2024 – 2030

BROOKINGS COUNTY

Pre-Disaster Mitigation Plan

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CHAPTER 1 | INTRODUCTION

INTRODUCTION

Brookings County (County) is vulnerable to natural hazards that have the possibility of causing serious threat to the health, welfare, and security of our citizens. The cost of response and recovery, in terms of potential loss of life or loss of property, from potential disasters can be lessened when attention is turned to mitigating their impacts and effects before, they occur or re-occur.

The Brookings County Board of Commissioners, in conjunction with the South Dakota Office of Emergency Management (SD OEM) and the Federal Emergency Management Agency (FEMA), has agreed to update this plan to assist all participating entities in the county in their mission to mitigate losses from natural hazards throughout Brookings County, South Dakota, and the communities located therein.

This plan is an update of the Pre-Disaster Mitigation Plan (PDM) that was developed by the County in 2007, updated in 2014, and once again in 2019. The document will serve as a strategic planning tool for use by the county and its communities in its efforts to mitigate future disaster events. The plan identifies and analyzes natural disasters that may occur in the County in order to understand the county's vulnerabilities and propose mitigation strategies that minimize future damage caused by those hazards. This knowledge will help identify solutions that can significantly reduce threat to life and property. The plan is based on the premise that hazard mitigation works. With increased attention to mitigating natural hazards, communities can greatly reduce threats to existing citizens and avoid creating new problems in the future. In addition, many mitigation actions can be implemented at minimal cost.

To date, a total of 4,079 Major Presidential Disaster Declarations (all natural hazards) have been proclaimed in the United States, of those declarations, 87 occurred fully or partially within the state of South Dakota. Brookings County is no stranger to natural and man-made disasters. All or portions of Brookings County have been included in 19 Presidential Disaster Declarations, four of which occurred in the last 10 years. In order to prevent and reduce the cost that is incurred by businesses, citizens, and property owners from these disasters, the Brookings County Pre-Disaster Mitigation Plan was developed. This plan identifies hazards that occur throughout Brookings County and mitigation projects that will aid in preventing and reducing the effects of those disasters on the property and lives within. Special consideration has been given to critical infrastructure throughout the county.

This is not an emergency response or emergency management plan. Certainly, the plan can be used to identify weaknesses and refocus emergency response planning. Enhanced emergency response planning is an important mitigation strategy. However, the focus of this plan is to support better decision making directed toward avoidance of future risks and the implementation of activities or projects that will eliminate or reduce the risk for those that may already have exposure to a natural hazard threat.

AUTHORITY FOR PRE-DISASTER MITIGATION PLAN

Each year, disasters take the lives of hundreds of people and injure thousands more in the United States. Across the nation, billions of taxpayer-funded dollars are spent annually to help communities, organizations, businesses, and individuals recover from natural disasters. However, these funds can never fully cover the true cost of the disasters.

In October of 2000, the Disaster Mitigation Act (DMA2K) was signed to amend the 1988 Robert T. Stafford Disaster Relief and Emergency Assistance Act. This amendment created the framework for state, local, tribal, and other territorial governments to engage in hazard mitigation planning to receive certain types of non-emergency disaster assistance. Section 322 (a-d) requires that local governments, as a condition of receiving federal disaster mitigation funds, have a multi-hazard mitigation plan in place that:

1. Identifies hazards and their associated risks and vulnerabilities;
2. Develops and prioritizes mitigation projects; and
3. Encourages cooperation and communication between all levels of government and the public.

The objective of this plan is to meet the hazard mitigation planning needs for the County and participating entities. Consistent with the Federal Emergency Management Agency's guidelines, this plan will review all possible activities related to disasters to reach efficient solutions, link hazard management policies to specific activities, educate and facilitate communication with the public, build public and political support for mitigation activities, and develop implementation and planning requirements for future hazard mitigation projects.

PURPOSE

The County PDM is a planning tool to be used by the County, as well as other local, state, and federal units of government, in their efforts to fulfill federal, state, and local hazard mitigation planning responsibilities; to promote pre- and post-disaster mitigation measures, short/long range strategies that minimize suffering, loss of life, and damage to property resulting from hazardous or potentially hazardous conditions to which citizens and institutions within the county are exposed; and to eliminate or minimize conditions which would have an undesirable impact on our citizens, economy, environment, or the well-being of the County. This plan will aid city, township, and county agencies and officials in enhancing public awareness of the threat hazards have on property and life, and what can be done to help prevent or reduce the vulnerability and risk of each County jurisdiction.

USE OF PLAN

The plan will be used to help the county, communities, and their elected and appointed officials:

- Plan, design and implement programs and projects that will help reduce their community's vulnerability to natural hazards.
- Facilitate inter-jurisdictional coordination and collaboration related to natural hazard mitigation planning and implementation.
- Develop or provide guidance for local emergency response planning.
- Be compliant with the Disaster Mitigation Act of 2000.

SCOPE OF PLAN

- Provide opportunities for public input and encourage participation and involvement regarding the mitigation plan.
- Identify hazards and vulnerabilities within the county and local jurisdictions.
- Combine risk assessments with public and emergency management ideas.
- Develop goals based on the identified hazards and risks.
- Review existing mitigation measures for gaps and establish projects to sufficiently fulfill the goals.
- Prioritize and evaluate each strategy/objective.
- Review other plans for cohesion and incorporation with the PDM.
- Establish guidelines for updating and monitoring the plan.
- Present the plan to the Brookings County Commissioners and the participating communities within the county for adoption.

WHAT IS HAZARD MITIGATION?

Hazard mitigation is defined as any cost-effective action(s) that has the effect of reducing, limiting, or preventing vulnerability of people, property, and the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation measures, which can be used to eliminate or minimize the risk to life and property, fall into three categories. First are those that keep the hazard away from people, property, and structures. Second are those that keep people, property, and structures away from the hazard. Third are those that do not address the hazard at all but rather reduce the impact of the hazard on the victims such as insurance. This mitigation plan has strategies that fall into all three categories.

Hazard mitigation measures must be practical, cost effective, environmental, and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not in themselves be more costly than the value of anticipated damages.

The primary focus of hazard mitigation actions must be at the point at which capital investment decisions are made and based on vulnerability. Capital investments, whether for homes, roads, public utilities, pipelines, power plants, or public works, determine to a large extent the nature and degree of hazard vulnerability of a community. Once a capital facility is in place, very few opportunities will present themselves over the useful life of the facility to correct any errors in location or construction with respect to hazard vulnerability. It is for these reasons that zoning and other ordinances, which manage development in high vulnerability areas, and building codes, which ensure that new buildings are built to withstand the damaging forces of hazards, are often the most useful mitigation approaches a jurisdiction can implement.

Previously, mitigation measures have been the most neglected programs within emergency management. Since the priority to implement mitigation activities is generally low in comparison to the perceived threat, some important mitigation measures take time to implement. Mitigation success can be achieved, however, if accurate information is portrayed through complete hazard identification and impact studies, followed by effective mitigation management. Hazard mitigation is the key to eliminating long-term risk to people and property in South Dakota from hazards and their effects. Preparedness for all hazards includes response and recovery plans, training, development, management of resources, and mitigation of each jurisdictional hazard.

This plan evaluates the impacts, risks, and vulnerabilities of natural hazards within the jurisdictional area of the entire county. The plan supports, provides assistance, identifies, and describes mitigation projects for each of the local jurisdictions who participated in the plan update. The suggested actions and plan implementation for local governments could reduce the impact of future natural hazard occurrences. Lessening the impact of natural hazards can prevent such occurrences from becoming disastrous but will only be accomplished through coordinated partnership with emergency managers, political entities, public works officials, community planners, and other dedicated individuals working to implement this program.

BROOKINGS COUNTY PROFILE

Population

Brookings County is on the eastern edge of the South Dakota border. It shares a north border with Hamlin and Deuel Counties, Lincoln County in Minnesota to the east, Moody and Lake Counties to the south, and Kingsbury County to the west. The county has a geographic area of 792 square miles and its Census 2020 population was 34,375, which averages 43.4 persons per square mile, which is a small increase since 2010. According to 2020 Census data, 14.0% of the population is older than age 65. Education levels of persons twenty-five and older include 96.2% high school graduates and 42.4% with college degrees. The number of high school and college graduates has remained steady since 2010, which is a positive trend for the County.

The county seat is Brookings, which is situated at the intersection of Interstate 29 and US Highway 14. Table 1.1 shows the population and number of housing units located in each of the county's municipalities. It should be noted that a small portion of the City of Arlington is located within Brookings County, but only two housing units (8 individuals) and no municipally provided infrastructure is located in Brookings County. Most of the City of Arlington is located in Kingsbury County, and is therefore not included in this plan. Table 1.2 lists the twenty-three County Townships by population. The County has continued to experience population growth since 1960. This is due primarily to the growth of the City of Brookings, which serves as the governmental, employment and trade center for the county and region. South Dakota State University in Brookings has also seen an increase in enrollment.

Table 1.1: Brookings County Municipalities

Name	2020 Population	2010 Population	Location	Elevation	Housing Units
Aurora	1,047	532	44 17'03" N 96 41'08" W	1,624'	474
Brookings	23,377	22,056	44 18'41" N 96 47'54" W	1,621'	10,031
Bruce	210	204	44 26'17" N 96 53'23" W	1,627'	117
Bushnell	71	65	44 19'43" N 96 38'33" W	1,690'	33
Elkton	755	736	44 14'04" N 96 28'48" W	1,752'	328
Sinai	99	120	44 14'40" N 97 02'27" W	1,781'	57

Volga	2,113	1,768	44 19'24" N 96 55'22" W	1,634’	938
White	537	485	44 26'00" N 96 38'45" W	1,798’	252
Unincorporated Areas	6,703	5,991			2,871
Brookings County	34,375	31,965	44 18'30" N 96 49'01" W	1,611’	14,849

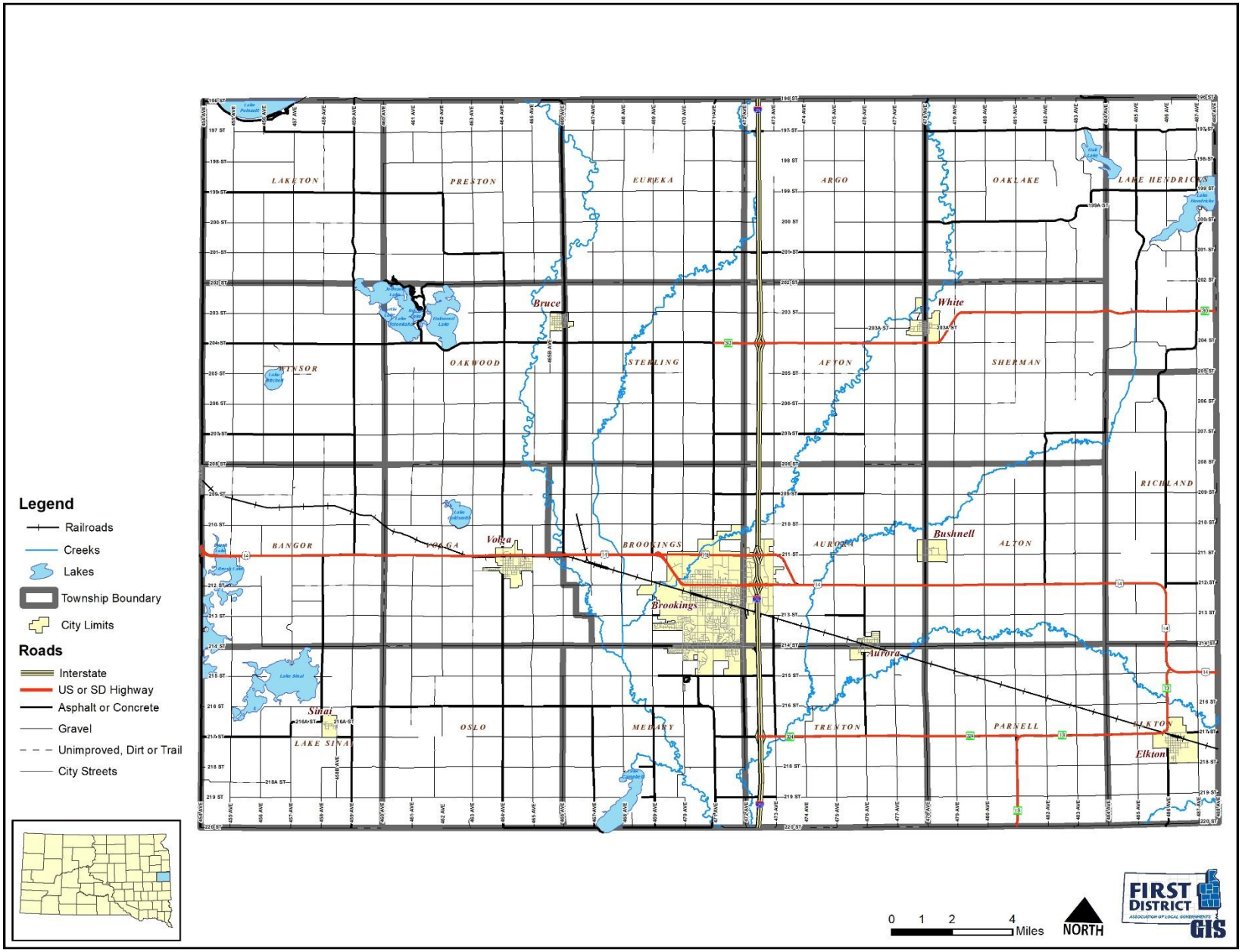
Source : 2020 & 2010 Census, www.Lat-Long.com, www.usbeacon.com

Table 1.2: Brookings County Townships

Township	Population
Afton	212
Alton	265
Argo	227
Aurora	257
Bangor	181
Brookings	409
Elkton	102
Eureka	206
Lake Hendricks	239
Lake Sinai	169
Laketon	163
Medary	1,421
Oak Lake	84
Oakwood	202
Oslo	212
Parnell	179
Preston	136
Richland	134
Sherman	268
Sterling	414
Trenton	188
Volga	363
Winsor	126

SOURCE : 2020 Census

Figure 1.1 Political Map



Social and Economic Description

Brookings County according to the Robert Wood Johnson Foundation and the University of Wisconsin Population Health Institute ranks among the healthiest counties in South Dakota.

The County's economy is dependent upon its agricultural and manufacturing sectors, but the largest industry sector is made up of non-agricultural employment such as, education, health care, and social service industries. Some notable employers in the City of Brookings are South Dakota State University, Larson's Manufacturing, Daktronics, Solventum, and Bel Brands.

The City of Brookings is by far the largest community in Brookings County and serves as the county seat and governmental, employment, and retail hub for the county and greater region. The remaining rural communities in the County serve as bedroom communities to Brookings and provide "small town" atmosphere to those residents. A large majority of the residents within these community's commute to Brookings or other employment centers. Most of those communities have limited retail and service sectors that provide basic needs to their residents.

Fishing and hunting, events held at the college, camping and lake use recreation, and numerous nature parks in Brookings create a base for tourism opportunities.

Overall unemployment rates in South Dakota have remained under 3.5% over the last 5 years with the exception of an 8.9% spike that resulted from the start of the Coronavirus pandemic in April of 2020. Since that date, unemployment rates across the state quickly declined back to around 3.5% by fall of 2020. The state unemployment rates continued to steadily decrease until plateauing and remaining at 2% (±0.1%) since. According to the US Bureau of Labor Statistics, Brookings County followed a similar pattern with unemployment hovering around 2.5% then spiking to 7.3% in April of 2020 but fell back to about 3.0% by fall of that year. The Brookings County unemployment rate experienced an uneven but consistent decrease with an average around 2.0% through 2022 to present day. According to the 2022 American Community Survey, 12.5% of the population of Brookings County is at or falls below the poverty line.

Brookings County issues approximately 145 building permits for all new buildings, including commercial and housing development. Very little development has occurred in the last five years that would alter the PDM plan from its planned update.

Physical Description and Climate

Brookings County is located in the central eastern South Dakota bordering the state of Minnesota and the counties of Deuel, Hamlin, Kingsbury, Lake, and Moody. Brookings County is located within the region generally classified as mild and dry continental or Steppe with four well-defined seasons. The weather can be quite changeable with large day to day temperature variations, particularly from the fall to the spring. Days with severe winter cold and summer heat are typical.

Normally, the temperature is moderate until the beginning of July, after which short, hot periods are experienced until the end of August. The freeze-free period is the number of days between the average last occurrence of freezing temperatures in the spring and the average first occurrence of 32 degrees F or lower in the fall. The length of the freeze-free period approximates the length of the growing season which ranges from 130 days or more between May 21st and September 21st. Topography and local weather conditions can produce subfreezing temperatures

at the ground surface while the air temperature a few feet above the ground remains above 32 degrees F.

Annual average precipitation is 24.31 inches, with over 69% of the precipitation falling from May through September. Precipitation can vary significantly from year to year, and location to location within a given year. The heaviest most intense precipitation often occurs with localized downpours associated with thunderstorms in June through August. Significant flash flooding can result from these downpours with over 3 inches of precipitation reported in a few events. Widespread heavy precipitation events of 1 to 2 inches can occur every few years and is most common from April through June and September through early November.

Average winter snowfall ranges up to 33 inches. The heaviest snowstorms often occur from late March through May or mid-October to mid-December. These storms can produce more than 12 inches of snow and are often made more severe as temperatures are warmer, and therefore the snow is heavier and more difficult to travel in and remove. These storms are often accompanied by high winds resulting in blizzard conditions. In spring these storms can coincide with the calving season resulting in livestock loss. Mid-winter snowstorms in general produce less than 6 inches of snow, but heavier amounts up to 19 inches or more have occurred. Despite the generally lighter amounts and drier snow, high winds can result in blizzard conditions. Even without falling snow, in the colder conditions of mid-winter, high winds can pick up loose snow, resulting in local ground blizzards.

Above normal snowfall can lead to exceptionally deep snowpack levels. Unusually cold late spring temperatures will allow the deep snowpack to persist until early April. Unpredictable weather patterns can shift to abnormally warm conditions with temperatures from the 40s to the 70s. These abnormally high temperatures can cause rapid snowmelt which may result in overland flooding in the region. With ever changing weather patterns and associated climate change related severe storms, it is important to understand a new normal higher level of precipitation is expected across the county and state.

Severe thunderstorms are common from June into early September. Typically, the greatest hazards associated with these thunderstorms are very high winds and large hail. Damage to structures and crops occurs every summer from these storms. Tornadoes have been reported but are relatively rare.

An important and unavoidable element of the climate in Brookings County is the often-windy conditions. Average wind speeds in Brookings County are 20.18 mph. The average and peak sustained winds tend to be stronger over higher more exposed terrain. The highest sustained winds tend to occur in the spring and fall, with sustained winds over 40 mph or greater occurring most years. Brookings County reached straight line wind speeds of 80 mph more than once every ten years.

For the purposes of this hazard assessment and mitigation plan, weather is of interest when it threatens property or life and thus becomes a hazard. The National Weather Service (NWS) provides short-term forecasts of hazardous weather to the public. In addition to issuing tornado and severe thunderstorm watches, the NWS also produces regularly scheduled severe weather outlooks and updates on various forms of hazardous weather including heavy rain and winter storms.

Hydrology

The majority of Brookings County is located within the Big Sioux River watershed. This watershed conveys water south to the Missouri River then on to the Mississippi River and the Gulf of Mexico. Additionally, the entirety of the County is located on the Coteau des Prairie. The Coteau is a plateau area from the ND/SD border that traverses southeasterly toward the State of Iowa. Drainage patterns on the Coteau de Prairie are generally characterized by poorly defined drainage channels and slow absorbing soils.

The principal surface water resources in Brookings County are the Big Sioux River, North Deer Creek, and Six Mile Creek, numerous wetlands, and natural lakes in the County.

Transportation and Utility Infrastructure

The County's road network is composed of a total of 1,323 miles including a mixture of state and federal highways, railroads, county roads, municipal road systems, township roads, and private roads. The rural road system performs two basic functions: (1) providing general mobility for the residents in rural areas, and (2) accommodating the movements of agricultural products to market. The rural transportation system was not designed to accommodate large volumes of traffic on a daily basis.

The major transportation infrastructure in the county includes roads, railroads, and an airfield. South Dakota Highways 14 is the main east-west route through the county with Highway 81 and Interstate 29 being the main north-south routes. Total State highway and interstate mileage in is approximately 273 miles. The bulk of the transportation infrastructure includes county highways and township roads that are used for rural transportation involving residents, agricultural products, and other commodities.

The County Highway Department maintains 394-miles. That road system includes 133 gravel road miles (976 miles in entire County), 261 hard surface rural road miles, and 220 bridges. In Brookings County, the transportation choices are limited to mostly private vehicles traveling over state and federal highways and county roads. The Brookings Area Transit Authority (BATA) provides bus service to the county, as well as two private taxicab/pick-up companies.

The Rapid City, Pierre, and Eastern Railroad runs east and west through the entire County, providing local companies the ability, in conjunction with the interstate, to ship bulk loads of agricultural and manufactured commodities to national and international destinations. Brookings County has one small airport located in the City of Brookings. The airport is used primarily by local pilots, crop sprayers, and students in South Dakota State University's aviation program.

Brookings-Deuel and Kingbrook Rural Water Systems serve the majority of rural residences in the County, as well as residents in the communities of Bushnell, White, Elkton, Bruce, and Sinai. The communities of Castlewood, Estelline and Lake Norden operate municipal water systems. The cities of Brookings and Volga have their own water systems. The City of Aurora uses water from the Brookings Municipal System, which is aquifer fed.

Regarding wastewater disposal, all of the municipalities, with the exception of Bushnell, within the County have municipal wastewater collection and treatment systems. Rural residences and those in Bushnell rely on individual septic tanks and drain-fields. The density of septic systems and their

potential to cause water contamination is an environmental concern. As the County's population continues to grow, new developments need to be controlled through planning and development guidelines.

Electric power is provided to rural county residents and people in the communities by the Sioux Valley Energy, H-D Electric, and Otter Tail Power. Brookings, Volga, White and Aurora operate their own municipal power system.

The primary telephone companies serving the County's rural population are Interstate Telephone Company (ITC) and Century Link. Cellular phone service is available in most parts of the county, but there are still places in the county where signals are weak.

Medical and Emergency Services

Brookings Health System operates four modern Type III ambulances and one Type II Special Operations Vehicle in Brookings County. They provide emergency 911 Advanced Life Support (ALS) services for the City of Brookings, much of the county of Brookings and the communities of Aurora, Bruce, Bushnell, Sinai, and Volga. Brookings Ambulance also assists area ambulance services from Arlington, Clear Lake, Elkton, Estelline, White and Lake Preston when requested.

Avera Medical Group and Brookings Health System serve the needs of Brookings and surrounding communities, including Arlington, Badger, Hetland, Lake Preston, Sinai, Nunda, Rutland, Estelline, Dempster, Bruce, Toronto, Astoria, White, Bushnell, Aurora, Elkton, Ward, and Volga. The health system houses a 49-bed hospital with three operating rooms; a 79-bed nursing home, Neighborhoods at Brookview; congregate living apartments for seniors, Brookhaven Estates; Arlington Medical Center; Volga Medical Clinic, White Medical Clinic, and Yorkshire Eye Clinic.

The City of Brookings is also home to the Sanford Health Clinic which has been providing medical care for the Brookings community since 2005.

The Brookings Emergency 9-1-1 Center continues to serve the Brookings Police Department and other area agencies as well. Those agencies include:

- Brookings Ambulance Service
- Brookings County Emergency Management
- Brookings County Sheriff's Office
- Brookings Fire Department
- Four county ambulance services
- Nine county fire departments
- South Dakota Highway Patrol (Brookings Squad)

CHAPTER 2 | PREREQUISITES

ADOPTION BY LOCAL GOVERNING BODY

The local governing body that oversees the update of the Brookings County Pre-Disaster Mitigation Plan is the Brookings County Board of Commissioners. The Commission has tasked the Brookings County Emergency Management Office with the responsibility of ensuring that the PDM is compliant with Federal Emergency Management Agency (FEMA) Guidelines and corresponding regulations.

MULTI-JURISDICTIONAL PLAN PARTICIPATION

Requirement 201.6(c)(1). Local Mitigation Plan Review Tool – A1(b).

This plan is a multi-jurisdictional plan which serves the entire geographical area located within the boundaries of Brookings County, South Dakota. The County has eight incorporated municipalities. All of the incorporated municipalities located entirely within the County elected to participate in the planning process and the update of the existing PDM. Emergency Management Directors of the adjoining counties were also included on the December 2023 invitation correspondence to participate in the Brookings County PDM Plan update process. Others invited to participate in the County PDM plan update process include local law enforcement providers, emergency services providers, area utility providers, area health providers, and county school superintendents. Table 2.1 shows the participating local jurisdictions including the following municipalities:

Table 2.1: Plan Participants

Continuing Participants	Do Not Participate*
Aurora	All 23 Townships
Brookings	
Bruce	
Bushnell	
Elkton	
Sinai	
Volga	
White	
Brookings County	

* Non-participating communities are still eligible for hazard mitigation funding, however, may not directly apply for assistance. Instead, any assistance would need to be applied for on behalf of the non-participating communities by Brookings County. While none of the townships directly participated in the PDM update, they were represented by their local Township Officials.

Unincorporated villages and townships are not direct participating entities in the plan because these entities are too small, both in population and in resources, to be capable of handling disaster needs on their own. The villages are governed by the township boards and are served by the County whenever necessary. The townships were invited to participate in the PDM update. Each township was asked to identify hazard risks, vulnerability, critical infrastructure and potential projects on maps they received via mail and return the information to the First District Association of Local Governments (First District) for incorporation in the plan. All twenty-three townships responded to the request.

Some of the rural utility providers attended planning meetings and provided system information for the updated plan.

The Brookings County Commission and each of the listed participating municipalities will pass resolutions to adopt the updated PDM. The dates of adoption by resolution for each of the jurisdictions are summarized in Table 2.2.

Table 2.2: Dates of Plan Adoption by Jurisdiction

Jurisdiction	Date of Adoption
City of Aurora	
City of Brookings	
Bruce	
Bushnell	
City of Elkton	
Sinai	
City of Volga	
City of White	
Brookings County Commission	

All the participating jurisdictions were involved in the plan update. Representatives from each municipality and the County, adjacent county Emergency Managers, law enforcement providers, rural utilities providers, emergency services, townships, school district superintendents, and local health providers were invited to the planning meetings. Those in attendance provided valuable perspective on the changes required for the plan. All representatives attending took part in the risk assessment exercise at the January 23, 2024 kickoff meeting.

Representatives in attendance took information from the PDM planning meetings back to their respective boards/agencies and presented the progress of the plan update. First District staff also presented progress reports when meeting individually with communities. The local jurisdictions reviewed and commented (via email or telephone) on updated information placed in the 2024 plan. The local jurisdictions have also presented the Resolution of Adoption to their councils and will pass the resolutions upon FEMA approval of the PDM update. The Resolutions are included in Appendix A.

Table 2.3 was derived to help define “participation” for the local jurisdictions who intend on adopting the plan. To be considered “participating”, each jurisdiction must have at least seven of the ten participation requirements fulfilled.

Table 2.3: Record of Participation

Nature of Participation	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White
Attended Meetings or work sessions (a minimum of 1 meeting will be considered satisfactory).	■	■	■	■	■	■	■	■
Submitted inventory and summary of reports and plans relevant to hazard mitigation.	■	■	■	■	■	■	■	■
Submitted the Risk Assessment Worksheet.	■	■	■	■	■	■	■	■
Submitted description of what is at risk (including critical facilities and infrastructure at risk from specific Hazards worksheet).	■	■	■	■	■	■	■	■
Submitted a description or map of land-use patterns (current and proposed/expected).	■	■	■	■	■	■	■	■
Developed goals for the community.	■	■	■	■	■	■	■	■
Developed mitigation actions with an analysis of why those actions were selected.	■	■	■	■	■	■	■	■
Prioritized actions emphasizing relative cost-effectiveness.	■	■	■	■	■	■	■	■
Reviewed and commented on the draft plan.	■	■	■	■	■	■	■	■
Hosted opportunities for public involvement (allowed time for public comment at a minimum of 1 city council meetings after giving a status report on the progress of the PDM update).	■	■	■	■	■	■	■	■
■ Requirement Met								

CHAPTER 3 | PLANNING PROCESS

BACKGROUND

The effort that led to the development of this plan is part of the larger, integrated approach to hazard mitigation planning in South Dakota that is led by the South Dakota Office of Emergency Management. Production of the plan was the ultimate responsibility of the Brookings County Emergency Management Director, who served as the county's point of contact for all activities associated with this plan. Input was received from the PDM Planning Team that was put together by the Emergency Management Director. All invited Planning Team members are listed below in Table 3.1.

The plan itself was written by an outside contractor, First District Association of Local Governments (First District) of Watertown, South Dakota, one of the state's six regional planning entities. The office has an extensive amount of experience in producing various kinds of planning documents, including municipal ordinances, land use plans, and zoning ordinances, and is an acknowledged leader in geographic information systems (GIS) technology throughout South Dakota. First District assisted the County in the development of the county's original PDM in 2003 in addition to the 2012 and 2018 PDM plan updates. The following staff members of the First District Association of Local Governments were involved in the 2024 plan update process: Todd Kays, Director; Luke Muller, Senior Planner; Amy Arnold, Geographic Information System Analyst; Kelli Henricks, Geographic Information System Specialist, and Greg Maag, Planner. Staff attended the PDM Planning Team and community meetings as the plan was being developed. Additional research and information gathering was provided by Payton Carda, an independent technical writing specialist. Carda complied and formatted all data, information, forms, and maps into the draft and final PDM plan. Arnold assisted by producing many of the maps for the plan and Muller directed the floodplain risk analysis (see next section) and completed the county land cover analysis discussed in the previous chapter. Several other individuals at the state level provided additional support and information that was quite useful. They include:

- James Poppen, CFM Mitigation Branch Chief/State Hazard Mitigation Officer, SD OEM – provided guidance and direction as the plan was being developed.
- Blaire Jonas, State of South Dakota NFIP/Mitigation Specialist, SD OEM – provided guidance and direction as the plan was being developed.
- Kyle Kafka, State of South Dakota Hazard Mitigation Specialist, SD OEM – provided guidance and direction as the plan was being developed.
- Diana Herrera, FEMA Regional Flood Insurance Liaison – supplied classification and information regarding the value and number of flood insurance policies and claims.
- Doug Hinkle, State of South Dakota Fire Marshall Office – provided information on fires events throughout the County.

- Whitney Kilts, SD DANR, Water Rights Program – provided information on dams located in the County.

- Greg Pollreisz, SD Department of Transportation – provided bridges and road mileage information within the County's Road system.

- Marc Macy, South Dakota National Flood Insurance Program Coordinator – provided classification and information regarding value and number of flood insurance policies and claims, as well as guidance and direction as the plan was being developed.

DOCUMENTATION OF THE PLANNING PROCESS

Requirement 44 CFR § 201.6(c)(1). Local Mitigation Plan Review Tool – A1(a-b)
Requirement 44 CFR § 201.6(b)(2). Local Mitigation Plan Review Tool – A2
Requirement 44 CFR § 201.6(b)(1). Local Mitigation Plan Review Tool – A3

Methodology

Mitigation planning is a process that communities use to identify policies, activities, and tools to implement mitigation actions. The process that was used to develop this plan consisted of the following steps:

1. Planning Framework
2. Risk Identification and Assessment
3. Mitigation Strategy
4. Review of Plan
5. Plan Adoption and Maintenance

Planning Framework

The planning framework component identified five objectives:

- Develop Plan to Plan;
- Identify Governmental Entities/Stakeholders;
- Establish PDM Planning Team;
- Define Scope of the Plan;
- Generate public participation component
- Establish schedule for planning process

Prior to receiving funding, public meetings were held at the Brookings County Courthouse to inform the public about the required PDM update. Funding from FEMA and the South Dakota Office of Emergency Management to prepare the mitigation plan was received by the county on 9/12/2023. Once funding was secured, the Brookings County Emergency Management Director and the First District acted as the PDM Planning Team and began to discuss the strategy to be used to develop the plan. The first task was to identify those entities/stakeholders that would have direct and indirect interests in the update of the PDM.

Prior to the first public informational meeting, the Brookings County Emergency Management Director wrote letters to all potential stakeholders, community organizations, municipalities, townships, utility providers, emergency responders, and concerned residents who might wish to volunteer their time and serve on a committee, and to those who would act as a resource for the PDM Planning Team. The letters included a brief description of the PDM. The same correspondence was sent to the Emergency Management Directors in the adjoining counties inviting them to participate in the Brookings County PDM Plan update process. Public input was solicited via notices regarding the PDM planning process in local media outlets and via the Internet.

Each individual who was contacted for the PDM Planning Team had at least one of the following attributes to contribute to the planning process:

- Significant understanding of how hazards affect the county and participating jurisdictions.
- Substantial knowledge of the county's infrastructure system.
- Resources at their disposal to assist in the planning effort, such as maps or data on past hazard events.

Table 3.1 lists all parties that were invited to participate as a PDM Planning Team member and records their attendance at the planning meetings, all of which were open to the public and held during the drafting of the plan. Agendas were distributed to the PDM Planning Team prior to each meeting, and the meeting minutes were shared afterward to keep everyone was informed of the discussions and decisions that took place.

Table 3.1: PDM Planning Team Members

Invited			Meeting Attendance		
Last Name	**First Name**	**Entity Represented**	**Meeting 1**	**Meeting 2**	**Meeting 3**
Alberts	Chris	Elkton fire Chief			
Anderson	Jeff	Bruce Mayor			
Behlings	Cody	Bruce Maintenance			
Bolzer	Pete	Brookings City FD			
Briseno	Paul	Brookings City Manager			
Doll	Nathan	Brookings Economic Development	■		
Drake	Michael	Brookings City PD		■	
Drietz	Thad	Brookings City	■	■	
Jacobson	David	Volga Fire Department		■	
Muller	Luke	First District	■	■	■
Frederiksen	Mike	Elkton School	■		
Gilbertson	Jay	East Dakota Water Development District			
Gladis	Scott	White Mayor			
Gustad	Brian	Brookings County Highway Superintendent			
Wire	Jerae	East River Electric Coop		■	
Haugen	Richard	Brookings County EM	■	■	■

Invited			Meeting Attendance		
Last Name	**First Name**	**Entity Represented**	**Meeting 1**	**Meeting 2**	**Meeting 3**
Hill	Robert	Brookings County EM Director	■	■	■
Jaacks	Brian	Bushnell Mayor			
Jandahl	Brian	Elkton School District			
Jarrett	Martin	Big Sioux Community Water System			
Jencks	Randy	Kingbrook RWS			
Jensen	Larry	Brookings County Commission		■	■
Jensen	Steve	Elkton Public Works			
Johnson	Doyle	Sinai Mayor			
Jones	Josh	Aurora Mayor	■		
Kludt	Kimberly	Deubrook School District			
Kneip	Collin	Aurora Public Works			
Kretsch	Heidi	Brookings Health	■		
Dekkenga	Gordon	Brookings Health		■	■
Landmark	Chad	White Public Works			
MacFarlane	Charles	Otter Tail Electric			
Marfield	Kevin	Brookings Sheriff's Office	■		
McCarthy	Tim	Sioux Valley Electric			
Merkley	Jason	Brookings Health System			
Meyer	Steve	Brookings Utilities			
Nelson	Jeff	East River Electric			
Pottast	Mark	Aurora Fire Chief	■		
Reed	Tim	Brookings Economic Development Corporation			
Remund	Charles	Elkton Mayor			
Richter	Charlie	Brookings City Engineer	■	■	■
Russell	Jamie	Volga Fire Chief			
Schulte	Michael	Volga City Manager	■		
Schultz	Summer	Brookings School District			
Schuster	Laura	Sioux Valley School District			
Schwartz	Dylan	White Fire Department		■	
Schuurman	Arend	Elkton Fire Department/Ambulance	■		
Scott	Jeremy	Brookings Fire Department	■		
Stanwick	Marty	Brookings County Sheriff		■	
Steen	Kevin	Volga Public Works			
Stokes	Richard	Bruce Fire Chief			
Stuefen	Scott	Elkton City	■		
Trygstad	Jayme	SDSU		■	
Wilts	Gene	Brookings-Deuel RWS			
Wosje	Jeremy	Sinai Fire Chief			
Vukovich	Jacob	Brookings Police Department	■	■	

Leadership and guidance in the planning effort and at the planning meetings was provided by the First District staff and the Brookings County Emergency Management Director. An agenda was distributed to each PDM Planning Team member prior to each meeting, but free-flowing discussion was always encouraged. When PDM Planning Team members had questions about a topic of discussion, either First District staff or the Emergency Management Director would step in.

Generally speaking, the planning process associated with the plan's development was relaxed and informal. No subcommittees were formed, and all decisions were made by mutual consensus of the PDM Planning Team members - no votes were taken, or motions made. Everyone's opinion was respected, nobody was discouraged from voicing their opinion, and no one was made to feel any less important than anyone else.

As the PDM Planning Team was being assembled, arrangements were made for the first PDM Planning Team meeting, which took place in the county Brookings Government Center in Brookings on January 23, 2024. An agenda was distributed to prospective PDM Planning Team members. Appendix B includes a copy of each meeting notice, agenda, attendance sheet, and minutes.

Those who attended the January 23rd meeting for the PDM update were asked to volunteer to serve on the PDM Planning Team. The PDM Planning Team was tasked with fostering coordination between the various entities involved; reviewing the drafts and providing comments after First District Association of Local Governments staff initiated changes to the existing plan. Each of the local jurisdictions had a member of their respective boards/councils represent the municipalities in the plan.

The representatives from the municipalities/entities were asked to share the progress of the plan at their own meetings and to ensure that those attending the board/council meetings were aware that they are invited to make comments on and participate in the process of updating the new plan. Comments provided by residents at the local town and PDM Planning Team meetings were collected and incorporated into the plan.

The first meeting of the PDM Planning Team served to introduce the participants to the concept of mitigation planning, why the plan was being updated, and a tentative timeline of how the process would proceed in the months to come (scheduling, assigning responsibilities, etc.). The meeting also included a review of the existing plan, which led to several important decisions. First, it was the consensus opinion of the PDM Planning Team that a rewrite of the plan would be needed. The PDM Planning Team decided that:

- The 2019 PDM plan did not include all the necessary requirements found in the Local Hazard Plan Review Tool (2023). To ensure that the updated plan included everything required by the plan review tool, the PDM Planning Team and community meetings used the plan review tool to guide the discussions.

- Updated information and data regarding the risk assessment was needed, more informative tables and maps would be helpful, and the mitigation strategy needed to be reviewed. FEMA comments received during the approval of the 2019 PDM plan will also be included in the updated plan.

- The risk identification and assessment as well as the identification of critical infrastructure and local municipal goals and objectives should be completed by the First District prior to the next meeting of the PDM Planning Team.

Opportunities for Public Comment

The public was provided several opportunities to comment on the plan during the drafting stages at the PDM Planning Team meetings, Hamlin County Annual Townships' meeting, and local community meetings. There were several work sessions and public hearings held to keep the public updated and involved in the plan.

Additionally, the County utilized an online survey to provide individuals that were unable to attend any community meetings, work sessions, or public hearings an option to participate in the PDM planning process. Information collected through the survey was analyzed and included in the plan when appropriate. Notices for the survey were published in the county newspapers, placed on the County website, and posted at most County/community offices to encourage local residents to provide information and participate in the planning process. Primarily, public input included the involvement in hazard assessment and mitigation projects. Those who were most involved were the representatives PDM Planning Team and representatives from the municipalities. The municipalities put the PDM update on the agenda at their regular meetings and allowed people to comment at the meetings. Table 3.2 identifies the location and date of each that was provided for the public to comment and how it was advertised.

Table 3.2: Opportunities for Public Comment

Location of Opportunity	Date	Type of Participation			How Was Meeting Advertised	
		City Council or County Commission Meeting	PDM Meeting	City Staff/Township Annual Mtg/Survey	Public Notice	Website
Aurora	08/12/2024	■			■	■
	Reserved for adoption meeting					
Brookings	08/22/24			■		
	08/27/2024	■			■	■
	Reserved for adoption meeting					
Bruce	02/13/2024	■			■	
	Reserved for adoption meeting					
Bushnell	03/04/2024	■			■	
	Reserved for adoption meeting					
Elkton	03/06/2024	■			■	■
	Reserved for adoption meeting					

Location of Opportunity	Date	Type of Participation			How Was Meeting Advertised	
		City Council or County Commission Meeting	PDM Meeting	City Staff/Township Annual Mtg/Survey	Public Notice	Website
Sinai	04/01/2024	■			■	
	Reserved for adoption meeting					
Volga	01/16/2024	■			■	■
	Reserved for adoption meeting					
White	04/01/2024	■			■	
	Reserved for adoption meeting					
Brookings County	PDM Grant Application 12/01/2022	■			■	■
	01/23/2024		■		■	■
	02/29/2024			■	■	
	09/15/2024	■			■	■
	December 10, 2024		■		■	■
	December 30, 2024		■		■	■
	Adoption Date	■			■	■

The PDM Planning Team discussed the importance of making the planning process available to vulnerable and disadvantaged populations within the community. While managers of some facilities that provide care and assistance to vulnerable populations (populations to protect) were part of the PDM Planning Team, it was determined that the Emergency Management Director should notify those vulnerable populations with information on how to participate in the planning process. The Emergency Management Director provided information to known places of employment of non-English speakers, and elderly care facilities regarding meetings of the PDM Planning Team, the PDM Draft, the location of the online survey, and other opportunities manners to comment.

At the community meetings elected officials discussed vulnerable populations within their communities. Each community identified where, if at all, elderly individuals; visitors to the community; individuals with developmental, physical, or sensory disabilities; hospitals; mobile home parks; temporary shelters; and non-English speakers live or would be best met to solicit comment. Each community identified those locations (primarily campgrounds, manufactured home courts, elderly/assisted living, schools, and day cares) within their communities. Board members and/or staff volunteered to informally inform individuals and managers of such facilities of the ongoing meetings and opportunities for comment, including directing those individuals to the online survey.

Aside from the inclusion on the PDM Planning Team of some managers of facilities involved in the care or other services to vulnerable populations; most attempts to include such vulnerable populations was passive. It was determined that prior to the next plan update, the list of

“populations to protect” should be updated to include places housing or primarily engaged in the service of elderly individuals; visitors to the community; individuals with developmental, physical, or sensory disabilities; hospitals; mobile home parks; temporary shelters; and non-English speakers. A mitigation activity has been added for all communities to include notification regarding the planning process and opportunities to provide comment directly to the list of populations to protect at the beginning of the planning process.

Online Survey Results

Brookings County and First District staff conducted an online survey regarding natural hazards identification and vulnerabilities. The online survey began on January 10, 2024 and ended on April 1, 2024. Public notices for the survey were posted in several offices of the county courthouse and at the finance offices of the participating communities. Some of the communities posted the notice in their local post offices to encourage participation by the public. Samples of posted notices can be found in Appendix F.

The County received 17 completed responses from citizens/locals, community organizations, companies, and non-profit organizations. A summary of the responses can be found in Appendix F. Of all the respondents, 75% percent indicated they had experienced or been impacted by a natural hazard. Additionally, a slightly higher percentage of respondents (81.3%) were somewhat concerned about the possibility of natural disasters impacting their community. All remaining responses were very concerned, showing that potential fallout from a natural disaster are a high concern.

When asked about the most effective way to receive information, social media and email were the top two answers, followed by TV and radio. It is evident that smart devices are heavily relied on in this day and age due to the speed and ease of communication. The County and its local jurisdictions must provide weather safety messaging on platforms where members of the population are already spending the majority of their time.

The respondents also reviewed the twelve main natural hazards that affect the County and ranked them from greatest to least great threat. The top three threats were tornado, severe winter weather, and thunderstorm (including lighting/hail). This answer is not entirely surprising considering the nearby community of Castlewood was impacted by a devasting tornado in the early summer of 2022. The least threatening hazards were considered to be ice jams, dam failure, and earthquake. This is likely due to their lack of history and unlikelihood of occurring within Brookings County. Respondents did not identify any other hazards that were not listed on the survey.

Lastly, respondents were asked to provide potential mitigation projects to address hazards in the county. Most respondent answers were related to drought, flooding, tornado, high wind, and severe winter weather. Respondents listed water conservation practices and policies as best mitigation activities for drought. Participants suggested storm sewer improvements as the best manner of mitigating flood risks. Mitigation activities for tornadoes, high wind, and severe winter storms included the recommendation for storm shelters/safe rooms, better emergency alert systems, and public information regarding the location and procedures for shelters and safe rooms. Some respondents cited the planting of shelterbelts near population centers as viable options to mitigate high wind. While most recommendations for winter weather were focused on recovery and maintenance of streets after a storm.

Most of the responses on the completed surveys reflect the same hazard identification, vulnerabilities, and mitigation activity information from the PDM team, County, and the communities that is included in the 2024 PDM plan. With regards to the suggested mitigation activities proposed by respondents, the County and communities have already accomplished many activities and projects that relate to the local citizens' concerns. The County and communities are proposing to undertake mitigation activities that will address additional respondents' suggestions. Local citizens are encouraged to work with their local governments to alleviate any specific matters they have.

PDM Plan Process Timeline

September 2023

- Brookings County receives FEMA/SD OEM funding to update county PDM plan

October - December 2023

- Develop PDM Team list
- Invite persons listed for the PDM Team to January 2024 PDM Team meeting
- Invite adjacent county EM Directors to the January 2024 PDM Team meeting
- Public notices published in local newspapers regarding January 2024 PDM Team meeting

January 2024

- Hold PDM Team kickoff meeting
- Establish the PDM Team
- Review the existing 2019 PDM plan
- Develop PDM Template and planning update process

February - October 2024

- Risk Assessment/Project Identification/Prioritization
  - Notices published
  - First District Staff attend community/township meetings
- Conduct online hazard mitigation survey
- First District research data/information for PDM plan
- First District completes draft PDM plan preparation

November 2024

- Review draft PDM plan
- Notice published draft PDM plan public comment period
- Provide adjacent county EM Directors PDM draft for their review (45 day comment period)
- PDM Team meeting #2 notice published
- Draft plan submitted to SD OEM for pre-review

December 2024

- Hold PDM Team meeting #2
- Review/approve final draft PDM plan
- Plan updated based on any comments received
- PDM Team meeting #3 notice published
- Hold PDM Team meeting #3
- Draft plan submitted to FEMA

December - January 2024

- FEMA plan approval received

January 2025

- Approved PDM plan adopted by County and participating communities

Risk Identification & Assessment/Mitigation Strategy/Review of Plan
Requirement 201.6(b)(3). Local Mitigation Plan Review Tool – A4-a.
Requirement 201.6(c)(3). Local Mitigation Plan Review Tool – C1-a-b.
Requirement 201.6(c)(3). Local Mitigation Plan Review Tool – C2-a.

The Risk Identification and Assessment component identified three strategies: Collect and Organize Data, Develop GIS Data, and Analyze Data. The Mitigation Strategy component identified five objectives: Review Existing PDM and other plans, Formation of Goals/Objectives, Compile existing resources to accomplish goals/objectives, Public review of Goals/Objectives, and PDM Planning Team Review of goals/objectives. The Review of PDM component identified three strategies: Writing of PDM, Public Review of PDM, and PDM Planning Team Review of PDM.

Based upon the discussions and information provided at the first meeting, it was determined that the existing PDM Risk Assessment and Mitigation Strategies needed to be updated. Before the second meeting, First District Staff updated the Introduction, Pre-requisites, Risk Assessment, Mitigation Strategy, and Plan Implementation components of the PDM.

Prior to the second PDM Planning Team meeting, First District Staff met with the participating municipalities and the Brookings County Townships at public noticed meetings to identify hazards and critical facilities, assess vulnerability, discuss development trends, and develop mitigation goals. First District also met with each participating jurisdiction to review proposed mitigation actions, including estimated costs, responsibility and priority. Meeting dates are referenced in Table 3.2. Staff members from Brookings County, Brookings County Townships, and rural utility providers were asked to identify hazards and critical facilities, assess vulnerability, discuss development trends, and develop mitigation goals and review these items with each respective governing body (if applicable). First District staff also conducted research regarding the history of disaster events in the county, including events that had occurred since the 2019 updated plan was developed.

During the 2019 PDM Plan update, First District conducted a technical review of existing documents. This review incorporated existing plans, studies, reports, technical information, zoning, and flood damage prevention ordinances into the PDM Update. It should be noted that most planning documents from each of the communities were previously developed by the First District. However, some of the smaller communities do not have such planning documents. Additionally, the 2019 PDM was used as a resource for the new plan because most of the natural hazard profile research had already been completed when it was drafted. In addition to the 2019 PDM, the First District reviewed several other existing documents including but not limited to the 2019 State of South Dakota Hazard Mitigation Plan and Flood Insurance Rate Maps for all applicable local jurisdictions. A summary of the technical review and incorporation of existing plans is included in Table 3.3.

Table 3.3: Record of Review

Technical Documents	Jurisdiction									Referenced in Plan
	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	Brookings County	
Aquifer Protection Ordinance	The aquifer protection ordinance was reviewed & not determined to be significantly impacted by any natural hazards. (Existing water services have been able to handle demand in drought conditions with established policies.)		N/A	N/A	N/A	N/A	N/A	N/A	The aquifer protection ordinance was reviewed & not determined to be significantly impacted by any natural hazards. (Existing water services have been able to handle demand in drought conditions with established policies.)	N/A
Building Code **(IBC 2023)**	N/A**	Reviewed existing building codes and limitations on development due to perceived or objectively probable natural hazards. The goal was to maximize efficacy of mitigation strategies/ projects and align them with development strategies.	N/A**	N/A**	N/A**	N/A**	Reviewed existing building codes and limitations on development due to perceived or objectively probable natural hazards. The goal was to maximize efficacy of mitigation strategies/ projects and align them with development strategies.	N/A**	Reviewed existing building codes and limitations on development due to perceived or objectively probable natural hazards. The goal was to maximize efficacy of mitigation strategies/ projects and align them with development strategies.	NA

Comprehensive Plan and Existing Land Use Maps	Reviewed existing and future land use maps, master street plan, and limitations on development due to perceived or objectively probable natural hazards; The goal was to maximize efficacy of mitigation strategies/ projects and align them with development strategies.		N/A	N/A	Reviewed existing and future land use maps, master street plan, and limitations on development due to perceived or objectively probable natural hazards; The goal was to maximize efficacy of mitigation strategies/ projects and align them with development strategies.	N/A	Reviewed existing and future land use maps, master street plan, and limitations on development due to perceived or objectively probable natural hazards; The goal was to maximize efficacy of mitigation strategies/ projects and align them with development strategies.			Chapters 1,3, 4, 6 & Appendix F
Capital Improvement Plan	Reviewed capital improvement plan to review recommended projects and the community's monetary capacity to implement each project. This information assisted in prioritizing all mitigation strategies.		N/A	N/A	Reviewed capital improvement plan to review recommended projects and the community's monetary capacity to implement each project. This information assisted in prioritizing all mitigation strategies.					N/A
Drainage Ordinance	N/A	Stormwater regulations were reviewed with specific attention to watershed & water runoff requirements. This information assisted in prioritizing flood-related projects.	N/A	N/A	N/A	N/A	N/A	N/A	Drainage regulations were reviewed with specific attention to watershed & water runoff requirements. This information assisted in prioritizing flood-related projects.	N/A
Flood Damage Prevention Ordinance	Reviewed effective flood maps to determine vulnerable private and public structures; their assessed values; & anticipated number of displaced individuals. This information assisted in prioritizing flood-related projects.			N/A	Reviewed effective flood maps to determine vulnerable private and public structures; their assessed values; &	N/A	Reviewed effective flood maps to determine vulnerable private and public structures; their assessed	N/A	Reviewed effective flood maps to determine vulnerable private and public structures; their assessed	Chapters 4, 5, 6 & Appendices D & E

					anticipated number of displaced individuals. This information assisted in prioritizing flood-related projects.		values; & anticipated number of displaced individuals. This information assisted in prioritizing flood-related projects.		values; & anticipated number of displaced individuals. This information assisted in prioritizing flood-related projects.	
Economic Development Plan	N/A	Reviewed economic development plan to review strengths, challenges, and opportunities with the community. This information assisted in prioritizing all mitigation strategies.	N/A	N/A	Reviewed economic development plan to review strengths, challenges, and opportunities with the community. This information assisted in prioritizing all mitigation strategies.	N/A	Reviewed economic development plan to review strengths, challenges, and opportunities with the community. This information assisted in prioritizing all mitigation strategies.	N/A	N/A	N/A
Emergency Operations Plan	The County Emergency Manager reviewed the County's Emergency Operations Plan with the LEOP at regular meetings. Since this has been done during every update of the PDM over the last 12 years, no changes were necessary to the PDM to account for this plan unless specified by the given jurisdiction in Chapter 5.									Chapter 4
Flood Insurance Studies or Engineering Studies for Streams	Reviewed effective flood maps to determine vulnerable private and public structures; their assessed values; anticipated number of displaced individuals. This information was used to assist in prioritizing flood related projects.			N/A	Reviewed effective flood maps to determine vulnerable private and public structures; their assessed values; anticipated number of displaced individuals. This information was used to assist in prioritizing flood related projects.		N/A	Reviewed effective flood maps to determine vulnerable private and public structures; their assessed values; anticipated number of displaced individuals. This information was used to assist in prioritizing flood related projects.		Chapters 4, 5, 6 & Appendices D & E
Hazard Vulnerability Analysis (by the local Emergency Management Office)	While not directly referenced in this document, Brookings County maintains a Hazardous Materials Plan. This plan identifies facilities that store hazardous materials across all jurisdictions within the county and outlines strategies/policies for mitigating & responding to spill events (which may or may not occur due to natural events). During each community and Planning Team meeting, members were reminded that discussions about hazardous materials should be addressed within the HAZMAT plan. Additionally, all discussions regarding the major street plan considered evacuation routes in the event of such incidents.									Chapters 1, 3, 4, & 5
Land Use Regulation Near Pipelines	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
State Hazard Mitigation Plan	The State Hazard Mitigation Plan served as a valuable resource, providing examples and background data. Relevant objective data from the state's plan was considered for inclusion and in some instances, reiterated in this plan.									All Chapters

Stormwater Management/ Drainage Plan	N/A	Drainage plans were reviewed with specific attention to watershed & water runoff requirements. This information assisted in prioritizing flood-related projects.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subdivision Ordinance	Subdivision regulations were reviewed with specific attention to installation of infrastructure to an ability to meet fire flows and for streets to meet IFC requirements. Though not reflected here, the community will review IFC requirements to determine whether minimum requirements should be placed in ordinance or standard operating procedures.		N/A	N/A	N/A	N/A	Subdivision regulations were reviewed with specific attention to installation of infrastructure to an ability to meet fire flows and for streets to meet IFC requirements. Though not reflected here, the community will review IFC requirements to determine whether minimum requirements should be placed in ordinance or standard operating procedures.			NA
Transportation Plan	N/A	Reviewed master street plan to identify which, if any, roads were more/less vulnerable to hazards OR more essential to travel during natural hazards.	N/A	N/A	N/A	N/A	N/A	N/A	Reviewed master street plan to identify which, if any, roads were more/less vulnerable to hazards OR more essential to travel during natural hazards.	Chapters 1, 3, 4, & 5

Zoning Ordinance and Site Plan Review	Zoning Ordinance restrictions on setbacks, densities; availability of infrastructure and public facilities to more intensive uses; and Brookings County FIS were discussed. It was determined that safety/mitigation related requirements were adequate in the present ordinance. Further, undeveloped lots appropriately zoned for construction within SFHA were reviewed.	N/A	Zoning Ordinance restrictions on setbacks, densities; availability of infrastructure and public facilities to more intensive uses; and Brookings County FIS were discussed. It was determined that safety/mitigation related requirements were adequate in the present ordinance. Further, undeveloped lots appropriately zoned for construction within SFHA were reviewed.	N/A	Zoning Ordinance restrictions on setbacks, densities; availability of infrastructure and public facilities to more intensive uses; and Brookings County FIS were discussed. It was determined that safety/mitigation related requirements were adequate in the present ordinance. Further, undeveloped lots appropriately zoned for construction within SFHA were reviewed.	Chapters 3, 4, 5, & 6

* *Document was reviewed in reference to the described section. Portions of the technical document may be included, but often times were merely considered/incorporated with no specific reference to the document.*

** *South Dakota Codified Law 11-10-6 establishes the most recent version of the International Building Code for all structures, excluding agricultural structures and single-family residential structures, within jurisdictions that have not adopted a building code. SDCL 11-10-6 does not provide for enforcement of this statute.*

N/A The jurisdiction does not have this program/policy/regulation/technical document.

All jurisdictions within Brookings County possess the legislative authority to establish and/or modify the technical documents referenced in Table 3.3. Brookings County communities are adopting and enforcing regulations and plans that they determine to provide direct benefit to the respective community without significantly increasing administrative costs. Before adopting regulations and policies, these communities are carefully weighing the measurable benefit (or decrease in expense) with the cost (including social cost) of administration. As a result, very few of the policies/documents/etc. in Table 3.3 above have been significantly updated since 2019.

The City of Brookings was in the process of adopting a major update to its Comprehensive Land Use Plan during the previous update of this plan. As a result, this is the first PDM to utilize that updated document. Since the last PDM Plan, the City of Brookings and Brookings County adopted a comprehensive update to its joint jurisdiction zoning ordinance for the first time since 1980. Further, Brookings County completed a six-year process to update its zoning ordinance in 2024. The only other community to update its land use plan and zoning ordinance since the last plan is the City of Elkton. All jurisdictions reviewed rules regarding bulk, height, and density of development to determine whether consistent, not only with the established planning principles of the community but also to ensure those regulations practicably employed the goals of the pre-disaster mitigation plan with reference to protection from fire, drought (impacts on water supply), limitation of density in flood prone areas and review of regulations for areas determined to be in a 100-year floodplain.

While reviewing those ordinances and changes at publicly noticed meetings, both entities chose to prioritize the adoption of updated special flood hazard areas as soon as possible. The communities await final authorization to adopt the newly updated maps, pending remaining appeals. Each of the communities intend to consider adding a requirement to add free-board or additional requirements above the minimum requirements to remain compliant.

In addition to the public technical documents, applicable members of the PDM Planning Team utilized internal related plans such as Brookings Healthcare's Threat/Hazard Assessment Model, which is referenced in regard to moderate or higher hazards identified by that model. Utility providers offered a variety of information regarding ability to serve and plans for future expansion or mitigation activity. Also the South Dakota State University Emergency Management Specialist offered insight into the university's similar mitigation plans and reports such as the Annual Security and Fire Safety Report which is referenced later. Such integration with the 2012 Pre-Disaster Mitigation Plan is partially credited with initiating and underscoring the urgency of addressing all buildings at South Dakota State University for the purposes of assigning emergency addresses for better emergency response throughout campus. Chapter 4 presents a comprehensive list of potential hazards that could affect Brookings County. During the initial meeting, the Planning Team initiated the development of a detailed profile for each hazard. These profiles incorporated insights from all participating jurisdictions highlighting the specific impacts each hazard can have on their community. Discussion also occurred regarding the existing hazard mitigation strategies, with a particular focus on protecting the critical and essential facilities in each community.

To streamline their efforts, the Planning Team prioritized and reduced the number of hazards to focus on to those that occur more frequently or pose the greatest risk of significantly higher damages. This more targeted approach allows the team to allocate the County's resources more effectively and enhance the resilience of its communities.

Upon completion of the draft plan, Brookings County Emergency Management and First District posted the draft plan on their websites. Correspondence regarding the posting of the PDM plan were sent to all the participants and to the emergency managers in the neighboring counties of:

Deuel, Hamlin, Kingsbury, Lake, and Moody. The County published a notice in the newspapers to notify the public regarding availability of the draft PDM plan for their review and comment. Everyone who received the correspondence regarding the plan was allowed forty-five days to comment on the draft.

At the second meeting, in December of 2024, Risk Identification/Assessment was discussed. The PDM Planning Team reviewed the updates prepared by the First District. This included first a review of the hazards identified in the State of South Dakota Hazard Mitigation Plan and that risk assessment portion of the existing PDM. First District staff also provided an overview of the information regarding Critical Facilities, Risk Identification, Hazard Vulnerability, and mitigation projects identified by the County's municipalities.

The PDM Planning Team also dealt with the Mitigation Strategy at the August 2024 meeting. Formation of the strategy began with a review of the results of the risk assessment, which led to discussion about the goals to be achieved with the mitigation plan. The list of goals is included in Chapter 5.

The PDM Planning Team reviewed the goals and objectives identified in the 2019 PDM. After review, the Team determined the 2019 goals and objectives were still appropriate and should be included in the updated PDM plan. One minor change was made to add fire prevention educational activities to Goal #1 of the Mitigation Activities for Fire and Drought Hazards. In addition, the PDM Planning Team reviewed the list of proposed actions included in the previous mitigation plan and discussion followed about the progress that had been made on implementing the actions. Specific mitigation actions recently identified by the participating jurisdictions were also discussed.

The rest of the meeting was spent prioritizing the mitigation actions and discussing how the plan would be implemented. It was emphasized that cooperation between the county and the participating jurisdictions was especially important, and discussion occurred about how this could best be achieved. Representatives from the jurisdictions were made aware of the critical role they needed to play to ensure the success of the mitigation strategy, such as implementing specific mitigation actions. The Emergency Management Director emphasized the importance of ensuring that no local decisions are made, or actions taken contrary to the goals of this plan. Also, responsible parties were identified for reporting on progress being made to implement the proposed mitigation actions, for evaluating the plan's overall effectiveness, and for getting the public more involved in the planning process.

At the end of the meeting the First District was instructed to conduct update the plan based on comments received. Then return for the final review and submission of the plan,

The final meeting of the PDM Planning Team was subsequently held in December of 2024 to review and discuss final draft as amended based upon comments from the planning team, communities, and the public. At the meeting, the PDM Planning Team recommended that the plan be submitted to SD OEM and FEMA. The final draft of the plan was again posted on the First District Association of Local Governments and Brookings County websites.

IDENTIFICATION OF HAZARDS

Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B1-a;
Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B1-b;
Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B1-f.

In this chapter, the hazards that were identified by the PDM Planning Team as having the most significance for the County are analyzed. As part of the analysis, various maps and tables were produced and are included within this chapter. The planning participants began the risk assessment process by reviewing the State of South Dakota Hazard Mitigation Plan (SD SHMP). The PDM Planning Team also reviewed records of hazard events that have occurred in the county since 2000, relying primarily on the Spatial Hazard Events and Losses Database for the United States (SHELDUS), compiled by the University of South Carolina's Hazards and Vulnerability Research Institute and data from the NCDC Storm Events Database. A summary of the findings for hazard occurrences from the past ten years is provided below in Table 4.1: The PDM Planning Team also identified potential hazards by observing development patterns, interviews from towns and townships, public meetings, PDM work sessions, previous disaster declarations and research of the history of hazard occurrences located within the County.

Table 4.1: Hazard Occurrences 2014-2023

Type of Hazard	# of Occurrences Since 2013	Source
Dam Failure	0	SD SHMP
Drought	10+	NOAA/UNL
Earthquake	0	SDGS
Extreme Cold	25	NOAA
Extreme Heat	9	NOAA
Fire (Urban and Wildfire)	371	NOAA & State Fire Marshall's Office
Flood	69	NOAA
Hail	36	NOAA
Heavy Rain	0	NOAA
Heavy Snow	5	NOAA
Ice Jams	0	SD SHMP
Ice Storm	1	NOAA
Landslide	0	SD SHMP

Type of Hazard	# of Occurrences Since 2013	Source
Lightning	0	NOAA
Subsidence	0	SD SHMP
Thunderstorm and High Wind	67	NOAA
Tornado	8	NOAA
Winter Storm and Blizzards	81	NOAA

Hazards were analyzed in terms of the hazard's probability of occurrence in Brookings County. Representatives from each participating jurisdiction and the PDM Planning Team were asked to complete worksheets that categorized hazards by the likelihood of occurrence within the county.

Every hazard or disaster that has occurred since 2014 was evaluated and placed into one of two separate columns depending on the likelihood of the disaster occurring in the PDM jurisdiction. Hazards that occur at least once a year or more were placed in the High Probability column; hazards that may have occurred in the past or could occur in the future but do not occur on a yearly basis were placed in the low probability column.

Due to the topographical features of the County and the nature of the natural hazards that affect the geographical area covered by this PDM, most areas of the county have similar likelihood of being affected by the natural hazards identified. Only the natural hazards from the High Probability and Low Probability Columns will be further evaluated throughout this plan, with an emphasis on the High Probability hazards. All hazards in the Unlikely to Occur column will not be further evaluated in the plan. Table 4.2 is an adjusted list of hazards produced from the FEMA worksheets completed by each participating jurisdiction and the PDM Planning Team.

Table 4.2: Hazards Categorized by Likelihood of Occurrence within Brookings County

High Probability	Low Probability
Blizzard	Drought
Extreme Cold	Urban Fire
Extreme Heat	
Flood	
Freezing Rain/Sleet/Ice	
Hail	
Heavy Rain	
Heavy Snow	
Lightning	
Rapid Snow Melt	
Strong Winds	
Thunderstorm	
Tornado	

Hazards or disasters for which there is no record of past occurrence in the area before and are unlikely to occur in the PDM jurisdiction any time in the future were not identified for planning purposes, however are included in the disaster profile for reference should the Brookings County PDM Planning Team's intent change in the future. Specifically, those hazards for which there is no record of past occurrence such as: landslides, subsidence, dam failures, ice jams, and earthquakes are profiled but are not identified for planning purposes. None of the municipalities have assets that are vulnerable to wildfires. Planning for wildfires within municipalities is limited to response and recovery activities rather than mitigation. All activities to improve response and recovery to urban fires should be considered activities to improve response and recovery to wildfires. Therefore, wildfires are only intended for planning purposes outside of municipalities.

Finally, several types of natural hazards that occur in other portions of the country were not included in the PDM plan hazard assessment due to the zero probability of them occurring in Brookings County. The hazards included avalanches, coastal storms, hurricanes, and volcanic activity.

TYPES OF NATURAL HAZARDS IN THE PDM JURISDICTION AREA

Most descriptions of the natural hazards likely to occur in the County were taken directly from the 2019 Brookings County PDM. For the purpose of consistency throughout the plan, additional definitions were included to reflect all the hazards that have a chance of occurring in the area. For all of the hazards identified, the probability of future occurrence is expected to be the same for all of the jurisdictions covered in the PDM.

HAZARD PROFILE

Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B1-a-f;
Requirement 201.6(c)(2)(ii). Local Mitigation Plan Review Tool – B2a-b.

It should be stated that most of the hazards identified in this section have the potential of occurring anywhere in the County. A brief section about the history of each hazard's occurrence in the county is provided. Table 4.3 below shows all of the Presidential Disaster Declarations that have involved the county. Information on previous occurrences – the location, the extent (i.e., magnitude or severity) of each hazard, and probability of future events (i.e., chance or occurrence) are listed individually by the type of hazard in the following tables.

Table 4.3: Presidential Disaster Declarations in South Dakota Including Clark County

Date	Disaster Dec #	Type	Total Damage	Public Assistance Cost	Hazard Mitigation Assistance
4/18/1969	257	Flooding	$4,599,306		
05/03/1986	764	Severe Storms and Flooding	$5,158,130		
7/2/1992	948	Flooding, Severe Storms, and Tornadoes			
07/19/1993	999	Severe Storms, Tornadoes and Flooding	$53,068,748		
06/21/1994	1031	Severe Storms and Flooding	$8,187,938		
05/26/1995	1052	Flooding	$35,649,349		
01/05/1996	1075	Severe Winter Storm	$13,085,649		
01/10/1997	1156	Severe Winter Storm and Blizzard	$19,455,263		
04/07/1997	1173	Severe Winter Storm and Severe Flooding	$87,069,429		
05/17/2001	1375	Severe Winter Storm and Flooding	$10,441,684	$5,097,819	
12/20/2005	1620	Severe Winter Storm	$28,071,441	$24,647,040	
11/2/2010	1947	Severe Storms and Flooding		$1,079,973	
05/13/2011	1984	Flooding		$52,090,678	
06/07/2019	4440	Severe Winter Storm, Snowstorm, and Flooding		$60,762,752	$9,432,655
11/18/2019	4469	Severe Storms, Tornadoes, and Flooding		18,594,268	2,988,996
06/29/2022	4656	Severe Storm, Straight-line Winds, Tornadoes, and Flooding		$6,733,541	$223,607
02/27/2023	4689	Severe Winter Storms and Snowstorm		$2,413,949	

SOURCE : www.fema.gov/disaster/declarations

While the PDM Planning Team reviewed all hazard occurrences that have been reported in the last 50 years, the list for some of the hazards was extremely long. The information provided in the tables is not a complete history report, but rather an overview of the hazard events. The PDM Planning Team felt the hazard trend for the last ten years could be summarized in this section and decided to include any new occurrence that have taken place since the previous PDM was drafted.

DAM FAILURE

The risk of dam breach or failure poses a lesser concern to the citizens of the County compared to the threat of flooding. Brookings County is home to numerous structures designed to control or regulate flow of water between bodies. The South Dakota Department of Agricultural and Natural Resources (SD DANR) identifies eight dams within the County, as listed below in Table 4.4. According to the SD DANR database, all eight dams located in Brookings County are rated as having low downstream hazard potential. A map (Figure 4.1) illustrating high and significant hazard dams throughout South Dakota can be found below. Additionally, the chart below depicts the dam safety and hazard potential classification rating system. Based on the dam data provided for Brookings County, the likelihood of a dam failure resulting in the loss of human life, economic impact, environmental damage, or disruption of essential services is unlikely to occur.

Hazard Potential Classification	Loss of Human Life	Economic, Environmental, Lifeline Losses
Low	None expected	Low and generally limited to owner
Significant	None expected	Yes
High	Probable. One or more expected	Yes (but not necessary for this classification)

SOURCE : FEMA, Federal Guidelines for Dam Safety -- Hazard Potential Classification System for Dams, April 2004

Figure 4.1 South Dakota High and Significant Hazard Dams

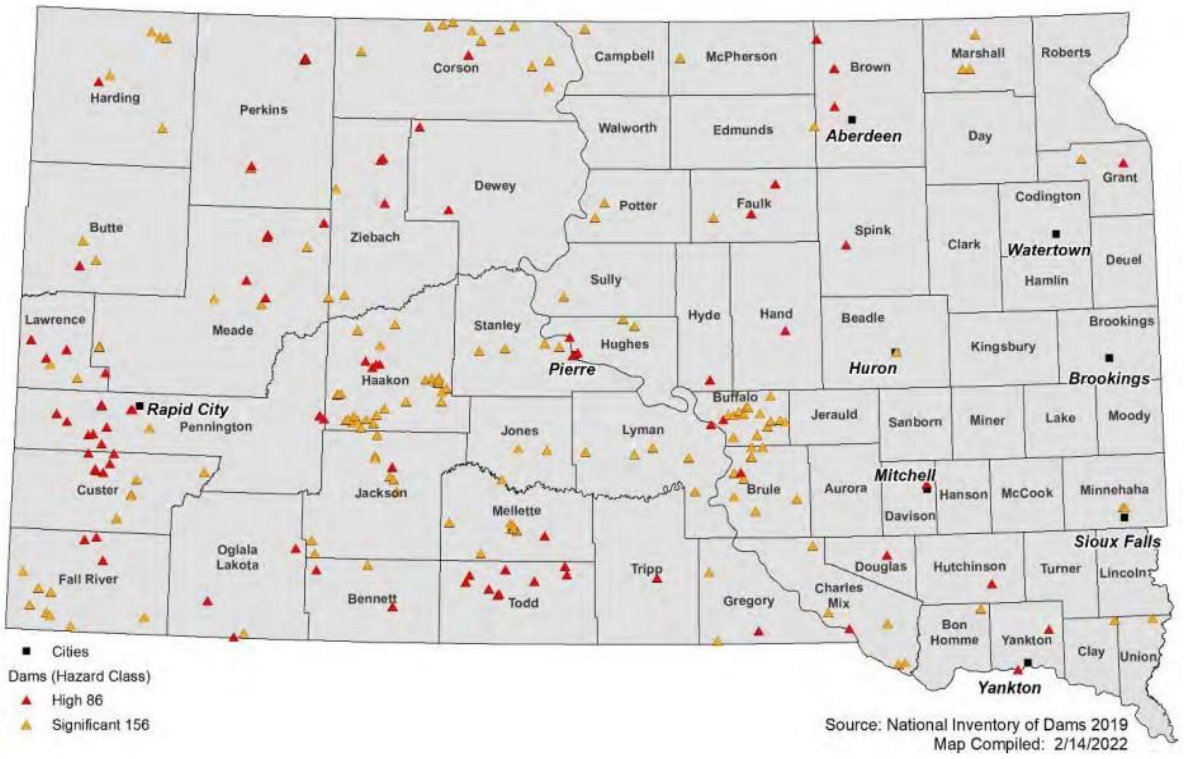


Table 4.4 Dam Locations in Brookings County

Dam Name	Owner	Location	Water Body
Upper Deer Creek-Lake Hendricks Watershed (UDCLH) 1-C	UDCLH Watershed District (Local Govt)	SW1/4 of SW1/4 of Section 31-112N-47W	Upper Deer Creek
Bullis Wetland Dam	USFWS (Federal)	NE1/4 of SW1/4 of Section 3-110N-52W	Big Sioux Tributary
Bolstad WPA	USFWS (Federal)	NE1/4 of NW1/4 of Section15-109N-52W	Big Sioux Tributary
Gibbons Dam	William Gibbons (Private)	NE1/4 of SW1/4 of Section 27-111N-48W	Deer Creek Tributary
Dry Lake WPA	USFWS (Federal)	NW1/4 of NW1/4 of Section 11-110N-52W	Big Sioux Tributary
Winter Dam	Robert Winter (Private)	NW1/4 of SE1/4 of Section 27-111N-52W	Big Sioux Tributary
Gibbons No. 3	William Gibbons (Private)	NW1/4 of SW1/4 of Section 27-111N-48W	Deer Creek Tributary
Gibbons No. 4	William Gibbons (Private)	SE1/4 of SW1/4 of Section 22-111N-48W	Deer Creek Tributary

SOURCE : SD DANR-Office of Water - Water Rights Program

Climate Change Considerations

There is no comprehensive assessment of how climate change might affect flooding in South Dakota. The TNCA, EPA-Climate Impacts on the Great Plains study plus other studies proposed climate change projections show that future precipitation patterns will vary across the Great Plains. Winter/spring precipitation and very heavy precipitation events are both projected to increase in the northern portions of the Great Plains, leading to increased runoff and potential flooding. Increased snowfall, rapid spring warming, and intense rainfall can combine to produce significant flooding.

Since 1990, South Dakota has averaged 22% more 2-inch rain events compared to the long-term average. Some historic rain and flooding events have occurred in recent years. Climate projections for the Great Plains indicate that 1-day, 20-year return events will increase in frequency by 8-16% in the coming decades. Brookings County is confident that existing dam capacity will be able to accommodate an increase of one flood, every 12 to 25 years (according to data elsewhere in this report, Brookings County currently experiences flooding at a frequence slightly more often than twice annually.

DROUGHT

South Dakota's climate is characterized by cold winters and warm to hot summers. There is usually light moisture in the winter and marginal to adequate moisture for the growing season for crops in the eastern portion of the state. Semi-arid conditions prevail in the western portion. This combination of hot summers and limited precipitation in a semi-arid climatic region places South Dakota present a potential position of suffering a drought in any given year. The climatic conditions are such that a small departure in the normal precipitation during the hot peak growing period of July and August could produce a partial or total crop failure.

The fact South Dakota's economy is closely tied to agriculture only magnifies the potential loss which could be suffered by the state's economy during drought conditions. The Keetch-Byron and Palmer Drought Indexes measure drought impact. The SD SHMP states that based on historical records, notable droughts have occurred somewhere in the state on average about every 12 years, which is equivalent of an 8% chance any given year. The FEMA National Risk Index (FEMA NRI) states Brookings County has an annualized frequency of 8 drought events per year.

The following chart depicts the intensity of dry conditions and is used on the U.S. Drought Monitor maps and in reports to show potential drought conditions in the country. This chart also correlates to the maps below representing the severity of drought conditions across Brookings County at the severest extent referenced in Table 4.5 identifying the ten-year drought history for the County.

Category	Description	Possible Impacts
D0	Abnormally Dry	Going into drought: • short-term dryness slowing planting, growth of crops or pastures Coming out of drought: • some lingering water deficits • pastures or crops not fully recovered
D1	Moderate Drought	• Some damage to crops, pastures • Streams, reservoirs, or wells low, some water shortages developing or imminent • Voluntary water-use restrictions requested
D2	Severe Drought	• Crop or pasture losses likely • Water shortages common • Water restrictions imposed
D3	Extreme Drought	• Major crop/pasture losses • Widespread water shortages or restrictions
D4	Exceptional Drought	• Exceptional and widespread crop/pasture losses • Shortages of water in reservoirs, streams, and wells creating water emergencies

SOURCE : http://droughtmonitor.unl.edu/archive.html - (This chart is used as the legend for the following maps).

Table 4.5: Brookings County Ten Year Drought History

Severest Extent (by Week – See Map for Date Below)	Date Start	Date End	Type	Crop Damage
05/05/15	03/31/2015	06/09/2015	Moderate Drought	
08/03/21	06/08/2021	09/21/2021	Severe to Extreme Drought	3.027M
12/13/22	11/08/2022	04/04/2023	Moderate Drought	
10/03/23	06/06/2023	01/09/2024	Moderate to Severe Drought	3.620M

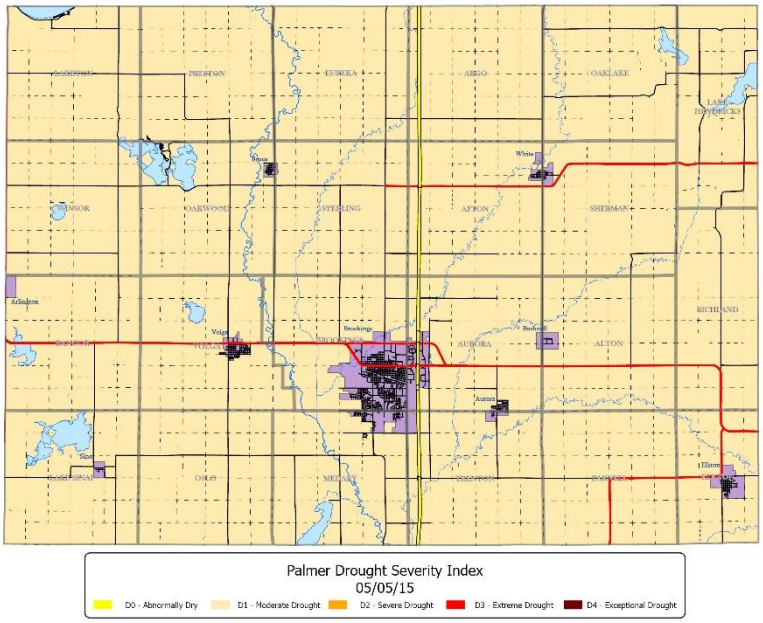
SOURCE : http://droughtmonitor.unl.edu/archive.html

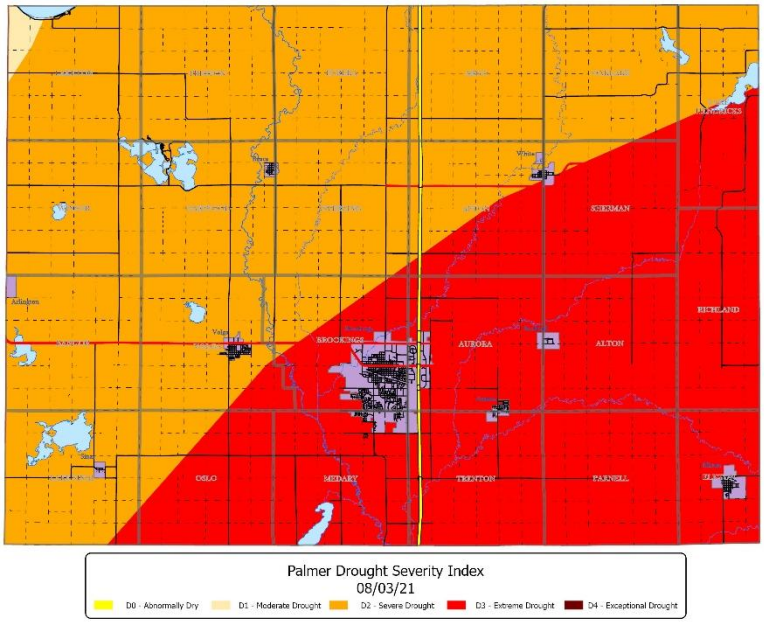
Major Drought Occurrences:

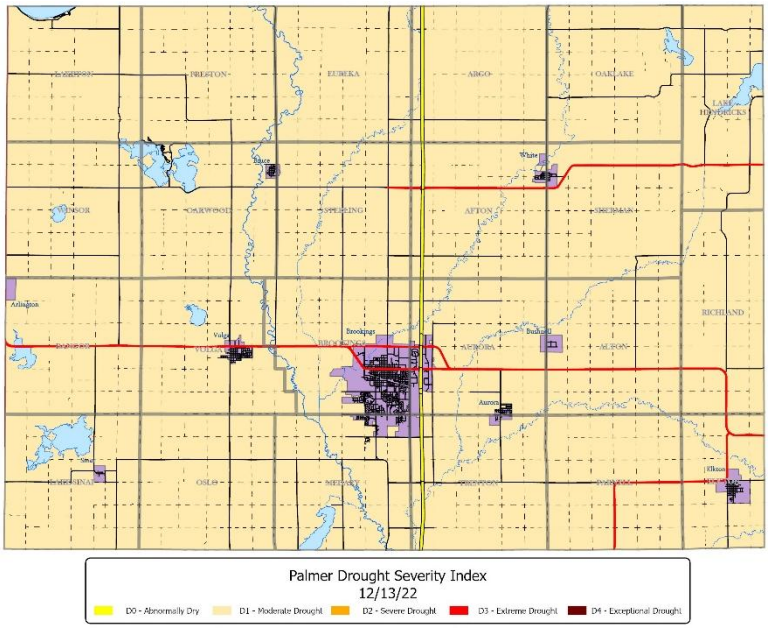
- 1880s-1890s: The years 1887, 1894-1896, 1898-1901 were very dry years. The National Weather Service (NWS) has several fire danger informational items located on their website.

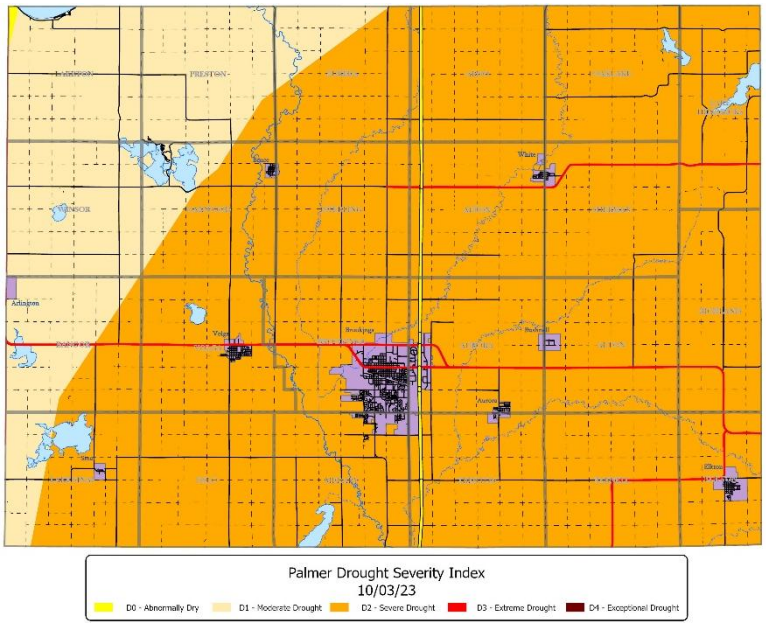
- 1930s: During the infamous dust bowl years, Brookings County was not spared a fair share of problems. Particularly dry summers were in 1934 and 1936.

- 1987-1990: An abnormally low amount of precipitation in the summer of 1987 combined with a hot and dry summer during 1988, left South Dakota in dire straits. Agricultural income was down 0.8% and wheat price per bushel decreased significantly.





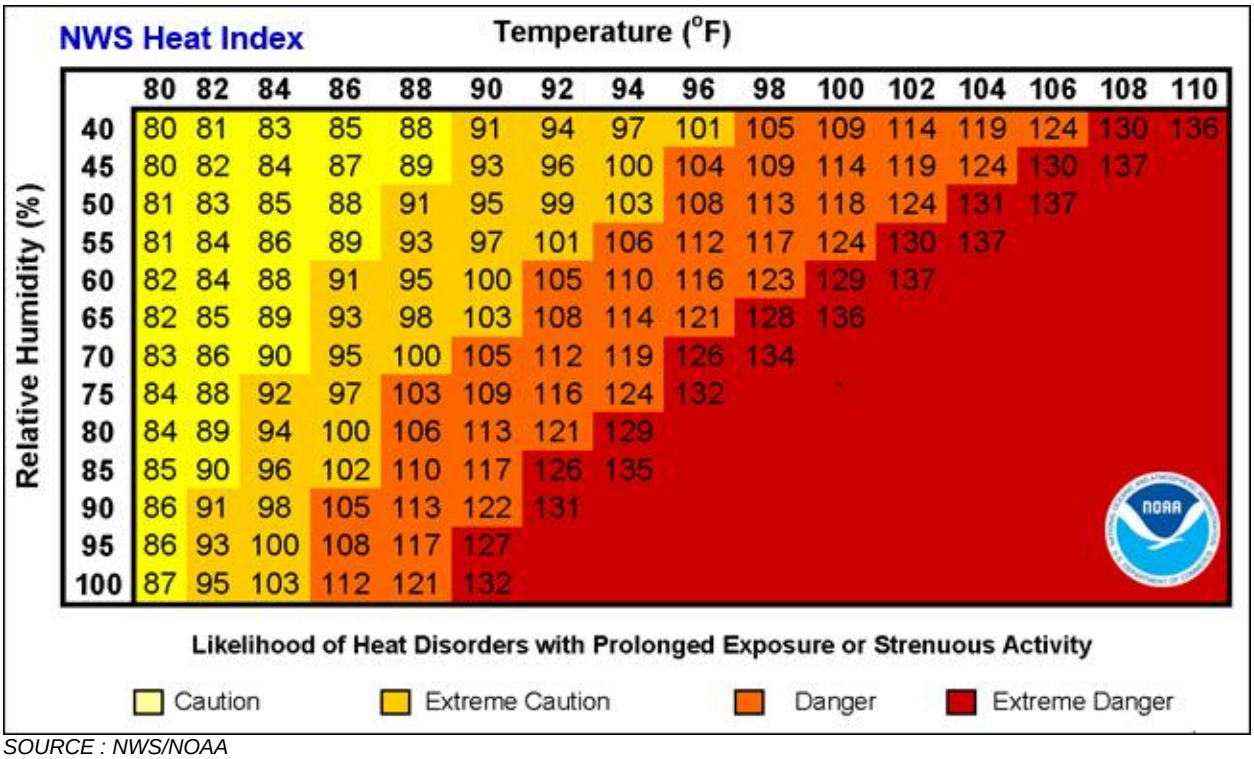




EXTREME HEAT

Extreme Heat, often referred to as a Heat Wave, is a prolonged period of excessively hot weather that may also be accompanied by high humidity. In the County, temperatures typically range from 0 to 100 degrees Fahrenheit. Therefore, any temperature outside of this range can be considered extreme. This term is applied to both routine weather variations and extraordinary heat spells that might occur only once a century. Extreme heat poses significant risks to people, livestock, and critical infrastructure when certain conditions are present.

The Heat Index, which is detailed below, measures the impact of extreme heat on humans and livestock. According to the FEMA National Risk Index (NRI), Brookings County experiences heat waves at an annualized frequency of 0.5 events per year. Table 4.6, located below, outlines the history of extreme heat events in Brookings County. This information is sourced from the National Oceanic and Atmospheric Administration (NOAA) National Centers for Environmental Information (NCDC) Storm Events Database.



SOURCE : NWS/NOAA

Extreme Heat Occurrences:

July 2011 – A significant upper-level, high-pressure system developed over the region bringing very hot and humid conditions. This was the worst heat wave to hit the region since July 2006. Beginning on Friday July 15, 2011 and persisting through Wednesday July 20th, many locations experienced high temperatures in the 90s to lower 100s, with low temperatures in the 70s at night. In addition, humidity levels rose to extreme levels at times. Surface dew point temperatures in the 70s and lower 80s brought extreme heat index values of up to 110 to 125 degrees. The dewpoints were some of the highest ever recorded in the region. The dewpoint at Aberdeen tied the previous record with 82 degrees. Sisseton also tied their record with 83 degrees. Watertown came a degree

shy of tying their record with 80 degrees. The prolonged heat took its toll on livestock with fifteen hundred cattle perishing during the heat. Numerous sports and outdoor activities were cancelled. Some of the highest heat index values included; 110 degrees at Mobridge; 111 degrees at Watertown; 113 degrees at Miller and Gettysburg; 114 degrees at Wheaton and Faulkton; 116 degrees at Pierre; 118 degrees at Sisseton; and 121 degrees at Aberdeen. The highest heat index value occurred at Leola with a temperature of 98 degrees and a dewpoint of 82 degrees, the heat index hit 125 degrees.

July 2016 - A very warm and abnormally large upper-level high pressure area along with high dew points brought high heat indices to central and northeast South Dakota on July 20, 2016. High temperatures were in the upper 80s to the 100s with overnight lows in the upper 60s to the mid-70s. A few of the highest heat index values include: 105 degrees at Britton, 106 degrees at Sisseton and Watertown, 107 degrees at Pierre, 108 degrees at Aberdeen and Clark, 109 degrees at Mobridge, 110 degrees at Eureka and Miller, and 111 degrees at Clear Lake. This event and the two listed below were located throughout regions which include all of Brookings County and between fifteen (15) and twenty-five (25) other counties.

Table 4.6: Brookings County History of Extreme Heat

Location	Date	Time	Type
Brookings County	06/10/2016	11:00	Excessive Heat
Brookings County	07/20/2016	12:00	Excessive Heat
Brookings County	07/11/2018	11:00	Heat
Brookings County	06/29/2019	12:00	Heat
Brookings County	06/30/2019	12:00	Heat
Brookings County	07/27/2023	10:00	Excessive Heat
Brookings County	08/19/2023	13:00	Excessive Heat
Brookings County	08/21/2023	11:00	Excessive Heat
Brookings County	09/03/2023	12:00	Heat

SOURCE : https://www.ncdc.noaa.gov/stormevents/

Climate Change Considerations

According to the Fifth National Climate Assessment, (FNCA) the line of demarcation between the arid west and humid east is moving eastward, beyond the traditional border at the 100th Meridian. Since it is known that dryer air, resulting from decreased snowpack in the west/northwest, leads to wider temperature fluctuations it is reasonable to expect increased frequency of extreme temperatures, such as extreme heat and cold. Though stream flow data runs contrary to the prediction of an arid Brookings County, it is expected the increased water levels are the result of more frequent extreme moisture events (summer and winter storms) and rapid snow melt.

Furthermore, the FNCA states, since 2000, the winter season is warming at a faster rate than any other season in the Northern Plains region, and this is also true for South Dakota. Higher average low temperatures in winter will shorten the time snow spends on the ground, and in turn lead to earlier Spring temperatures and drier air reaching farther east earlier in the year than in the past. While it is true that the warmer air will converge with moist air to the east, resulting in large rain

events, it is expected that warm air will be more likely to increase the frequency of prolonged heat/dry events.

As discussed elsewhere in this plan, climate change is fueling more extreme weather events, such as summer storms and extreme weather variability. Given the increased likelihood of both storms and extreme heat, the importance of temporary emergency shelter with back-up generators for the facility and water/sewer services for that facility in the event of loss of service/shelter due to storms leads to displacement of residents for prolonged period of times during extreme heat events.

EARTHQUAKE

An earthquake results from the sudden release of energy due to an adjustment in the earth's crust. This adjustment causes the ground to tremble and generates vibrations that radiate out from the quake's focus. Earthquakes primarily occur along fault zones, which are fractures in the Earth's crust where stress builds until one side slips. In South Dakota, the likely causes of earthquakes stem from underlying plate movements underlying and ongoing isostatic (glacial) rebound. Severe earthquakes can cause significant damage to infrastructure and result in injury or loss of life. However, earthquakes in South Dakota are generally minor, typically resulting in low rumbles with no damage. According to the South Dakota Geological Survey, one earthquake was recorded as occurring in Brookings County on May 25, 1986 with a recorded magnitude of less than 3.0.

Although the Midwest is often referred to by geologists as the "stable midcontinent", earthquake shock waves can travel farther and faster from the epicenter due to the older, cooler, and denser geological makeup. However, because earthquakes in South Dakota tend to be mild causing little to no damage other than rattling dishes, cracked windows, or stuck doors, this hazard poses a low risk to the County. The Richter Scale measures earthquake intensity, and according to FEMA's National Risk Index (NRI), the annual probability of an earthquake to occur in the County is 0.013% annually. Earthquakes are not a risk in Brookings County.

Richter scale of earthquake magnitude

magnitude level	category	effects	earthquakes per year
less than 1.0 to 2.9	micro	generally not felt by people, though recorded on local instruments	more than 100,000
3.0–3.9	minor	felt by many people; no damage	12,000–100,000
4.0–4.9	light	felt by all; minor breakage of objects	2,000–12,000
5.0–5.9	moderate	some damage to weak structures	200–2,000
6.0–6.9	strong	moderate damage in populated areas	20–200
7.0–7.9	major	serious damage over large areas; loss of life	3–20
8.0 and higher	great	severe destruction and loss of life over large areas	fewer than 3

> *John P. Rafferty*

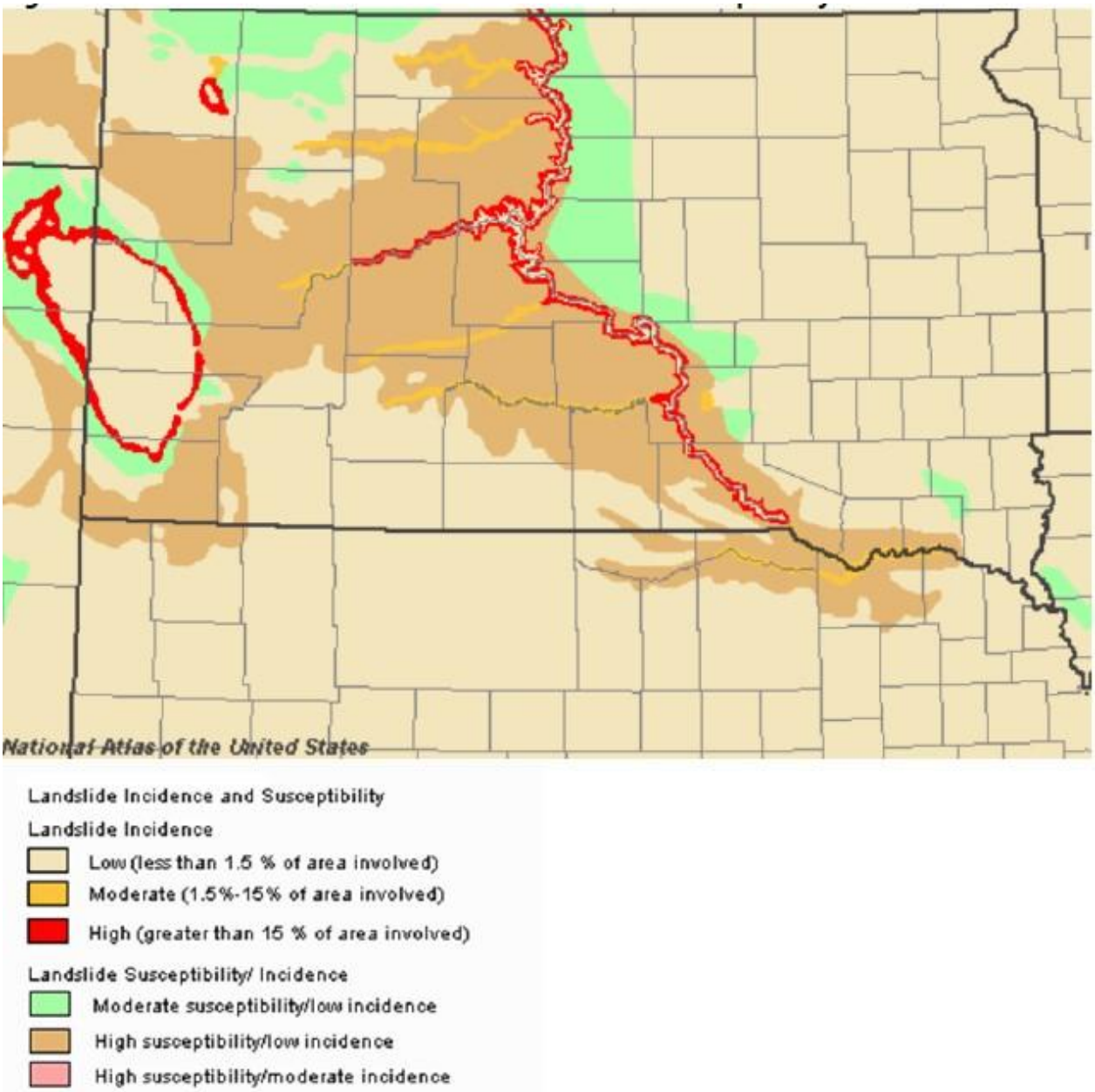
Climate Change Considerations

Climate change leads to increased frequency in extreme weather events and increased meltwater. Therefore, increased pressure resulting from additional surface or ocean water may result in increased seismic pressure at faults and over volcanic areas. Further, increased frequency in drought conditions is hypothesized to increase seismic activity in seismically active areas. This hypothesis is based upon Jet Propulsion Laboratories' research indicating that mountains increase and decrease in size based upon fluctuations in drought/wet conditions. With no known fault lines in or near eastern South Dakota, earthquakes which occur are statistical anomalies. Though they have occurred in the past, there is no data which would predict future occurrences in a county, such as Brookings, which has only experienced one minor earthquake originating within the county.

LANDSLIDE

Landslides are a geological phenomenon that encompass a wide range of ground movements, such as rock falls, deep slope failures, and shallow debris flows. All of these movements can occur in offshore, coastal, and onshore environments. While gravity is the primary driving force behind landslides, other contributing factors can build up specific subsurface conditions that make the area or slope prone to failure. However, an actual landslide often requires a trigger to be initiated. The following map from the SD SHMP illustrates landslide incidence and susceptibility across South Dakota, including Brookings County. Landslides are not a risk in the County. The FEMA NRI indicates that zero events per year are expected.

Figure 4.2 South Dakota Landslide Incidence and Susceptibility

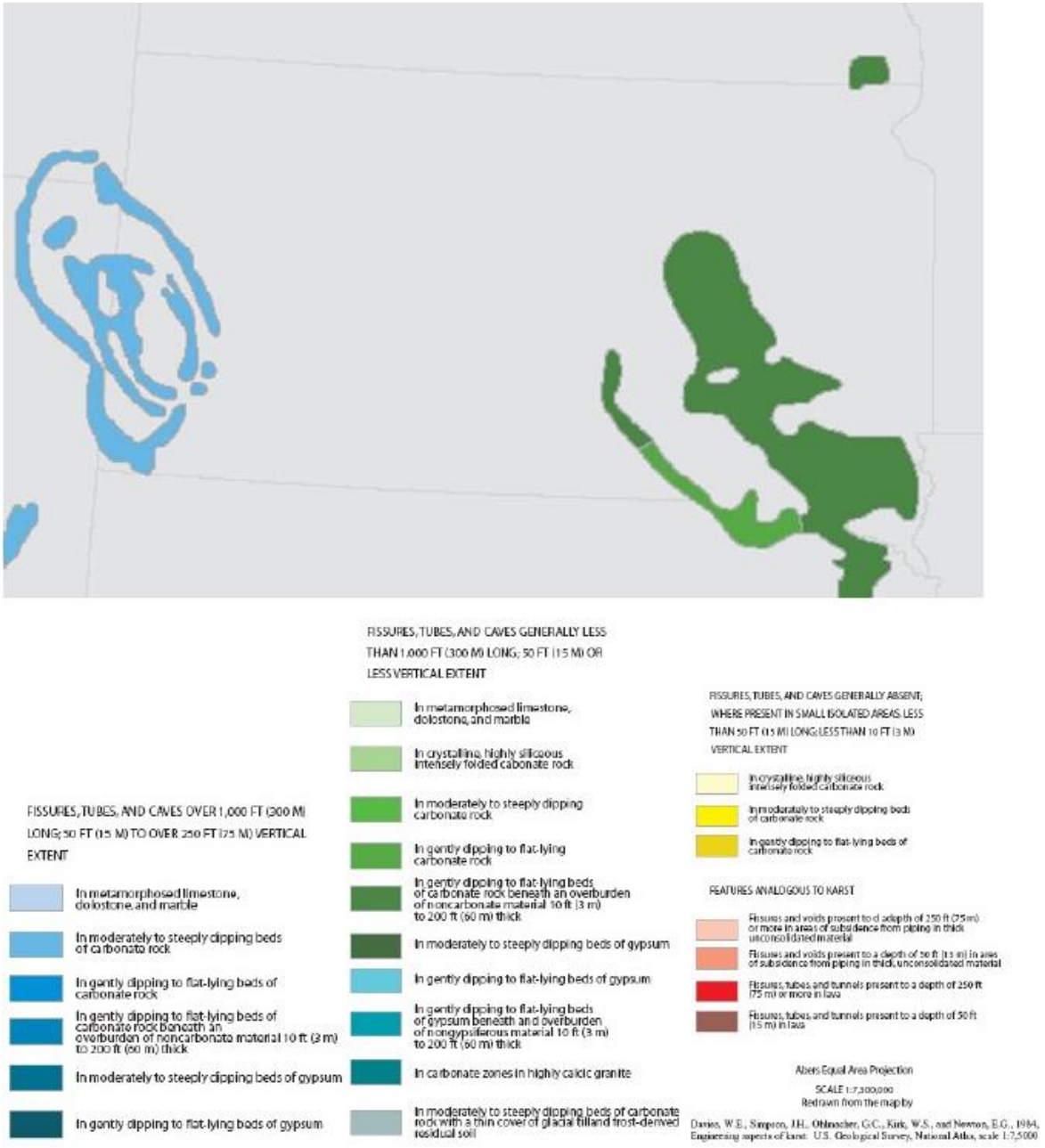


SOURCE : U.S. Geological Survey, map generated by https://nationalmap.gov/ www.nationalatlas.gov

SUBSIDENCE

Subsidence refers to the downward movement of a surface relative to a reference point, while its opposite, uplift, results in an increase in elevation Various factors can cause subsidence, including the dissolution of limestone, mining activities, fault movements, isostatic rebound, extraction of natural gas, ground water depletion, and seasonal effects. The accompanying map from the State of South Dakota Hazard Mitigation Plan (SD SHMP) illustrates the subsidence risks across South Dakota, including Brookings County. The map indicates that subsidence risks in Brookings County are not a concern.

Figure 4.3 State of South Dakota Subsidence Risk



SOURCE : The National Karst Map kttp://www.nckri.org/map/maps/engineering_aspects/davies_map_PDF.pdf

FLOOD

Flooding is a temporary overflow of water onto normally dry land, resulting in measurable property damage or necessitating the evacuation of people and resources. Floods can cause injuries and even loss of life, especially when swiftly moving water is involved. As little as six inches of moving water is enough to sweep a vehicle off a road. Floods can develop slowly due to prolonged rainfall causing rivers to swell, or rapidly during a warming trend following a heavy snowfall. Both heavy rains and rapid snowmelt can lead to flooding or flash flooding, both of which are included under

this hazard profile. Even small streams or dry creek beds can overflow and create flooding. Two types of flooding hazards are present within the County.

1. Inundation flooding occurs most often in the spring. The greatest risks are realized typically during a rapid snowmelt before ice is completely off all of the rivers. Ice jams occur when warm temperatures and heavy rain cause snow to melt rapidly. Snow melting combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of the river. The ice layer often breaks into large chunks, which float downstream and often pile up near narrow passages and other obstructions, such as bridges and dams causing localized flooding.

2. Flash flooding is more typically realized during the summer months. This flooding is primarily localized, though enough rain can be produced to cause inundation flooding. Heavy, slow moving thunderstorms often produce large amounts of rain. The threat of flooding would be increased during times of high soil moisture.

Disruption of communication, transportation, electric service, and community services, along with contamination of water supplies and transportation accidents are very possible. Brookings Healthcare System, in its Threat/Hazard Assessment Module (THAM) rates flooding as one of four hazards in this plan for which there is a “moderate” risk to its facilities and normal operation.

National Flood Insurance Rate maps designate 100 year and 500 year floodplain zones. Areas subject to inundation by the 1-percent-annual-chance flood event are designated 100 year floodplain. Moderate risk areas within the 0.2-percent-annual-chance floodplain are designated 500 year floodplain. See attached Brookings County 100 year flood plain map (Figure 4.4) below. The County should anticipate having at least two flood events each year. According to the FEMA NRI, Brookings County has the potential for 2.7 riverine flooding events to occur annually. Table 4.7 contains the County’s flood history for the last ten years.

Figure 4.4 Brookings County 100 Year Flood

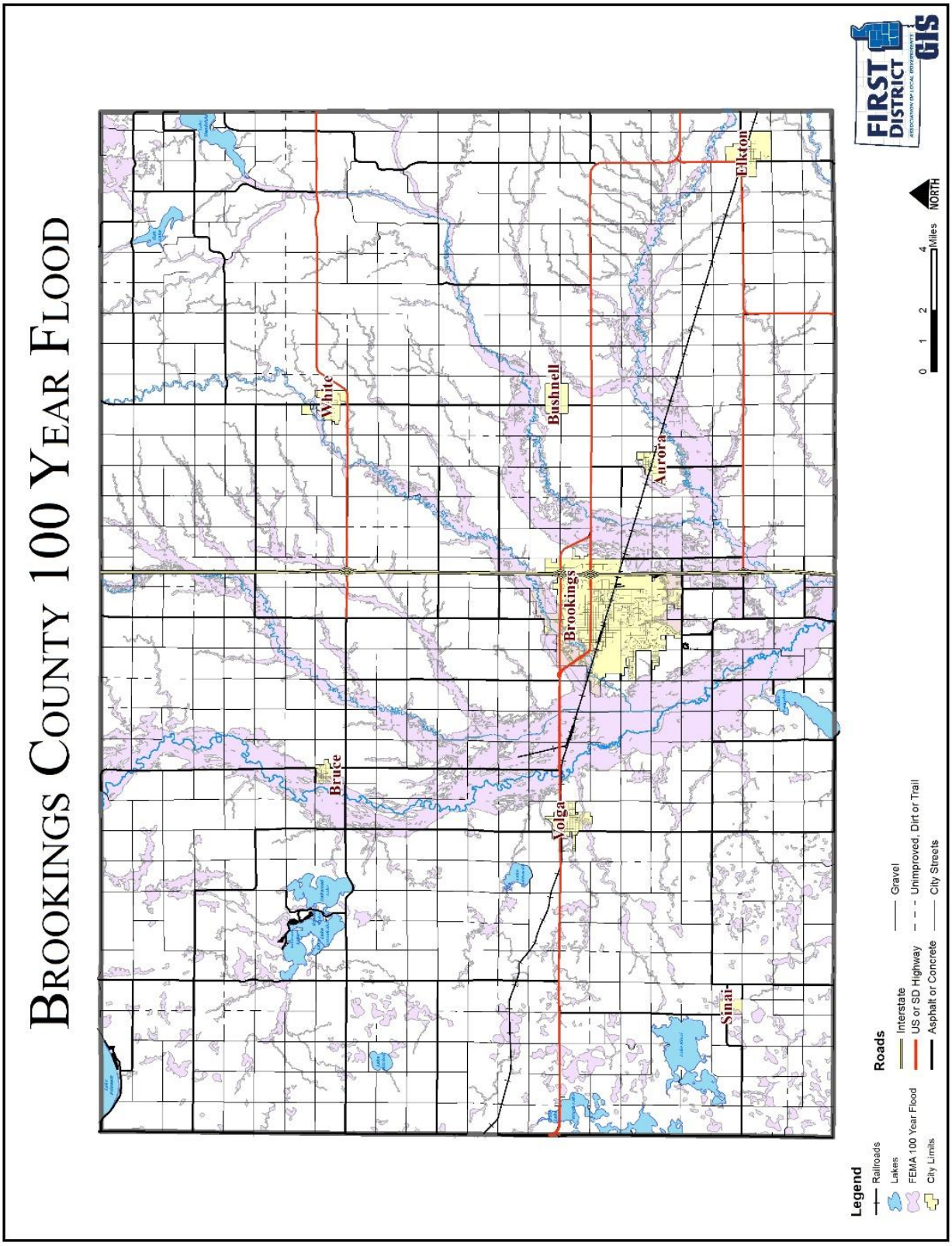


Table 4.7: Brookings County Ten Year Flood History

Location	Type	Date	Time	Property Damage	Crop Damage
White	Flash Flood	06/01/2014	18:00		
White	Flash Flood	06/05/2014	09:16		
Brookings Muni Airport	Flash Flood	06/17/2016	06:00	50.00K	
Bruce	Flood	03/22/2018	05:00		
Medary	Flood	03/24/2018	08:00		
Bruce	Flood	04/13/2018	06:00		
Bruce	Flood	04/20/2018	07:00; 22:00		
White	Flood	04/21/2018	04:00		
Bruce	Flood	04/23/2018	02:00		
Medary	Flood	04/23/2018	10:00		
Bruce	Flood	05/01/2018	00:00		
Brookings Muni Airport	Flash Flood	07/19/2018	02:00		
Brookings	Flash Flood	07/19/2018	03:50; 04:00		
Bushnell	Flash Flood	07/19/2018	04:45		
Medary	Flood	07/19/2018	19:00		
Medary	Flood	03/13/2019	12:00	170.00K	
White	Flood	03/15/2019	03:00		
Medary	Flood	03/18/2019	20:00		
Bruce	Flood	03/21/2019	03:30		
Bruce	Flood	03/22/2019	13:00		
Bruce	Flood	04/01/2019	00:00		
White	Flood	04/17/2019	13:00		
Bruce	Flood	05/01/2019	00:00		
Brookings Muni Airport	Flash Flood	05/17/2019	19:52; 22:00		
White	Flood	05/18/2019	07:00		
Sinai	Flood	06/01/2019	00:00		21.540M
Bruce	Flood	06/01/2019	00:00		
Bruce	Flood	06/27/2019	08:00; 22:00		
Bruce	Flood	07/01/2019	03:00		
White	Flood	07/09/2019	22:00		
Bruce	Flood	07/10/2019	21:00		
Bruce	Flood	08/01/2019	00:00		

Location	Type	Date	Time	Property Damage	Crop Damage
Bruce	Flood	08/19/2019	16:00; 22:30		
Brookings Muni Airport	Flash Flood	09/10/2019	22:51	10.00K	
Brookings	Flash Flood	09/10/2019	23:15	10.00K	
Medary	Flood	09/11/2019	19:30	25.00K	
Sinai	Flood	09/12/2019	00:00	244.00K	204.00K
White	Flood	09/12/2019	03:00	50.00K	
Bruce	Flood	09/12/2019	05:00		25.00K
Bruce	Flood	09/12/2019	12:30		10.00K
Bruce	Flood	10/23/2019	07:00	2.50K	
Bruce	Flood	11/12/2019	11:30		
Bruce	Flood	21/11/2019	11:00		
Storla	Flood	03/08/2020	20:00		
Bruce	Flood	03/11/2020	04:00		
Bruce	Flood	03/13/2020	17:00		
Bruce	Flood	03/22/2020	04:00		
Bruce	Flood	03/29/2020	08:00		
Bruce	Flood	04/01/2020	00:00		
Bruce	Flood	05/13/2022	02:00; 19:00		
Bruce	Flood	05/31/2022	12:00		
Bruce	Flood	06/01/2022	00:00		
White	Flood	04/08/2023	18:00		
Bruce	Flood	04/10/2023	05:00		
Medary	Flood	04/10/2023	07:00		
Bruce	Flood	04/11/2023	01:00		

SOURCE : https://www.ncdc.noaa.gov/stormevents/

Major Flood Occurrences:

- **Spring 1951 -** Big Sioux River—Heavy flooding originated in the Brookings area. An accumulation of snow throughout February and an additional six to fourteen inches during March served as the flood source. High temperatures in late March brought about rapid melting and the flood condition. The Big Sioux was ½ mile wide in Moody County, 1 ½ miles wide around Baltic and Sioux Falls, and 2 miles wide below the Rock River. The area from Brookings to below the falls of Sioux Falls had about 73,400 acres of land flooded and damage of nearly $2.25 million. The area from Sioux Falls to Sioux City, Iowa, had an estimated 29,000 acres flooded and $600,000 in damage.

- **March 1960** - Big Sioux River—Flooding occurred from the Brookings area south to the junction with the Missouri. Deer Creek and Medary Creek caused flooding in Aurora. Bruce and Sioux Falls also experienced flooding. Damage was heavy and estimated at $2.3 million. Approximately half of this was incurred in the lower basin. About 86,000 acres of land were flooded, and 41,000 of these were between Sioux Falls and Sioux City.

- **April 1997** - Near record to record snowmelt runoff and heavy rains of 1 to 2 inches on April 5th combined to bring Lake Poinsett to a record 6 feet overfull on April 18th. Over 100 cabins, homes, and businesses around the lake became inundated with extensive damage done to most. Extensive sandbagging was done to save property. Periods of strong winds through the end of April combined with debris in the Lake, railroad ties, propane takes, etc, resulted in broken windows and doors on some of the cabins on the Lake.

- **April 2001** - Beadle, Brookings, Brown, Buffalo, Clark, Codington, Day, Deuel, Edmunds, Grant, Gregory, Hamlin, Hanson, Jerauld, Kingsbury, Marshall, Mellette, Moody, Roberts, Sanborn, Spink, Todd, Turner, and Tripp counties were included in the disaster declaration. The major impact was to public infrastructure. Due to ice and wind damage to utility poles and lines, electrical services to some areas were interrupted. Numerous bridges and roads were impacted as well. There was damage to county and township roads in the eastern and northeastern portion of the state that had previously not been affected by floodwater. Some of the damaged roads included school bus, mail, and farm-to-market routes. Travel on these roadways involved significant risk. Several roads were temporarily impassable, requiring residents to travel greater distances because of detours. Many farmers were unable to access their fields to begin spring planting. In Mellette County, ice is fluctuations substantially damaged a bridge, which caused the county to close the bridge to through traffic, resulting in a 40-mile detour for residents needing to cross the White River. This disaster also heavily impacted South Dakota's agricultural and livestock community.

- **March to April 2011** - Major flooding of the Big Sioux River, other streams, lakes, and general flooding, which began with a rapid March snowmelt, continued through April. Many roads remained flooded with heavy road damage being reported in some areas. High water and groundwater levels resulting from record precipitation in the previous year was the main reason that improvement was so slow. Flooding around the south end of Lake Pointsett in the northwest part of the county continued in particular to be damaging. The Big Sioux River crested at 3 feet above flood stage near Brookings on April 6th. Some roads remained closed by the flooding for part of the month. Water was running over other roads, from flooded lowlands, lakes, and the Big Sioux River. Some roads were heavily damaged. Some homes and businesses were still flooded and damages were estimated at $500,000.

- **April 2019 -** The continuation of snowmelt from an above normal snowfall combined with a historic heavy snow/blizzard in mid-April, resulted in widespread flooding across central and northeast South Dakota. Countless roads along with thousands of acres of cropland were flooded throughout April. Impacts include damaged roads, culverts, and bridges, and livestock, homes, and businesses were affected. Delayed planting resulted across all of the region as well. Cattle and calves were stressed by the cold and wet pattern, as the mud and cold caused some sickness with the livestock. Flooded roads made it difficult for many farmers or ranchers to get to their fields or livestock. The wet pattern along with the flooding continued into May, further delaying planting across the region.

South Dakota's governor declared a disaster for the state in March. This declaration was followed by a disaster declaration by the President of the United States. As a result, 24 of the 26 counties across central and northeast SD had access to public property damage assistance. Overall, damage estimates from the blizzards and floods for the state were 43 million dollars.

- **June 2019 -** Spring snowmelt and heavy rain flooding from March, April, and May continued into June. This combined with above normal June rainfall resulted in hundreds of thousands of acres of crops damaged or unplanted across central and northeast South Dakota. For the entire state of South Dakota, nearly 4 million acres of crops were left unplanted as a result of the flooding. Total damaged or unplanted crop loss estimates for central and northeast South Dakota were near 307 million dollars.

- **September 2019 -** After upstream rainfall during September 10-12 of 3.12 inches 4 miles southwest of Toronto and 2.35 inches near Castlewood, the Big Sioux River near Estelline (gage site BSES2) reached a crest of 1.04 feet above flood stage on September 13. Flooding resulted in damage to public infrastructure including county and township roads and culverts. Flooding also resulted in crop losses across the area. High water resulted in widespread flooding of agricultural lands. Crop loss estimates provided by the United States Department of Agriculture.

- **April 2023 –** Above normal seasonal snowfall and unusually cold late spring conditions resulted in a persistent and unusually deep snowpack into early April. In the second week of April temperatures became abnormally warm, surging to the 70s and 80s. This resulted in a period of very rapid snowmelt and both river and overland flooding. As a result of the flooding, many roads were not suitable for travel. Ten counties and one reservation suffered severe impacts to public infrastructure. An estimated $2,305,362 in qualifying costs were incurred during the flooding in those counties.

SUMMER STORMS

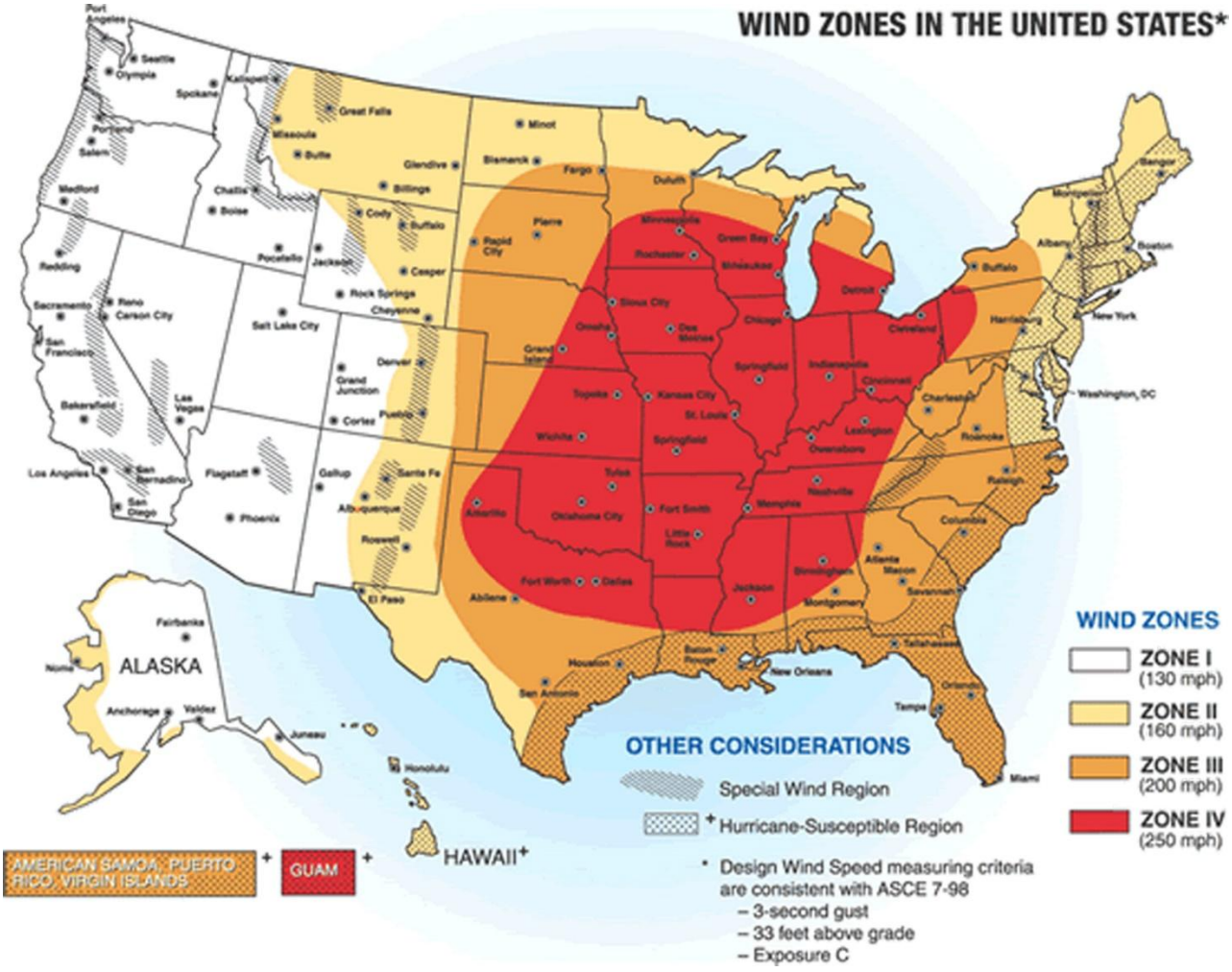
Summer Storms are generally defined as atmospheric hazards resulting from changes in temperature and air pressure which cause thunderstorms that may cause hail, lightning, strong winds, and tornados.

According to an article by Emily Greenhalgh featured on the NOAA/Climate.gov website, history says mid-to-late June brings a higher probability of severe weather across much of the contiguous United States. As we move from spring to summer, the predominant way severe weather forms across the U.S. changes. Once the jet stream moves north, severe weather occurs mainly due to mesoscale processes as larger areas of the country experience warm, humid conditions. These conditions are, historically, prime ingredients for severe weather events. “Severe weather” is defined as tornadoes, thunderstorm winds over 58 miles per hour, or hail larger than a quarter (one inch in diameter) and lightning.

TORNADO

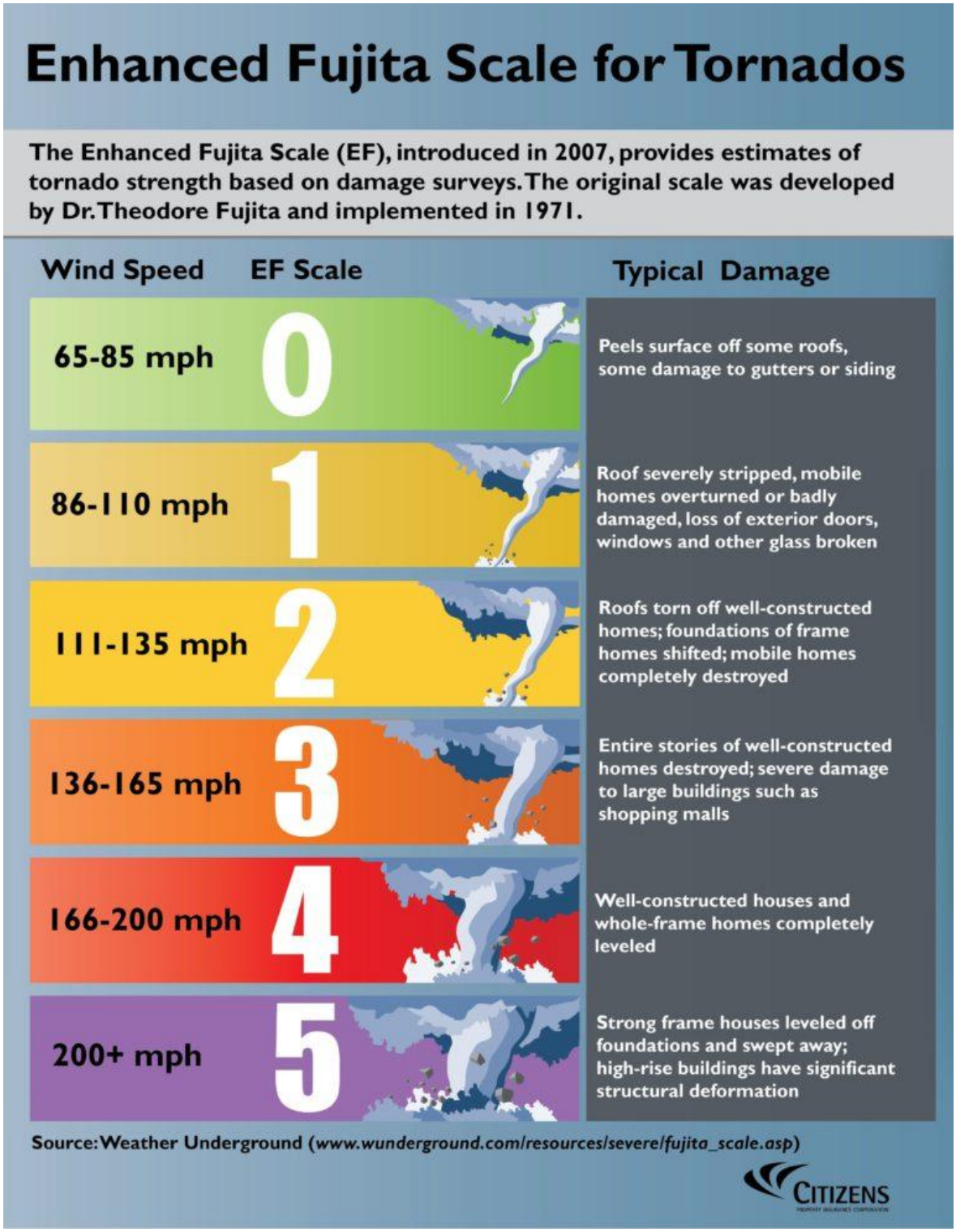
Tornados are violent windstorms that may occur singularly or in multiples as a result of severe thunderstorms. They develop when cool air overrides warm air, causing the warm air to rapidly rise. Many of these resulting vortices stay in the atmosphere, though a touchdown can occur. See Figure 4.5 Wind Zones in the United States Map below.

Figure 4.5 Wind Zones in the United States



The Enhanced Fujita Tornado Damage Scale categorizes tornadoes based on their wind speed, see following chart Figure 4.6.

Figure 4.6 Enhanced Fujita Tornado Damage Scale



The annual risk for intense summer storms is high. The entire County is susceptible to summer storms. Warning time for summer storms is normally several hours, sufficient for relocation and evacuation, if necessary. Between the years of 1950 and 2023, the County confirmed twenty-

three tornadoes/funnel clouds. However, tornadoes may occur with little or no warning. The table below denotes the tornado history in the County over the past ten years. Throughout these events, most tornadoes caused only minor damages. Brookings County has an annualized tornado frequency of 0.5 events per year based on FEMA NRI.

Table 4.8: Brookings County Ten Year Tornado History

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Volga	08/06/2015	17:33	Tornado	EF 0		
Brookings Muni Airport	08/06/2015	18:00	Tornado	EF 0	80.00K	
Bruce	07/16/2016	21:21	Funnel Cloud			
Medary	06/15/2019	17:15	Funnel Cloud			
Sinai	05/30/2022	13:15	Tornado	EFU		
Volga	05/30/2022	13:23	Tornado	EF1		
Volga	05/30/2022	13:24	Funnel Cloud			
Bruce	09/23/2023	14:54	Tornado	EFU		
Bruce	09/23/2023	15:04	Tornado	EFU		
Bruce	09/23/2023	15:16	Tornado	EFU		
White	09/23/2023	15:50	Tornado	EFU		

SOURCE : https://www.ncdc.noaa.gov/stormevents/

Major Tornado Occurrences:

- **August 3, 1944 -**The center of this storm struck south of the City of Brookings. A funnel was sighted and it left a swath of destruction for five miles. Twenty-two barns were destroyed, 14 between the towns of Sinai and Volga. All telephone poles south of the City of Brookings were destroyed and one third of the hangar roof was torn off at the airport.

- **June 1992 -** This marked the date of one of the largest tornado outbreaks on record, affecting portions of Central United States. From June 14 – June 18 170 tornados were confirmed to have touched down with three F4 and one F5 tornados. The damages in 1992 from this outbreak were estimated at 242 million dollars with one life lost.

- **August 1996-** A tornado in Aurora heavily damaged a farm. The house and adjacent garage and some contents were damaged, hay barn and dog kennels were destroyed, and damage occurred to other farm buildings and to trees. Overall, the damages were estimated at $200,000.

- **August 2015 -** Thunderstorms produced damaging winds in southeast South Dakota during the afternoon and early evening of August 6th. The storms affected mostly Brookings County, but the first report was some distance away in Gregory County, and there were reports in Moody County also. There were also two tornadoes and one report of large hail. A tornado damaged the roof, gutters, and siding of three houses, damaged the roof, patio deck, chimney, and garage of another house, and damaged a fence.

Each year, many storms and a few tornadoes affect the county. Summer storms in the County usually produce a wide range of damage making damage estimates difficult. A complete listing of all summer storms having occurred within the county is not possible due to inaccurate reporting. The NOAA NCDC Storm Events online database was the primary source for this information.

THUNDERSTORM/STRONG WIND

Thunderstorms and high wind occurrences in the County are very common. Strong winds can be detrimental to the area. According to the SD SHMP, these winds are the most common type of severe weather in South Dakota. They can exceed 100 mph and are responsible for most wind damage related to thunderstorms. Since thunderstorms do not have narrow tracks like tornadoes, the associated wind damage can be extensive and affect entire (and multiple) counties. Trees, poles, power lines, and any weak structures are susceptible to damage from strong winds. In addition to the damage, when strong winds knock down trees, poles, power lines, and structures, additional traffic hazards are created for travelers and commuters. Brookings Healthcare System, in its (THAM) rates strong winds associated with these storms as one of four hazards in this plan for which there is a "moderate" risk to its facilities and normal operation

Strong winds are defined as winds over forty miles per hour (34.76 knots), are not uncommon in the area. Winds over fifty miles per hour (43.45 knots) can be expected twice each summer. Strong winds can cause destruction of property and create safety hazards resulting from flying debris. Strong winds also include severe localized wind blasting down from thunderstorms. These downward blasts of air are categorized as either microbursts or macrobursts depending on the amount geographical area they cover. Microbursts cover an area less than 2.5 miles in diameter and macrobursts cover an area greater than 2.5 miles in diameter. Based on past records, multiple strong wind events will occur in the County annually. The FEMA NRI suggests the County will experience 3.3 strong wind events per year.

According to the NCDC Storm Events Database, the County experienced 67 wind events from 2014-2023. Table 4.9 denotes the extent and severity of such hazards occurring in the last ten years. The County continues to educate residents of the dangers of such storms through public service announcements and other printed media.

Table 4.9: Brookings County Ten Year History for Thunderstorms/High Winds

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Brookings County	06/22/2015	04:35; 04:55	High Wind	56 kts. MG; 51 kts. MG		
Volga	07/28/2015	01:58	Thunderstorm Wind	52 kts. EG		
Volga	08/06/2015	17:55	Thunderstorm Wind	55 kts. MG		
Brookings Muni Airport	08/06/2015	18:02; 18:05; 18:10; 18:12; 18:13; 18:13	Thunderstorm Wind	60 kts. MG; 61 kts. EG; 74 kts. EG; 74 kts. EG; 60 kts. MG; 65 kts. EG	20.00K	

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Medary	08/06/2015	18:04; 18:05; 18:12; 18:12	Thunderstorm Wind	61 kts. EG; 61kts. EG; 70 kts. EG 74 kts. EG		
Brookings	02/19/2016	04:30	High Wind	36 kts. ES		
Volga	06/03/2016	15:57	Thunderstorm Wind	56 kts. EG		
Medary	06/19/2016	20:45	Thunderstorm Wind	52 kts. EG		
Volga	07/16/2016	21:55	Thunderstorm Wind	52 kts. EG		
Volga	08/04/2016	03:40	Thunderstorm Wind	52 kts. EG		
Aurora	08/11/2016	23:27	Thunderstorm Wind	52 kts. EG		
Brookings County	12/25/2016	23:00	High Wind	35 kts. MS		
Sinai	05/28/2017	17:26; 17:26; 17:26	Thunderstorm Wind	56 kts. EG; 61 kts. EG; 61 kts. EG		
Ahnberg	05/28/2017	17:26	Thunderstorm Wind	52 kts. EG		
Bruce	07/11/2017	21:10; 21:40	Thunderstorm Wind	52 kts. EG; 56 kts. EG		
White	07/11/2017	21:40	Thunderstorm Wind	56 kts. EG		
Bushnell	07/11/2017	21:57; 21:57	Thunderstorm Wind	56 kts. EG; 56 kts. EG		
Brookings	07/19/2017	12:05; 12:30	Thunderstorm Wind	64 kts. MG; 70 kts. EG		
White	07/25/2017	15:45	Thunderstorm Wind	52 kts. EG		
Brookings Muni Airport	07/19/2018	02:38	Thunderstorm Wind	79 kts. EG	10.00K	
Aurora	05/17/2019	19:23	Thunderstorm Wind	50 kts. EG		
Brookings Muni Airport	07/20/2019	06:33	Thunderstorm Wind	65 kts. MG		
Brookings County	10/21/2019	18:00	High Wind	50 kts. MG		
White	06/04/2020	20:36; 20:39	Thunderstorm Wind	52 kts. MG; 72kts. MG		13.00K

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Bruce	07/18/2020	00:40	Thunderstorm Wind	52 kts. EG	5.00K	
Elkton	07/20/2020	20:49	Thunderstorm Wind	52 kts. MG		
Ahnberg	08/28/2020	00:55	Thunderstorm Wind	61 kts. EG	5.00K	
Bruce	08/28/2020	01:03	Thunderstorm Wind	56 kts. EG	3.00K	
White	08/28/2020	01:21	Thunderstorm Wind	51 kts. MG		
Sinai	08/26/2021	09:22	Thunderstorm Wind	56 kts. EG		
Aurora	08/26/2021	09:37	Thunderstorm Wind	56 kts. EG	3.00K	
Brookings	09/16/2021	23:08	Thunderstorm Wind	51 kts. MG		33.00K
Brookings County	12/15/2021	21:20	High Wind	37 kts. MS		
Brookings County	03/25/2022	09:00	Strong Wind	45 kts. MG		
Brookings County	04/14/2022	04:30	High Wind	38 kts. MS		
Brookings County	04/23/2022	11:40	High Wind	38 kts. MS		
Volga	05/12/2022	16:24; 16:24	Thunderstorm Wind	63 kts. MG; 65 kts. EG		
Brookings	05/12/2022	16:24; 16:26	Thunderstorm Wind	78 kts. EG; 80 kts. EG		
Ahnberg	05/12/2022	16:25	Thunderstorm Wind	78 kts. EG		
Brookings Muni Airport	05/12/2022	16:26; 16:26	Thunderstorm Wind	69 kts. MG; 78 kts. EG		
Aurora	05/12/2022	16:26	Thunderstorm Wind	78 kts. EG		
Volga	05/12/2022	16:28	Thunderstorm Wind	64 kts. MG		
White	05/12/2022	16:40	Thunderstorm Wind	63 kts. MG		35.00K
Brookings Muni Airport	05/30/2022	13:36	Thunderstorm Wind	68 kts. MG		
White	05/30/2022	13:55	Thunderstorm Wind	56 kts. MG		
Bruce	08/02/2022	20:03	Thunderstorm Wind	52 kts. EG		18.00K

Location	Date	Time	Type	Magnitude	Property Damage	Crop Damage
Brookings County	04/30/2023	08:00	Strong Wind	42 kts. MG		
Brookings County	10/12/2023	15:00	Strong Wind	46 kts. MG		
Brookings County	12/09/2023	08:00	Strong Wind	39 kts. MG		

SOURCE : https://www.ncdc.noaa.gov/stormevents/

Major Wind Occurrences:

- **July 1, 1928 -** Traveling from southwest of Sinai to northeast of White the winds tore down large trees, wrecked telephone phones and broke many large windows in downtown businesses. The roof of a hangar at the Brookings airport was carried nearly 300 feet from its original location, and two planes were damaged. The schoolhouse 3.5 miles northwest of Volga was completely destroyed.

- **May 7, 1993 -** Very strong winds, likely the result of a downburst in a severe thunderstorm, destroyed an apartment building, five mobile homes, 15 garages, and 16 vehicles, and damaged many other homes and vehicles. 12 people were treated for minor injuries from the storm. The storm also caused considerable damage to some area farms and the roof of a motel. Estimated damage was $5,000,000.00 dollars.

- **July 28, 2002 -** Beginning at the town of Sinai and ending 5 miles east south east of the town of Sinai a thunderstorm winds caused widespread structural, tree, and power line damage in and near Sinai. The roof was ripped off a mobile home, a well drilling business was destroyed, the siding from another business was ripped off, part of a grain elevator was smashed, several garages were destroyed or heavily damaged, several trees were blown down and widespread tree debris littered the area, and power lines and poles were blown down. Power outages lasted until the next day. At a farm just east of Sinai, five grain bins, a machine shed, and several small shacks were destroyed, and the farmhouse was damaged, with about 300 thousand dollars in damage estimated at this farm alone. Other small farm structures in the area were reported to be destroyed or damaged. Crops in the area were heavily damaged by the wind and accompanying hail, with one witness watching as a bean field "just disappeared."

  The crop damage was widespread, but the amount of crop damage could not be determined. Starting three miles west of Sinai and ending two miles west North West of Sinai, length 1 mile width 50 yards tornado caused no reported damage. The City of Elkton had thunderstorm winds that caused tree damage, and damage to buildings such as shingles blown off and broken windows from tree debris. The winds caused severe crop damage in the area, especially to corn crops. South of Brookings thunderstorm winds damaged a barn, a silo, and tore the roof off a mobile home. The winds also caused tree damage, including fifty to sixty trees blown down on a golf course. The City of Brookings reported large hail, driven by severe winds, damaged vehicles and crops. Total estimated damage was $3,250,000.00 with one life lost during cleanup operations.

- **June 2017 -** A large upper-level low pressure trough lifting northeast over the region along with a surface cold front interacting with a warm and very humid air mass brought severe thunderstorms to the region. During the mid-afternoon hours, storms rapidly developed over

central and eastern South Dakota, between Pierre and Aberdeen. These storms quickly strengthened and produced large hail, damaging winds, and eventually tornadoes. The storms evolved into mainly a wind and tornado event around 7 pm CDT. Widespread wind damage occurred across northeast South Dakota as the storms formed a line and moved northeast. Many tornadoes occurred across the region, causing EF-0 and EF-1 damage.

- **May 2022 -** A derecho developed in south central South Dakota and traveled northeast into eastern and northeastern South Dakota. A broad swath of winds from 70 to 100 mph devastated much of southeast South Dakota, and portions of southwest Minnesota, northeast Nebraska and northwest Iowa, causing extensive tree and structural damage and scores of injuries. This thunderstorm complex generated 14 total tornadoes across northeastern South Dakota in addition to a broad area of straight-line wind damage with measured speeds up to 102 mph in Gary, SD.

  In addition, vehicles and high-profile vehicles were blown off several roads, shutting down traffic on Interstates 29 and 90. Two (direct) fatalities occurred in vehicles impacted by debris as the storms moved into the Sioux Falls area. Power was disrupted in a widespread area, with estimates of over 45,000 customers impacted at one time. Many schools were closed due to damage and power issues. The most impactful tornado was an EF-2 which damaged numerous homes in the town of Castlewood and drew national media attention. Governor Kristi Noem requested a Presidential Disaster Declaration, which was later granted, and signed Executive Order 2022-06 to help residents recover from related storm damage. Estimated statewide damage to public infrastructure is assessed at 6.7 million dollars across 20 counties and two reservations. South Dakota National Guard activated personnel to help with clear debris and provide security for the town of Castlewood during cleanup.

HAIL

Hail is a form of precipitation consisting of solid ice that forms inside thunderstorm updrafts. The raindrops reach extremely cold areas which causes them to freeze. The semi-frozen droplets grow in size as they come into contact with each other forming the hailstone. Once the updraft can no longer support the weight of the hail, it falls to Earth. Hailstones usually consist mostly of water ice and measure between 5 and 150 millimeters in diameter, with the larger stones coming from severe and dangerous thunderstorms. The largest hailstone recorded in the United States occurred in 2010 in Vivian, South Dakota. The hailstone measured eight inches in diameter. However, even dime sized hail can cause significant damage to vehicles, buildings, livestock, and crops. When viewed from the air, it is evident that hail falls in paths known as hail swaths. These occur as storms move while the hail is falling out. They can range in size from a few acres to an area 10 miles wide and 100 miles long.

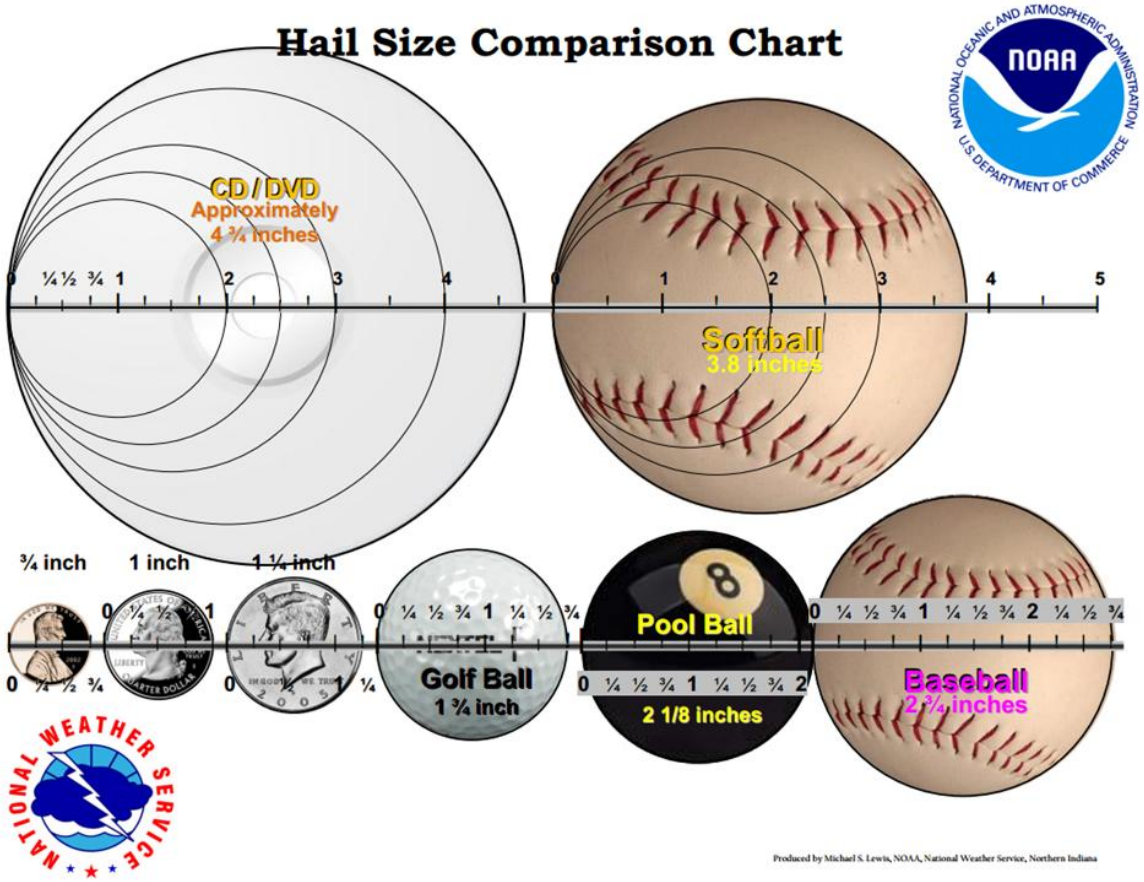
The County has a 100% potential for hail occurring each year. Most thunderstorms will produce varying sizes of hail. The FEMA NRI states 5.4 hail events per year. Brookings Healthcare System, in its THAM rates hail as one of four hazards in this plan for which there is a “moderate” risk to its facilities and normal operation. The following charts shows the hail size comparisons.

Hail Size Description Chart

Hailstone size	Measurement	
	in.	cm.
bb	< 1/4	< 0.64
pea	1/4	0.64
dime	7/10	1.8
penny	3/4	1.9
nickel	7/8	2.2
quarter	1	2.5
half dollar	1 1/4	3.2
golf ball	1 3/4	4.4
billiard ball	2 1/8	5.4
tennis ball	2 1/2	6.4
baseball	2 3/4	7.0
softball	3.8	9.7
Compact disc / DVD	4 3/4	12.1

Note: Hail size refers to the diameter of the hailstone.

SOURCE : NWS/NOAA



The table below indicates hail occurrences throughout the County over the last ten years. However, the information provided by the NOAA website is incomplete due to inconsistent reporting after such hazards occur. Because hail can occur in a high number of occurrences, it is reasonable to expect that at least some property or crop damage was sustained during the events listed, even though the damage may not have been reported or recorded. It is possible that such damage was not reported because it was believed to be insignificant at the time or because those responsible for reporting such information did not report to the proper agencies.

Table 4.10: Brookings County Ten Year Hail History

Location	Date	Time	Type	Magnitude	Crop Damage
White	03/31/2014	14:33	Hail	0.75 in.	
Bruce	03/31/2014	14:40	Hail	0.88 in.	
Sinai	05/08/2014	11:32	Hail	1.75 in.	
Ahnberg	05/08/2014	11:40	Hail	1.50 in.	
Volga	08/06/2015	17:55	Hail	1.75 in.	
Ahnberg	06/03/2016	15:55	Hail	0.88 in.	
Brookings	06/17/2016	17:49	Hail	1.50 in.	
Medary	06/19/2016	20:45	Hail	0.75 in.	
Ahnberg	07/05/2016	15:53	Hail	0.75 in.	
Brookings	07/05/2016	16:31	Hail	1.75 in.	
Bruce	07/16/2016	21:50	Hail	1.00 in.	
White	07/11/2017	10:30; 21:08	Hail	1.50 in; 1.00 in.	
Bruce	07/11/2017	10:55	Hail	1.00 in.	
White	07/25/2017	15:28	Hail	1.50 in.	
White	04/13/2018	23:33	Hail	0.75 in.	
Bushnell	05/17/2019	19:18	Hail	1.00 in.	
Elkton	07/20/2020	20:49	Hail	0.75 in.	100.00K
Volga	09/05/2020	22:03; 22:03	Hail	0.88 in; 1.25 in.	18.00K
Elkton	08/05/2021	18:25; 18:26; 18:35	Hail	1.50 in; 1.00 in; 1.00 in.	
Volga	04/12/2022	18:15	Hail	1.00 in.	
Bushnell	04/28/2022	17:22	Hail	1.00 in.	
White	05/09/2022	05:29	Hail	0.88 in.	8.00K
Volga	06/20/2022	17:15; 17:23		1.25 in; 0.88 in.	6.00K
Brookings Muni Airport	06/20/2022	17:29		1.00 in.	

Location	Date	Time	Type	Magnitude	Crop Damage
Brookings	06/20/2022	17:30; 17:33		1.00 in; 1.50 in.	
Sinai	07/13/2023	16:30; 16:35		1.50 in; 1.75 in.	60.00K
Bruce	07/19/2023	13:50		1.00 in.	
White	07/19/2023	14:15		1.25 in.	
Elkton	09/29/2023	15:19		1.00 in.	

SOURCE : https://www.ncdc.noaa.gov/stormevents/

LIGHTNING

Lightning results from a buildup of electrical charges that happens during the formation of a thunderstorm. The rapidly rising air within the cloud, combined with precipitation movement within the cloud, results in these charges. Giant sparks of electricity occur between the positive and negative charges both within the atmosphere and between the cloud and the ground. When the potential between the positive and negative charges becomes too great, there is a discharge of electricity, known as lightning. Lightning bolts reach temperatures near 50,000˚ F in a split second. The rapid heating and expansion, and cooling of air near the lightning bolt causes thunder. There is a 100% chance of lightning occurring in Brookings County each year. The FEMA NRI shows 31.5 lightning events per year. Brookings Healthcare System, in its THAM rates lighting as the only hazard in this plan for which there is a “high” risk to its facilities and normal operation.

The extent or severity of lightning can range from significant to insignificant depending on where it strikes and what structures are hit. Water towers, cell phone towers, power lines, trees, and common buildings all have the possibility of being struck by lightning.

Lightning strikes can also start wildfires, structure fires, or damage electrical systems. Most people are struck by lightning before it starts raining or after it stops raining. People who leave shelter during thunderstorms to watch or follow lightning also have the possibility of being struck by lightning. According to the NWS, an average of 49 people a year are killed by lightning strikes. The following chart shows the lightning activity levels that are used.

Lightning Activity Levels

Level	Description
1	No thunderstorms
2	Isolated thunderstorms. Lightning is very infrequent, 1–5 cloud-to-ground strikes in a five-minute period.
3	Widely scattered thunderstorms. Lightning is infrequent, 6–10 cloud-to-ground strikes in a five-minute period.
4	Scattered thunderstorms. Lightning is frequent, 11–15 cloud-to-ground strikes in a 5-minute period.
5	Numerous thunderstorms. Lightning is frequent and intense, greater than 15 cloud-to-ground strikes in a five-minute period.
6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for starting fires, and is normally highlighted in fire weather forecasts with a red flag warning.

SOURCE : NWS

The NCEI (National Center for Environmental Information) Storm Events Database indicated no lightning occurrences were reported over the past ten years where damage was reported. However, the possibility exists that the information reported is incomplete. It is also important to note that while no damage was reported, lightning strikes are common in all South Dakota counties.

Climate Change Considerations

See "URBAN FIRE/WILDFIRES."

WINTER STORMS

Winter storms deposit four or more inches of snow in a twelve-hour period or six inches of snow during a twenty-four-hour period. Such storms are generally classified into four categories with some taking the characteristics of several categories during distinct phases of the storm. These categories include freezing rain, sleet, snow, and blizzard. Generally winter storms can range from moderate snow to blizzard conditions and can occur between October and April. The months of May, June, July, August, and September could possibly see snow, though the chances of a storm is very minimal. Blizzard, freezing rain/sleet/ice, and heavy snow are components of winter storms and included under this profile. The FEMA NRI states the County should anticipate 7.1 winter weather events per year.

Blizzards are a snow storm that lasts at least three hours with sustained wind speeds of thirty-five miles per hour (mph) or greater, visibility of less than one-quarter mile, temperatures lower than 20°F and white out conditions. Snow accumulations vary, but another contributing factor is loose snow existing on the ground which can get whipped up and aggravate the white out conditions. When such conditions arise, blizzard warnings or severe blizzard warnings are issued. Severe blizzard conditions exist when winds obtain speeds of at least forty-five mph plus a great density of falling or blowing snow and a temperature of 10°F or lower. At least one blizzard should occur each year in the County.

Freezing Rain/Ice occurs when temperatures drop below thirty degrees Fahrenheit, and rain starts to fall. Freezing rain coats objects with ice, creating dangerous conditions due to slippery surfaces, sidewalks, roads, and highways. Sometimes ice is unnoticeable, and is then referred to as black ice. Black ice creates dangerous conditions, especially for traffic. Additionally, a quarter inch of frozen rain can significantly damage trees, electrical wires, weak structures, and other objects due to the additional weight bearing down on them. The potential for ice storms in Brookings County annually is minimal, but can cause significant damages when they occur. The FEMA NRI indicates 0.6 ice storm events per year.

Sleet does not generally cling to objects like freezing rain, but it does make the ground very slippery. This also increases the number of traffic accidents and personal injuries due to falls. Sleet can severely slow down operations within a community. Not only is there a danger of slipping, but with wind, sleet pellets become powerful projectiles that may damage structures, vehicles, or other objects. Sleet normally occurs several times each year.

Heavy Snow is a common occurrence throughout the County during the months from October to April. Average annual snowfall for the county can range up to thirty-four inches. Accumulations in dry years can be as little as five to ten inches, while wet years can see yearly totals up to eighty inches. Snow is a major contributing factor to flooding, primarily during the

spring months of melting. The County should expect approximately several heavy snow events each year.

Table 4.11 shows just how common blizzards, snow and ice storms are in the County. While such storms would be considered extreme in many parts of the State, the consistent nature of such weather hazards are expected in this area. Thus, planning and response mechanisms for snow and ice storms are vital to the County and are routine procedures in the County due to the common nature of such storms. Winter storms in South Dakota are known to cover large geographical areas, often an entire county or multiple counties can be affected by a single storm. All of the storms identified in Table 4.11 were considered to have occurred countywide. Due to the multiple occurrences of storms each year, an exhaustive compilation is not possible.

Table 4.11 Brookings County Ten Year History of Snow and Ice Storms

Location	Date	Time	Type	Snowfall Summary	Property Damage
Brookings County	01/16/2014	10:00	Blizzard	0” – 2” across 9 counties	
Brookings County	03/04/2014	16:00	Heavy Snow	5” – 8” across 2 counties	
Brookings County	03/18/2014	09:00	Heavy Snow	4” – 10” across 11 counties	
Brookings County	12/15/2014	08:00	Winter Storm	1” – 2” across multiple counties	
Brookings County	01/05/2015	11:00	Winter Storm	3” – 7” across multiple counties	
Brookings County	01/08/2015	13:20	Blizzard	Specifics not available – blowing snow & reduced visibility	
Brookings County	11/30/2018	02:00	Winter Storm	5” – 11” across multiple counties with freezing rain	
Brookings County	12/01/2015	00:00	Winter Storm	Carryover from day before	
Brookings County	12/15/2015	16:00	Heavy snow	0” – 9” across multiple counties with blowing snow	
Brookings County	12/25/2015	20:00	Winter Storm	6” – 9” across multiple counties with blowing snow	
Brookings County	11/18/2016	04:00	Blizzard	4” – 9.5” across multiple counties	
Brookings County	12/10/2016	10:00	Heavy Snow	3” – 8” across 13 counties	
Brookings County	12/16/2016	11:00	Winter Storm	4” – 9” across 21 counties with blowing snow	
Brookings County	03/12/2017	17:00	Heavy Snow	4” – 8” across 11 counties	
Brookings County	02/22/2018	13:00	Winter Storm	5” – 8” across 6 counties	
Brookings County	03/23/2018	20:00	Winter Storm	6” – 9” across 2 counties	
Brookings County	04/08/2018	07:00	Winter Storm	9.5” around Brookings	
Brookings County	04/13/2018	12:00	Blizzard	8” – 20” across multiple counties	
Brookings County	12/26/2018	15:00	Winter Storm	7” – 8” across multiple counties	

Location	Date	Time	Type	Magnitude	Crop Damage
Brookings County	03/09/2019	04:00	Winter Storm	2” – 6” across multiple counties	
Brookings County	04/11/2019	03:00	Blizzard	7” – 18” across multiple counties with freezing rain and sleet	
Brookings County	12/28/2019	01:00	Winter Storm	1” – 11.5” across multiple counties with blowing & drifting snow	
Brookings County	01/17/2020	07:30	Blizzard	2” – 6” across multiple counties with freezing rain	
Brookings County	02/08/2020	21:00	Winter Storm	Specifics not available	
Brookings County	02/12/2020	11:00	Blizzard	Specifics not available	
Brookings County	10/20/2020	04:00	Winter Storm	3” – 7” across multiple counties	
Brookings County	12/23/2020	09:00	Blizzard	Specifics not available	
Brookings County	01/14/2021	15:00	Blizzard	2” – 3” across multiple counties	
Brookings County	02/27/2021	22:00	Winter Storm	2” – 7” across 11 counties	
Brookings County	03/14/2021	21:00	Winter Storm		
Brookings County	01/14/2022	02:00	Winter Storm	5” – 11” across 6 counties	
Brookings County	12/12/2022	18:00	Ice Storm	Specifics not available	
Brookings County	12/15/2022	05:00	Winter Storm	3” – 17” across multiple counties	
Brookings County	12/22/2022	10:00	Blizzard	1” – 3” across multiple counties with drifts up to 5” – 10”	
Brookings County	01/03/2023	09:00	Winter Storm	2” – 3” inches per hour with up to 9” near Volga	
Brookings County	02/21/2023	10:00	Blizzard	3” – 17” across multiple counties	

SOURCE : https://www.ncdc.noaa.gov/stormevents/

The above data was obtained from the storm events database, compiled by the National Oceanic and Atmospheric Administration (NOAA). Specific references to accumulations at communities within Brookings County were included above. Where regional accumulations were listed, those were included, otherwise “specifics not available” was listed where no region-wide snowfall/rain/ice was listed. “Blizzard” conditions are based upon wind and temperature, as described above. Many events did not list snowfall for the county or region, but described widespread general effects of wind. The peak wind gust listed specifically for Brookings County associated with Blizzard conditions was 56 mph.

Major Winter Storm Occurrences:

- **January 1888 –** According to an article on the SDSU website for National History Day in SD, an extreme blizzard in January 1888 led to 170 deaths in South Dakota alone. Many of those who passed away were school children trying to walk home, giving this blizzard its name. This blizzard is also sometimes referred to as the Schoolhouse/Children's Blizzard of 1888.

- **March 1966 –** One of the worst blizzards in South Dakota history occurred in the northern Great Plains in March 1966. The blizzard dumped several feet of snow and brought winds of 40-55 MPH with gusts as high as 100 MPH. The storm caused several fatalities, killed numerous livestock and caused structural damages. Roads were blocked and schools and businesses were closed.

- **October 1995 -** a severe autumn snow and ice storm caused widespread damage in South Dakota. Winds associated with the storm caused lines to slap together and poles to fail, producing widespread power outages to large portions of rural South Dakota. Tree damage also led to significant damage to electrical utilities. Thirteen rural electric cooperatives reported damage from this storm. The cooperatives lost nearly 9,500 poles and 170 transmission lines. Damage was estimated at $10 to $10.3 million to rural electric infrastructure only. Approximately 30,290 households were affected by the power outages. The power outages also caused several rural water systems' pumping stations to go off line, causing a loss of water utilities to members of rural water systems. The National Guard provided generators to power these pumping stations to restore water service. This storm also forced major transportation delays as portions of Interstates 90 and 29 had to be closed because of the snow accumulation on the roadway and poor visibility. Twenty-eight counties including Brookings County were included in the disaster declaration.

- **March 2002-** Widespread heavy snow was preceded by freezing rain. Precipitation from the Chamberlain to Huron areas and east to Brookings was mainly snow, with accumulations ranging from 8 inches in several areas to 19 inches at Huron. The heavy snow on top of the ice made travel difficult, and in places impossible, as some roads were blocked. Cattle losses were suspected from the heavy wet snow occurring during calving season, but in most cases specific numbers were not available. Over the Southeast part of the affected area, including near and just south of Sioux Falls, damage to power lines due to icing was reported, with several power outages in Sioux Falls. Three to six inches of snow fell on top of the ice in this area. Damages were estimated at $210,000.

- **November 2005 -** Snowfall varying from 4 to 15 inches combined with winds gusting over 50 mph to produce blizzard conditions. The heaviest snowfalls were mostly near and west of the James River, in the area where a severe ice storm immediately preceded the blizzard. Several reports of 6-to-8-foot drifts were received from this area. Visibilities were lowered frequently to zero and travel was made impossible in many areas. Roads, including Interstate Highways 90 and 29 were closed for extended periods of time. Most schools and businesses that were not already closed because of the ice storm were forced to close. The winds during the blizzard continued to bring down power lines and poles, most of which had been coated and weighted down by ice in the area hit by the ice storm. In addition, minor damage was caused to homes and vehicles by the strong winds and by windblown debris, mainly from trees. Damages were estimated at $1,900,000.

- **December 2016 -** This storm was unusually warm for the region for late December and produced record breaking heavy rain along with flooding in some cases. Significant icing occurred across areas at or just below the freezing point, which resulted in widespread tree and power pole and line damage to the area. Some downed branches and trees fell onto homes across the region. This storm also brought high winds along with snow and blizzard conditions to the region. This significant storm resulted in massive power outages, stranded motorists and closed roads. Roads and walkways became treacherous ice rinks and remained as such for many days. There were numerous injuries from slips on the ice, as well as several vehicular accidents and flight cancellations. Livestock was also affected, though most made it through the storm. Dairy operations dealt with frozen drinking water tanks.

  High winds gusting to over 70 mph impacted the entire region on the 25th and 26th. The combination of snow and ice and high winds snapped or otherwise damaged hundreds of power poles, downed several thousand miles of power lines, damaged several hundred transmission structures and brought many substations down. Many roads were blocked by power lines. Overall, more than one hundred linemen worked to bring the power back. Twenty-one counties encompassing 30 communities and 3 Indian reservations were impacted. Entire communities, thousands of homes and businesses, and ultimately over 12,000 people went without power. For some, power was not restored for 10 days despite tireless efforts. All power was restored by January 4th, 2017. Water and sewer systems shut down for several days for some communities and emergency shelters were necessary. County and city governments were overwhelmed by ice accumulations and blizzard conditions and struggled with maintaining accessibility even for emergency traffic. Road conditions deteriorated to the point where it took up to several hours for emergency officials to respond to 911 calls. The total estimated damage was near 8 million dollars for central and northeast South Dakota.

- **March 2018 -** An intense surface low pressure area brought scattered showers and thunderstorms along with heavy snow to much of north central and northeast South Dakota from the 5th to the 6th. The scattered showers and thunderstorms moved across the region during the early morning hours of the 5th while heavy snow developed from the mid-morning to the early afternoon. There were several reports of thundersnow across the region. Snowfall amounts ranged from 6 to as much as 18 inches before it ended on the 6th. The very heavy snow resulted in closed businesses, schools, government offices, difficult travel conditions with several accidents reported, along with closed highways and Insterstate-29. Many activities and events were also postponed or cancelled.

- **December 2022 -** A strong low-pressure system produced snow and heavy snow prior to the onset of strong northwesterly winds and periods of additional snow, which resulted in blizzard or ground blizzard conditions across much of central and northeastern South Dakota for extended periods of time from the morning of December 14th through the afternoon of December 16th. Heavy snow of at least 6 inches in 12 hours was recorded from December 15th into the 16th in conjunction with the blizzard conditions. Winds gusted generally between 45 and 60 mph.

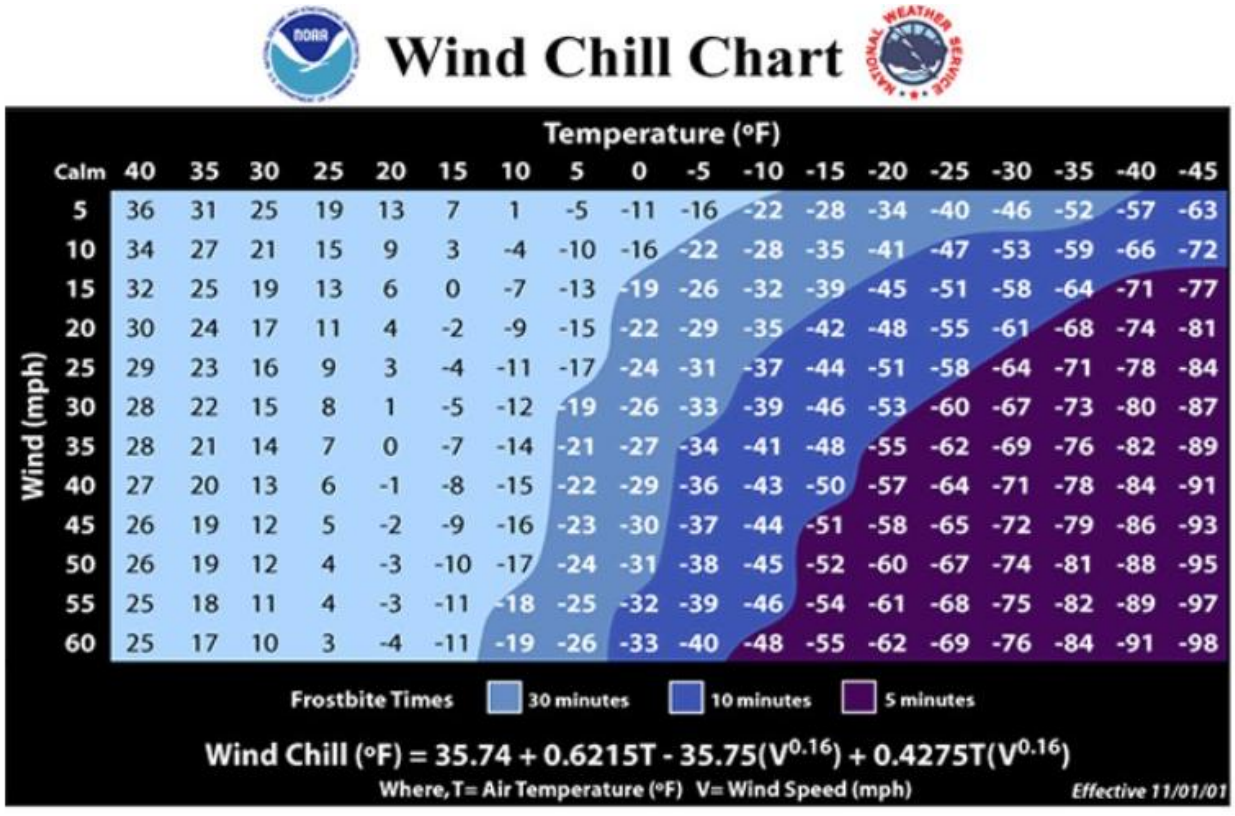
  The South Dakota Department of Transportation placed nearly the entire state under No Travel Advised or had road closures by Thursday, as numerous roads had become impassable. I90 closed from Chamberlain to Rapid City from 10am CST on Tue Dec 13th through mid-day Sat Dec 17th (from Kadoka to Chamberlain), and I29 closed from Watertown to the ND border from 7pm Wed Dec 14th through 9am Sat Dec 17th. Several dozens of semi drivers were stranded for consecutive days and nights at the Coffee Cup Fuel Stop in Vivian, and numerous other vehicle accidents and rescues occurred as well. Additionally, power

outages were reported across the area, and school was cancelled at numerous locations for multiple consecutive days.

The blizzard was just one component of a highly impactful, major winter storm. This storm was severe, widespread and prolonged in nature, and produced freezing rain, heavy snow and/or blizzard conditions from December 12th through 16th across the region. A Major Disaster Declaration was declared on February 27th by Governor Noem for several counties across central and northeastern South Dakota for winter weather from December 12-25th.

EXTREME COLD

What constitutes extreme cold, and its effects can vary across different areas of the country. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered "extreme cold," however, Eastern South Dakota is prone to much more extreme temperatures than other areas in the country. Temperatures typically range between zero degrees Fahrenheit and 100 degrees Fahrenheit, so extreme cold could be defined in the Brookings County PDM jurisdiction area as temperatures below zero. The Wind Chill Chart is used to measure extreme cold. The NWS/NOAA Wind Chill Chart can be found below. At least one extreme cold event should occur each year. The FEMA NRI suggests 2.7 cold wave events per year.



Extreme Cold temperatures often accompany a winter storm, so you may have to cope with power failures and icy roads. Whenever temperatures drop decidedly below normal and as wind speed increases, heat can leave your body more rapidly. These weather-related conditions may lead to serious health problems. Extreme cold is a dangerous situation that can bring on health emergencies in susceptible people, such as those without shelter or who are stranded, or who

live in a home that is poorly insulated or without heat. Exposure is the biggest threat/vulnerability to human life; however, incidences of exposure are isolated and thus unlikely to happen in masses. The following information was found on the NOAA website. Table 4.12 identifies dates and times of the temperature extremes. The location in table 4.12 is not specifically identified in the table by jurisdiction due to the vast area across the State of South Dakota affected by extreme temperatures. Brookings Healthcare System, in its THAM rates extreme cold as one of four hazards in this plan for which there is a "moderate" risk to its facilities and normal operation

Table 4.12: Brookings County Ten Year History of Extreme Cold Temperatures

Location	Date	Time	Type
Brookings County	01/23/2014	5:00	Extreme Cold/Wind Chill
Brookings County	03/02/2014	2:00	Extreme Cold/Wind Chill
Brookings County	01/16/2016	21:00	Extreme Cold/Wind Chill
Brookings County	06/10/2016	11:00	Excessive Heat
Brookings County	07/20/2016	12:00	Excessive Heat
Brookings County	12/30/2017	8:00	Extreme Cold/Wind Chill
Brookings County	01/01/2018	00:00	Extreme Cold/Wind Chill
Brookings County	01/15/2018	00:00	Extreme Cold/Wind Chill
Brookings County	03/03/2019	02:00	Extreme Cold/Wind Chill
Brookings County	02/12/2020	20:00	Extreme Cold/Wind Chill
Brookings County	02/13/2021	22:00	Extreme Cold/Wind Chill
Brookings County	12/31/2021	22:00	Extreme Cold/Wind Chill
Brookings County	01/01/2022	00:00	Extreme Cold/Wind Chill
Brookings County	01/06/2022	04:00	Extreme Cold/Wind Chill
Brookings County	12/21/2022	21:00	Extreme Cold/Wind Chill
Brookings County	07/27/2023	10:00	Excessive Heat
Brookings County	08/19/2023	13:00	Excessive Heat
Brookings County	08/21/2023	11:00	Excessive Heat

SOURCE : https://www.ncdc.noaa.gov/stormevents/

- **January 2009 -** After a clipper system dropped from one to four inches of snow, Arctic air and blustery north winds pushed into the area. The coldest air and the lowest wind chills of the season spread across much of central and northeast South Dakota. Wind chills fell to thirty-five to fifty degrees below zero late in the evening of the thirteenth and remained through the fourteenth. By the morning of January 15, 2009, the Arctic high-pressure area settled in across northeast South Dakota, bringing wind chills as low as sixty degrees below zero. Many vehicles did not start because of the extreme cold and several schools had delayed starts. Daytime highs remained well below zero across the area. This was one of the coldest days that most areas experienced since the early 1970s.

- **January 2014 -** The combination of sub-zero temperatures with north winds produced dangerously cold wind chills from 40 below to around 55 degrees below zero. Winds gusted to over 40 mph at times. Several area activities were cancelled, as well as many schools on Monday the 6th. Some of the coldest wind chills included 50 below in Hayti. With these types of temperature extremes, the biggest concern for people is exposure because prolonged exposure means almost certain death.

- **December 2017 -** Extreme wind chills of 35 to near 55 degrees below zero occurred off and on during this time. Record lows set on the morning of January 1st were in the 30s below zero with even some 40s below zero. Temperatures did not respond well for daytime highs on January 1st as several record low highs in the single digits below zero occurred.

- **February 2021 –** A potent and persistent outbreak of Arctic air affected the entire region. The coldest days of the outbreak for many occurred Valentine's Day weekend, when high temperatures averaged around ten below zero, in northeastern South Dakota, to the single digits above zero, in central South Dakota. On February 14th, low temperatures dropped into the 20s to the 30s degrees below zero range. Extreme wind chills of 35 degrees to 55 degrees below zero also occurred on several days during the outbreak. The magnitude of the cold during this outbreak was fairly rare compared to the past 50 years, at least in terms of the persistence of the Arctic air. This was especially impressive considering the lack of deep, fresh snow cover across most of the area. If there had been widespread deep, fresh snowpack ahead of this Arctic outbreak, low temperatures would have been more severe and more often approaching record territory. Impacts from this extreme and persistent cold included many frozen and/or broken water pipes (the limited snow depth did not help in this regard) and froze-over home sewer vents, dead vehicle batteries, school delays, and church cancellations. The prolonged cold caused significant strains to the power grid as demand spiked both locally and across several other states. Thousands of customers were at least briefly without power locally, particularly during the morning of Tue, Feb 16th. Concerns for rolling blackouts lingered for several days in this regard due to the continued extreme demand/strain, and people were repeatedly asked to conserve energy however possible.

Climate Change Considerations

According to the Fifth National Climate Assessment, the line of demarcation between the arid west and humid east is moving eastward, beyond the traditional border at the 100th Meridian. Since it is known that dryer air, resulting from decreased snowpack in the west/northwest, leads to wider temperature fluctuations it is reasonable to expect increased frequency of extreme temperatures, such as extreme heat and cold. Though stream flow data runs contrary to the prediction of an arid Brookings County, it is expected the increased water levels are the result of more frequent extreme moisture events (summer and winter storms) and rapid snow melt. The winter season is warming at a faster rate than any other season in the Northern Plains region, and this is also true for South Dakota. Winter storms and blizzards, however, will continue to be a severe weather hazard in the state. Overall snow cover has decreased in the Northern Hemisphere, due in part to higher temperatures that shorten the time snow spends on the ground.

Warmer winter temperatures could mean more ice and freezing rain events, which often impact electrical utilities and communication systems, but can also affect agricultural livestock and roads and transportation. The increased frequency of ice and freezing rain events increases the likelihood that those events will occur in tandem with extreme cold events. Thereby increasing the importance of temporary emergency shelter with back-up generators for the facility; and water and sewer services for that facility.

URBAN FIRE/WILDFIRE

According to a United Nations Office of Disaster Risk Reduction (UNODRR) Urban Fire article, all fires regardless of trigger, need three elements to sustain themselves: fuel, oxygen, and heat. The heat thermally decomposes the fuel into a hot gas which mixes with the oxygen which then creates a combustible gas namely the flame, the edge of which is where the combustion reaction happens.

UNODRR urban fire article further states urban fires are fire involving buildings or structures in cities or towns with potential to spread to adjoining structures. Triggers of urban fires are numerous, from human actions (e.g., knocking over a candle, arson) and technological triggers (e.g., power surge overloading appliances), to natural triggers (e.g., wildland fires interacting with urban areas).
Urban fires are linked to density of structures and type of construction. Highly dense settlements are likely to have large areas of structures that are in close proximity to one another which will facilitate fire spread. This, when combined with combustible construction can lead to large-scale fire events.

Wildfires are uncontrolled conflagrations that spread freely through the environment. Other names such as brush fire, bushfire, forest fire, grass fire, hill fire, peat fire, vegetation fire, and wildfire may be used to describe the same phenomenon. A wildfire differs from the other fires by its extensive size; the speed at which it can spread out from its original source; its ability to change direction unexpectedly; and to jump gaps, such as roads, rivers and fire breaks.

Fires start when an ignition source is brought into contact with a combustible material that is subjected to sufficient heat and has an adequate supply of oxygen from the ambient air. Ignition may be triggered by natural sources such as a lightning strike, or may be attributed to a human source such as “discarded cigarettes, sparks from equipment, and arched power lines.

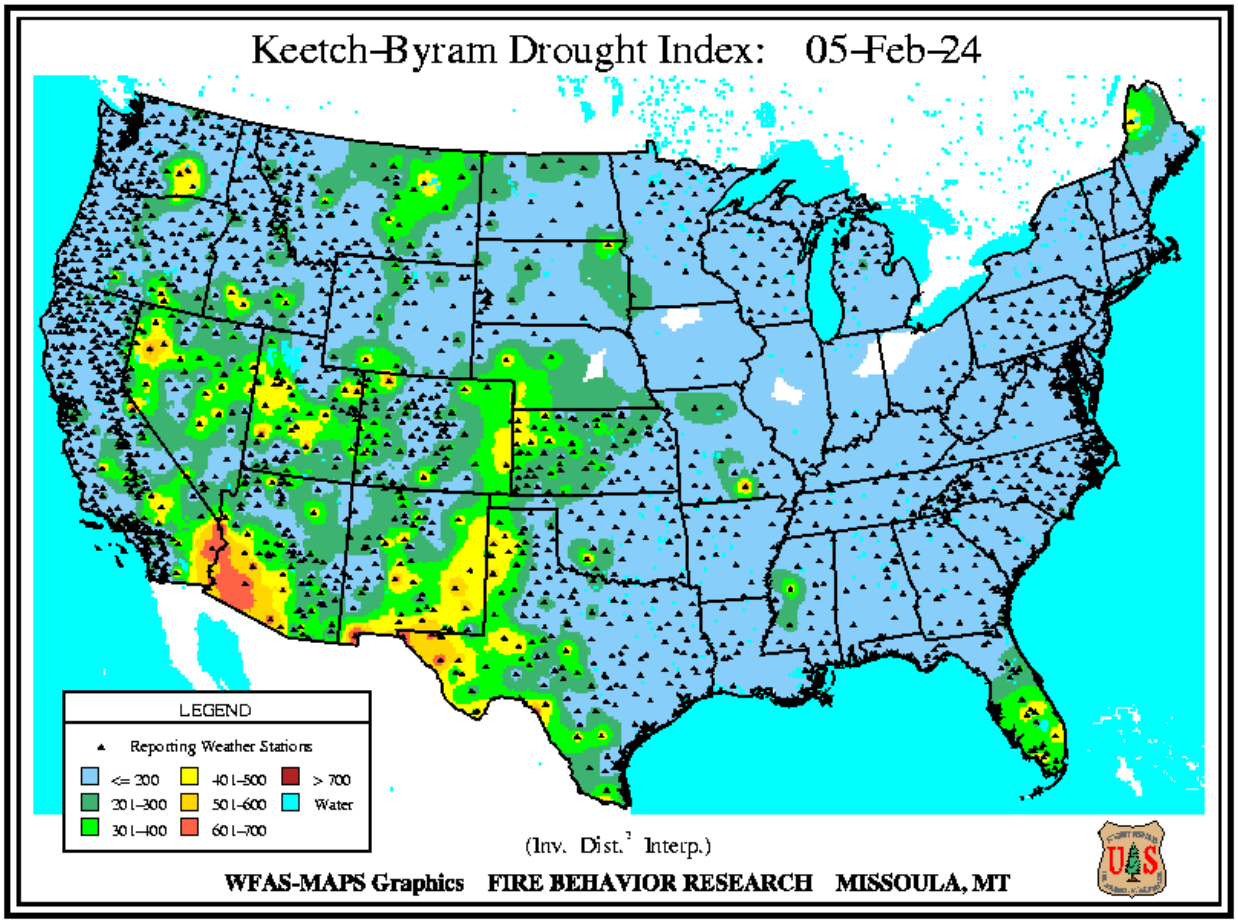
According to the SD Drought Mitigation Plan (SD DMP), lightning fires burn more acreage than human-caused fires, in part, because 1) multiple lightning fire ignitions often occur at the same time; 2) lightning fires can occur throughout the protection area, while most human-caused fires occur in accessible areas; 3) people often detect and report human-caused fires quickly due to their proximity to inhabited areas; and 4) lightning producing thunderstorms typically occur during the hottest portion of the fire season, while many human-caused fires start during spring or fall. When combined with drought, these conditions can create devastating wildfires.

According to Drought.gov and the Wildland Fire Assessment System, the Keetch-Byram Drought Index assesses the risk of fire due to drought. The Keetch-Byram Drought Index (KBDI) assesses the risk of fire by representing the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in deep duff and upper soil layers.

The KBDI attempts to measure the amount of precipitation necessary to return the soil to full field capacity. The index ranges from zero, the point of no moisture deficiency, to 800, the maximum drought that is possible, and represents a moisture regime from 0 to 8 inches of water through the soil layer. At 8 inches of water, the KBDI assumes saturation. At any point along the scale, the index number indicates the amount of net rainfall that is required to reduce the index to zero, or saturation.

- KBDI = 0 - 200: Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity. Typical spring dormant season following winter precipitation.
- KBDI = 200 - 400: Typical of late spring, early growing season. Lower litter and duff layers are drying and beginning to contribute to fire intensity.
- KBDI = 400 - 600: Typical of late summer, early fall. Lower litter and duff layers actively contribute to fire intensity and will burn actively.
- KBDI = 600 - 800: Often associated with more severe drought with increased wildfire occurrence. Intense, deep burning fires with significant downwind spotting can be expected. Live fuels can also be expected to burn actively at these levels.

A sample KBDI can be found below.



A strong possibility exists for simultaneous emergencies during droughts. Wildfires are the most common. While researching the hazard occurrences that have taken place in the County, it became evident that the information found on the NCDC Storm Events Database website was incomplete. Therefore, other sources were contacted whenever possible. Specifically, NCDC Storm Events Database had zero occurrences listed for wildfires in the County, but the State Fire Marshal's Office (SFMO) was contacted to verify that information.

The information from the SFMO is derived from the reports submitted by local fire departments who respond to the fires. According to SFMO representatives, many of the fire departments in the County are volunteer-based, which often leads to wildfires being extinguished without reports being filed with the State. As a result, the SFMO data is not entirely complete either. For the purpose of this PDM, we have used the numbers provided by the SFMO as a point of reference to assess the likelihood of a wildfire hazard occurring within the jurisdiction.

The information provided by the SFMO identifies 247 structure fire responses, 136 vehicle fire responses, and 371 outdoor fire responses reported from 2014 to 2023. The cause of the outdoor fires is not listed, so it is not known for certain whether all or some of these fires resulted due to a natural hazard occurrence or as a result of human behavior. Additionally, the SFMO provided information about the number of injuries and fatalities reported as a result of these fires. According to the information provided, 7 civilian and 2 firefighter injuries or and 2 civilian and 0 firefighter fatalities were reported during that time period.

The table below identifies the number of fire department responses to structural, vehicle and outdoor fires that have been experienced within the county. It should be noted that the number of responses does not necessarily mean that there were 247 outdoor (wildfire) fires as some events required multiple departments to respond.

Table 4.13: Brookings County Structural, Vehicular, and Outdoor (Wildfire) Department Responses

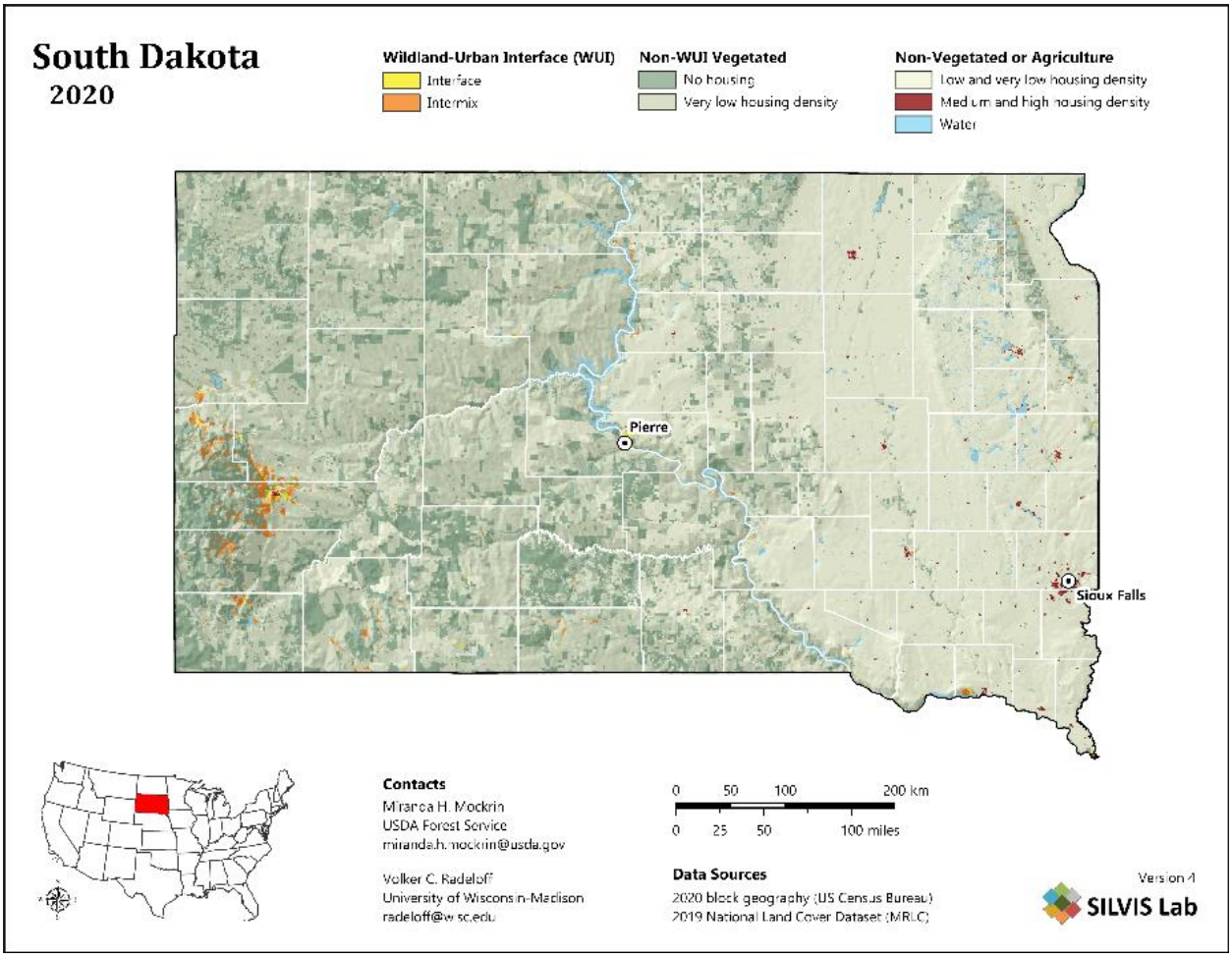
Year	Structural Fires	Vehicle Fires	Outdoor Fires
2014	24	17	43
2015	19	7	34
2016	28	18	38
2017	26	13	41
2018	18	11	16
2019	19	12	14
2020	34	20	48
2021	26	16	57
2022	33	14	49
2023	20	8	31
Total	**247**	**136**	**371**

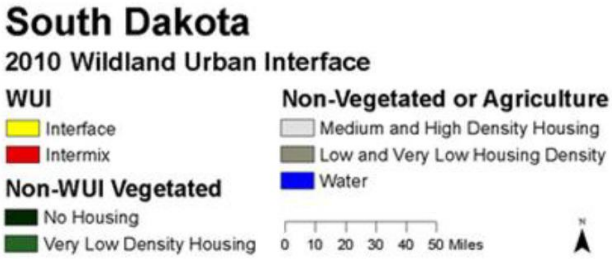
SOURCE : State of South Dakota Fire Marshall Office

The data compiled by the SMFO is not discriminate enough to determine whether a fire can be classified as an urban or rural. The map from the SD SHMP displayed on the following page shows the South Dakota Wildland Urban Interface areas that can experience wildfires. This shows very little chance of a wildfire occurrence broadly over the entire Brookings County jurisdiction. The FEMA NRI shows a 0.053% chance of wildfire per year.

The PDM Planning Team reviewed the incidence of fire at South Dakota State University. According to its annual 2024 report, a total of three (3) fires occurred on campus (all in 2021) from 2021 – 2023.

Figure 4.7: SD Wildland-Urban Interface Map





Climate Change Considerations

Driven by increased temperature and decreased relative humidity, fire potential in this region is projected to increase under future climate change, especially in summer and autumn, with fire seasons becoming longer, according to the Fifth National Climate Assessment. Increased evapotranspiration and drought risk raise the probability of large fire occurrence. The number of large grassland wildfires in the four semiarid ecoregional grasslands of the Northern Great Plains increased by 213%, from 128 between 1985 and 1995 to 273 between 2005 and 2014, with total area burned increasing in the western ecoregions of the region by 350% but decreasing in eastern ecoregions by 75% or more. Wildfire numbers and fire-season length increased from the 1970s

to the 2000s by 889% and 85 days, respectively, in western Montana and Wyoming forests, with most ignited by lightning strikes rather than humans. Historically, snow cover prevented winter wildfires and increased fuel moisture conditions during snowmelt followed by spring precipitation. However, early spring snowmelt has been correlated with increased fire activity. From 1950 to 2010, the number of snow-cover days declined within the region.

Though urban fires are not expected to be significantly impacted by climate change, wildfires in Brookings County may increase. The data for increased frequency of wildfire is based largely west of this County. However, with the creep of earlier warm Spring temperatures will come higher likelihood of existing pasture land being dry enough to ignite in lightning storms. As previously noted elsewhere in this plan, more intense summer storms can be expected which is expected to lead to a higher risk for lightning; and, in turn, lighting ignited grassland fires.

ASSESSING VULNERABILITY: OVERVIEW

Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B1-d&f.
Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B2-a-b.

Hazards were also analyzed in terms of the level of the community or county's perceived vulnerability to the hazard. Vulnerability to the hazard is the susceptibility of life, property, and the environment to injury or damage if a hazard occurs.

Representatives from each participating jurisdiction and the PDM Planning Team were asked to complete worksheets that rated their perception to vulnerability of hazards for either their specific geographical location, or for county-wide risks. A low vulnerability hazard is one that has very low damage potential to either life or property (minor damage to less than 5% of the jurisdiction). A "medium" vulnerability hazard is unlikely to threaten human life, although some people may be at risk, but may pose moderate damage potential (causing partial damage to 5% to 10% of the jurisdiction, on an irregular occurrence). A "high" vulnerability hazard may threaten human life, and more than ten percent of the jurisdiction may be at risk on a regular occurrence. Table 4.14 below is an overall summary of perceived vulnerability by jurisdiction produced from the FEMA worksheets completed by each participating jurisdiction and PDM Planning Team.

Table 4.14: Overall Summary of Vulnerability by Jurisdiction

Type of Disaster	Brookings County	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	Avg. Rating
Drought	L	M	L	L	M	N	L	L	M	L
Earthquake	M	N	M	N	N	H	N	N	N	N
Extreme Cold	M	M	L	L	M	H	L	M	M	M
Extreme Heat	M	M	L	L	L	H	L	M	L	L
Flood	M	L	M	H	N	N	L	L	N	L
Freezing Rain/Sleet/Ice	M	L	M	L	H	H	H	M	H	M
Hail	M	M	M	M	M	M	M	M	M	M
Heavy Rain	M	L	H	L	L	M	L	M	L	L
Heavy Snow	M	L	L	L	H	M	L	M	H	M
Lightning	M	M	L	L	L	L	L	L	L	L
Rapid Snow Melt	M	L	H	L	N	L	L	L	N	L
Strong Winds	M	H	M	M	H	H	H	M	H	H
Thunderstorm	M	M	M	L	N	M	L	L	L	L
Tornado	M	H	L	H	H	H	H	H	H	H
Urban Fire	M	M	M	L	H	L	H	L	H	M

N : Not applicable; not a hazard to the jurisdiction

L : Low risk/vulnerability; little damage potential (minor damage to less than 5% of the jurisdiction)

M : Medium risk/vulnerability; moderate damage potential (causing partial damage to 5-10% of the jurisdiction, and irregular occurrence)

H : High risk/vulnerability; significant risk/major damage potential (for example, destructive, damage to more than 10% of the jurisdiction and/or regular occurrence)

After identifying and assessing the natural hazards that may affect Brookings County and discussing their perceived vulnerabilities, the Team decided to concentrate on the following natural hazards: flooding, severe summer storms, severe winter storms, and drought/fire. The remaining natural hazards: earthquakes, dam failure, ice jams, landslides, and subsidence had a low/no probability of occurrence and a low/no vulnerability in most of the County. These hazards will no longer be considered by this plan.

It should be noted that Elkton, Brookings City and the County reported vulnerability to earthquakes due to unfamiliarity with standards for earthquakes. Due to the fact that no earthquake has ever been reported within Brookings County, and there is no reason to expect that to change the communities determined earthquakes to be akin to meteor strikes which can occur but the risk is historically insignificant. For future plans, Brookings County will adopt a vulnerability score which will account for probability of these hazards that the communities are unfamiliar with and better justify that being historically insignificant led to the community finding it unnecessary to establish mitigation actions for the given hazard.

Regional Climate Change Trends

FEMA requires PDM plans to include climate change projections as a part of the hazard assessment and vulnerability analysis. The Third National Climate Assessment (TNCA), published in 2014, addresses the current and future impacts of climate-related impacts on various sectors and regions throughout the United States. This report was reviewed and its findings were incorporated into this plan.

The TNCA indicates increasing mean temperatures in the northern Great Plains region, where South Dakota is located, and winter temperatures warming faster than summer temperatures. This trend may lead to greater evaporation and more frequent droughts, necessitating new agricultural practices to adapt to changing conditions. Additionally, South Dakota has experienced a long-term trend of increasing annual precipitation, with the majority occurring in spring and fall. The report suggests precipitation extremes will become more frequent and intense, potentially exacerbating flooding, especially in the spring.

The Fourth National Climate Assessment, released in 2018, reaffirms the findings within the TNCA. Other studies reviewed for this plan include the State of South Dakota Multi-Jurisdictional Hazard Mitigation Plan, the US Environmental Protection Agency's report on Climate Impacts in the Great Plains, and the NOAA NCDC-State Climate Summaries 2022 for South Dakota, which provide similar information as the third and fourth climate assessments.

HAZARD VULNERABILITIES

The following paragraphs summarize the description of the jurisdiction's vulnerability to each hazard and the impact of each hazard on the jurisdiction**.**

Flooding

Inundation flooding occurs most often in the spring. The greatest risks are realized typically during a rapid snowmelt before ice is completely off all of the rivers or ice jams that occur when warm temperatures and heavy rain cause snow to melt rapidly. Snow melting combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of the river. The ice layer often breaks into large chunks, which float downstream and often pile up near narrow passages

and other obstructions, such as bridges and dams causing localized flooding. Flash flooding is more typically realized during the summer months. This flooding is primarily localized when enough rain can be produced to cause inundation flooding. Flooding can result in injuries and even loss of life when quickly moving water is involved. Six inches of moving water is enough to sweep a vehicle off a road. Disruption of communication, transportation, electric service, and community services, along with contamination of water supplies and transportation accidents are very possible.

Brookings County has experienced severe damages to roads and culverts periodically from flooding. Conditions, at times, make emergency response and evacuation operations difficult, adversely affecting the safety of residents. The flooding of township roads is a concern for the entire county. Township officials have identified areas that are either vulnerable or have experienced recurring damages. These areas are identified in maps contained in the Appendix E.

Flooding, especially county-wide flooding, causes significant damages and disrupts travel on roads in the county. According to the FEMA NRI, Brookings County can expect 2.7 riverine flooding events per year. These are mostly localized events. FEMA flood studies provide mapping and detailed flood information for floodplains where the water body has a one percent chance of occurrence in any given year in identified special flood hazard areas. Below data indicates specific reports of flooding. Brookings County residents and emergency responders have adjusted to life with dozens of feet of water over former collector streets (county roads) and local streets (township roads) for three decades, in some cases. Flood events listed below were compiled from data available through NOAA. These refer to events where waters subsided over time. It should be noted that, except for flash flooding, the “location” of flooding is considered regional rather than site specific.

Table 4.15: Brookings County Ten Year Flooding History

Location	Date	Time	Type	Rainfall/Event Summary	Property Damage	Crop Damage
White	06/01/2014	18:25	Flash Flood	Heavy rain caused flash flooding of area roads & cut channels in farm fields.		
White	06/05/2014	09:16	Flash Flood	Heavy rain caused water to run over some roads.		
Brookings Muni Airport	06/17/2016	18:00	Flash Flood	Heavy rain caused flash flooding of numerous streets, making some impassable & stranding several vehicles.	50.00K	
Bruce	03/22/2018	05:00	Flood	Runoff from rainfall, snow melt, and ice breakup caused minor flooding of lowland agricultural areas.		
Medary	03/24/2018	08:00	Flood	Continuation of snow and rain.		
Bruce	04/13/2018	06:00	Flood	Rapid snow melt led to flooded cropland and roads.		
Bruce	04/20/2018	07:00; 22:00	Flood	Snow melt and runoff from heavier rainfall produced moderate flooding – large impact to lowland agricultural areas.		
White	04/21/2018	04:00	Flood	Continuation of snow melt & rain runoff.		
Bruce	04/23/2018	02:00	Flood	Continuation of snow melt & rain runoff.		
Medary	04/23/2018	22:00	Flood	Continuation of snow melt & rain runoff.		
Bruce	05/01/2018	00:00	Flood	Continuation of snow melt & rainfall runoff.		

Location	Date	Time	Type	Rainfall/Event Summary	Property Damage	Crop Damage
Brookings Muni Airport	07/19/2018	02:00	Flash Flood	3rd Street in Brookings was under water due to torrential rainfall.		
Brookings	07/19/2018	03:50; 04:00	Flash Flood	6.8: - 9" of rain resulted in multiple streets flooded in Brookings.		
Bushnell	07/19/2018	04:45	Flash Flood	Water over US Hwy 14.		
Medary	07/19/2018	19:00	Flood	3" – 9" of rain caused river levels to rise above 2.5' above flood stage.		
Medary	03/13/2019	12:00	Flood	Flooding resulted in damage to public infrastructure.	170.00K	
White	03/15/2019	03:00	Flood	Snow melt & heavy rainfall resulted in flooding of ag lands and numerous city/township roads.		
Medary	03/18/2019	20:00	Flood	Medary Creek reached 2nd highest crest on record of 1.71' above flood stage.		
Bruce	03/21/2019	03:30	Flood	Big Sioux River near Bruce reached 2nd highest crest on record of 2.86' above flood stage.		
Bruce	03/22/2019	13:00	Flood	Continued snow melt and heavy rainfall.		
Bruce	04/01/2019	00:00	Flood	Runoff from precipitation which totaled 2" – 4" in. resulting in flooding along the Big Sioux River.		
White	04/17/2019	07:00	Flood	2" – 3" of precipitation.		
Bruce	05/01/2019	00:00	Flood	3rd month of constant flooding due to continued snow melt and precipitation.		
Brookings Muni Airport	05/17/2019	19:52; 22:00	Flash Flood	Water reach 2' depth at many city intersections.		
White	05/18/2019	07:00	Flood	Widespread rainfall 1" – 2" caused flooding to agricultural land & township roads and spring planting.		
Sinai	06/01/2019	00:00	Flood	Prolonged flooding led to loss of or inability to plant crops.		21.540M
Bruce	06/01/2019	00:00	Flood	Continuation of flooding from May & further impeded spring planting.		
Bruce	06/27/2019	08:00; 22:00	Flood	Runoff from 1" – 2" of rainfall renewed minor flooding.		
Bruce	07/01/2019	03:00	Flood	6" – 10" of rainfall resulted in flooding along the Big Sioux River.		
White	07/09/2019	22:00	Flood	Flooding of city & rural roads and agricultural lands.		
Bruce	07/10/2019	21:00	Flood	Continued flooding.		
Bruce	08/01/2019	00:00	Flood	Continued flooding.		
Bruce	08/19/2019	16:00; 22:30	Flood	Rainfall of 2" – 3" flooded agricultural land.		
Brookings Muni Airport	09/10/2019	22:51	Flash Flood	Vehicles became stranded in flood waters after intense rainfall.	10.00K	

Location	Date	Time	Type	Rainfall/Event Summary	Property Damage	Crop Damage
Brookings	09/10/2019	23:15	Flash Flood	Several streets around town remained flooded, with the underpass on 6th Ave in Brookings pooled to several feet.	10.00K	
Medary	09/11/2019	19:30	Flood	5" – 10" of rainfall. Numerous county & township roads were inundated with water.	25.00K	
Sinai	09/12/2019	00:00	Flood	Flooding resulted in damage to public infrastructure including county & township roads and culverts, along with crop losses.	244.00K	204.00K
White	09/12/2019	03:00	Flood	Continued excessive rainfall.	50.00K	
Bruce	09/12/2019	05:00; 12:30	Flood	Continued excessive rainfall.		35.00K
Bruce	10/23/2019	07:00	Flood	Big Sioux River near Bruce crested above flood stage resulted in minor flooding of ag land & property damage.	2.50K	
Bruce	11/12/2019	11:30	Flood	Ice development on the Big Sioux River piled up on several bridges causing lowland flooding.		
Bruce	12/11/2019	11:00	Flood	Snow melt & ice jams resulted in minor flooding.		
Storla	03/08/2020	20:00	Flood	1" – 4" of precipitation residing in snowpack & flooding.		
Bruce	03/11/2020	04:00	Flood	4" – 6" of snowpack melt.		
Bruce	03/13/2020	17:00	Flood	Continued snow melt.		
Bruce	03/22/2020	04:00	Flood	Continued snow melt. Big Sioux River remained at minor flood stage.		
Bruce	03/29/2020	08:00	Flood	Minor rainfall, less than 1", caused ag land flooding.		
Bruce	04/01/2020	00:00	Flood	Continuation of flooding from March.		
Bruce	05/13/2022	02:00; 19:00	Flood	Runoff from 2" – 3" of rainfall left small tracts of ag land with minor flooding.		
Bruce	05/31/2022	12:00	Flood	1" -1.5" of rainfall resulted in minor flooding of ag land.		
Bruce	06/01/2022	00:00	Flood	Significant rural land was flooded.		
White	04/08/2023	18:00	Flood	Rapid snowmelt between 2" – 5"		
Bruce	04/10/2023	05:00	Flood	Due to snowmelt, Big Sioux River was above minor flood stage for 16 days and above moderate stage for 6 days.		22.00K
Medary	04/10/2023	07:00	Flood	Rapid snowmelt from above normal temperatures.		
Bruce	04/11/2023	01:00	Flood	Big Sioux River continued to rise above flood stage due to rapid snowmelt.		

SOURCE : https://www.ncdc.noaa.gov/stormevents/

Climate Change Considerations

There is no comprehensive assessment of how climate change might affect flooding in South Dakota. The TNCA, EPA-Climate Impacts on the Great Plains study, and other studies proposed climate change projections that show future precipitation patterns will vary across the Great Plains. Winter/spring precipitation and very heavy precipitation events are both projected to increase in the northern portions of the Great Plains, leading to increased runoff and potential flooding. Increased snowfall, rapid spring warming, and intense rainfall can combine to produce significant flooding.

Since 1990, South Dakota has averaged 22% more 2-inch rain events compared to the long-term average. Some historic rain and flooding events have occurred in recent years. Climate projections for the Great Plains indicate that 1-day, 20-year return events will increase in frequency by 8-16% in the coming decades.

Vulnerability

There is no comprehensive assessment of how climate change might affect flooding in South Dakota. The TNCA, EPA-Climate Impacts on the Great Plains study plus other studies proposed climate change projections show that future precipitation patterns will vary across the Great Plains. Winter/spring precipitation and very heavy precipitation events are both projected to increase in the northern portions of the Great Plains, leading to increased runoff and potential flooding. Increased snowfall, rapid spring warming, and intense rainfall can combine to produce significant flooding. Since 1990, South Dakota has averaged 22% more 2-inch rain events compared to the long-term average. Some historic rain and flooding events have occurred in recent years. Climate projections for the Great Plains indicate that 1-day, 20-year return events will increase in frequency by 8% to 16% in the coming decades.

Severe Storms

Summer Storms

Summer storms can develop anywhere in the County and historically occur from early spring to early fall. Summer storms can quickly progress into thunderstorms that include strong winds, heavy rains and flooding, lightning, and hail. These storms can also spur the development of funnel clouds and tornadoes. Summer storms range from mild to severe, posing risks of injury or death, destroying property, and killing livestock. This section covers five types of hazards caused by summer storms, particularly thunderstorms: hail, heavy rains, lightning, strong winds, and tornadoes. Flooding was discussed in a precious section.

Hail can cause damage to property such as crops, vehicles, windows, roofs, and structures. The County and its local jurisdictions are vulnerable to hail, like most other areas in the State due to the nature of the hazard. The average hail stone size for these incidents was a little over 1-inch in diameter. Mitigating hail is difficult and is usually found in the form of insurance policies for structures, vehicles, and crops. The County can expect hail several times each year.

Heavy Rain causes damage to public and private property, such as roads and homes. Roads, culverts, and bridges can be washed out, causing traffic hazards for travelers and commuters. Many times the roads have to be closed causing rural traffic to have to take alternate routes which can sometimes be an additional five to ten miles out of the way. All areas of the County are vulnerable when heavy rains occur. Storm sewers are built for the typical storm and therefore do not accommodate excessive or heavy rains. When heavy rains occur in the County, it may cause sewers to back up in homes due to excess water entering the wastewater collection lines. The excess water sometimes has no place to go and thus basements fill up with water which results in damage to water heaters, furnaces, and damage to living quarters for people who live in basement apartments.

Lightning often strikes the tallest objects within the area. In city limits, trees and poles often receive the most strikes. In rural areas, shorter objects are more vulnerable to being struck. Electrical lines and poles are also vulnerable because of their height and charge. Tall trees located near electrical lines can be broken in wind or by lightning strikes and land on electrical lines, severing connections. Limited loss of power is common on an annual basis. Typical power interruptions last around one to three hours. Most residents are prepared to deal with this.

Cloud-to-ground lightning can kill or injure people by direct or indirect means. Objects can be struck directly, which may result in an explosion, burn, or total destruction. Damage may also be indirect, when the current passes through or near an object, which generally results in less damage. Most injuries from lightning occur before rain begins or near the end of thunderstorms. Individuals who sought shelter leave those areas prior to the entire completion of the thunderstorm. Believing it is safe to freely move around, lightning strikes catch them off guard.

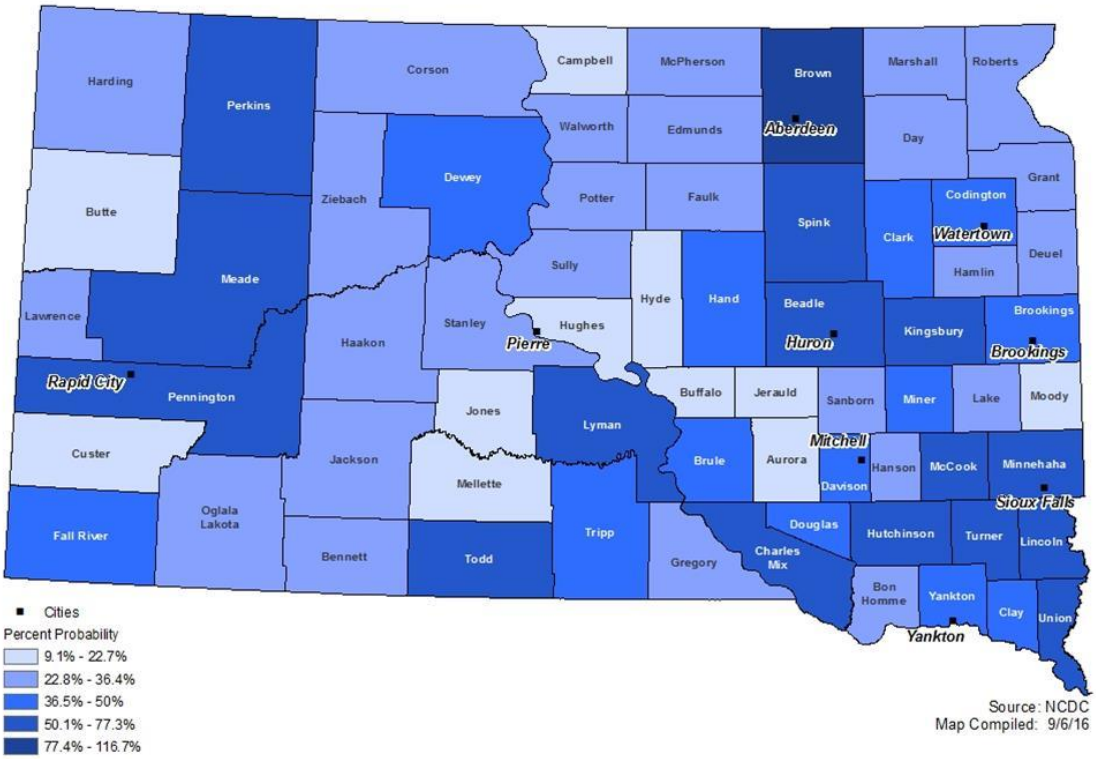
One of lightning's most dangerous attributes includes its ability to cause fires. Since the entire county is vulnerable to lightning strikes and subsequent fires, these fires will be treated under the fire section of this PDM.

Strong Winds can be detrimental to the County. Trees, poles, power lines, and weak structures are all susceptible and vulnerable to strong winds. When strong winds knock down trees, poles, power lines, and structures it creates additional traffic hazards for travelers and commuters. Strong winds are a common occurrence in all parts of the County. The farming community tends to be vulnerable because many old farm sites have weak, dilapidated, or crumbling structures or structures such as grain bins which can easily be blown over. Another area of particular vulnerability would be those areas with dense tree growth where dead or decaying trees lose their stability and can be blown over or knocked down easily. High voltage electrical transmission lines run the length of the County. These lines are susceptible to breaking during high winds and hail.

Tornadoes present significant danger and occur most often in South Dakota during the months of May, June, and July. The greatest period of tornado activity (about 82 percent of occurrence) is from eleven a.m. to midnight. Within this time frame, most tornadoes occur between four p.m. and six p.m.

According to the NCEI, there were 1,885 tornadoes, of which 692 were F1 or higher, in South Dakota between 1950 and 2023 (73 years). Based on this information, the probability that at least one tornado will occur in South Dakota is 100%. Annualized losses are estimated at nearly $11 million. Figure 4.8 depicts the probability of a damaging tornado occurring in each county based on the historical data. FEMA NRI projects the potential for 0.5 tornado events per year.

Figure 4.8 Damaging Tornado Probability by County



Climate Change Considerations

The annual risk for intense summer storms is very high and will increase. Climate projections are that the frequency and severity of heavy rainfall events will increase. Often associated with summer storms are hail, lightning and strong winds. It is expected that as summer/thunder storms increase, in conjunction with more of the associated hail, lightning, and strong wind events.

The Fourth National Climate Assessment report states, “since the 1970s, the United States has experienced a decrease in the number of days per year on which tornadoes occur, but an increase in the number of tornadoes that form on such days.”

According to the SD SHMP, there is a lot of uncertainty with the influence of climate change on severe summer storms and tornadoes, future updates to the mitigation plan should include the latest research on how the hazards frequency and severity could change.

Winter Storms

Winter Storms have a high risk of occurrence in the County. Several snowstorms each resulting in five to ten inches of snow occur in the County area annually. High winds, heavy and blowing snow, freezing rain/ice, and cold temperatures can impair/immobilize transportation, down power lines and trees, cause the collapsing of weaker structures, and potentially cause flooding. Livestock and wildlife are also very vulnerable during periods of heavy snow. Most winter storms can be considered to have occurred countywide.

Blizzards are characterized by high winds, heavy and blowing snow, cold temperatures, and low visibility. Blizzards subsequently create conditions such as icy roads, closed roads, downed power

lines and trees. The County's population is especially vulnerable to these conditions because people tend to leave their homes to get to places such as work, school, and stores rather than staying inside. Traffic is one of the biggest hazards in the County during a blizzard because people often get stuck, stranded, and lost when driving their vehicles which usually prompts others such as family and or emergency responders to go out in the adverse conditions to rescue them.

Freezing rain/ice causes adverse conditions such as slippery surfaces and extra weight buildup on power lines, poles, trees, and structures. The additional weight can often cause weak structures to cave in and cause tree branches and power lines to break and fall. Electric transmission/distribution lines run the length of the County. These lines are susceptible to breaking under freezing rain and icy conditions and severing during high blizzard winds. Loss of power can cause the loss of residential heating and utilities usage. Limited loss of power is not uncommon on an annual basis. A typical power interruption lasts from one to three hours. Most residents are prepared to deal with this type of inconvenience. The elderly and families with children potentially may suffer from a long duration loss of power during winter storms. Traffic on the roads and highways tend to be another hazard during freezing rain and icy conditions because vehicles often slide off the road which prompts emergency responders and others to have to go out on rescue missions in the adverse conditions.

Extreme cold temperatures in the County are common occurrences. It is expected that at least three times each year there will be extreme cold in the area. It is possible that people in the area have adapted to this type of extreme temperatures and thus such weather events are not reported as often as they occur. Extreme cold and a long duration power outage has the potential to cause harm to vulnerable populations, damage structures that are poorly insulated or without heat and disrupt/impair communication facilities. Many communities have designated emergency shelters with generators to provide a location for persons in need of shelter. In South Dakota, most neighbors and relatives will check on vulnerable persons to ensure their safety during these types of events.

Flooding was previously covered in this section.

While winter storms would be considered extreme in many parts of the State, the consistent nature of such weather hazards are expected in this area. Thus, planning and response mechanisms for snow and ice storms are vital to the County and are routine procedures in the County due to the common nature of such storms.

Climate Change Considerations

According to climate reports, there is evidence for the entire Northern Hemisphere of an increase in both storm frequency and intensity during the cold season since 1950, with storm tracks having shifted slightly towards the poles. South Dakota's northern location and proximity to the typical U.S. winter storm track make it highly susceptible to heavy snows, high winds, and low wind chill temperatures. Extremely heavy snowstorms increased in number during the last century in northern and eastern parts of the United States, but have been less frequent since 2000. Total seasonal snowfall has generally increased in the northern Great Plains.

The winter season is warming at a faster rate than any other season in the Northern Plains region, and this is also true for South Dakota. Winter storms and blizzards, however, will continue to be a severe weather hazard in the state. Overall snow cover has decreased in the Northern Hemisphere, due in part to higher temperatures that shorten the time snow spends on the ground.

Warmer winter temperatures could mean more ice and freezing rain events, which often impact electrical utilities and communication systems, but can also affect agricultural livestock and roads and transportation. There remains some uncertainty in projections for the coming decades, but the rising trend of extreme precipitation events in general (including winter season) will continue to be a hazard.

Drought/Fires

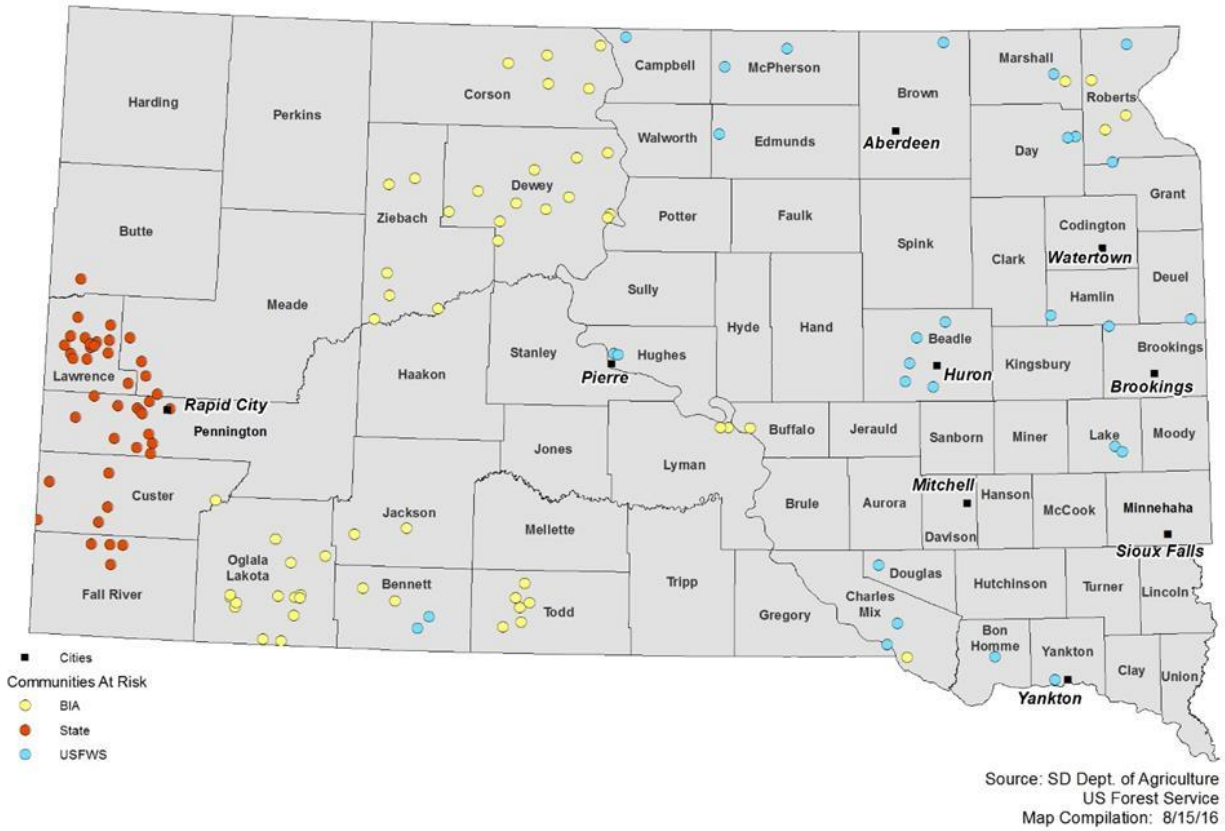
Drought can be defined as a period of prolonged lack of moisture. High temperatures, high winds, and low relative humidity all result from droughts and are caused by droughts. Precipitation, streams, rivers, lakes, reservoirs and groundwater are used to meet a diverse set of water resource needs within the State including drinking water. Each of these water sources can be adversely impacted during drought periods. Crops and other vegetation are harmed when moisture is not present within the soil. Roughly every fifty years a significant drought is experienced within the county, while less severe droughts have occurred as often as every three years. The FEMA NRI states Brookings County has an annualized frequency of 8 drought events per year.

Severe heat waves, a component of drought, have caused catastrophic crop damage, deaths from hyperthermia, and widespread power failures due to increased use of air conditioning. Loss of power and crop damage is the largest vulnerabilities to the county during extreme heat. Both have an effect on quality of life, however, neither are detrimental to the existence of the population of the County.

Wildfires occur primarily during drought conditions. Wildfires can cause extensive damage, both to property and human life, and can occur anywhere in the county. Even though wildfires can have various beneficial effects on wilderness areas for plant species that are dependent on the effects of fire for growth and reproduction, large wildfires often have detrimental atmospheric consequences, and too frequent wildfires may cause other negative ecological effects. Current techniques may permit and even encourage fires in some regions as a means of minimizing or removing sources of fuel from any wildfire that might develop.
Moisture amounts have the biggest impact on fire situations. During wet years, fire danger is low. More controlled burns are conducted, and fewer mishaps occur. During dry years, severe restrictions are placed on any types of burns. For information on dealing with open/controlled burning within the county, see SDCL 34-29B and SDCL 34-35. The FEMA NRI states Brookings County has a 0.053% chance of wildfire per year.

Since there are no remote forested regions in Brookings County, wildfires can be easily spotted and are capable of being maintained. The County does not have any areas that are considered wildland-urban interface. All communities and the golf course receive fire protection from local fire departments. The following map shows the SD communities at risk from wildfire including Brookings County.

4.9: SD Communities at Risk from Wildfire



In addition, fire interference with traffic on highways is not a major concern. The most important factor in mitigating wildfires continues to be common sense and adherence to local burning regulations and suggestions disseminated by the area officials.

Urban fires are a potential threat to the County and its communities. According to the US Fire Administration, many urban fires are caused by human related activities such as cooking, smoking, seasonal activities (candles and X-mas tree lights) or intentionally set. Other causes include home appliances, electrical systems and heating systems. The probability of an urban fire increases with population growth. This is due to human error and carelessness, which are other factors contributing to fires. Urban fires can cause extensive losses of property, lives, injuries and livelihood. The urban poor are the persons who are at greatest risk from urban fire. Generally, they have little means of protection against losses. In addition, those at greatest risk of death and injury are the old and the young due to lack of knowledge in how to respond and lack of mobility when trying to respond.

Inadequate planning, infrastructure, and construction practices related to fire prevention and mitigation significantly increase the potential for fire ignition and spread. Fire risk reduction requires established firefighting capabilities, education and training. Many of the communities have a volunteer fire department for fire suppression or are covered by a neighboring department. Most of the communities in Brookings County have smaller populations. The City of Brookings is the largest and the city has its own fire department.

Larger communities may implement building and fire regulations, but smaller communities lack personnel for inspections and therefore do not enact building and fire regulations. The State of

South Dakota adopted the 2021 International Building Codes (IBC). South Dakota state law requires all commercial and public building to be built to the 2021 IBC standards in the state. Many communities adopt zoning regulations and ordinances to help with development and reduce building densities to reduce fire spread and for fire access. According to the USFA, the number of urban fires, fire casualties, and economic losses has continued to decline over the last several years.

Climate Change Considerations

In the Fourth National Climate Assessment, climate model projections paint a clear picture of a warmer future in the Northern Great Plains, with conditions becoming consistently warmer in two to three decades and temperatures rising steadily towards the middle of the century. Overall, climate models project an increase in the number of heavy precipitation events for much of the region. Most precipitation events are projected to occur during the winter and spring seasons. Rising temperatures will lead to increased evaporation and increasing drought frequency and intensity. The probability for more very hot days (days with maximum temperatures above 90°F) is expected to increase during the summer months, with potential impacts on agriculture, energy production, human health, stream flows, snowmelt, and fires. Less precipitation and warmer temperatures during the summer growing season, potentially causing drought conditions, may adversely affect agriculture (no irrigation), human health and fires.

According to the SD DMP and SD SHMP, wildfire conditions across South Dakota and the western United States in general are likely to worsen in the future due to climate change. The increase in moisture can provide favorable conditions for fuel (vegetation) growth. Longer, hotter summers deplete moisture in soils and vegetation potentially promoting drought conditions. The increase in temperatures can dry out fuels more rapidly allowing them to burn more easily. Hotter temperatures and drought conditions may adversely affect water supplies by decreasing their availability for fire suppression. Climate change is also believed to increase the severity of thunderstorms, leading to more lightning strikes that can ignite fires.

It appears that climate change will not have a major impact on urban fires, except when a wildfire crosses into a community. According to the USFA, the changing climate will create more fire hazard areas because of the increase in dry vegetation and wildland-urban interfaces will continue to grow.

ASSESSING VULNERABILITY: CURRENT AND FUTURE CONDITIONS

Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B1-e
Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B2-a&b
Requirement 201.6(d)(3). Local Mitigation Plan Review Tool – E2

The Planning Team determined that each respective community should be tasked with identifying its assets needing protection from hazards. Those assets are listed as “critical infrastructure” in Table 4.28. As a part of the asset/infrastructure listing, each community was asked to identify vulnerable or socially disadvantaged populations within its respective community. Those populations are listed as “populations to protected” in Table 4.28.

The planning team determined that dam failures, subsidence, earthquakes, and ice jams had no record of occurrence. Further, they determined that the primary effect of wildfires to municipalities

was that of response and recovery. Therefore, those hazards were not included for planning purposes, despite being included in the Hazard Profile of this plan. Though wildfires were identified as hazards for the rural portions of the county, rural fires are limited to grassland, pasture, (post-harvest) crop ground which catches fire and spreads to another property.

It is expected that climate change will lead to more incidence of grassland fire (wildfire) in Brookings County in the future due to more periods of drought, extreme heat, wind, and frequency of lightning strikes. No residences, whether communal or single family, are at a higher risk of wildfire occurring today than any other. Rather crops, pasture, grassland, and other personal property are primarily the vulnerable assets to wildfire. Changes in population and land use are not expected to be significantly impacted by the increase in incidence of wildfire expected from climate change. An increasingly sporadic development of residences in the rural portions of the county, and aging population are unlikely to be affected by the increase in wildfire in any appreciable manner.

A review of all other hazards in relation to the general and unique risks to current and future assets by jurisdiction is included in Tables 4.14a – 4.14e. A review of the expected future impacts on each respective community in relation to expected changes in population and land use are included in Tables 4.14f - 4.14j. It should be noted that the risks and impacts of many hazards were determined by the PDM Planning Team to be similar. The below tables, as with mitigation activities later in this plan, are grouped into like categories.

Table 4.16: Risks to Current and Future Assets by Community – Extreme Heat

Community	Current Assets	Future Assets	Extreme Heat	
			General Risks	*Unique Risks*
Brookings (County)	See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County	Population increase: less than or equal to 1.1% annually (Table 1.1)	Prolonged exposure of residents to extreme temperatures during utility outage or following other natural disaster.	Redevelopment and replacement of older houses results in more energy efficient houses, and less likelihood of utility (air conditioning) failure as utilities are expanded and improved in growing / redeveloped areas. More demand for water as seasonal dwellings are also generally occupied in the summer.

Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)		Increased utility (water/electric) burden on existing (aging) infrastructure will lead it increased risk for loss of utility service throughout town without upgrades.
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)		Continued increase in SDSU enrollment increases risk of mass shelter need in extreme heat; increased residents = increased demand for service at Brookings Health System makes it critical that BHS keep utility service in extreme heat.
Bruce		Population increase: 2.5% annually (Table 1.1)		Increased utility (water/electric) burden on existing (aging) infrastructure.
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)		Increased utility (water/electric) burden on existing (aging) infrastructure.
Elkton		Population increase: less than or equal to 2.5% annually (Table 1.1)		Public School and campground run higher risk of single event affecting more people.
Sinai		Population to remain stable (Table 1.1)		Aging population more susceptible to health risks from extreme heat in utility failure
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)		Public School, day cares, assisted living, run higher risk of single event affecting more people.
White		Population increase: less than or equal to 1.0% annually (Table 1.1)		Public School, campground, clinic, and daycares run higher risk of single event affecting more people.

Table 4.17: Risks to Current and Future Assets by Community – Tornado

Community	Current Assets	Future Assets:	Tornado	
			General Risks	*Unique Risks*
Brookings (County)	See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County	Population increase: less than or equal to 1.1% annually (Table 1.1)	Injury, loss of life, loss of/damage to property, loss of essential utility services.	Campgrounds, schools, and numerous slab-on-grade or manufactured homes near lakes are significantly vulnerable to catastrophic damage during tornado events. Insufficient tornado safe rooms and warning systems exist around the lakes for seasonal and permanent residents.
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)		Day care, campground, ball park, and numerous apartments without storm shelter will continue to be at risk with no tornado safe room.
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)		More residents that do not know tornado procedures; increased challenge in disseminating information relating to emergency shelter to non-English speaking residents; numerous trailer courts with no tornado safe room are at risk.
Bruce		Population increase: 2.5% annually (Table 1.1)		Community Club, campground, ball park without storm shelter will continue to be at risk with no tornado safe room. Overhead electricity lines within and supplying town are at risk of going down in tornado.
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)		Park and old homes run risk of destruction, with no tornado safe room. Overhead electricity lines within and supplying town are at risk of going down in tornado.
Elkton		Population increase: less than or equal to 2.5% annually (Table 1.1)		Public school, campground, and ballfields with no tornado safe room. Overhead electricity lines within and supplying town are at risk of going down in tornado.
Sinai		Population to remain stable (Table 1.1)		Park and old homes run risk of destruction, with no tornado safe room. Overhead electricity lines within and supplying town are at risk of going down in tornado
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)		Public school, day cares, assisted living, manufactured home courts, ball park, and apartments with no tornado safe room require shelter. Overhead electricity lines within and supplying town are at risk of going down in tornado.
White		Population increase: less than or equal to 1.0% annually (Table 1.1)		Public School, campground, clinic, and daycares run higher risk of tornado injuring more people. Overhead electricity lines within and supplying town are at risk of going down in tornado.

Table 4.18: Risks to Current and Future Assets by Community – Thunderstorm

Community	Current Assets	Future Assets:	Thunderstorm (Including hail, lightning, high wind)	
			General Risks	*Unique Risks*
Brookings (County)	See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County	Population increase: less than or equal to 1.1% annually (Table 1.1)	Injury, loss of life, loss of property, loss of essential utility services, loss of function of city operations.	Campgrounds, schools, and numerous slab-on-grade or manufactured homes near lakes are significantly vulnerable to catastrophic damage during thunderstorm events. Insufficient storm shelters and warning systems exist around the lakes for seasonal and permanent residents.
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)		Day care, campground, ball park, and numerous apartments without storm shelter will continue to be at risk with no storm shelter.
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)		More residents that do not know thunderstorm procedures; increased challenge in disseminating information relating to emergency shelter to non-English speaking residents; numerous trailer courts with no storm shelter are at risk.
Bruce		Population increase: 2.5% annually (Table 1.1)		Community Club, campground, ball park without storm shelter will continue to be at risk with no storm shelter. Overhead electricity lines within and supplying town are at risk of going down in thunderstorm.
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)		Park and old homes run risk of destruction, with no storm shelter. Overhead electricity lines within and supplying town are at risk of going down in thunderstorm.
Elkton		Population increase: less than or equal to 2.5% annually (Table 1.1)		Public school, campground, and ballfields with no storm shelter. Overhead electricity lines within and supplying town are at risk of going down in thunderstorm.
Sinai		Population to remain stable (Table 1.1)		Park and old homes run risk of destruction, with no storm shelter. Overhead electricity lines within and supplying town are at risk of going down in thunderstorm
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)		Public school, day cares, assisted living, manufactured home courts, ball park, and apartments with no storm shelter require shelter. Overhead electricity lines within and supplying town are at risk of going down in thunderstorm.
White		Population increase: less than or equal to 1.0% annually (Table 1.1)		Public School, campground, clinic, and daycares run higher risk of thunderstorm injuring more people. Overhead electricity lines within and supplying town are at risk of going down in thunderstorm.

Table 4.19: Risks to Current and Future Assets by Community – Winter Storms

Community	Current Assets	Future Assets:	Winter Storms (Extreme Cold, Blizzard, Freezing Rain, Heavy Snow)	
			General Risks	*Unique Risks*
Brookings (County)	See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County	Population increase: less than or equal to 1.1% annually (Table 1.1)	Injury and loss of life due to extreme cold and blowing snow, loss of essential utility services, loss of function of roadways.	Redevelopment and replacement of older houses results in more energy efficient houses, and less likelihood of utility (air conditioning) failure as utilities are expanded and improved in growing / redeveloped areas. More demand for water as seasonal dwellings are also generally occupied in the summer. Emergency services becoming difficult to impossible due to roads become impassible due to visibility and snowpack.
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)		Overhead electricity lines within and supplying town are at risk of going down in with freezing rain. Emergency services becoming difficult to impossible due to roads become impassible due to visibility and snowpack.
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)		Continued increase in SDSU enrollment increases risk of mass shelter need in winter storms; increased residents = increased demand for service at Brookings Health System makes it critical that BHS keep utility service and clear transportation in storm events.
Bruce		Population increase: 2.5% annually (Table 1.1)		Overhead electricity lines within and supplying town are at risk of going down in with freezing rain. Emergency services becoming difficult to impossible due to roads become impassible due to visibility and snowpack.
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)		Overhead electricity lines within and supplying town are at risk of going down in with freezing rain. Emergency services becoming difficult to impossible due to roads become impassible due to visibility and snowpack.
Elkton		Population increase: less than or equal to 2.5% annually (Table 1.1)		Overhead electricity lines within and supplying town are at risk of going down in with freezing rain. Emergency services becoming difficult to impossible due to roads become impassible due to visibility and snowpack.
Sinai		Population to remain stable (Table 1.1)		Overhead electricity lines within and supplying town are at risk of going down in with freezing rain. Emergency services becoming difficult to impossible due to roads become impassible due to visibility and snowpack.
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)		Overhead electricity lines within and supplying town are at risk of going down in with freezing rain. Emergency services becoming difficult to impossible due to roads become impassible due to visibility and snowpack.
White		Population increase: less than or equal to 1.0% annually (Table 1.1)		Overhead electricity lines within and supplying town are at risk of going down in with freezing rain. Emergency services becoming difficult to impossible due to roads become impassible due to visibility and snowpack.

Table 4.20: Risks to Current and Future Assets by Community – Flooding

Community	Current Assets	Future Assets:	Flooding (Heavy Rain, Rapid Snow Melt, Ice Jam)	
			General Risks	*Unique Risks*
Brookings (County)	See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County	Population increase: less than or equal to 1.1% annually (Table 1.1)	Loss of property, loss of essential utility services, loss of function of roadways.	Residents in existing structures constructed prior to adoption of floodplain regulations at significant risk of flooding near Oakwood, Poinsett, and Lake Hendricks. Crops at risk of flooding or not being able to be planted. Roadways under water semi-permanently or seasonal; or roadways inundated for varying periods. (See also Table 4.31)
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)		Only mapped floodplain in areas which may be filled prior to development. 214th Street leading to I-29 is succeptible to flooding and damage. (See also Table 4.32)
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)		Unless mitigated, existing property susceptible to flooding will be increasingly used for student or low-income housing. (See also Table 4.33)
Bruce		Population increase: 2.5% annually (Table 1.1)		Flooding poses a significant threat to a significant number of residences and limits future growth / redevelopment of the city. Water collects in ditches along roadways, deteriorating roads. Flooding threatens to deteriorate the existing sanitary sewer treatment facility. (See also Table 4.34)
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)		No mapped floodplain. Roadways leading to and from town may be inundated for varying periods. (See also Table 4.35)
Elkton		Population increase: less than or equal to 2.5% annually (Table 1.1)		No mapped floodplain. Roadways leading to and from town may be inundated for varying periods. (See also Table 4.36)
Sinai		Population to remain stable (Table 1.1)		Floodplain is primarily limited to lands which will remain inundated in the foreseeable future. Roadways leading to and from town may be inundated for varying periods. (See also Table 4.37)
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)		Floodplain confines growth in the west. Water collects in ditches along roadways, deteriorating roads. Flooding limits the expansion of sanitary sewer treatment facility. (See also Table 4.38)
White		Population increase: less than or equal to 1.0% annually (Table 1.1)		Some roadways leading to and from town may be inundated for varying periods. (See also Table 4.39)

Table 4.21: Risks to Current and Future Assets by Community – Extreme Heat

Community					**Extreme Heat**		
					Effects of Climate Change	***Impacts***	
	Current Assets:	*Future Assets:*	*Expected Changes in Population Patterns*	*Expected Changes in Land Use and Development*		*Changes in Population Patterns*	*Change in Land Use and Development*
Brookings (County)	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: less than or equal to 1.1% annually (Table 1.1)	*Continued development on fringes of Brookings (southwest) and redevelopment near lakes (primarily retired or seasonal.)*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Increasing Frequency of Extreme Heat*	Increased development/ demand for seasonal residence near lakes require expansion of services and increased efficiency of service. May require cooperative agreements with other jurisdictions/ special districts to provide utilities.	Increased stress on livestock and crops. Crops will more regularly experience flood and heat stress in same year. Continued emphasis on rural water provision to communities and rural residents.
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*		Increased demand on aging infrastructure and services. Development has significantly outpaced the ability to upgrade infrastructure and services due to lack of revenue sources for the community (sales tax).	Development will result in higher urgency to upgrade/maintain existing infrastructure. Expansion will not be significantly affected by more hot days.
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)	SDSU and local industry continues to drive population increase. The population increase is of varying ethnicity and age range, however college age/ young adults will continue to make up a larger proportion of population than most communities	Residential development will expand westward and southward until floodplain limits such development. The city is bookended on the north by SDSU which would require approx 1 mile of main line to connect new development to existing development. Commercial dev. will infill along US HWY 14 and expand E/W with Industrial growth.		Congregational style living (dorms, nursing/ assisted living, group homes, etc.) will need back-up power or identified locations for shelter/service during extreme heat if power goes out.	Infill will result in higher urgency to upgrade/maintain existing infrastructure. Expansion will not be significantly by more hot days. Care facilities will have more days when utility service on hot days may result in need for emergency care.
Bruce		Population increase: 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		Increased demand on aging infrastructure and services.	No adopted land use plan
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		Increased demand on aging infrastructure and services.	No adopted land use plan
Elkton		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Population will continue to increase. Primarily continuation of a young families and work-force aged residents*	*New residential development on the northwest, southwest, and southern edge of existing development. Short term growth expected to be infill and extending south to city limits boundary. Commercial development will be infill and along the highway. Industrial development along (north of) the railroad*		Increased demand on aging infrastructure and services.	Development will result in higher urgency to upgrade/maintain existing infrastructure. Expansion will not be significantly affected by more hot days.
Sinai		Population to remain stable (Table 1.1)	Decrease or stabile population; but average age will increase (residents will be less mobile.)	No adopted land use plan		Less people needing emergency service/shelter.	No adopted land use plan

Table 4.21: Risks to Current and Future Assets by Community – Extreme Heat (*cont.)*

Community					Extreme Heat		
					Effects of Climate Change	Impacts	
	Current Assets:	Future Assets:	Expected Changes in Population Patterns	Expected Changes in Land Use and Development		Changes in Population Patterns	Change in Land Use and Development
Volga	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: less than or equal to 2.0% annually (Table 1.1)	Population will continue to increase. Primarily continuation of a young families with increased development of families transitioning to second residences.	Residential development will continue to expand westward in the short term and on the northeast in the long term. Nodal commercial development and infill redevelopment is expected. Industrial growth will continue in the east.	*Increasing Frequency of Extreme Heat*	Increased demand on aging infrastructure and services. Need for redundancy of water/electrical service is critical as population expands	Development will result in higher urgency to upgrade/maintain existing infrastructure. Expansion will not be significantly affected by more hot days.
White		Population increase: less than or equal to 1.0% annually (Table 1.1)	Continued construction of residences for families and workers at local industry.	Residential growth will continue east and west, with lower density development near the golf course on the north. Commercial development/ redevelopment is expected along arterials, and industrial growth will occur in the northwest		Increased demand on aging infrastructure and services. Need for redundancy of water/electrical service is critical as population expands	Development will result in higher urgency to upgrade/maintain existing infrastructure. Expansion will not be significantly affected by more hot days.

Table 4.22: Risks to Current and Future Assets by Community – Tornado

Community					Tornado		
					Effects of Climate Change	Impacts	
	Current Assets:	Future Assets:	Expected Changes in Population Patterns	Expected Changes in Land Use and Development		Changes in Population Patterns	Change in Land Use and Development
Brookings (County)	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: less than or equal to 1.1% annually (Table 1.1)	*Continued development on fringes of Brookings (southwest) and redevelopment near lakes (primarily retired or seasonal.)*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Increasing Frequency and Severity of Tornadoes*	Scattered residential development and expansion of seasonal development increase likelihood that loss of life and injury may occur again.	Demand has increased for permanent, seasonal, and transient housing near lakes increased likelihood of that population cluster (highest concentration in the summer) experiencing catastrophe.
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*		Increased population increases likelihood of tornado causing property or personal damage.	Compact, orderly development decreases the chances of isolated tornado damage. Lack of tornado safe room poses a risk for increased multi-family residential uses and recreational amenities.
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)	SDSU and local industry continues to drive population increase. The population increase is of varying ethnicity and age range, however college age/ young adults will continue to make up a larger proportion of population than most communities	Residential development will expand westward and southward until floodplain limits such development. The city is bookended on the north by SDSU which would require approx 1 mile of main line to connect new development to existing development. Commercial dev. will infill along US HWY 14 and expand E/W with Industrial growth.		Rental and congregate living increases need for tornado safe rooms and communication of when they are open, and where they are located.	New or expanded manufactured home courts should require tornado safe rooms/ storm shelters as part of permitting.

Table 4.22: Risks to Current and Future Assets by Community – Tornado *(cont.)*

Community					**Tornado**		
					Effects of Climate Change	***Impacts***	
	Current Assets:	*Future Assets:*	*Expected Changes in Population Patterns*	*Expected Changes in Land Use and Development*		*Changes in Population Patterns*	*Change in Land Use and Development*
Bruce	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*	*Increasing Frequency and Severity of Tornadoes*	Increased population increases likelihood of tornado causing property or personal damage.	No adopted land use plan
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		Increased population increases likelihood of tornado causing property or personal damage.	No adopted land use plan
Elkton		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Population will continue to increase. Primarily continuation of a young families and work-force aged residents*	*New residential development on the northwest, southwest, and southern edge of existing development. Short term growth expected to be infill and extending south to city limits boundary. Commercial development will be infill and along the highway. Industrial development along (north of) the railroad*		Parks, campgrounds, multi-family structures, schools, and care facilities will rely more frequently on tornado safe rooms	Compact, orderly development decreases the chances of isolated tornado damage. Lack of tornado safe room poses a risk for increased multi-family residential uses and recreational amenities.
Sinai		Population to remain stable (Table 1.1)	Decrease or stabile population; but average age will increase (residents will be less mobile.)	No adopted land use plan		Decreased population will result in less likelihood of residents being affected by tornado, however aging housing stock and average age of residents increases likelihood of severe property and phisical damage/ harm.	No adopted land use plan
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)	Population will continue to increase. Primarily continuation of a young families with increased development of families transitioning to second residences.	Residential development will continue to expand westward in the short term and on the northeast in the long term. Nodal commercial development and infill redevelopment is expected. Industrial growth will continue in the east.		Rental and congregate living increases need for tornado safe rooms and communication of when they are open, and where they are located.	New or expanded manufactured home courts, campgrounds and multi-family structures and recreational facilities should incorporate tornado safe rooms/ storm shelters as part of planning.
White		Population increase: less than or equal to 1.0% annually (Table 1.1)	Continued construction of residences for families and workers at local industry.	Residential growth will continue east and west, with lower density development near the golf course on the north. Commercial development/ redevelopment is expected along arterials, and industrial growth will occur in the northwest		Parks, campgrounds, multi-family structures, schools, and care facilities will rely more frequently on tornado safe rooms	Compact, orderly development decreases the chances of isolated tornado damage. Lack of tornado safe room poses a risk for increased multi-family residential uses and recreational amenities.

Table 4.23: Risks to Current and Future Assets by Community – Thunderstorm

Community					Thunderstorm (Including hail, lightning, high wind)		
					Effects of Climate Change	Impacts	
	Current Assets:	Future Assets:	Expected Changes in Population Patterns	Expected Changes in Land Use and Development		Changes in Population Patterns	Change in Land Use and Development
Brookings (County)	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: less than or equal to 1.1% annually (Table 1.1)	*Continued development on fringes of Brookings (southwest) and redevelopment near lakes (primarily retired or seasonal.)*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Increasing Frequency and Severity of thunderstorm lightning, and stronger winds.*	Many residents are re-developing sites or building in new subdivisions. These residences are following building code, and removing older, non-compliant structures. Increased population increases load on utilities which may not have been designed to handle expanded population.	Demand has increased for permanent, seasonal, and transient housing near lakes increased likelihood of physical harm or property damage.
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*		Increased population increases likelihood of storm causing property or personal damage.	New structures are less vulnerable to summer storms; however existing, aging structures in addition to overhead utilities in and outside town are vulnerable to storms.
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)	SDSU and local industry continues to drive population increase. The population increase is of varying ethnicity and age range, however college age/ young adults will continue to make up a larger proportion of population than most communities	Residential development will expand westward and southward until floodplain limits such development. The city is bookended on the north by SDSU which would require approx 1 mile of main line to connect new development to existing development. Commercial dev. will infill along US HWY 14 and expand E/W with Industrial growth.		Rental and congregate living increases need for storm shelters and communication of when they are open, and where they are located.	New/replacement/ refinished structures are less vulnerable to summer storms; however existing, aging structures in addition to overhead utilities in and outside town are vulnerable to storms.
Bruce		Population increase: 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		Increased population increases likelihood of storm causing property or personal damage.	No adopted land use plan
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		Increased population increases likelihood of storm causing property or personal damage.	No adopted land use plan
Elkton		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Population will continue to increase. Primarily continuation of a young families and work-force aged residents*	*New residential development on the northwest, southwest, and southern edge of existing development. Short term growth expected to be infill and extending south to city limits boundary. Commercial development will be infill and along the highway. Industrial development along (north of) the railroad*		Increased population increases likelihood of storm causing property or personal damage.	New structures are less vulnerable to summer storms; however existing, aging structures in addition to overhead utilities in and outside town are vulnerable to storms.

Table 4.23: Risks to Current and Future Assets by Community – Thunderstorm *(cont.)*

Community					**Thunderstorm (Including hail, lightning, high wind)**		
					Effects of Climate Change	***Impacts***	
	Current Assets:	*Future Assets:*	*Expected Changes in Population Patterns*	*Expected Changes in Land Use and Development*		*Changes in Population Patterns*	*Change in Land Use and Development*
Sinai	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population to remain stable (Table 1.1)	Decrease or stabile population; but average age will increase (residents will be less mobile.)	No adopted land use plan	*Increasing Frequency and Severity of thunderstorm lightning, and stronger winds.*	Decreased population will result in less likelihood of residents being affected by storm, however aging housing stock and average age of residents increases likelihood of severe property and phisical damage/ harm.	No adopted land use plan
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)	Population will continue to increase. Primarily continuation of a young families with increased development of families transitioning to second residences.	Residential development will continue to expand westward in the short term and on the northeast in the long term. Nodal commercial development and infill redevelopment is expected. Industrial growth will continue in the east.		Rental and congregate living increases need for storm shelters and communication of when they are open, and where they are located.	New/replacement/ refinished structures are less vulnerable to summer storms; however existing, aging structures in addition to overhead utilities in and outside town are vulnerable to storms.
White		Population increase: less than or equal to 1.0% annually (Table 1.1)	Continued construction of residences for families and workers at local industry.	Residential growth will continue east and west, with lower density development near the golf course on the north. Commercial development/ redevelopment is expected along arterials, and industrial growth will occur in the northwest		Increased population increases likelihood of storm causing property or personal damage.	New/replacement/ refinished structures are less vulnerable to summer storms; however existing, aging structures in addition to overhead utilities in and outside town are vulnerable to storms.

Table 4.24: Risks to Current and Future Assets by Community – Winter Storm

Community					**Winter Storms (Extreme Cold, Blizzard, Freezing Rain, Heavy Snow)**		
					Effects of Climate Change	***Impacts***	
	Current Assets:	*Future Assets:*	*Expected Changes in Population Patterns*	*Expected Changes in Land Use and Development*		*Changes in Population Patterns*	*Change in Land Use and Development*
Brookings (County)	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: less than or equal to 1.1% annually (Table 1.1)	*Continued development on fringes of Brookings (southwest) and redevelopment near lakes (primarily retired or seasonal.)*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Increasing Frequency and Severity of Winter Storms: including freezing rain, extreme cold, Blizzard, and heavy snow.*	Increased development/ demand for seasonal residence near lakes require expansion of services and increased efficiency of service. May require cooperative agreements with other jurisdictions/ special districts to provide utilities.	Increased residential development near fringes of towns and lakes will increase demand for "high density" services, however expense to provide those services will outpace revenue generated in taxes. Lake development will increase urgency in clearing collector streets leading to clusters, however roughly half of those residences are unoccupied through winter.
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*		Increased population increases likelihood of need for emergency services/ care during winter storms, therefore increased urgency for clearing evacuation routes and collectors. Higher proportion of families result in higher utility consumption / demand during likely more prolonged winter weather events.	Exposed/above ground utilities are at risk of damage with increased frequency. Increased population will be relying on aging infrastructure in the core of town.
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)	SDSU and local industry continues to drive population increase. The population increase is of varying ethnicity and age range, however college age/ young adults will continue to make up a larger proportion of population than most communities	Residential development will expand westward and southward until floodplain limits such development. The city is bookended on the north by SDSU which would require approx 1 mile of main line to connect new development to existing development. Commercial dev. will infill along US HWY 14 and expand E/W with Industrial growth.		Increased population increases likelihood of need for emergency services/ care during winter storms, therefore increased urgency for clearing evacuation routes and collectors. Higher proportion of families result in higher utility consumption / demand during likely more prolonged winter weather events.	Exposed/above ground utilities are at risk of damage with increased frequency. Overhead utilities in and outside town are vulnerable to storms.
Bruce		Population increase: 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		Aging population may need help with care/recovery following storms; more severe events increase difficulty of emergency service provision.	No adopted land use plan
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		Aging population may need help with care/recovery following storms; more severe events increase difficulty of emergency service provision.	No adopted land use plan

Table 4.24: Risks to Current and Future Assets by Community – Winter Storm *(cont.)*

Community					**Winter Storms (Extreme Cold, Blizzard, Freezing Rain, Heavy Snow)**		
					Effects of Climate Change	***Impacts***	
	Current Assets:	*Future Assets:*	*Expected Changes in Population Patterns*	*Expected Changes in Land Use and Development*		*Changes in Population Patterns*	*Change in Land Use and Development*
Elkton	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: less than or equal to 2.5% annually (Table 1.1)	*Population will continue to increase. Primarily continuation of a young families and work-force aged residents*	*New residential development on the northwest, southwest, and southern edge of existing development. Short term growth expected to be infill and extending south to city limits boundary. Commercial development will be infill and along the highway. Industrial development along (north of) the railroad*	*Increasing Frequency and Severity of Winter Storms: including freezing rain, extreme cold, Blizzard, and heavy snow.*	Increased population increases likelihood of need for emergency services/ care during winter storms. Higher proportion of families result in higher utility consumption / demand during likely more prolonged winter weather events.	Exposed/above ground utilities are at risk of damage with increased frequency. Increased population will be relying on aging infrastructure in the core of town, and services providing utilities to the community itself.
Sinai		Population to remain stable (Table 1.1)	Decrease or stabile population; but average age will increase (residents will be less mobile.)	No adopted land use plan		Aging population may need help with care/recovery following storms; more severe events increase difficulty of emergency service provision.	No adopted land use plan
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)	Population will continue to increase. Primarily continuation of a young families with increased development of families transitioning to second residences.	Residential development will continue to expand westward in the short term and on the northeast in the long term. Nodal commercial development and infill redevelopment is expected. Industrial growth will continue in the east.		Increased population increases likelihood of need for emergency services/ care during winter storms. Higher proportion of families result in higher utility consumption / demand during likely more prolonged winter weather events.	Exposed/above ground utilities are at risk of damage with increased frequency. Overhead utilities in and outside town are vulnerable to storms.
White		Population increase: less than or equal to 1.0% annually (Table 1.1)	Continued construction of residences for families and workers at local industry.	Residential growth will continue east and west, with lower density development near the golf course on the north. Commercial development/ redevelopment is expected along arterials, and industrial growth will occur in the northwest		Increased population increases likelihood of need for emergency services/ care during winter storms, therefore increased urgency for clearing evacuation routes and collectors.	Exposed/above ground utilities are at risk of damage with increased frequency. New development will account for those risks but is at mercy of existing/aging/ exposed infrastructure.

Table 4.25: Risks to Current and Future Assets by Community – Flooding

Community	[redacted]				Flooding (Heavy Rain, Rapid Snow Melt, Ice Jam)		
					Effects of Climate Change	Impacts	
	Current Assets:	Future Assets:	Expected Changes in Population Patterns	Expected Changes in Land Use and Development		Changes in Population Patterns	Change in Land Use and Development
Brookings (County)	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: less than or equal to 1.1% annually (Table 1.1)	*Continued development on fringes of Brookings (southwest) and redevelopment near lakes (primarily retired or seasonal.)*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Increasing frequency of heavy rain and rapid snow melt. Ice may continue to temporarily block culverts for short periods.*	Increased demand for residences in flood prone/ flood prone - adjacent areas. Incidence of isolation of residences due to water over roads, are expected to become more regular. More frequent occurrences of residents being able to leave the house, but primary transportation routes are impassible.	With existing regulations and policies, development is not anticipated within floodplains unless elevated above Base flood elevation. (See also Table 4.41)
Aurora		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*	*Continued dependence upon agricultural land uses in exurban areas. Increased development density near municipalities and expanded development is expected near developed lakes.*		Multi-family residential structures are expected to be constructed, after fill is placed in the small area shown in the floodplain.	With existing regulations and policies, development is not anticipated within floodplains unless elevated above Base flood elevation. (See also Table 4.42)
Brookings		Population increase: less than or equal to 1.5% annually (Table 1.1)	SDSU and local industry continues to drive population increase. The population increase is of varying ethnicity and age range, however college age/ young adults will continue to make up a larger proportion of population than most communities	Residential development will expand westward and southward until floodplain limits such development. The city is bookended on the north by SDSU which would require approx 1 mile of main line to connect new development to existing development. Commercial dev. will infill along US HWY 14 and expand E/W with Industrial growth.		Occupancy of structures within mapped floodplain will become tenant occupied due to increased flood frequency. May result in more disadvantaged populations residing in these structures.	With existing regulations and policies, development is not anticipated within floodplains unless elevated above Base flood elevation. (See also Table 4.43)
Bruce		Population increase: 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		Occupancy of structures within mapped floodplain will become tenant occupied or abandoned with increased flood frequency. May result in more disadvantaged populations residing in these structures.	No adopted land use plan
Bushnell		Population increase: less than or equal to 2.5% annually (Table 1.1)	*Decrease or stabile population; but average age will increase (residents will be less mobile.)*	*No adopted land use plan*		No mapped floodplain.	No adopted land use plan

Table 4.25: Risks to Current and Future Assets by Community – Flooding *(cont.)*

Community					Flooding (Heavy Rain, Rapid Snow Melt, Ice Jam)		
					Effects of Climate Change	Impacts	
	Current Assets:	Future Assets:	Expected Changes in Population Patterns	Expected Changes in Land Use and Development		Changes in Population Patterns	Change in Land Use and Development
Elkton	*See Table 1.1 [Population]; Table 4.28 Critical Structures in Brookings County. Description of effects on current assets are included in Tables 5.1 - 5.13 as part of description of mitigation activities to address specified hazards.*	Population increase: less than or equal to 2.5% annually (Table 1.1)	*Population will continue to increase. Primarily continuation of a young families and work-force aged residents*	*New residential development on the northwest, southwest, and southern edge of existing development. Short term growth expected to be infill and extending south to city limits boundary. Commercial development will be infill and along the highway. Industrial development along (north of) the railroad*	*Increasing frequency of heavy rain and rapid snow melt. Ice may continue to temporarily block culverts for short periods.*	No mapped floodplain.	No mapped floodplain. (See also Table 4.44)
Sinai		Population to remain stable (Table 1.1)	Decrease or stabile population; but average age will increase (residents will be less mobile.)	No adopted land use plan		Floodplain does not affect residences or structures within city limits however arterial/ evacuation routes are at risk of inundation during flooding. (This has occurred in the past.)	No adopted land use plan
Volga		Population increase: less than or equal to 2.0% annually (Table 1.1)	Population will continue to increase. Primarily continuation of a young families with increased development of families transitioning to second residences.	Residential development will continue to expand westward in the short term and on the northeast in the long term. Nodal commercial development and infill redevelopment is expected. Industrial growth will continue in the east.		Floodplain and low lying areas make west and southerly expansion difficult, but possible. Eastward expansion for more than one-half mile is nearly impossible due to Big Sioux floodplain. Population growth will occur in areas requiring floodproofed utility services. Care should be taken to minimize the effect flood has on construction of residences on the other side of drainage areas from existing development.	With existing regulations and policies, development is not anticipated within floodplains unless elevated above Base flood elevation. (See also Table 4.45)
White		Population increase: less than or equal to 1.0% annually (Table 1.1)	Continued construction of residences for families and workers at local industry.	Residential growth will continue east and west, with lower density development near the golf course on the north. Commercial development/ redevelopment is expected along arterials, and industrial growth will occur in the northwest		Population growth will occur in areas requiring floodproofed utility services. Care should be taken to minimize the effect flood has on construction of residences on the other side of drainage areas from existing development.	With existing regulations and policies, development is not anticipated within floodplains unless elevated above Base flood elevation. (See also Table 4.46)

ASSESSING VULNERABILITY: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

Requirement 201.6(c)(2)(ii). Local Mitigation Plan Review Tool – B2-c.
Requirement 201.6(c)(3)(ii). Local Mitigation Plan Review Tool – C2/C2-a.

Brookings County and all of its municipalities, with the exception of Bushnell, participate in the National Flood Insurance Program (NFIP). Table 4.15 below shows the entities that participate in the NFIP. FEMA is in the process of updating the county's flood hazard boundary map for areas near the Big Sioux River and Lake Poinsett. The County and the communities of Aurora, Brookings, Bruce, Elkton, Sinai, Volga, and White will continue to participate and ensure compliance of the participating local jurisdictions located within the floodplain.

Table 4.26: Communities Participating in the National Flood Program

Community Name	Community ID	Current Map Effective Date
Brookings County	460253	07/16/08(M)
Aurora	460051	07/16/08
Brookings	460004	07/16/08
Bruce	460005	07/16/08(M)
Bushnell	***Not Participating***	
Elkton	460172	07/16/08
Sinai	460098	07/16/08
Volga	460223	07/16/08
White	460148	07/16/08

In order to remain in good standing with FEMA/NFIP, each participating community has implemented and continues to enforce the local floodplain management regulations to regulate and permit development in SFHAs in accordance with the model ordinance provided by FEMA. The Brookings County Auditor maintains the flood zone maps and the Director of Equalization utilizes DFIRMS for all planning mechanisms occurring in the unincorporated areas of the county; specifically, development of new structures. Brookings County's flood zone maps available at the Community Development Office; the City of Brookings' are available with the City Engineer, all others are available at the Finance Office. Further they are all available via interactive map at: https://brookingscountysd.gov/197/Interactive-Maps.

Further, each individual community has appointed a designated floodplain administrator that requires elevation certificates and issues floodplain development permits for structures constructed within Zone A of the identified flood hazard areas, including those repairs or replacements on structures requiring permits due to substantial damage for substantial improvement in accordance with adopted floodplain regulations. The DFIRMS are used to determine where the natural drainage occurs and ensures that new development will not interrupt the natural drainage.

For all entities, with the exception of Bushnell, any application for building permit, use permit, subdivision, and public project is reviewed by the floodplain administrator of each respective community (See Table 4.18 for floodplain administrator). During the review for compliance with other terms of the zoning ordinance, the administrator (same as zoning officer in all cases) the floodplain administrator/zoning officer determines whether the proposed development is located within the Floodplain Protection District.

The floodplain administrators use the interactive map at https://brookingscountysd.gov/197/Interactive-Maps, which includes the effective flood hazard areas from the most recent Flood Insurance Study to determine whether proposed development is within the Floodplain Protection District. If further assistance is needed in the review, staff consults with First District Association of Local Government Staff, representatives of the applicant, state NFIP coordinator, and/or applicable representatives from FEMA Region 8. If it is determined the proposed development will be within the 100-year floodplain, the applicant is required to

contact a surveyor or engineer to complete an elevation certificate. The applicant may choose to add fill to the property, then use the surveyor or engineer to assist in submitting for a Letter of Map Change; or the applicant may choose to use the elevation certificate to complete a floodplain development application. The vast majority of projects completed within the floodplain utilize fill to raise the property above the base flood elevation before construction or are completing projects in which water can freely flow through (such as pillars of a deck.)

Bushnell does not require building permits, so in those cases the finance officer contacts the owner of property whenever a project commences within the identified floodplain to ensure that the same process is followed as is described above for the other towns and county.

All of the jurisdictions which are participating in the NFIP require the lowest floor of structures to be constructed above base flood elevation. Requiring any additional free-board was not palatable to the residents, nor elected officials of any of the jurisdictions within Brookings County. However, all communities included substantial damage and substantial improvement provisions in accordance with the template provided to communities in South Dakota by FEMA. In all, neither the emergency management director, nor any other staff members are aware of any cases of damage to 50% of the total value of any residence or structure in Brookings County. Historically, when damages do occur to structures staff follows up to find out whether the owner intends to replace or remodel. Typically structures within the floodplain either have minor modifications or are entirely replaced.

ADDRESSING VULNERABILTY: REPETITIVE LOSS PROPERTIES

Requirement 201.6(c)(2)(ii). Local Mitigation Plan Review Tool – B2-c.
Requirement 201.6(c)(3). Local Mitigation Plan Review Tool – C2/C2-a.

Due to various geomorphologic and topographical conditions, periodic flooding affects numerous areas in both incorporated and unincorporated areas of the County. Property adjacent to Lake Poinsett, Lake Oakwood, and Lake Campbell are most prone to flooding in Brookings County. Residential development occurred adjacent to numerous lakes in Brookings County, particularly Lake Poinsett, long before the initial flood hazard boundaries being identified in December of 1977. As a result, numerous structures already existed at the time of adoption of the first map and continue to be lived in today. Numerous structures, primarily residentially used are located within Flood Hazard Areas currently identified as Zone A. Many structures located within the County have experienced flooding or are required to be insured against flood due to their proximity to special flood hazard areas. The County has a total of nine hundred five (905) flood insurance policy holders. The vast majority of those policies insure residents adjacent to the numerous lakes in Brookings County.

Table 4.27: Brookings County National Flood Insurance Program Statistics

Community Name	Current NFIP Policies	Number of Claims Paid Since 1978	Total Value of Claims Paid	Flood Insurance Coverage	Repetitive Loss Properties
City of Aurora	1	0	$0.00	0	0
City of Brookings	69	17	$182,329.00	47	1
City of Bruce	13	11	$33,852.00	12	0
Unincorporated areas of Brookings County	119	52	$587,014.00	87	5
Totals	**202**	**80**	**$803,195.00**	**146**	**6**

SOURCE : FEMA Region 8 Flood Insurance Liaison

The PDM Planning Team focused attention particularly on flood related issues. An issue of primary concern is the number of times specific properties and structures on those properties flood. The City of Brookings and rural Brookings County combine to have six (6) total repetitive loss properties. All six (6) are single family residences. Repetitive loss properties are those for which two or more losses of at least $1,000 each have been paid under the National Flood Insurance Program (NFIP) within any ten-year period. A goal of the County is to protect specific areas in the county from flooding. This goal aims to protect properties prone to flood losses but does not discount the possibility that in some cases structures located in the floodplain may need to be removed.

ADDRESSING VULNERABILTY: SEVERE REPETITIVE LOSS PROPERTIES

Requirement 201.6(c)(2)(ii). Local Mitigation Plan Review Tool – B2-c.
Requirement 201.6(c)(3). Local Mitigation Plan Review Tool – C2/C2-a.

The Flood Insurance Reform Act of 2004 identified another category of repetitive loss: severe repetitive loss, which is defined as "a single-family property (consisting of one to four residences) covered by the NFIP flood insurance that has incurred flood-related damage leading to either:

1. Four or more separate claims payments (paid under flood insurance coverage) exceeding $5,000 per claim, with a cumulative total exceeding $20,000; or
2. At least two separate claims payments where the cumulative amount exceeds the reported value of the property.

Currently, Brookings County does not have any properties classified "severe repetitive loss."

ASSESSING VULNERABILITY: IDENTIFYING STRUCTURES

Requirement 201.6(c)(2)(ii). Local Mitigation Plan Review Tool – B2-a-c.

One of the primary purposes of this PDM is to identify and equip critical facilities, emergency shelters, and summer storm shelters with the ability to provide essential energy for continued access to sanitation and maintain vital functions during a natural hazard occurrence. In the event of a disaster resulting from severe summer or winter storms, terrorist attacks, or hazardous materials incidents, the County and participating entities will have the ability to prevent further loss of life with generator-powered shelters. The communities throughout the County have many structures that are vital to emergency operations.

Each jurisdiction was responsible for listing critical infrastructure within their communities. Table 4.28 is a list of critical facilities that would cause the greatest distress in the county if destruction occurred. The information provided in the table below was compiled via survey of the participating communities.

Table 4.28: Critical Infrastructure in Brookings County

Jurisdiction/ Entity	Location	Address	Sector	Sub sector	Name	Owner Type
Sioux Valley Energy	Rural Brookings County	Not Specified	Non-Emergency Response Facility	Electrical Substations (8)	Sioux Valley Energy	Private
Brookings County	Brookings County	315 7th Avenue	Government Facility	Building	Sheriff's Office and Detention Center	Public
Brookings County	Brookings County	314 6th Avenue	Government Facility	Building	Courthouse	Public
Brookings County	Brookings County	40th St S and County 77	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings County	Brookings County	215th St and 470th Ave	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings County	City of Bruce	Co. Road 6	Transportation	Evacuation Route	Co. Road 6	Public
Brookings County	City of White	Co. Road 25	Transportation	Evacuation Route	Co. Road 25	Public
Brookings County	Town of Sinai	Co. Road 11	Transportation	Evacuation Route	Co. Road 11	Public
Brookings County	City of Elkton	Co. Road 30 & 33	Transportation	Evacuation Route	Co. Road 30 & 33	Public
Aurora	City of Aurora	101 Nicolett St	Emergency Services	Building	Fire Department	Public
Aurora	City of Aurora		Population to Protect	Manufactured Homes	Trailer Court	Public
Aurora	City of Aurora		Government Facility	Building	City Shop - Generator/ City Offices	Public
Aurora	City of Aurora	206 Lilac Ave	Population to Protect	Day Care	Jessica Waldner Day Care	Private
Aurora	City of Aurora		Telecommunications	Telephone	Cell Tower	Private
Aurora	City of Aurora		Telecommunications	Switch/Router	Interstate Telecom (ITC)	Private
Aurora	City of Aurora		Non-Emergency Response Facility	Sanitary Sewer	Lift Station (3)	Public
Aurora	City of Aurora		Non-Emergency Response Facility	Sanitary Sewer	Lagoons	Public
Aurora	City of Aurora		Population to Protect	Building	Apartments	Private
Aurora	City of Aurora		Population to Protect	Park	Campground	Public
Aurora	City of Aurora		Population to Protect	Buildings	Manufactured Home Court	Private
Aurora	City of Aurora	304 Broadway St	Population to Protect	Emergency Shelter	St. William Abbot Catholic Church	Private

Jurisdiction/ Entity	Location	Address	Sector	Sub sector	Name	Owner Type
Aurora	City of Aurora	201 E Pine St	Population to Protect	Emergency Shelter	First Impact Church	Private
Aurora	City of Aurora		Non-Emergency Response Facility	Water Supply – Tower	New City Water Tower	Public
Brookings	City of Brookings		Non-Emergency Response	Bridge on Evacuation Route	US 14B Bridge (Big Sioux River)	Public
Brookings	City of Brookings		Non-Emergency Response	Bridge on Evacuation Route	US 14 Bridge (Big Sioux River)	Public
Brookings	City of Brookings	422 Western Ave.	Government Facility	Emergency Fuel Facility	Brookings County Highway Department	Public
Brookings	City of Brookings	520 3rd Street	Government Facility	Building	City Hall	Public
Brookings	City of Brookings	311 3rd Avenue	Emergency Services	Building	Police Station	Public
Brookings	City of Brookings	311 3rd Avenue	Emergency Services	Building	Fire Station #1	Public
Brookings	City of Brookings	607 20th Avenue	Emergency Services	Building	Fire Station #2	Public
Brookings	City of Brookings	530 22nd Avenue	Emergency Services	Building	Fire Station #3	Public
Brookings	City of Brookings	32nd Street	Emergency Services	Building	Fire Station #4	Public
Brookings	City of Brookings	Western Avenue	Emergency Services	Building	Fire Station - Airport	Public
Brookings	City of Brookings	824 32nd Avenue	Government Facility	Emergency Shelter	Dacotah Bank Center/Storm Shelter	Public
Brookings	City of Brookings		Non-Emergency Response Facility	Water Supply – Tower	Water Tower	Public
Brookings	City of Brookings	22nd Avenue S. and Olwein St	Non-Emergency Response Facility	Water Supply	Water Tower	Public
Brookings	City of Brookings	3000 8th Street South & 2304 Medary Ave	Non-Emergency Response Facility	Water Supply – Wells	Treatment Plant	Public
Brookings	City of Brookings	21660 470th Ave	Non-Emergency Response Facility	Sanitary Sewer	Wastewater Treatment	Public
Brookings	City of Brookings	405 1st Avenue	Non-Emergency Response Facility	Emergency Shelter	URC Shelter-Non-Profit	Public
Brookings	City of Brookings	415 4th Street	Communications	Telephone, Internet, Cable Services	Swiftel Telecommunications	Public
Brookings	City of Brookings	22nd & 6th Street	Telecommunications	Switch/Router	Interstate Telecom (ITC)	Private
Brookings	City of Brookings	22nd Avenue S.	Non-Emergency Response Facility	Natural Gas Supply	Utilities	Private
Brookings	City of Brookings	300 22nd Avenue	Emergency Response Facility	Building	Brookings Hospital	Public

Jurisdiction/ Entity	Location	Address	Sector	Sub sector	Name	Owner Type
Brookings	City of Brookings	2300 Yorkshire Drive	Emergency Response Facility	Building	Ambulance Facility	Public
Brookings	City of Brookings		Non-Emergency Response Facility	Electrical Supply	Sub Station	Public
Brookings	City of Brookings	127 7th Avenue	Government Facility	Transportation	Street Department	Public
Brookings	City of Brookings	47352 307th Street	Non-Emergency Response Facility	Waste Facility	Landfill	Public
Brookings	City of Brookings		Public Institution	Education	South Dakota State University	Public
Brookings	City of Brookings	520 Elm Avenue	Public Institution	Education	Brookings High School	Pubic
Brookings	City of Brookings	1801 12th Street	Public Institution	Education	Mickelson Middle School	Public
Brookings	City of Brookings	1401 15th Street	Public Institution	Education	Camelot Intermediate School	Public
Brookings	City of Brookings	304 15th Avenue	Public Institution	Education	Hillcrest Elementary School	Public
Brookings	City of Brookings	718 5th Street	Public Institution	Education	Medary Elementary School	Public
Brookings	City of Brookings	111 26th Street South	Public Institution	Education	Dakota Prairie Elementary School	Public
Brookings	City of Brookings		Non-Emergency Response Facility	Electrical Supply	Sub Station	Public
Brookings	City of Brookings		Non-Emergency Response Facility	Electrical Supply	Sub Station	Public
Brookings	City of Brookings	1313 Western Ave	Non-Emergency Response Facility	Transportation	BATA Facility	Public
Brookings	City of Brookings	405 1st Ave	Population to Protect	Nursing Home/ Assisted Living	United Living Community	Private
Brookings	City of Brookings	2421 Yorkshire Dr	Population to Protect	Nursing Home/ Assisted Living	The Neighborhoods at Brookview	Private
Brookings	City of Brookings	104 4th St	Population to Protect	Nursing Home/ Assisted Living	Park Place Assisted Living	Private
Brookings	City of Brookings	1906 12th St S	Population to Protect	Nursing Home/ Assisted Living	StoneyBrook Suites Assisted Living	Private
Brookings	City of Brookings	2015 8th St S	Population to Protect	Nursing Home/ Assisted Living	Edgewood Brookings	Private
Brookings	City of Brookings	900 20th St S	Population to Protect	Nursing Home/ Assisted Living	Peaceful Pines Senior Living	Private
Brookings	City of Brookings	748 22nd Ave S	Population to Protect	Nursing Home/ Assisted Living	Independent Living Choices Brookings	Private

Jurisdiction/ Entity	Location	Address	Sector	Sub sector	Name	Owner Type
Brookings	City of Brookings	908 Hope Dr	Population to Protect	Non-Profit Organization	United Way & Food Pantry	Private
Brookings	City of Brookings	121 10th St W	Population to Protect	Recreation	Campgrounds	Public
Brookings	City of Brookings	PRIVATE	Population to Protect	Non-Profit Organization	Domestic Abuse Shelter	Private
Brookings	City of Brookings	520 3rd St	Building	Storm Shelter	City County Government Center	Public
Brookings	City of Brookings	10th Street and HWY 14	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	Medary Ave and 15th St	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	13th Street and 7th Ave	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	2nd St South and 8th Ave South	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	472nd Ave and Western Estate Rd	Population to Protect	Manufactured Home Court	Western Estates	Private
Brookings	City of Brookings	20th Street and 472nd Ave	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	3rd Avenue and 2nd Street	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	8th Avenue and 6th Street	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	Medary Avenue and Vine Street	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	5th Avenue S and 7th Street	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Brookings	City of Brookings	3rd Avenue and 5th Street	Population to Protect	Manufactured Home Court	Manufactured Home Court	Private
Bruce	City of Bruce	507 Jay Street	Government Facility	Building	City Hall	Public
Bruce	City of Bruce	525 Jay Street	Government Facility	Building	Fire Hall	Public
Bruce	City of Bruce	NW ¼ of STR 7-111-50	Non-Emergency Response	Sanitary Sewer – Lagoon	City Lagoon	Public
Bruce	City of Bruce	611 Washington Street	Non-Emergency Response	Sanitary Sewer – Lift Station	Lift Station	Public
Bruce	City of Bruce	409 Jefferson Street	Population to Protect	Building	Community Club	Private
Bruce	City of Bruce	608 Jay Street	Non-Emergency Response	Building	City Shop	Public
Bruce	City of Bruce	418 Madison Street	Population to Protect	Recreation	Campground	Public
Bruce	City of Bruce	308 Wagner Street	Population to Protect	Recreation	City Park	Public

Jurisdiction/ Entity	Location	Address	Sector	Sub sector	Name	Owner Type
Bruce	City of Bruce	213 2nd Street	Population to Protect	Recreation	Ballfield	Public
Bruce	City of Bruce	5th Street and Jay Street	Non-Emergency Response	Electrical Supply	Sub Station	Public
Bushnell	Town of Bushnell	47821 Main Street	Government Facility	Building	City Hall	Public
Bushnell	Town of Bushnell	47821 Main Street	Non-Emergency Response Facility	Water Supply - Well	City Well	Public
Bushnell	Town of Bushnell	47821 Main Street	Communications	Emergency Services	Storm Siren	Public
Bushnell	Town of Bushnell	Main St/2nd Avenue	Population to Protect	Park	City Park	Public
Bushnell	Town of Bushnell	21078 478th Avenue	Non-Emergency Response Facility	Electrical Supply	Ottertail Transformer	Private
Elkton	City of Elkton	109 Elk Street	Emergency Services	Building	Ambulance/Fire Department	Public
Elkton	City of Elkton	800 Buffalo Street	Public Institution	Education	Elkton School	Public
Elkton	City of Elkton	1 Block N of E 2nd Street & Badger Street	Non-Emergency Response Facility	Water Services – Water Storage	Elkton Water tower	Public
Elkton	City of Elkton	485th Ave/218th St	Non-Emergency Response Facility	Sanitary Sewer	Lagoons	Public
Elkton	City of Elkton	Beaver Street	Non-Emergency Response Facility	Electrical Supply	Ottertail Power	Private
Elkton	City of Elkton	206th Buffalo Street	Government Facility	Building	City Shop	Public
Elkton	City of Elkton	1st Street E	Telecommunications	Switch/Router	Interstate Telecom (ITC)	Private
Elkton	City of Elkton	302nd Beaver Street	Non-Emergency Response Facility	Sanitary Sewer	Lift Station	Public
Elkton	City of Elkton	215 3rd Street	Non-Emergency Response Facility	Sanitary Sewer	Lift Station	Public
Elkton	City of Elkton	470 5th Street	Non-Emergency Response Facility	Sanitary Sewer	Lift Station	Public
Elkton	City of Elkton	Marshal Street & 1st Street	Communications	Cell Tower	Cell Tower	Private
Elkton	City of Elkton	Cornel Avenue	Non-Emergency Response Facility	Water Services	Rural Water	Private
Elkton	City of Elkton		Transportation	Railroad	Elkton Railroad	Private
Elkton	City of Elkton	3rd Street	Population to Protect	Park	Campground	Private
Sinai	Town of Sinai	318 Main Street	Government Facility	Building	Sinai City Hall	Public
Sinai	Town of Sinai	311 Main Street	Government Facility	Building	Sinai Fire Department	Public
Sinai	Town of Sinai	309 Main Street	Non-Emergency Response Facility	Building	American Legion Hall	Public

Jurisdiction/ Entity	Location	Address	Sector	Sub sector	Name	Owner Type
Sinai	Town of Sinai	302 Main Street	Communication	Emergency Services	Storm Siren	Public
Sinai	Town of Sinai	216 2nd Street	Non-Emergency Response Facility	Building	City Maintenance Shed	Public
Sinai	Town of Sinai	2nd Street W	Non-Emergency Response Facility	Building	City Storage Building	Public
Sinai	Town of Sinai	458th Ave & 217th Street	Non-Emergency Response	Sanitary Sewer – Lagoon	City Lagoon	Public
Sinai	Town of Sinai	2nd St W & Main Ave	Non-Emergency Response	Sanitary Sewer – Lift Station	Lift Station	Public
Volga	City of Volga	NW of 109 Samara Avenue	Non-Emergency Response	Electrical Supply	West Substation	Public
Volga	City of Volga	SW Corner of 100 Caspian Avenue	Non-Emergency Response	Electrical Supply	East Substation	Public
Volga	City of Volga	125 W 2nd Street	Population to Protect	Assisted Living	Dakota Sun	Private
Volga	City of Volga	226 Kasan Avenue	Government Facility	Building	City Hall	Public
Volga	City of Volga	226 Kasan Avenue	Government Facility	Building	Fire Hall	Public
Volga	City of Volga	220 E Hwy 14	Population to Protect	Manufactured Home Court	DC Court	Private
Volga	City of Volga	222 E Hwy 14	Population to Protect	Manufactured Home Court	Valley Village	Private
Volga	City of Volga	315 Samara Avenue	Population to Protect	Manufactured Home Court	Sand Creek	Private
Volga	City of Volga	200 Hansina Avenue	Population to Protect	Education	Sioux Valley School	Public
Volga	City of Volga	226 E 6th street	Population to Protect	Education	Volga Christian School	Private
Volga	City of Volga	(West of City)	Non-Emergency Response	Water Supply – Wells	City Well	Public
Volga	City of Volga	120 E 1st Street	Non-Emergency Response	Water Supply – Tower	City Water Tower	Public
Volga	City of Volga	Throughout the City	Non-Emergency Response	Water Supply – Transmission Lines	City Water Lines	Public
Volga	City of Volga	304 Caspian Avenue	Non-Emergency Response	Sanitary Sewer – Lagoon	City Lagoon	Public
Volga	City of Volga	E of 217 E 7th Street	Non-Emergency Response	Sanitary Sewer – Lift Station	Lift Station	Public
Volga	City of Volga	222 E HWY 14	Non-Emergency Response	Sanitary Sewer – Lift Station	Lift Station	Public
Volga	City of Volga	W of 101 Edman Avenue	Non-Emergency Response	Sanitary Sewer – Lift Station	Lift Station	Public
Volga	City of Volga	212 Kasan Avenue	Government Facility	Emergency Shelter	Auditorium	Public

Jurisdiction/ Entity	Location	Address	Sector	Sub sector	Name	Owner Type
Volga	City of Volga	109 Samara Avenue	Government Facility	Emergency Shelter	Community Center	Public
Volga	City of Volga	515 Samara Avenue	Population to Protect	Apartment(s)	Country View	Private
Volga	City of Volga	W of 99 Caspian Avenue	Communications	Cell Tower	Cell Tower	Private
Volga	City of Volga	6th Street and Caspian Ave	Non-Emergency Response	Water Supply Tower	750,000 Gallon water tower	Public
Volga	City of Volga	Watts Street	Non-Emergency Response	Sanitary Sewer	Lift Station	Public
Volga	City of Volga	601 Samara Ave	Population to Protect	Apartments	Westside Apartments	Private
Volga	City of Volga	109 Samara Ave	Government Facility	Building	City Street Shop	Public
Volga	City of Volga	120 E 1st Street	Communications	Cell Tower	Cell Tower	Private
Volga	City of Volga	South of HWY 14	Transportation	Railroad	Rapid City, Pierre & Eastern	Private
Volga	City of Volga	225 Samara Ave	Population to Protect	Park	Swimming Pool	Public
Volga/Brookings County	Brookings County	East of Volga	Non-Emergency Response	Bridge on Evacuation Route	US 14 Bridge (E of Volga)	Public
White	City of White	499 S Hooker Ave	Utility	Substation	Substation	Private
White	City of White	NE Corner of 477th Ave & 204th St	Non-Emergency Response Facility	Sanitary Sewer	City Lagoons	Public
White	City of White	100 S School Ave	Public Institution	School	Deubrook School	Public
White	City of White	300 W Main St	Government Facility	City Hall	White City Hall	Public
White	City of White	104 N Lincoln Ave	Telecommunications	Private	ITC Telecommunications	Private
White	City of White	210 W Main St	Government Facility	Building	White Fire Department	Public
White	City of White	107 N Lincoln Ave	Non-Emergency Response Facilities	Water Services	White Water tower	Public
White	City of White	102 W 5th Street	Emergency Response Facility	Building	Storm Shelter	Private
White	City of White	269 E 2nd St	Population to Protect	Park	Park/ Campground	Public
White	City of White	511 W 5th St	Population to Protect	Public Park	Athletic Complex	Public
White	City of White	302 E 5th St	Population to Protect	Building	White Medical Clinic	Private
White	City of White	301 N Hooker Ave	Population to Protect	Building	Daycare	Private
White	City of White	206 W 1st St	Population to Protect	Building	Daycare	Private

ASSESSING VULNERABILITY: COMMUNITY CAPABILITIES

Requirement 201.6(c)(3) Local Mitigation Plan Review Tool – C1(a-b).
Requirement 201.6(c)(3). Local Mitigation Plan Review Tool – C2/C2-a.

Each community possesses a unique set of capabilities, including authorities, policies, programs, staff, funding, and other resources for accomplishing effective mitigation. One crucial step in assessing a community's vulnerability is to objectively review the capabilities to implement mitigation strategies and identify any limiting factors.

To achieve this, each community examined its existing administrative documents, procedures, and policies. This review enabled the communities and the planning team to evaluate how current capabilities either alleviate or exacerbate vulnerability to disaster impacts. Table 4.18 identifies the administrative and technical competences of each community, including the individuals responsible for those roles. Table 4.19 encapsulates the efficacy of the specified planning mechanisms regarding disaster mitigation and identifies potential deficiencies in the plans.

Table 4.29: Administrative and Technical Capabilities

Administrative/ Staff Composition	Local Jurisdiction								
	Aurora	***Brookings***	***Bruce***	***Bushnell***	***Elkton***	***Sinai***	***Volga***	***White***	***Brookings County***
Board of Adjustment	Planning Commission	Appointed	Elected Officials	NA	Elected Officials	NA	Elected Officials	Elected Officials	Planning Commission
Building Official	NA	Appointed	NA	NA	NA	NA	NA	NA	Appointed
Community Planner	NA	Appointed	NA	NA	NA	NA	NA	NA	Appointed
Elected Officials	Aldermanic	Commission	Aldermanic	Trustee	Aldermanic	Trustee	Aldermanic	Aldermanic	Commission
Emergency Manager	NA	NA	NA	NA	NA	NA	NA	NA	Appointed/ Zoning Officer
Engineer/Highway Superintendent	NA	Appointed	NA	NA	NA	NA	NA	NA	Appointed
Floodplain Administrator	Finance Officer/ Maintenance Supervisor	City Engineer	Finance Officer	NA	Finance Officer	Finance Officer	City Manager	Finance Officer	Zoning Officer
GIS Coordinator	NA	City GIS Coordinator	NA	NA	NA	NA	NA	NA	County GIS Coordinator
Planning Commission	Appointed	Appointed	NA	NA	Elected Officials	NA	Elected Officials	Elected Officials	Appointed
Zoning Officer	Finance Officer/ Maintenance Supervisor	Appointed	Finance Officer	NA	Finance Officer	NA	Finance Officer	Finance Officer & Mayor	Appointed
Grant Writing Capability	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*	Yes*
Non-profit organizations focused on environmental protection.	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**	Yes**
Public-Private partnership initiatives addressing disaster-related issues.	No	No	No	No	No	No	No	No	No

NA: This Jurisdiction has nobody serving in this role.
* *First District Association of Local Governments provides these services without cost.*
** *East Dakota Watershed Development District.*

Table 4.30: Capabilities of Growth Guidance Instruments

Capabilities of Community Planning Mechanisms	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	Brookings County
Does the Future Land-Use Map identify natural hazard areas?	Y	Y	NA	NA	Y	NA	Y	Y	Y
Do the land-use policies discourage development or redevelopment within natural hazard areas?	Y	Y	Y	NA	Y	NA	Y	Y	Y
Does the plan provide adequate space for expected future growth in areas located outside natural hazard areas?	Y	Y	NA	NA	Y	NA	Y	Y	Y
Does the transportation plan limit access to hazard areas?	N	N	NA	NA	N	NA	N	N	N
Is transportation policy used to guide growth in safe locations?	Y	Y	NA	NA	Y	NA	N	Y	Y
Are movement systems designed to function under disaster conditions (e.g., evacuation)?	Y	Y	NA	NA	Y	NA	Y	Y	Y
Are environmental systems that protect development from hazards identified and mapped?	N	N	NA	NA	N	NA	N	N	N
Do environmental policies provide incentives to development that is located outside protective ecosystems?	N	N	NA	NA	N	NA	N	N	N
Do environmental policies maintain and restore protective ecosystems?	N	N	NA	NA	N	NA	N	N	Y
Are the goals and policies of the comprehensive plan related to those of the FEMA Local Hazard Mitigation Plan?	N	N	NA	NA	N	NA	N	N	N

Capabilities of Community Planning Mechanisms	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	Brookings County
Is safety explicitly included in the plan's growth and development policies?	Y	Y	NA	NA	Y	NA	Y	Y	Y
Does the monitoring and implementation section of the plan cover safe growth objectives?	N	N	NA	NA	N	NA	N	N	N
Does the Zoning Ordinance conform to the comprehensive plan in terms of discouraging development or redevelopment within natural hazard areas?	Y	Y	NA	NA	Y	NA	Y	Y	Y
Does the zoning ordinance contain natural hazard overlay zones that set conditions for land use within such zones?	Y	Y	NA	NA	Y	NA	Y	Y	Y
Do rezoning procedures recognize natural hazard areas as limits on zoning changes that allow greater intensity or density of use?	N	Y	NA	NA	N	NA	Y	N	Y
Does the zoning ordinance restrict development within, or filling of, wetlands, floodways, and floodplains?	Y	Y	Y	NA	Y	NA	Y	Y	Y
Do the subdivision regulations restrict the subdivision of land within or adjacent to natural hazard areas?	Y	Y	NA	NA	NA	NA	NA	Y	Y
Do the subdivision regulations provide for conservation subdivisions or cluster subdivisions in order to conserve environmental resources?	N	N	NA	NA	NA	NA	NA	N	Y
Do the subdivision regulations allow density transfers where Hazard areas exist?	N	N	NA	NA	NA	NA	NA	N	N

NA: This jurisdiction does not have the specified document.

ASSESSING VULNERABILITY: ESTIMATING POTENTIAL LOSSES

Requirement 201.6(b)(3). Local Mitigation Plan Review Tool – A4/A4-a.
Requirement 201.6(c)(2)(ii). Local Mitigation Plan Review Tool – B2-a-c.
Requirement 201.6(c)(3). Local Mitigation Plan Review Tool – C2.
Requirement 201.6(d)(3). Local Mitigation Plan Review Tool – E1-a.

The data presented in the following tables was collected from the Brookings County Director of Equalization. Any inconsistencies or gaps in information are due to the absence of existing mechanisms, plans, and technical documents available.

The assessor's office provided the assessed valuation of all structures on every property within the incorporated and rural areas of the county. The data provides the total value for structures a certain use on property. It was not possible to discern the number of structures per lot, so the actual number of structures is based on the number of parcels with the specified use type. For the purposes of this plan only Residential, Commercial/Industrial, Agricultural, and Manufactured Homes were included. More specifically, all agricultural structures were included; only primary residential structures (houses, apartments, etc.) and not including sheds, lean-tos, and garages were included. All commercial or industrial structures were included, whether considered primary or accessory structures. Public or quasi-publicly owned structures and other structures for which the Department of Equalization did not have an assessed value were not included in the calculation. Structures throughout the incorporated and unincorporated portions of the county were reviewed based upon updated, preliminary flood hazard areas (Zone "A") boundaries which are required to be adopted by the applicable jurisdictions in early 2025. If it was determined any structures on the applicable lot were located within the flood hazard area, the total assessed value for structures on said lot was included in the value of structures in the hazard area. The information does not account for letters of map amendment or letters of map revision which may have been approved.

All properties with structures, whether owner occupied or not were included in the valuations provided in Tables 4.31 through 4.40. The reports provided by the assessor's office did not include the number of people in each structure; thus, many of the tables are missing this information, so the degree to which the number of people of affected may vary depending upon the occupancy status (owner occupied / leased / seasonal). The following tables also do not address information regarding religious, governmental, or utility structures.

Table 4.31: Brookings County (Rural Area)
Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in County	# in HA	% in HA	$ in County	$ in HA	% in HA	# in Rural Areas	# in HA	% in HA
Residential	1,978	776	39.23	$230,352,500	$84,655,600	36.75	6,703	1812	27.03
Commercial/Industrial	120	36	30.00	$72,434,200	$27,349,400	37.76			
Agricultural	1,427	789	55.29	$55,538,100	$26,805,700	48.27			
Mobile Homes	15	8	53.33	$740,400	$413,800	55.89		19	0.28
Total	3,540	1609	45.45	$359,065,200	$139,224,500	38.77	6,703	1,830	27.31

Table 4.32: Aurora Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	301	0	0.00	$26,814,400	$0	0.00	1,047	0	0.00
Commercial/Industrial	19	0	0.00	$3,240,700	$0	0.00			
Agricultural	0	0	0.00	$0	$0	0.00			
Manufactured Home	0	0	0.00	$0	$0	0.00		0	0.00
Total	320	0	0.00	$30,055,100	$0	0.00	1,047	0	0.00

Table 4.33: Brookings Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	4,786	85	1.78	$662,614,400	$8,492,000	1.28	23,377	198	0.85
Agricultural	699	49	7.01	$383,827,000	$22,612,400	5.89			
Commercial/Industrial	42	14	33.33	$327,600	$110,800	33.82			
Manufactured Home	3	0	0.00	$50,700	$0	0.00		0	0.00
Total	5,530	148	2.68	$1,046,819,700	$31,215,200	2.98	23,377	198	0.85

Table 4.34: Bruce Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	97	44	45.36	$5,352,600	$1,864,500	34.83	210	79	37.61
Agricultural	28	5	17.86	$1,370,700	$186,700	13.62			
Commercial/Industrial	1	0	0.00	$700	$0	0.00			
Manufactured Home	4	3	75.00	$212,000	$125,800	59.34		5	2.56
Total	130	52	40.00	$6,936,000	$2,177,000	31.39	210	84	40.17

Table 4.35: Bushnell Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	36	0	0.00	$1,854,000	$0	0.00	71	0	0.00
Agricultural	4	0	0.00	$80,800	$0	0.00			
Commercial/Industrial	5	0	0.00	$119,500	$0	0.00			
Manufactured Home	0	0	0.00	$0	$0	0.00		0	0.00
Total	45	0	0.00	$2,054,300	$0	0.00	71	0	0.00

Table 4.36: Elkton Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	277	0	0.00	$19,685,100	$0	0.00	755	0	0.00
Agricultural	54	0	0.00	$4,382,800	$0	0.00			
Commercial/Industrial	2	0	0.00	$4,300	$0	0.00			
Manufactured Home	0	0	0.00	$0	$0	0.00		0	0.00
Total	333	0	0.00	$24,072,200	$0	0.00	755	0	0.00

Table 4.37: Sinai Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	64	6	9.38	$2,563,600	$2,563,600	100.00	99	10	10.53
Agricultural	2	0	0.00	$620,600	$0	0.00			
Commercial/Industrial	0	0	0.00	$0	$0	0.00			
Manufactured Home	0	0	0.00	$0	$0	0.00		0	0.00
Total	66	6	9.09	$3,184,200	$2,563,600	80.51	99	10	10.53

Table 4.38: Volga Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	562	1	0.18	$69,032,500	$292,700	0.42	2,113	2	0.11
Agricultural	84	7	8.33	$14,722,000	$1,241,900	8.44			
Commercial/Industrial	12	6	50.00	$33,400	$15,700	47.01			
Manufactured Home	2	0	0.00	$51,000	$0	0.00		0	0.00
Total	660	14	2.12	$83,838,900	$1,550,300	1.85	2,113	2	0.11

Table 4.39: White Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	203	2	0.99	$15,158,700	$67,800	0.45	537	4	0.79
Agricultural	35	2	5.71	$2,133,400	$297,900	13.96			
Commercial/Industrial	5	2	40.00	$83,800	$50,800	60.62			
Manufactured Home	0	0	0.00	$0	$0	0.00		0	0.00
Total	243	6	2.47	$17,375,900	$416,500	2.40	537	4	0.79

Table 4.40: Brookings County (Total)
Estimated Potential Dollar Losses to Vulnerable Structures

Type of Structure	Number of Structures			Value of Structures			Number of People		
	# in City	# in HA	% in HA	$ in City	$ in HA	% in HA	# in City	# in HA	% in HA
Residential	8,304	914	11.01	$1,033,427,800	$97,936,200	9.48	34,375	2,106	6.13
Agricultural	1,045	99	9.47	$482,812,200	$51,688,300	10.71			
Commercial/Industrial	1,494	813	54.42	$56,107,400	$26,983,000	48.09			
Manufactured Home	24	11	45.83	$1,054,100	$539,600	51.19		24	0.07
Total	10,867	1837	120.73	$1,573,401,500	$177,147,100	119.46	34,375	2,130	6.20

Notes:

 # in HA: Number of structures in hazard area identifies the number of properties of a given use type, with structures located within the floodplain. Aerial photography, Comprehensive Land Use Plans, and DFIRM boundaries provided by FEMA were used for identification. Some structures included may have received LOMA's, removing them from the flood plain, since the effective date of the current DFIRM.

$ in HA: Value of structures in hazard area was estimated by extrapolating assessed valuations of structures on parcels which had a primary structure within the hazard area. This data was provided by the Brookings County Department of Equalization and is classified by land use.

 # in [Jurisdiction]: The number of people was based on the 2020 Census.

 # in Hazard Area: The number of people in a hazard area was determined by multiplying the average household size of a given community as identified by the number of structures in the identified hazard area and multiplying that number by the rate of occupancy for the community (All statistics from the US Census 2020). (Occupancy status of the structure was not available, so therefore not considered.)

ASSESSING VULNERABILITY: ANALYZING DEVELOPMENT TRENDS

Requirement 201.6(b)(3). Local Mitigation Plan Review Tool – A4.
Requirement 201.6(c)(2)(ii). Local Mitigation Plan Review Tool – B2-a-c.
Requirement 201.6(c)(3). Local Mitigation Plan Review Tool – C2.
Requirement 201.6(d)(3). Local Mitigation Plan Review Tool – D1.
Requirement 201.6(d)(3). Local Mitigation Plan Review Tool – D2.
Requirement 201.6(d)(3). Local Mitigation Plan Review Tool – E1-a.
Requirement 201.6(d)(3). Local Mitigation Plan Review Tool – E2-c.

The land use and development trends for each jurisdiction were identified by the representatives from each of the jurisdictions. Most communities within Brookings County are experiencing growth and have comprehensive land use plans which identify future areas for development. Five of the seven participating communities are showing growth.

In addition to Brookings County, the cities of Aurora, Brookings, Elkton, Volga, and White all have adopted Comprehensive Land Use Plans with Future Land Use Maps. Elkton completed an update of its Comprehensive Land Use Plan in 2020. Brookings completed its update to the Comprehensive Plan in 2018. Volga and Aurora are scheduled to review and update its respective plans and ordinances in 2025.

The Comprehensive Land Use Plans for each community were reviewed by each community utilizing one. Specifically, available undeveloped areas projected for residential, commercial, and industrial uses were reviewed. Based upon their own projected density of development for each land use, the communities then identified the potential number of lots which could be created within flood hazard areas given current land use regulations and controls. Participating

communities in Brookings County are in the process of adopting the most recently prepared National Flood Insurance Program Flood Hazard Maps and recommended ordinances for the proper regulation of property within the floodplain. Each respective community intends on adopting those ordinances and maps in early 2025. Those maps have changed since the last update to the PDM Plan. Tables 4.32 – 4.36 utilize those new flood hazard boundary maps to identify the projected vulnerability for communities which have adopted land use plans. Future Land Use Maps for each jurisdiction which have adopted Comprehensive Land Use Plans are included in Appendix G.

Table 4.41: Brookings County (Unincorporated Area)
Potential Floodplain Development – By Land Use Type

	Community Totals		Flood Hazard Area			
Land Use Category	*Projected Development Density (Acres/Unit)*	*Acres of projected future development*	*Acres of future development in Hazard Area*	*% Area for future development*	*Potential # of Lots for future development*	*# of Undeveloped Lots Already Appropriately Zoned*
Ag – Residential	35	N/A	N/A	N/A	76*	54
Lake – Residential	2	N/A	N/A	N/A	2	2
Commercial	2	N/A	N/A	N/A	0	0
Industrial	2	N/A	N/A	N/A	0	0

N/A: Most of the rural area is planned to remain agricultural in use with varying degree of land use restrictions.
**This only includes those lots entirely contained within the floodplain.*
Not all portions of Lake-Residential Lots appropriately zoned are within the 100-year Floodplain

Table 4.42: City of Aurora
Potential Floodplain Development – By Land Use Type

	Community Totals		Flood Hazard Area			
Land Use Category	*Projected Development Density (Units/Acre)*	*Acres of projected future development*	*Acres of future development in Hazard Area*	*% Area for future development*	*Potential # of Lots for future development*	*# of Undeveloped Lots Already Appropriately Zoned*
Ag – Residential	2.5	54	4.25	7.9	10	1
Commercial	1	54	12.0	22.4	12	1
Industrial	0.25	268	25.5	9.5	6	0

Table 4.43: City of Brookings
Potential Floodplain Development – By Land Use Type

	Community Totals		Flood Hazard Area			
Land Use Category	*Projected Development Density (Units/Acre)*	*Acres of projected future development*	*Acres of future development in Hazard Area*	*% Area for future development*	*Potential # of Lots for future development*	*# of Undeveloped Lots Already Appropriately Zoned*
Ag – Residential	2.5	500*	0.0	0	0	3
Commercial	1	N/A**	20	N/A	5	0
Industrial	0.25	N/A**	100	N/A	25	0

**Does not include Low Density Residential category*
***Many land use categories are form based and combine commercial/industrial uses.*

Table 4.44: City of Elkton
Potential Floodplain Development – By Land Use Type

	Community Totals		Flood Hazard Area			
Land Use Category	*Projected Development Density (Units/Acre)*	*Acres of projected future development*	*Acres of future development in Hazard Area*	*% Area for future development*	*Potential # of Lots for future development*	*# of Undeveloped Lots Already Appropriately Zoned*
Ag – Residential	2.5	198	0.0	0	0	0
Commercial	1	47	0.0	0	0	0
Industrial	0.25	98	0.0	0	0	0

Table 4.45: City of Volga
Potential Floodplain Development – By Land Use Type

	Community Totals		Flood Hazard Area			
Land Use Category	*Projected Development Density (Units/Acre)*	*Acres of projected future development*	*Acres of future development in Hazard Area*	*% Area for future development*	*Potential # of Lots for future development*	*# of Undeveloped Lots Already Appropriately Zoned*
Ag – Residential	3	298	12	4.0	36	1
Commercial	1	32	5	15.6	15	3
Industrial	0.25	57	0	0	0	0

Table 4.46: City of White
Potential Floodplain Development – By Land Use Type

	Community Totals		Flood Hazard Area			
Land Use Category	*Projected Development Density (Units/Acre)*	*Acres of projected future development*	*Acres of future development in Hazard Area*	*% Area for future development*	*Potential # of Lots for future development*	*# of Undeveloped Lots Already Appropriately Zoned*
Ag – Residential	2.5	87	1.3	1.4	3	0
Commercial	1	6	0.0	0	0	0
Industrial	0.25	24	0.0	0	0	0

Brookings County is one of the fastest growing counties in the State of South Dakota in terms of growth as a percentage of population. Population in all of Brookings County's communities, except Sinai, has grown since the previously adopted PDM Plan, as is evidenced by Table 1.1. New single family development has been the driver of growth in Volga and Aurora. The City of Brookings is growing with a wide variety of housing types, but a particular increase in multi-family dwellings has occurred since the previous plan. Other municipalities are experiencing infill growth with modest expansion on the fringe. While some homes are being built on large estates and farmsteads; (rural) Brookings County's population is primarily increasing as a result of subdivisions within the fringe of the City of Brookings as well as redevelopment and expanded development near lakes.

UNIQUE OR VARIED RISK ASSESSMENT

Requirement 201.6(c)(2)(i). Local Mitigation Plan Review Tool – B1.
Requirement 201.6(c)(2)(ii). Local Mitigation Plan Review Tool – B2-a-c.

After conducting the risk assessment for each jurisdiction, the PDM Planning Team decided that all areas of the county have an equal chance of a natural hazard occurrence in their area. While the extent to which each jurisdiction is affected by such hazards varies slightly between the local jurisdictions, the implications are the same. Thus, the PDM Planning Team decided that all jurisdictions in the County are equally affected by the types of hazards/risks that affect the PDM jurisdiction. Thus, the unique or varied risk requirement is not applicable to the Brookings County PDM.

On the following pages, a hazard vulnerability map is shown for each of the jurisdictions participating in this PDM. The maps identify critical infrastructure. The maps identify critical infrastructure and one-hundred-year flood plain. Since most major hazards facing the county are not geographically based. Winter storms and severe summer storms carry an equal probability of occurring throughout the county. While specific locations for above ground electrical distribution lines are not identified on the map(s), they are located throughout the County and are vulnerable to both flooding and severe weather (See Figures 4.1 through 4.10).

Figure 4.10: Brookings County (Rural Areas) Hazard Vulnerability Map

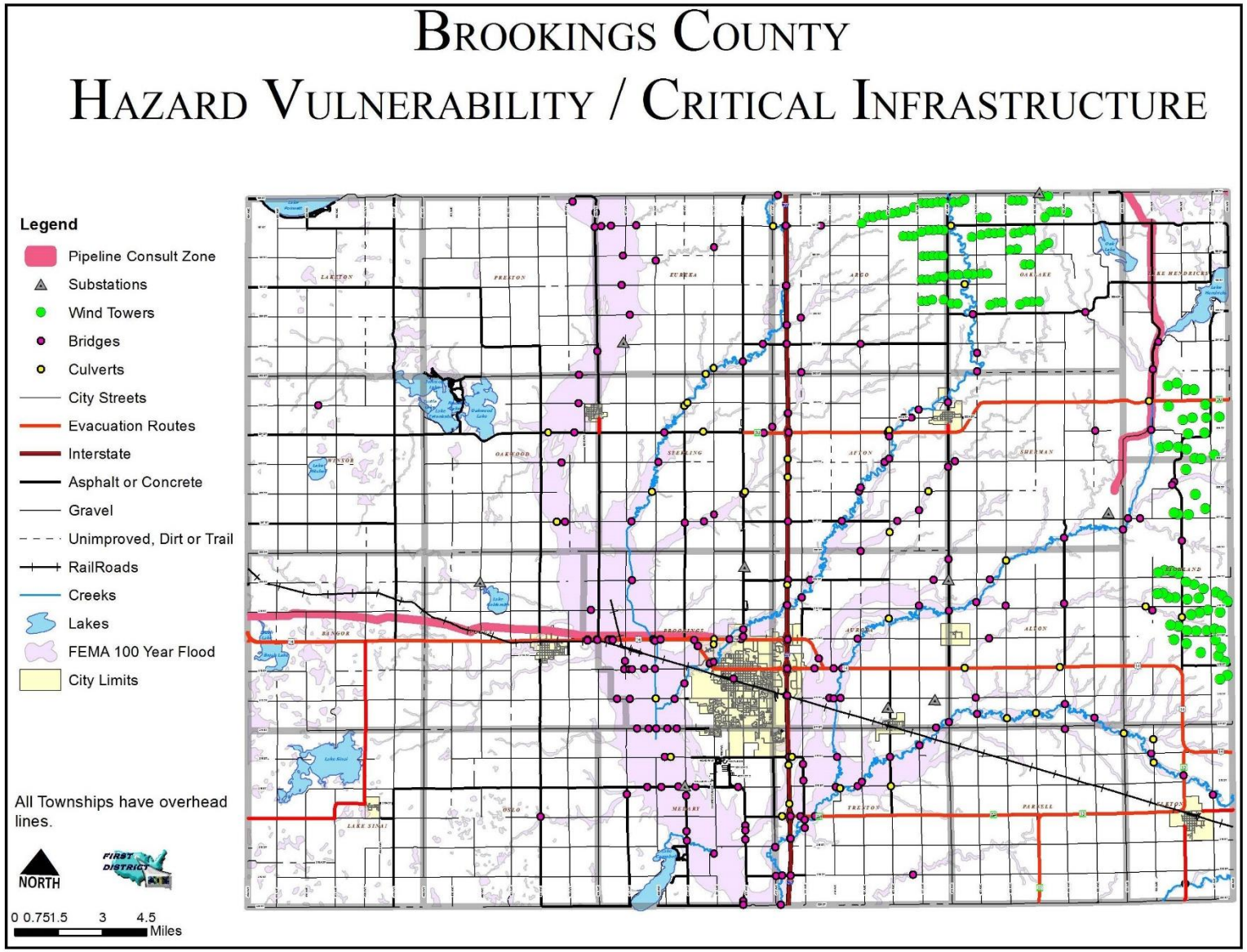


Figure 4.11: Brookings County Hazard Vulnerability Map

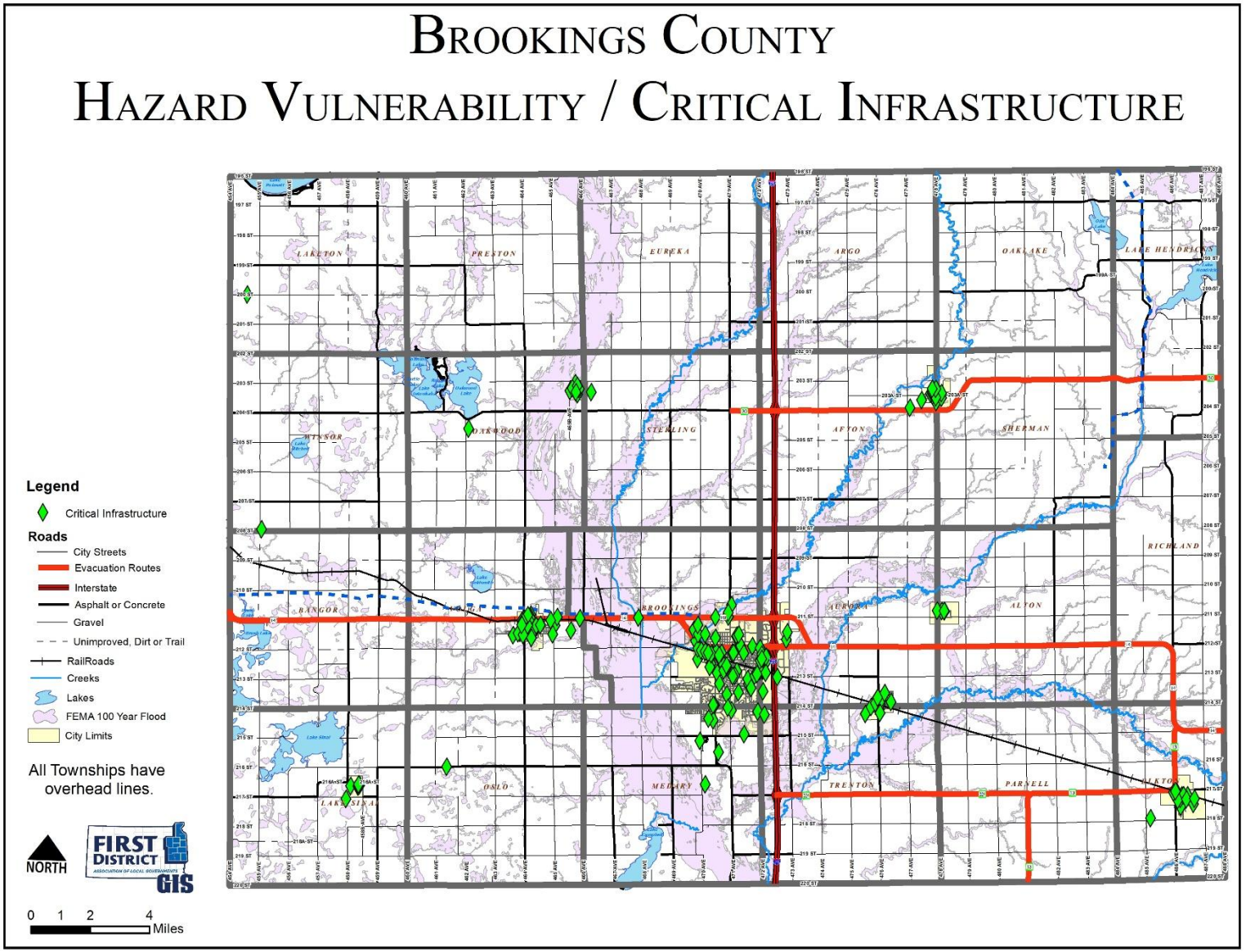


Figure 4.12: City of Aurora Hazard Vulnerability Map

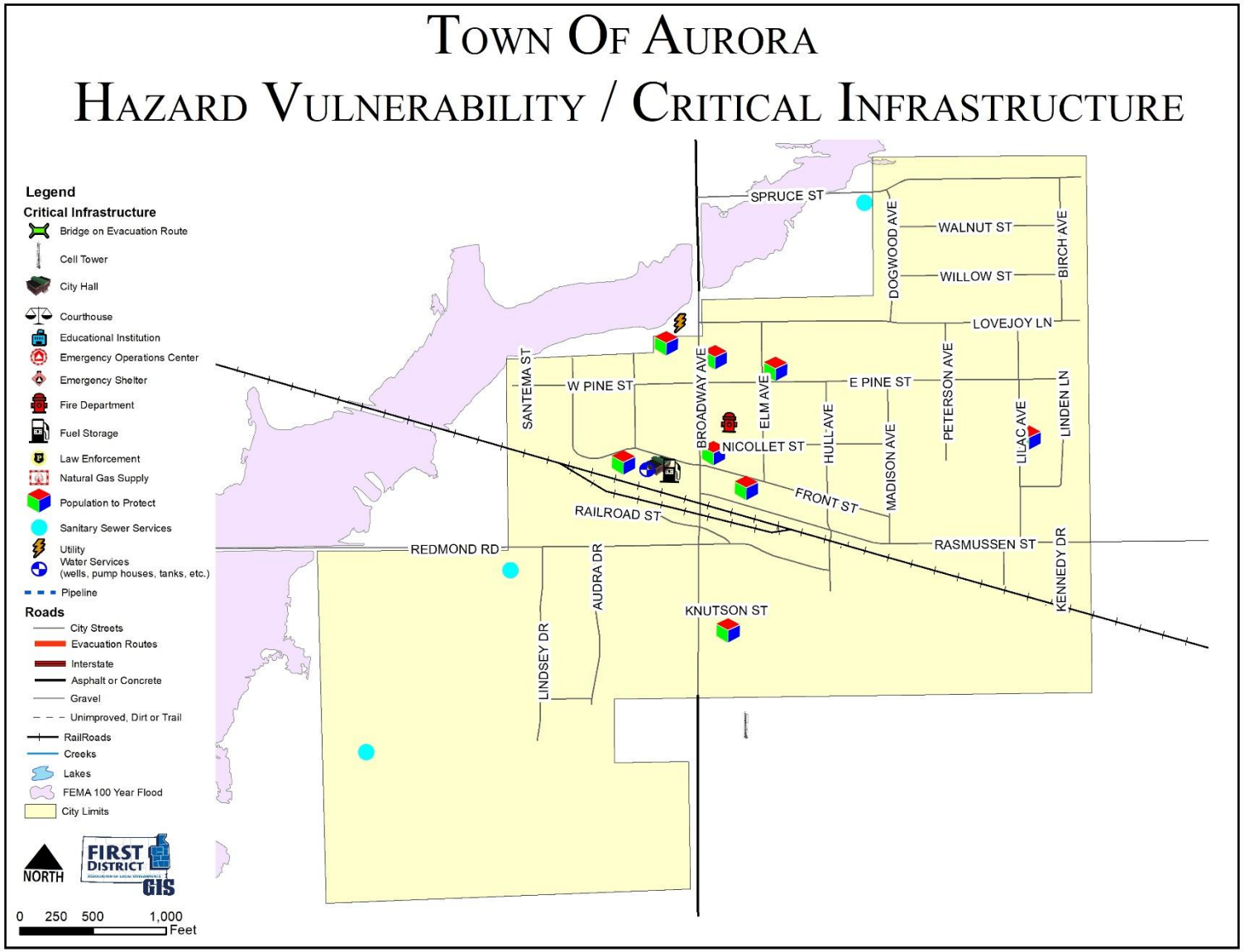


Figure 4.13: City of Brookings Hazard Vulnerability Map

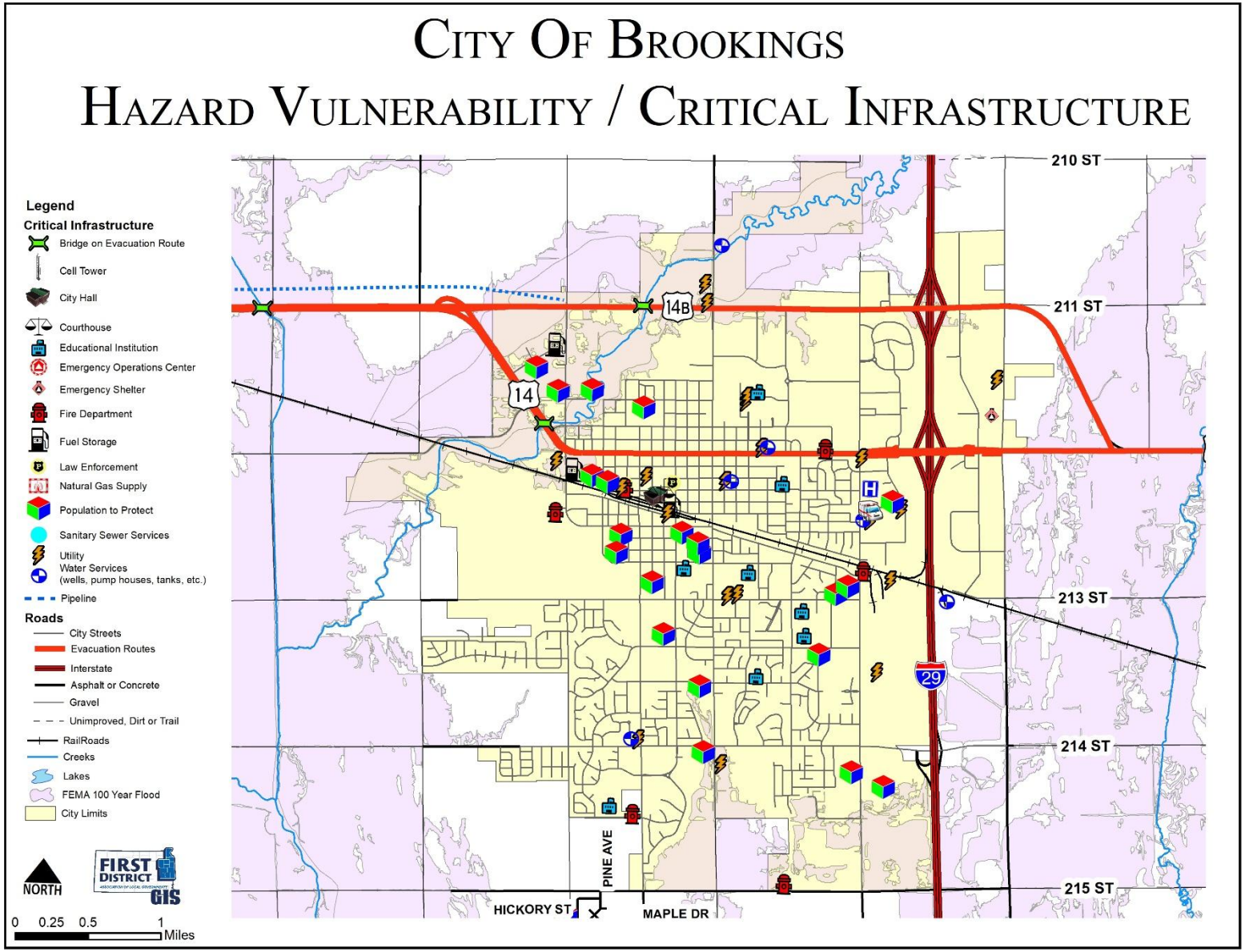


Figure 4.14: City of Bruce Hazard Vulnerability Map

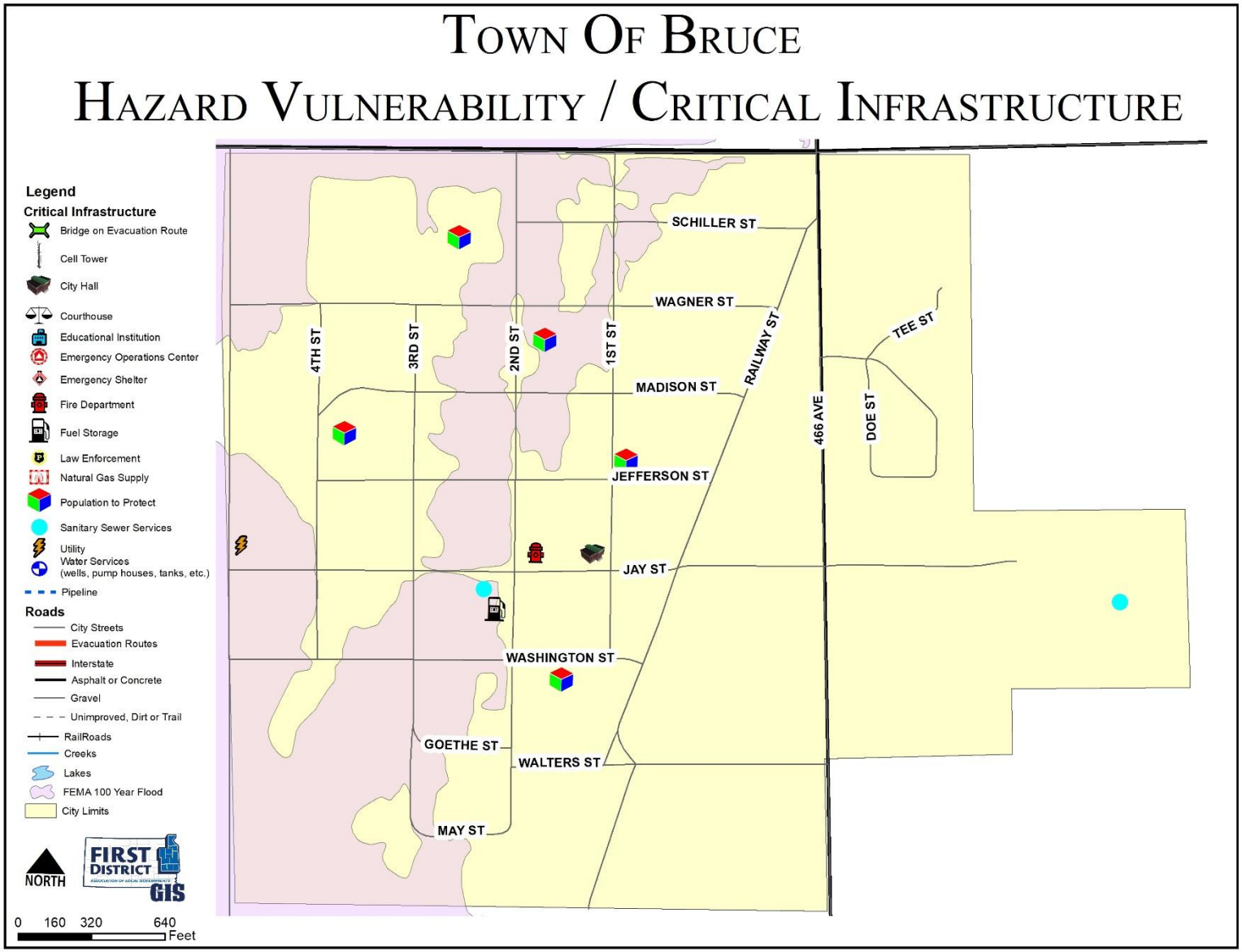


Figure 4.15: Town of Bushnell Hazard Vulnerability Map

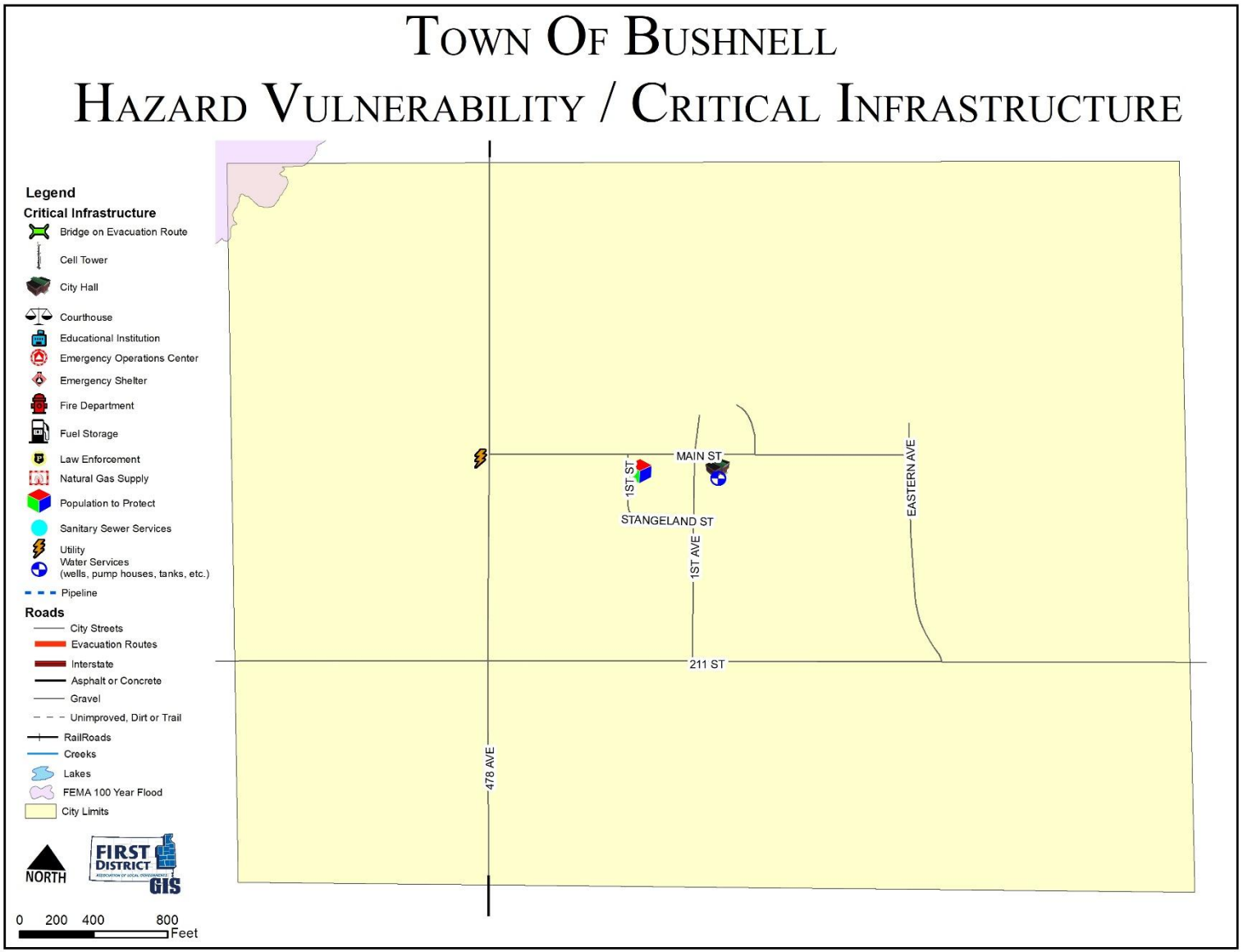


Figure 4.16: City of Elkton Hazard Vulnerability Map

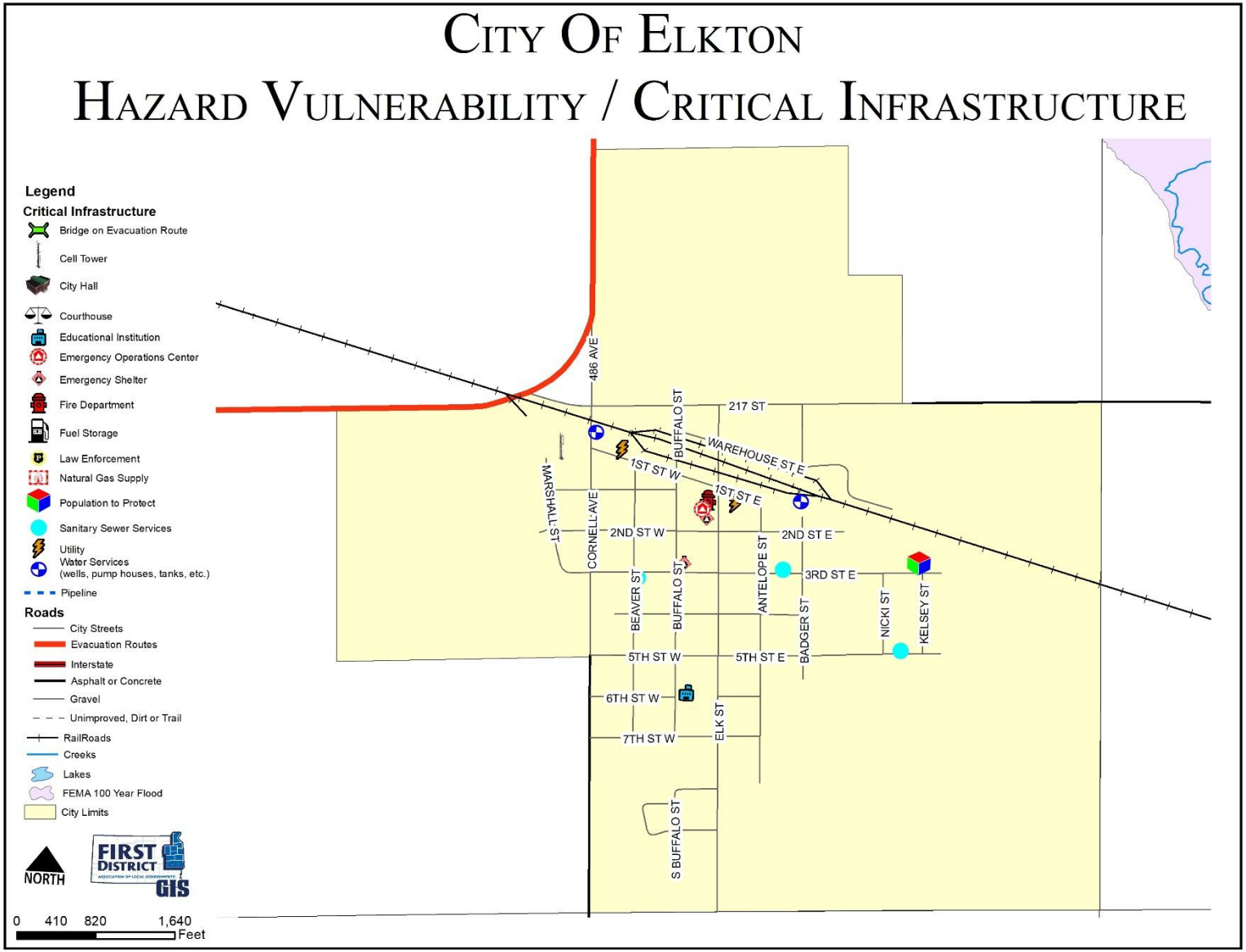


Figure 4.17: Town of Sinai Hazard Vulnerability Map

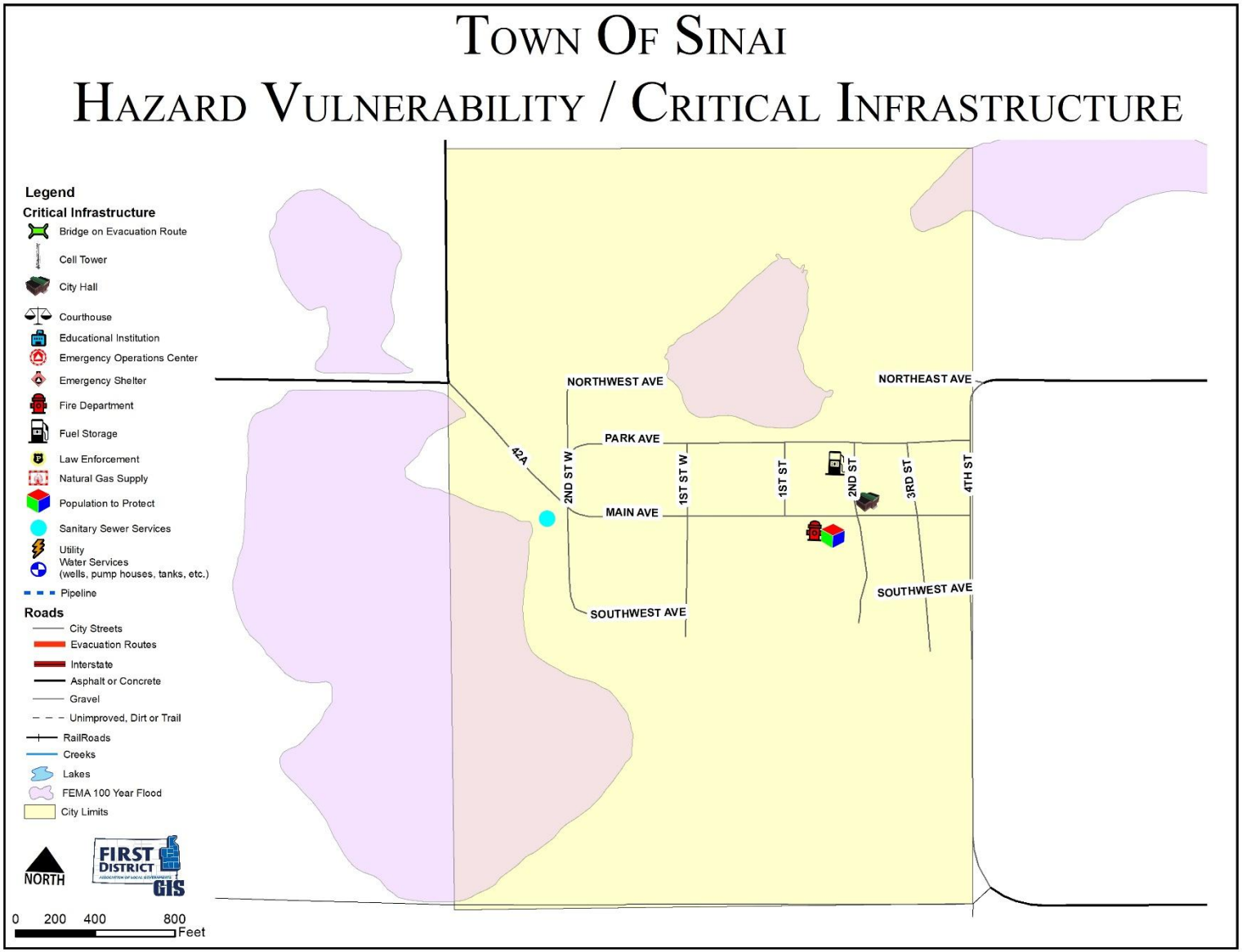


Figure 4.18: City of Volga Hazard Vulnerability Map

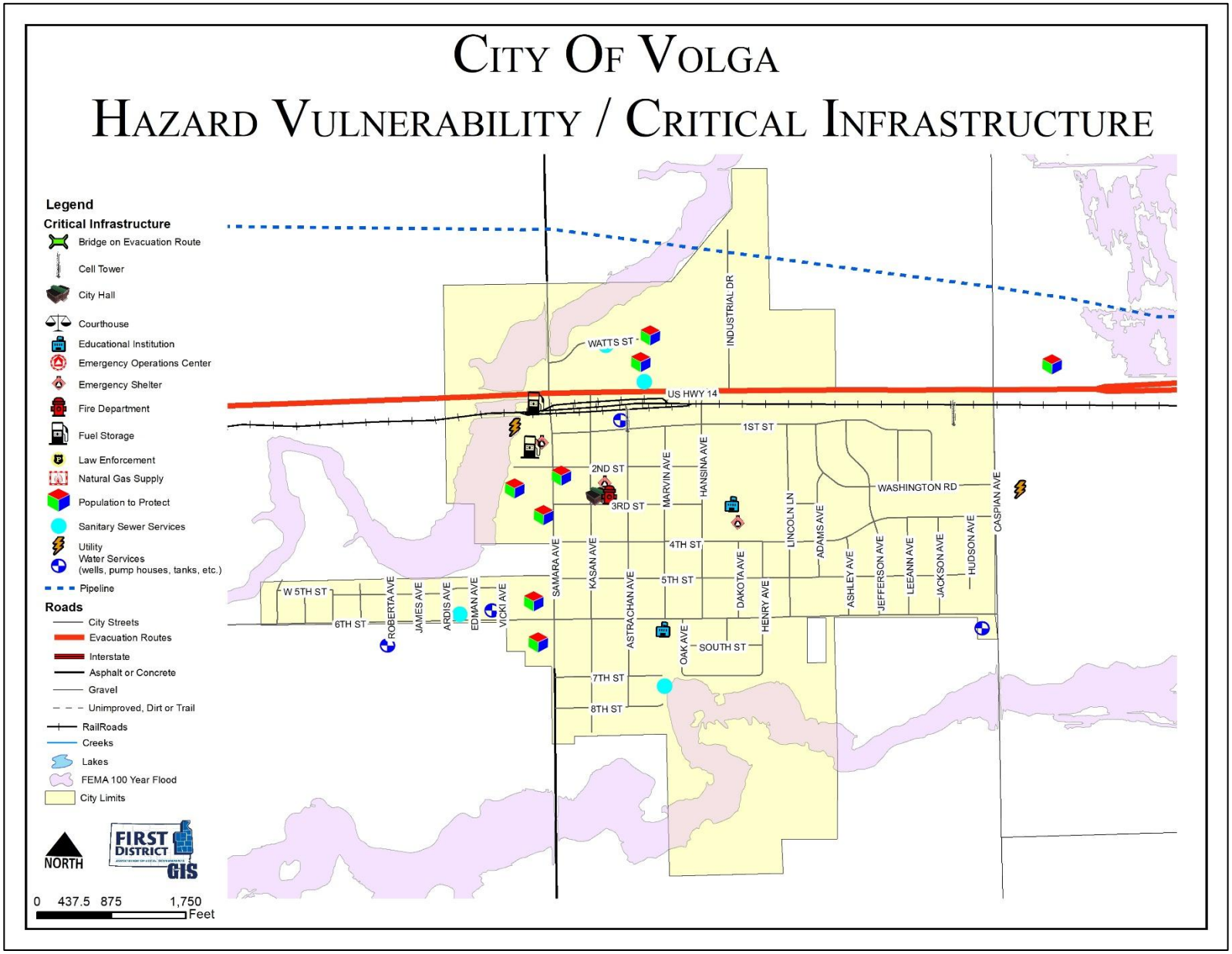
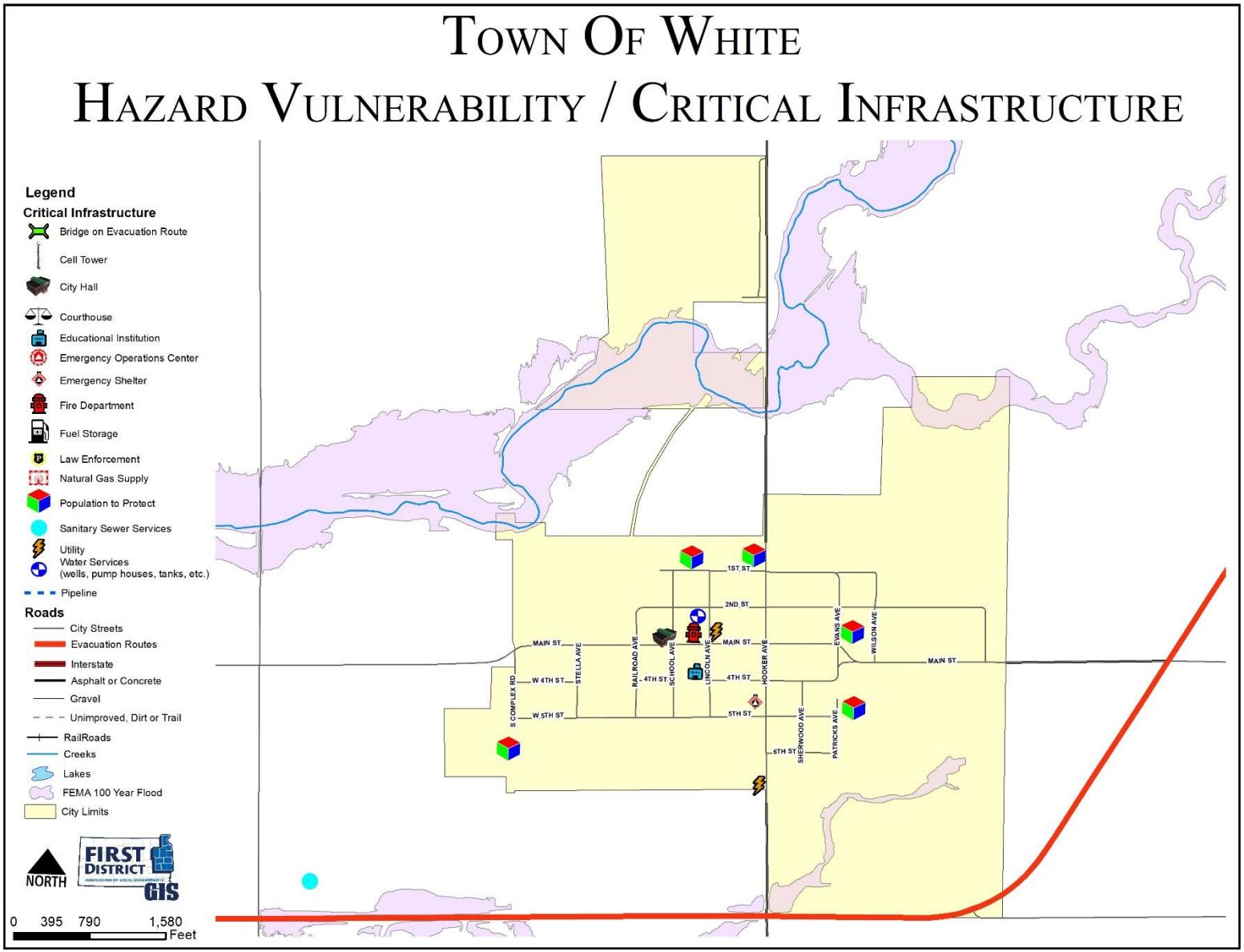


Figure 4.19: City of White Hazard Vulnerability Map



CHAPTER 5 | MITIGATION STRATEGY

MITIGATION OVERVIEW

Requirement 201.6(b)(1) …Local Mitigation Plan Review Tool – A3.
Requirement 201.6(c)(3)(i). Local Mitigation Plan Review Tool – C3.
Requirement 201.6(c)(3)(ii). Local Mitigation Plan Review Tool – C4 (inc. C4-a&b).
Requirement 201.6(c)(3)(iii) & (iv). Local Mitigation Plan Review Tool – C5.
Requirement 201.6(d)(3). Local Mitigation Plan Review Tool – E2-a&b.

The SD SHMP addresses several mitigation categories, including warning and forecasting, community planning, and infrastructure reinforcement. The County and participating entities' critical needs are mitigating high wind and flood hazards, acquiring backup generators for critical infrastructure, construction of tornado safe rooms and/or storm shelters, and enhancing public awareness.

Following the completion of the risk assessment (which encompassed identifying hazards, evaluating their probability, and assessing vulnerability), the PDM Planning Team reached a mutual consensus. The team agreed that the mitigation strategies should primarily focus on addressing the following hazards: winter storms, severe summer storms, flooding, and drought/wildfires in both urban and rural areas.

The PDM Planning Team began by reviewing the goals, objectives, and priorities of the 2019 Plan. They found the goals and objectives of the previous plan were still relevant, with only minor changes being needed. The goals and objectives were then revised and incorporated into the updated plan. Similarly, the priorities and focuses of the mitigation strategies from the previous plan were also deemed appropriate and integrated into the updated plan.

To complete the goal identification process, the PDM Planning Team assessed the county's and participating jurisdictions' vulnerability to each identified hazard and the severity of the threat posed by each. The discussion largely centered around past event damage and strategies to reduce or eliminate future damage. Though reviewing each jurisdiction's Comprehensive Land Use Plan (if available), the participants were also able to consider how future development might impact each jurisdictions' vulnerability to the hazards they face.

While pinpointing goals, numerous activities or projects were identified with broadly defined benefits for several jurisdictions within the County. Although many actions were acknowledged by the PDM Planning Team to have wide-reaching benefits, due to the scope or varying levels of importance to individual jurisdictions, specific costs, timeframes, or priorities were not assigned. Along with this, while many infrastructure projects and policies throughout all communities would help mitigate hazards, they were not always located in the most vulnerable areas.

Each community reviewed the activities/policies and corresponding problem statements to determine their applicability to their respective jurisdictions. The results of this community review are displayed in Tables 5.1 – 5.12. Unless otherwise noted, the lead contact for all mitigation projects in those tables will be the Finance Officer for each respective municipality and the County Auditor for Brookings County. The funding source for projects in Tables 5.1 – 5.12 will be from the general fund of the applicable jurisdiction unless specifically noted.

Projects/policies marked with a "✓" were identified in previous plans and determined to be not completed since the previous plan. Projects/policies marked with a "☑" are new for the respective community. Projects/policies marked with a "☒" were determined no longer viable. Each project/policy in Tables 5.1 – 5.12 should be considered as a "medium" priority rating in relation to the projects listed in 5.13. Unless otherwise noted, any project listed within Tables 5.1 – 5.12 should be expected to commence within three (3) to five (5) years. Projects with "*" are already occurring and expected to remain ongoing during the life of the plan; such as the regular publication of articles relating to natural hazards and disaster resiliency as shown in Figure 5.1.

Specific projects for each community are listed in Table 5.13. Projects listed in Table 5.13 may duplicate those listed in Tables 5.1 – 5.12. Table 5.13 represents more specific requests where it may have been determined a different funding source may be sought, or a more specific location or purpose for a strategy may have been determined. Those projects intended to mitigate problems at a specific location are represented in Figures 5.1a to 5.10.

Figure 5.1: Sample Newspaper Article by Emergency Manager

Volume 145
No. 198
Brookings, SD

Register

FRIDAY
October 11, 2024

Native American Day Holiday

Your commu

SKY: Temp variance brings fog

Continued from page 1

BOB HILL

HILL IS THE BROOKINGS COUNTY EMERGENCY MANAGER

EYE ON THE SKY

Burn ban queries and fog

Since my last article, Brookings County has enacted a burn ban. My office has been fielding questions about what that means.

According to our Brookings County Nuisance Ordinance, Ordinance #2001-02, it means you cannot do any open burning. The intentional burning of any substance, whether natural or manmade, or the intentional casting off of any burning substance, whether natural or manmade. There are exceptions and these are as follows:

A. The burning of any such substance in an approved container sufficient so as to prohibit the escape of any of the burning substance or any sparks, flames or hot ashes from the container. The escape of any of such burning substance or the escape of any sparks, flames or hot ashes from any such container shall be deemed prima facie evidence the container was insufficient so as to meet the exception. Such container must be located so the smoke from the fire does not travel to any occupied structure not owned by the person starting the fire.

B. The maintaining of a fire in any interior fireplace, stove or furnace.

C. Campfires and bonfires which are used solely for recreational purposes, for ceremonial occasions, or for outdoor preparation of food; provided that such campfire or other fire is started and maintained so as to prevent the escape of any burning substances, sparks, flames or hot ashes and so as to prevent the smoke from such campfire or other fire from traveling to any occupied structure not owned by the person starting the fire.

Brookings County has a second ordinance that prohibits open burning when the National Weather Service has declared a red flag warning in Brookings County or when the grassland fire danger rating in Brookings County reaches very high or extreme, meaning wildfire and dangerous fire hazards exist.

Now I want to shift back to fall weather. As you might have noticed, fall is not in a hurry to start quite yet. The National Weather Service sent a reminder that fog can form during the mornings when the temperatures fluctuate.

Driving in fog can be dangerous, with over 38,000 vehicle crashes occurring each year. Of those crashes, over 600 people are killed and more than 16,300 people are injured annually. Be on the lookout for sudden changes in visibility, and if reduced visibilities are encountered while driving, do not change lanes or pass other vehicles unless absolutely necessary. Slow down, turn off cruise control, reduce "in-vehicle" distractions and be sure you can stop within the distance you can see.

Some other information from the NWS if you must drive in foggy conditions:

• Slow down and allow extra time to reach your destination.

• Make your vehicle visible to others both ahead of you and behind you by using your low-beam headlights since this means your taillights will also be on. Use fog lights if you have them.

• Never use your high-beam lights. Using high-beam lights causes glare, making it more difficult for you to see what's ahead of you on the road.

• Leave plenty of distance between you and the vehicle in front of you to account for sudden stops or changes in the traffic pattern.

• To ensure you are staying in the proper lane, follow the lines on the road with your eyes.

• In extremely dense fog where visibility is near zero, the best course of action is to first turn on your hazard lights, then simply pull into a safe location such as a parking lot of a local business and stop.

• If there is no parking lot or driveway to pull into, pull your vehicle off to the side of the road as far as possible. Once you come to a stop, turn off all lights except your hazard flashing lights, set the emergency brake, and take your foot off of the brake pedal to be sure the taillights are not illuminated so that other drivers don't mistakenly run into you.

The NWS does send out their advisories and warnings when the conditions warrant it.

A Dense Fog Advisory is issued by your local National Weather Service office when widespread dense fog develops. When this happens, visibilities frequently drop to one-quarter of a mile or less. These conditions make travel difficult. Take extra caution when on the road or avoid driving if possible.

A Freezing Fog Advisory is issued by your local National Weather Service office when fog develops and surface temperatures are at or below freezing. The tiny liquid droplets in the fog can freeze instantly to any surface, including vehicles and road surfaces. Freezing fog makes driving, boating, flying and other forms of transportation particularly hazardous. Visibilities are typically at or below 1 mile.

Enjoy this nice weather and remember to Keep an Eye on the Sky.

Principal Goals

1. ***Reduce the loss of life, property, infrastructure, critical facilities, cultural resources and impacts from severe weather, flooding and other natural disasters.***

2. ***Improve public safety during severe weather, flooding and other natural disasters.***

3. ***Improve the County's Emergency Preparedness and Disaster Response and Recovery capabilities.***

Mitigation Activities for Flooding Hazards

Goal #1: Protect specific areas of Brookings County from flooding due to heavy rain, rapid snow melt, and ice jams.

Goal #2: Educate and inform Brookings County residents regarding flooding safety in relation to heavy rain, rapid snow melt, and ice jams.

Goal #3: Reduce the extent to which utility interruptions affect areas during flooding events caused by heavy rain, rapid snow melt, and ice jams.

- *Actions/Projects to reduce flood risk through policy implementation. (See Table 5.1)*
- *Actions/Projects to change the characteristics or impacts of flood hazards. (See Table 5.2)*
- *Actions to reduce loss potential of infrastructure to flood hazards. (See Table 5.3)*

Mitigation Activities for Severe Weather Hazards (summer and winter)

Goal #1: Increase public awareness and education on severe summer weather events (includes: thunderstorms, high wind, hail, lightning, and tornadoes) and severe winter weather events (includes: blizzards, freezing rain, and high wind).

Goal #2: Improve public safety during severe summer weather events (as above) and severe winter weather events (as above).

Goal #3: Reduce the extent to which utility interruptions affect areas during severe summer weather events (as above) and severe winter weather events (as above).

Goal #4: Reduce crippling effects of winter weather events (as above).

- *Actions/Projects to reduce severe weather risk through policy implementation. (See Table 5.4)*
- *Actions/Projects to change the characteristics or impacts of severe weather hazards. (See Table 5.5)*
- *Actions/Projects to reduce loss potential of infrastructure to severe weather hazards. (See Table 5.6)*

Table 5.1: Actions/Projects to Reduce Flood Risk through Policy Implementation

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Public is unaware of scope of flood risk and existing emergency plans.	Public education. Disseminate information regarding how to deal with flooding. This would include transportation issues, home protection strategies, safety issues, and how to move forward after a flooding situation.	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Encouraging homeowners in flood-prone areas to purchase flood insurance.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Jurisdiction is unaware of potential hydrologic impacts of drainage or development projects.	Conduct necessary studies addressing drainage (stormwater flow/runoff, etc.).			✓	✓	✓	✓	✓	✓	✓
Residents are not eligible for flood insurance.	Begin participation in the National Flood Insurance Program.				✓					
Failure to comply with NFIP programs makes the community ineligible for flood insurance and certain funding.	Ensure continued National Flood Insurance Program compliance by enforcing floodplain management ordinance.	✓*	✓*	✓*		✓*	✓*	✓*	✓*	✓*
Jurisdiction is unaware of opportunities to participate in programs to assist in achieving mitigation goals.	Work to improve the level of communication and coordination with the State NFIP coordinator.	✓*	✓*	✓*		✓*	✓*	✓*	✓*	✓*
Jurisdiction has no legal mechanism to regulate land use.	Adoption and enforcement of land use regulation.				✓		✓			
Jurisdiction needs to continue to regulate minimum land use and development standards.	Continue enforcement of zoning and subdivision ordinances.	✓*	✓*	✓*		✓*		✓*	✓*	✓*
Jurisdiction has little legal mechanism to regulate drainage.	Developing a county/city drainage ordinance.	✓		✓	✓	✓	✓	✓	✓	

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Jurisdiction needs to continue to regulate minimum construction standards.	Continue enforcement of building codes. (Currently IBC 2023)		✓*					✓*		✓*
Jurisdiction lacks technical analysis or identification of specific mitigation projects.	Identify and prioritize capital/structural mitigation projects that are cost effective and technically feasible.	✓*	✓*^	✓*	✓*	✓*	✓*	✓*	✓*	✓*

^Continue to study other areas, and refine cost/benefit activities over time.

Table 5.2: Actions/Projects to Change the Characteristics or Impacts of Flood Hazards

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Portions of storm sewer system is not designed to 100-year flood event.	Installing or upgrading storm sewer piping/or overland flow.	✓	✓	✓	✓	✓	✓	✓	✓	
Drainage patterns have changed; culverts are inadequate for conveyance of water.	Installing or enlarging drainage culverts.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Install drainage tile.									✓
	Install or enlarge detention/retention ponds.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Certain streets have substandard or no curb and gutter.	Install curbing and guttering in city streets to improve stormwater flow.	✓*	✓*	✓ **5-10 years**	✓ **5-10 years**	✓*	✓ **5-10 years**	✓*	✓ **5-10 years**	

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Capacity of rivers, streams, and retention areas is decreased due to accumulation of debris.	Clean out debris in drainage areas, tributaries, etc. to improve water flow.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Install valves or plugs in sanitary and stormwater sewer system.	✓	✓					✓		✓
	Install riprap around sanitary sewer ponds.	✓	✓					✓		✓
Potential for development in flood prone areas.	Preservation and expansion of open space along the river and enhancement of existing berm areas.	✓	✓					✓		✓
	Work with property owners to implement deed restrictions for open lots/vacant properties in the flood hazard areas to prevent development.		✓							✓

Table 5.3: Actions/Projects to Reduce Loss Potential of Infrastructure to Flood Hazards

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Many roads and bridges were built prior to identification of flood hazard areas.	Replace and raise bridges.		✓ **5-10 years**							✓ **5-10 years**
	Elevating roads in flood-prone areas.	✓	✓	✓	✓	✓	✓	✓	✓	✓*
Some utility structures are located in areas vulnerable to flooding.	Flood-proof or replace utility structures in flood-prone areas.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Structures constructed in the floodplain prior to identification of flood hazard areas at risk of flooding or impeding water/ice.	Making structural retrofits to infrastructure.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Work with property owners to mitigate repetitive loss residences through elevation, acquisition, or relocation.		✓							✓

Table 5.4: Actions/Projects to Reduce Severe Weather Risk through Policy Implementation

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Public is unfamiliar with certain disaster preparation measures.	Public education. Disseminate information regarding how to deal with severe weather (summer/winter). Some of the issues that may be addressed would include: safety issues on downed power lines, electrical and fire dangers, necessity for generators and how to use them, protecting property, survival strategies during storms, and purchasing of back-up power for various household and farming operations. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lack of data regarding vulnerability to severe summer & winter storms.	Gather data to create a more precise loss estimate for winter storms. (W)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Gather data to create a more precise loss estimate for summer storms. (S)	✓	✓	✓	✓	✓	✓	✓	✓	✓

*Projects denoted with "**(S)**" are specific to **Summer Storms**, "**(W)**" for **Winter Storms**.*

Table 5.5: Actions/Projects to Change the Characteristics or Impacts of Severe Weather Hazards

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Certain areas and populations are not served by storm shelters	Identify area of need for tornado safe rooms or community shelters. (S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Identify areas of need for storm shelters at manufactured home and RV parks. (S)		✓					✓		✓
Critical facilities are vulnerable to power failure.	Install backup generators for infrastructure, shelters, and emergency operations. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Certain areas are susceptible to snow drifting.	Survey areas in need of snow shelterbelts and plant trees accordingly. (W)									✓*
	Install or plant living snow fences. (W)									✓*

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Certain areas of town cannot hear storm sirens and other emergency warning systems	Construct new or improve existing warning systems. (S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Storm sirens and other emergency warning systems are outdated.	Replace or upgrade existing warning systems. (S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Lack of emergency preparedness supplies and equipment.	Ensure emergency shelters area stocked with adequate supplies. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 5.6: Actions/Projects to Reduce Loss Potential of Infrastructure to Severe Weather Hazards

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Utility lines and structures are subject to failure in high wind, heavy rain, ice events	Upgrading of utility lines. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Burial of utility lines when needed. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Require upgrading of overhead lines when age or disasters provide an opportunity. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Removal of trees near power lines. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Attachment of guy wires to dead-end poles. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Testing integrity of poles. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Usage of anti-galloping devices. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Making structural retrofits to facilities. (W/S)	✓	✓	✓	✓	✓	✓	✓	✓	✓

Mitigation Activities for Fire and Drought Hazards

Goal #1: Improve fire prevention education and fire response.
Goal #2: Reduce the negative effects droughts have on Brookings County.
Goal #3: Reduce the negative effects wildfires have on Brookings County.

- *Actions/Projects to reduce fire and drought risks through policy implementation. (See Table 5.7)*

- *Actions/Projects to change the characteristics or impacts of fire and drought hazards. (See Table 5.8)*

- *Actions to reduce loss potential of infrastructure to fire and drought hazards. (See Table 5.9)*

Mitigation Activities for Hazards Identified but Do Not Occur

The hazards of landslides, subsidence, earthquakes, and dam failures have no history of occurring in any jurisdiction within Brookings County. These hazards were not identified for planning purposes but were listed in exercises merely for comparative purposes. It was determined by the PDM Planning Team that since these hazards have never occurred, and there is no reason to expect them to occur in the future within Brookings County's jurisdictions, no mitigation activities are necessary.

General Mitigation Activities

Technological (See Table 5.10):

Planning (See Table 5.11):

Administration/Coordination (See Table 5.12)

Table 5.7: Actions/Projects to Reduce Fire and Drought Risk through Policy Implementation

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Community becomes vulnerable to fire hazard while staff is being trained.	Find funding sources to pay for persons to fill positions while individuals are at training courses.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Potential for development in areas vulnerable to wildfire or urban fire.	Adoption and enforcement of property regulations in areas vulnerable to wildfire.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Establish/require minimum fire suppression standards for subdivisions.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Community has no plan/policy for water rationing in emergency.	Develop water rationing measures that will be implemented during a drought situation.	✓*	✓*	✓	✓	✓	✓	✓*	✓	✓
Public is unaware of fire safety and benefits of conserving water.	Educate residents on fire safety and the benefits of conserving water at all times, not just during a drought.	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 5.8: Actions/Projects to Reduce Loss Potential of Infrastructure to Fire and Drought Hazards

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Firefighting equipment becomes out of date quickly.	Ensure that fire departments are adequately equipped to respond to wildfires.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
Fire hydrants become unusable.	Locate dry fire hydrants and improve existing infrastructure for hydrant hook-ups.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Construct additional water supply.	✓	✓							✓
Fire protection capabilities are limited.	Construct new fire station.									

Table 5.9: Actions/Projects to Change the Characteristics or Impacts of Fire and Drought Hazards

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Reservoirs are vulnerable to silting and decrease in efficient provision of water services in emergency situations.	Dredge reservoirs to improve water quality. Reservoirs silt in and dredging, water can flow to more places, more quickly, and more easily.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Dead or dry plant material creates fire hazard/location changes seasonally and annually.	Burn areas, as necessary, to ensure a fire break rather than ignition fuel.									✓*
Local economy is very dependent on corn/soybean production.	Educate farmers on the benefits of a diversified crop protection plan in the event of a drought.	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Work with local farmers to investigate the use of more drought resistant crops.	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 5.10: Technological Activities

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Current data and software can become obsolete or out of date.	Continue utilizing a working computer-aided mapping system for the County. This includes using overlays of GIS data, HazMat, flood zones, and roads.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Enhance existing computer-aided dispatch.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Use HAZUS software to estimate losses in flooding situations. Information may also be able to be used for other hazard areas.	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Work with South Dakota State University to explore additional methods of estimating losses in natural hazards.	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 5.11: Planning Activities

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
Maintenance of a mitigation plan is beyond the economic capability of this community.	Find funding to review and update the regional and local disaster mitigation plans on a five-year cycle.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Disaster mitigation projects have not always been incorporated into other plans.	Incorporate disaster mitigation actions into appropriate local and regional plans – master plans, land use, transportation, open space, and capital programming.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Integrate disaster mitigation concerns into subdivision, site plan review, and other zoning reviews. In particular, require the consideration of downstream flooding impacts caused by new projects.	✓*	✓*	✓*		✓*		✓*	✓*	✓*
	Integrate disaster mitigation concerns into transportation projects (e.g., drainage improvements, underground utilities, etc.).	✓*	✓*	✓*		✓*		✓*	✓*	✓*
This community's mitigation projects are not coordinated with other communities' projects.	Develop a means for sharing information on a regional basis about successful disaster mitigation planning and programs.	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 5.12: Administration/Coordination Activities

Problem Statements	Actions	Aurora	Brookings	Bruce	Bushnell	Elkton	Sinai	Volga	White	*Brookings County*
This community is not staffed, nor does it have funding mechanisms to apply for and administer funding sources for mitigation projects.	Identify and pursue funding that builds local capacity and supports grant-writing for mitigation actions identified in the PDM.	✓	✓	✓	✓	✓	✓	✓	✓	✓
Need to create manner of mass dissemination of emergency preparedness and response information.	Establish social media pages, and identify individual to maintain said pages and establish authority to determine what information is posted.	☑	☑	☑	☑	☑	☑	☑	☑	☑
Populations to protect and socially disadvantaged populations are not identified.	Create and update list of vulnerable populations within jurisdiction; and provide notification to those populations of plan updates.	☑	☑	☑	☑	☑	☑	☑	☑	☑
Need to improve coordination of activities with other governmental jurisdictions and utility providers.	Increase communication/coordination between federal, state, regional, county, municipal, private, and non-profit agencies in the area of pre-disaster mitigation.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*
	Maintain and enhance working relationships with the utility providers.	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*	✓*

After holding meetings with the PDM Team and local jurisdictions, as well as hosting multiple opportunities for public input, the mitigation goals from the 2019 plan were confirmed as the best aid the County for reducing and lessening the effects of natural hazards. Projects previously identified in the 2019 PDM were carefully analyzed and discussed to determine which of the projects had enough merit to be included in the updated PDM and to determine if the projects meet the hazard mitigation needs of the county. The projects were evaluated based on a cost/benefit ratio and priority.

Although this PDM focuses on disaster mitigation rather than disaster preparedness, most communities conversed over disaster preparedness projects as well. It was difficult for individual communities to recognize the difference between providing storm shelters and making sure the storm shelters function properly (for example). Actions considered in this category included the acquisition of emergency generators, and erecting or replacing warning sirens in areas that are currently underserved.

Most of the mitigation actions proposed by the jurisdictions were identified by city council/town board members, public works personnel, or PDM Planning Team members from the jurisdiction. Natural hazards and vulnerability were discussed. Projects were suggested for inclusion on the mitigation list. Project cost estimates were created based upon similar projects in the region. Local jurisdiction Boards evaluated each project based on importance, need, urgency, benefits, cost, funding availability, and timeline. Projects were then either included on the list or removed. Then assigned a priority metric and other parameters.

Some actions were also proposed by townships and utility providers due to the direct impact of disasters on infrastructure and services they provide. Once each jurisdiction had its list of proposed actions complete, it was submitted to the Emergency Management Director. At the second PDM Planning Team meeting, the actions were reviewed. At the third PDM Planning Team meeting a final opportunity was given for the jurisdictions to add any additional actions or refine information relating to previously identified projects.

Although additional data will be needed in some cases, a timeframe for completion, oversight, funding sources, and any other relevant issues were addressed. These implementation strategies are geared toward the specific goal and area. Often, these projects will not encounter any resistance from environmental agencies, legal authorities, and political entities. Table 5.13 is a presentation of the mitigation actions proposed by the PDM Planning Team. In addition to identifying the proposed actions, the table includes additional information about each action. Elected officials and staff of each municipality and the county were responsible for providing most of this information for actions in their community, but the other planning participants helped in this process.

The following information is provided for each action:

- A statement regarding the specific problem the proposed action will mitigate.
- The local priority rating:
    - “High”-greater importance, unanimous Board agreement, meets an essential need, shorter implementation time and funding availability.
    - “Medium”-less urgent need, limited benefits, maintenance activities and limited funding availability.
    - “Low”-least important, minimal benefits, longer term project and lack of funding availability.

- The time frame to accomplish the action:
  - "Short" means actions that are intended to be initiated within two years.
  - "Medium" is for actions that should be started within five years.
  - "Long" is for actions that are not anticipated to be started for at least five years.
- The party(s) primarily responsible for implementing the action.
- The estimated cost/benefit – projected costs for many of the actions were obtained from knowledgeable sources based on current information. Estimations are subject to change due to details of specific projects. Benefits for most projects were not readily quantifiable.
- Potential sources of funding (discussed below).
- The primary hazard being addressed.
- The goal corresponding to the action.

As mentioned above, jurisdictions and entities integrally involved in the planning for disasters due to their wide breadth implications include townships and most utility providers. Utility providers were represented on the PDM Planning Team. Each utility provider was asked individually to submit their own mitigation actions. The main mitigation activity proposed by utility providers is the burying or upgrading of overhead lines in rural areas of the county to make them more resistant to hazards.

In January of 2024, each individual township in Brookings County was mailed maps upon which they were asked to identify potential mitigation activities and vulnerable roads or infrastructure and to return the maps to First District for inclusion in the Plan. In addition, a meeting at which all township supervisors were invited was held on February 29th, 2024. At this meeting, those townships that had not responded to the mailed maps were asked to identify potential mitigation projects and vulnerable roads or infrastructure. Primarily these activities included replacing culverts with larger culverts, elevating or rip-rapping roads, and reconstructing roads. Not all townships submitted the maps with potential activities; however, the Appendix E includes maps of vulnerable sites and potential mitigation actions in the County as proposed by those townships that participated.

Particular attention needs to be paid to sources of funding for the actions. Given the existing financial reality of very tight county and municipal budgets, some of the proposed actions cannot realistically be implemented without substantial grant assistance. With such assistance, it is likely that many of the high priority projects can be undertaken without placing an onerous burden on local budgets. Resources for some of the actions available from FEMA through the South Dakota Office of Emergency Management include the Hazard Mitigation Grant Program, Building Resilient Infrastructure Communities grant program, and Flood Mitigation Assistance grant programs. Other possible sources of funding include:

<u>Grant and loan programs/sources</u>

- Community Development Block Grant program
- Economic Development Administration
- FEMA Assistance to Firefighters Grant program
- South Dakota Dept of Environment and Natural Resources
- South Dakota Dept of Transportation
- US Department of Agriculture Rural Development Office

Local resources

- General obligation bonds
- Revenue bonds
- Tax Increment Financing (TIF) districts
- City/Town Enterprise Funds
- City/Town/County General Fund (any reference to “City,” “Town,” or “County” refers to the general fund of the specified Town, City, or County.)

Table 5.13: Proposed Mitigation Activities

BROOKINGS COUNTY PROBLEM STATEMENTS	BROOKINGS COUNTY ACTIONS	PRIORITY RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
Base flood elevation for residentially developed lakes is unknown.	Establishment of base flood elevations for Poinsett, Campbell, and Oakwood Lakes.	High	Short	Brookings County Floodplain Administrator	*Cost is a percentage of present staffing. Elevations are provided in floodmap going effective April 2025.*	County General Fund	Flooding	Protect Specific Areas of Brookings County from floods.
Poorly defined drainage leads to flooding of manufactured homes and potential development property in and around SW1/4 of Sec 11-T109N-R50W.	Study and implement drainage improvements in low lying areas to run water into Big Sioux River southwest of Sec 11-T109N-R50W.	High	Medium	Brookings County Emergency Management Director	$750,000/reduce flood-related damages in the county	County, City, HMGP, DOT	Flooding	Protect Specific Areas of Brookings County from floods.
Flood Control measures along Big Sioux River have degraded, and an uncontrolled portion of river has expanded to cause damage to the area.	Construct flood control measures (Levee/Dam) along Big Sioux River in South Half of Sec 9-T109N-R50W.	Medium	Medium	Brookings County Emergency Management Director	Unknown/reduce flood-related damages in the county	County, HMGP, DENR	Flooding	Protect Specific Areas of Brookings County from floods.

Alternative medical facilities lack back-up power for provision of service	Back-up generator or power for Dakota Bank Center (Emergency Shelter/ Emergency or back-up care center) *All Jurisdictions*	High	Short	Brookings County Emergency Management Director	Unknown/Size or manner of providing back-up power may require study to determine appropriate generator	Private, County/Municipal General Funds, USDA, BRIC, HMGP	Extreme Heat, Extreme Cold, Severe Storms (W/S),	Improve public safety during severe weather and extreme temperatures.
Communication gaps between responders during emergencies.	Purchase & distribute new mobile units and install additional transmission repeater. (All Jurisdictions)	High	Short	Brookings County Emergency Management Director	$150,000/improve emergency services in the county	County General Fund, 911 funds	All	Improve public safety during severe weather.
Educate County residents regarding risks, vulnerability, and mitigation activities for hazardous events	Continue periodic newspaper articles Severe Weather Awareness, Winter Weather Awareness and Fire Prevention Weeks (*All Jurisdictions*)	High	Ongoing	Emergency Management Director	<$1,000 - part of duties of emergency management office/ Keep weather preparedness in public conscience	County General Fund	All	Improve public safety during hazardous conditions
Communities do not have metric to measure effects of Lightning/lack of public data.	Keep record of and track damages resulting from lightning strikes (life/property) (*All Jurisdictions*)	High	Short	Emergency Management Director / Respective Fire Chief	<$1,000 – cost of coordination and record keeping/ gain insight on how to mitigate lighting damage	County/Fire Department General Funds	Lightning, Urban Fire, Wild Fire	Improve public safety during severe (Summer) weather.
Drought may increase risk of wildfire spreading	Annual reminders (newspaper article/PSA) for farmers to have tillage equipment prepared to till buffer to stop spread of wildfire – especially during harvest/drought.	Low	Short	Emergency Management Director	<$1,000 – cost interview or printing materials/ reminder of active role everyone plays in managing fire	County General Fund	Wildfire, Drought	Change the characteristics or impacts of fire and drought hazards
Rural and public water supplies at risk of depleting due to demand	Policy of support for regional water supplier such as *Project Mainstem* (All Jurisdictions)	Medium	Long	Brookings County Emergency Mgmt Director/Respective Finance Officers	$0/Support beginning of long process to establish regional water	N/A	Fire, Drought, Extreme Heat	Improve firefighting capabilities, ensure continuation of service in disasters

Overhead power lines are vulnerable to loss of service or damage due to high winds and/or ice.	Bury or upgrade overhead power lines to make them more resistant to damage from ice	High	Medium	Utility Provider	Dependent on type of line and construction method/ reduce damage and prevent loss of power service	OEM/HMGP, USDA, Utility Funds	Severe Weather Hazards (summer and winter)	Reduce the extent to which utility interruptions affect areas during severe weather situations.
Overhead power lines are vulnerable to loss of service or damage due to high winds and/or ice.	Bury power lines in heavy tree areas or rebuild/relocate overhead lines away from heavy tree areas	Medium	Medium	Utility Provider	Dependent on type of line and construction method/ reduce damage and prevent loss of power service	OEM/HMGP, USDA, Utility Funds	Severe Weather Hazards (summer and winter)	Reduce the extent to which utility interruptions affect areas during severe weather situations.
Overhead lines and support structures are vulnerable to flooding.	Bury or rebuild/relocate overhead power lines away from flood-prone areas	Medium	Medium	Utility Provider	Dependent on type of line and construction method/ reduce flood-related damage and prevent loss of power service	OEM/HMGP, USDA, Utility Funds	Flooding	Reduce the extent to which utility interruptions affect areas during flooding events caused by heavy rain, and rapid snow melt.
Water sources become depleted during drought. *(All Municipalities)*	Establish policies to decrease water consumption during specified periods of drought/low water storage. *(All Municipalities)*	Low	Long	Respective Finance Officer (All Municipalities)	$2,500 per year for enforcement (Each Municipality)	Municipal General Funds	Drought/Urban fire/ wildfire	Water sources become depleted during drought.
CITY OF AURORA PROBLEM STATEMENTS	**CITY OF AURORA ACTIONS**	**PRIORITY RATING**	**TIMEFRAME**	**CONTACT**	**COST/BENEFIT**	**FUNDING SOURCE**	**HAZARD**	**GOAL**
New development has occurred in areas that cannot hear storm sirens.	Place additional storm siren in park on Lilac Avenue and Pine Street Intersection.	High	Short	(Aurora) Maintenance Supervisor	$17,000	HMGP/OEM	Severe Weather Hazards (Summer and Winter)	Improve public safety during severe weather.

CITY OF AURORA PROBLEM STATEMENTS	CITY OF AURORA ACTIONS	PRIORITY RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
Portions of Lilac & Linden Avenues & E. Redmond Road prone to flooding in heavy rain or rapid snow melt.	Conduct drainage study to identify location, elevation, and size for culverts and other drainage improvements.	Medium	Medium	(Aurora) Maintenance Supervisor	$250,000	HMGP, City, Watershed District	Flooding	Protect Specific Areas of Brookings County from floods.
Portions of Lilac & Linden Avenues & E. Redmond Road prone to flooding in heavy rain or rapid snow melt.	Implement stormwater drainage improvements in targeting these streets.	Medium	Medium	(Aurora) Maintenance Supervisor	$250,000	HMGP	Flooding	Protect Specific Areas of Brookings County from floods.
CITY OF BROOKINGS PROBLEM STATEMENTS	**CITY OF BROOKINGS ACTIONS**	**PRIORITY RATING**	**TIMEFRAME**	**CONTACT**	**COST/BENEFIT**	**FUNDING SOURCE**	**HAZARD**	**GOAL**
Ensure Emergency Storm Shelter access within proximity for all rec facilities.	Discuss and map existing emergency storm shelters in order to identify and fill in gaps.	Low	Short	City of Brookings Parks, Recreation, and Forestry	$500,000 per structure/prevent injuries and save lives	HMGP, BRIC, USDA/CDBG, City	Tornado/ Severe Weather Storms	Improve public safety during severe weather
Certain areas of the city are subject to varying degrees of flooding resulting in property damage and disruption of services	Implement goals, strategies, and projects identified in the City of Brookings Master Drainage Plan	High (projects are prioritized within that plan)	Short (ongoing)	City of Brookings Engineer	$42 Million/reduce flood insurance payments and flood damage for residents and reduce disruption of transportation and utility service in floods	City General Fund, HMGP, CDBG, BRIC	Flooding	Protect Specific Areas of Brookings County from floods.

CITY OF BROOKINGS PROBLEM STATEMENTS	CITY OF BROOKINGS ACTIONS	PRIORITY RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
Community has Repetitive Flood Loss Properties	Purchase of properties identified as Repetitive Flood Loss	High	Short	Brookings City Manager	$250,000/ remove property from repetitive loss and limit risk of injury due to flooding	HMGP, BRIC, Private	Flooding	Protect Specific Areas of Brookings County from floods.
Properties and residences are repeatedly flooded in the northwest part of the City by Six Mile Creek.	Refine and implement strategies identified in the 2024 Six-Mile Creek Feasibility Study	High (projects are not prioritized in plan but offered as options)	Medium	City of Brookings Engineer	$17-85 Million Cost Preliminary Cost/Benefit of 5 options range from 0.27 – 1.49 based on preliminary estimates	City General Fund, HMGP, FMA, BRIC	Flooding	Protect Specific Areas of Brookings County from floods.
CITY OF BRUCE PROBLEM STATEMENTS	**CITY OF BRUCE ACTIONS**	**PRIORITY RATING**	**TIMEFRAME**	**CONTACT**	**COST/BENEFIT**	**FUNDING SOURCE**	**HAZARD**	**GOAL**
City does not have a designated storm shelter/community hall.	Construction of a multi-use storm shelter/gathering space.	Medium	Long	Town Board President	$600,000/prevent injuries and save lives	HMGP, BRIC, USDA/CDBG, City	Tornado	Improve public safety during severe weather
City has many structures within the Floodplain	Provide information to individuals in flood prone areas on available mitigation activities (elevation, floodproofing, buyout, ICC funding, etc.	High	Short	Finance Officer	$0/inform residents of options to mitigate flood damage	City General Fund	Flooding	Protect specific areas of Bruce from Flooding

TOWN OF BUSHNELL PROBLEM STATEMENTS	TOWN OF BUSHNELL ACTIONS	RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
Town Hall (emergency shelter) lacks a backup generator in case of power failure.	Purchase and install of emergency backup generator for Town Hall.	High	Short	Town Board President	$100,000/ provide a location for persons needing shelter	HMGP, BRIC, Town General Fund	Severe Weather Hazards (W/S); Extreme Heat/ Cold	Improve public safety during severe weather
The town lacks a storm shelter.	Construction of Tornado Emergency Shelter.	Medium	Medium	Town Board President	$500,000/prevent injuries and save lives	HMGP, BRIC, USDA/CDBG, City	Tornado	Improve public safety during severe weather
Town has no functioning fire hydrants to respond to fires.	Install water tank for emergency purposes.	Medium	Long	Town Board President	$50,000/reduce fire damage potential in town & save lives	FMAG, FP&S, DOI	Urban/ Wildfire	Maintain firefighting capabilities
Powerlines are vulnerable to loss of service due to high winds and/or ice.	Bury overhead power lines.	High	Short	Town Board President	Unknown/prevent loss of power service	OEM/HMGP, City, USDA, Ottertail Electric	Severe Weather Hazards	Reduce the extent to which utility interruptions affect areas during severe weather situations.
CITY OF ELKTON PROBLEM STATEMENTS	**CITY OF ELKTON ACTIONS**	**RATING**	**TIMEFRAME**	**CONTACT**	**COST/BENEFIT**	**FUNDING SOURCE**	**HAZARD**	**GOAL**
Old trees are vulnerable to breakage during high wind events affecting overhead power lines.	Bury overhead power lines.	High	Short	Finance Officer/ Utility Provider	Unknown/prevent loss of power service	OEM/HMGP, City, USDA, Ottertail Electric	Severe Weather Hazards	Reduce the extent to which utility interruptions affect areas during severe weather situations.

CITY OF ELKTON PROBLEM STATEMENTS	CITY OF ELKTON ACTIONS	RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
Old trees are vulnerable to breakage during high wind events affecting overhead power lines.	Implement tree replacement program. Offer economic assistance for citizens to remove old trees & replant with new / trim old trees.	High	Short	Finance Officer	$50,000 each/prevent loss of services & injuries	OEM/HMGP, City, USDA, Ottertail Electric	Severe Weather Hazards	Reduce the extent to which utility interruptions affect areas during severe weather situations.
Residents in the SE portion of City cannot hear warning siren.	Purchase and install additional storm warning siren for SE portion of City.	High	Short	Finance Officer	$50,000/prevent injuries and save lives	City, OEM/HMGP	Severe Weather Hazards	Improve public safety during severe weather.
Campground and ballfield users vulnerable to sudden storm events.	Develop emergency plan for severe weather & purchase fliers/signage to be posted in locations for at risk persons.	High	Short	Finance Officer	Unknown prevent injuries and save lives	City General Fund	All Hazards	Improve public safety during all hazards.
Town does not have a storm shelter or tornado safe room.	Construct a tornado Emergency Shelter near campground.	High	Medium	Finance Officer	$500,000/provide a location for persons to shelter	HMGP, BRIC, USDA/CDBG, City	Severe Weather Hazards	Improve public safety during severe weather.
Community lacks wind protection outside of City.	Establish living snow fence/shelterbelts north and west of community.	Low	Long	Finance Officer	Unknown/ensure evacuation routes remain clear during winter storms & save lives	NRCS/City	Severe Weather Hazards	Improve public safety during severe weather.

TOWN OF SINAI PROBLEM STATEMENTS	TOWN OF SINAI ACTIONS	RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
The town does not have a Tornado Safe Emergency Shelter.	Construction of Tornado Shelter.	Medium	Medium	Finance Officer	$500,000/prevent injuries and save lives	BRICE/ OEM/HMGP, Town, USDA	Tornado	Improve public safety during severe weather.
Low lying areas are prone to overland flooding due to Lake Sinai.	Complete required drainage improvements from engineering study.	Medium	Medium	Finance Officer	$150,000/reduce flood damages in town	HMGP	Flooding	Protect Specific Areas of Brookings County from floods.
Town does not have a back-up generator for emergency use.	Purchase of portable back-up generator.	High	Short	Town Board President	$30,000/provide temporary power during an emergency	HMGP, BRIC, Town General Fund	Severe Weather Hazards	Reduce the extent to which utility interruptions affect areas during severe weather situations.
CITY OF VOLGA PROBLEM STATEMENTS	**CITY OF VOLGA ACTIONS**	**RATING**	**TIMEFRAME**	**CONTACT**	**COST/BENEFIT**	**FUNDING SOURCE**	**HAZARD**	**GOAL**
Powerlines are vulnerable to damage due to high winds and/or ice.	Bury overhead powerlines.	Medium	Short	Finance Officer	Unknown/prevent loss of power service	OEM/HMGP, City, USDA, Ottertail Electric	Severe Weather Hazards	Reduce the extent to which utility interruptions affect areas during severe weather situations.
The town does not have a Tornado Safe Emergency Shelter.	Construction of Tornado Shelter.	Medium	Short	Finance Officer	$500,000/prevent injuries and save lives	BRICE/ OEM/HMGP, Town, USDA	Tornado	Improve public safety during severe weather.

CITY OF VOLGA PROBLEM STATEMENTS	CITY OF VOLGA ACTIONS	RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
Wastewater Treatment Facility does not have adequate backup generators.	Purchase backup generators and support systems.	Medium	Medium	Finance Officer	$300,000/provide temporary power during an emergency	HMGP, BRIC, Town General Fund	Severe Weather Hazards	Reduce the extent to which utility interruptions affect areas during severe weather situations.
Stormwater system infrastructure on 2nd Street from Astrachan to Samara Ave require extensive on-going maintenance and are unable to handle increased water levels.	Implement improvements listed in Volga Stormwater Plan (Banner 2018).	High	Long	Finance Officer	$777,000/reduce flood damages in town	HMGP/DENR/ City/Rural Development	Severe Weather Hazards (summer and winter)	Reduce the extent to which utility interruptions affect areas during severe weather situations.
Stormwater system infrastructure on 6th Street require extensive on-going maintenance and are unable to handle increased water levels.	Implement improvements listed in Volga Stormwater Plan (Banner 2018).	High	Long	Finance Officer	$1,800,000/reduce flood damages in town	HMGP/DENR/ City/Rural Development	Severe Weather Hazards (summer and winter)	Reduce the extent to which utility interruptions affect areas during severe weather situations.
Stormwater drainage through town is known to cause local flooding issues.	Implement improvements such as sizing up stormwater sewer.	Medium	Medium	Maintenance Supervisor	$350,000/reduce flood damages in town	HMGP, BRIC, City General Funds	Severe Weather Hazards (summer and winter)	Protect Specific Area of Brookings County from Floods.

CITY OF VOLGA PROBLEM STATEMENTS	CITY OF VOLGA ACTIONS	RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
Improve upon ability to review building plans, site plans, subdivision proposals, nor ensuring fire safe, orderly development which may be efficiently provided emergency, utility service and minimize flood risk	Update Comprehensive Land Use Plan and Zoning Regulations.	Low	Long	Finance Officer	$5,000/prevent & reduce flood-related damages.	City	Flooding	Improve public safety during severe weather.
Current Fire Hall underserves staff and volunteers.	Construct new Fire Hall.	High	Short	Finance Officer	Unknown/equip the community with more fire-fighting capabilities & save lives.	FMAG, FP&S, DOI/City	Urban/ Wild Fire	Maintain firefighting capabilities.
CITY OF WHITE PROBLEM STATEMENTS	**CITY OF WHITE ACTIONS**	**RATING**	**TIMEFRAME**	**CONTACT**	**COST/BENEFIT**	**FUNDING SOURCE**	**HAZARD**	**GOAL**
Town does not have a tornado Emergency Shelter.	Construction of tornado safe room in a central community location.	High	Medium	Finance Officer	$500,000/prevent injuries and save lives	BRICE/ OEM/HMGP, Town, USDA/ Fire	Fire	Improve public safety during severe weather.

CITY OF WHITE PROBLEM STATEMENTS	CITY OF WHITE ACTIONS	RATING	TIMEFRAME	CONTACT	COST/BENEFIT	FUNDING SOURCE	HAZARD	GOAL
Improve upon ability to review building plans, site plans, subdivision proposals, nor ensuring fire safe, orderly development which may be efficiently provided emergency, utility service and minimize flood risk	Update Comprehensive Land Use Plan and Zoning Regulations.	Low	Short	Finance Officer	$5,000/prevent & reduce flood-related damages.	City	Flooding	Improve public safety during severe weather.

Figure 5.1a: Brookings County Potential Mitigation

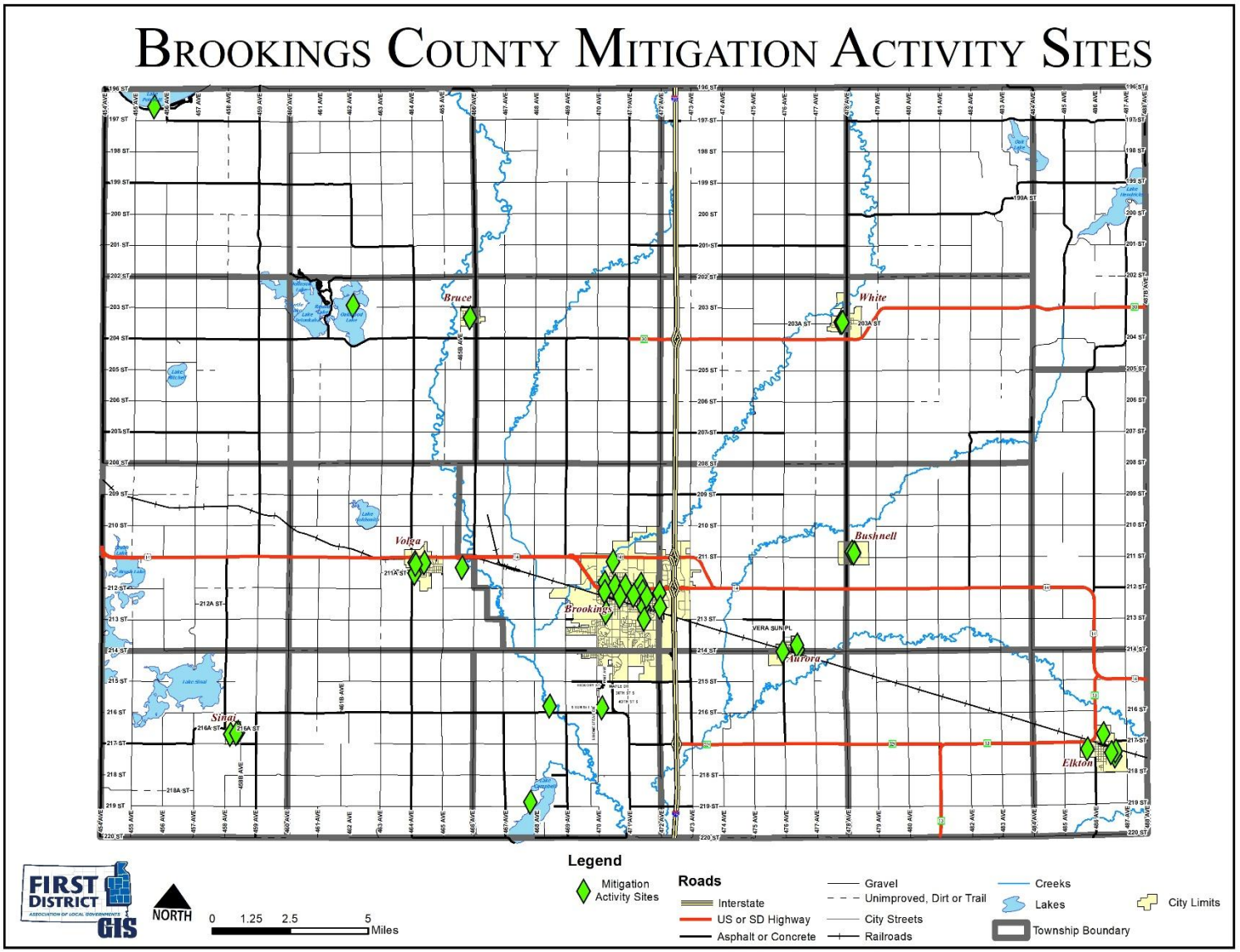


Figure 5.2: City of Aurora Potential Mitigation

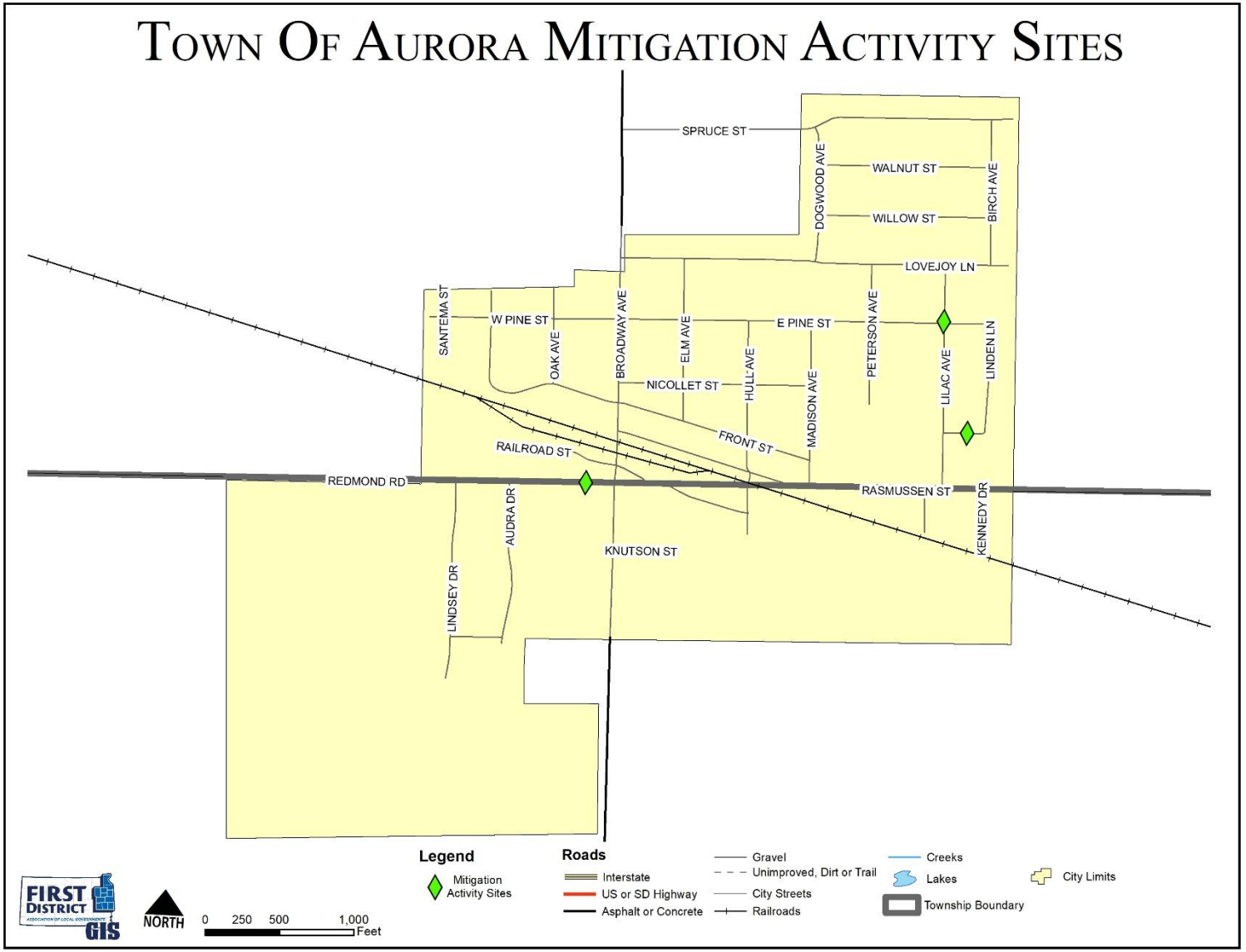


Figure 5.3: City of Brookings Potential Mitigation Project Map

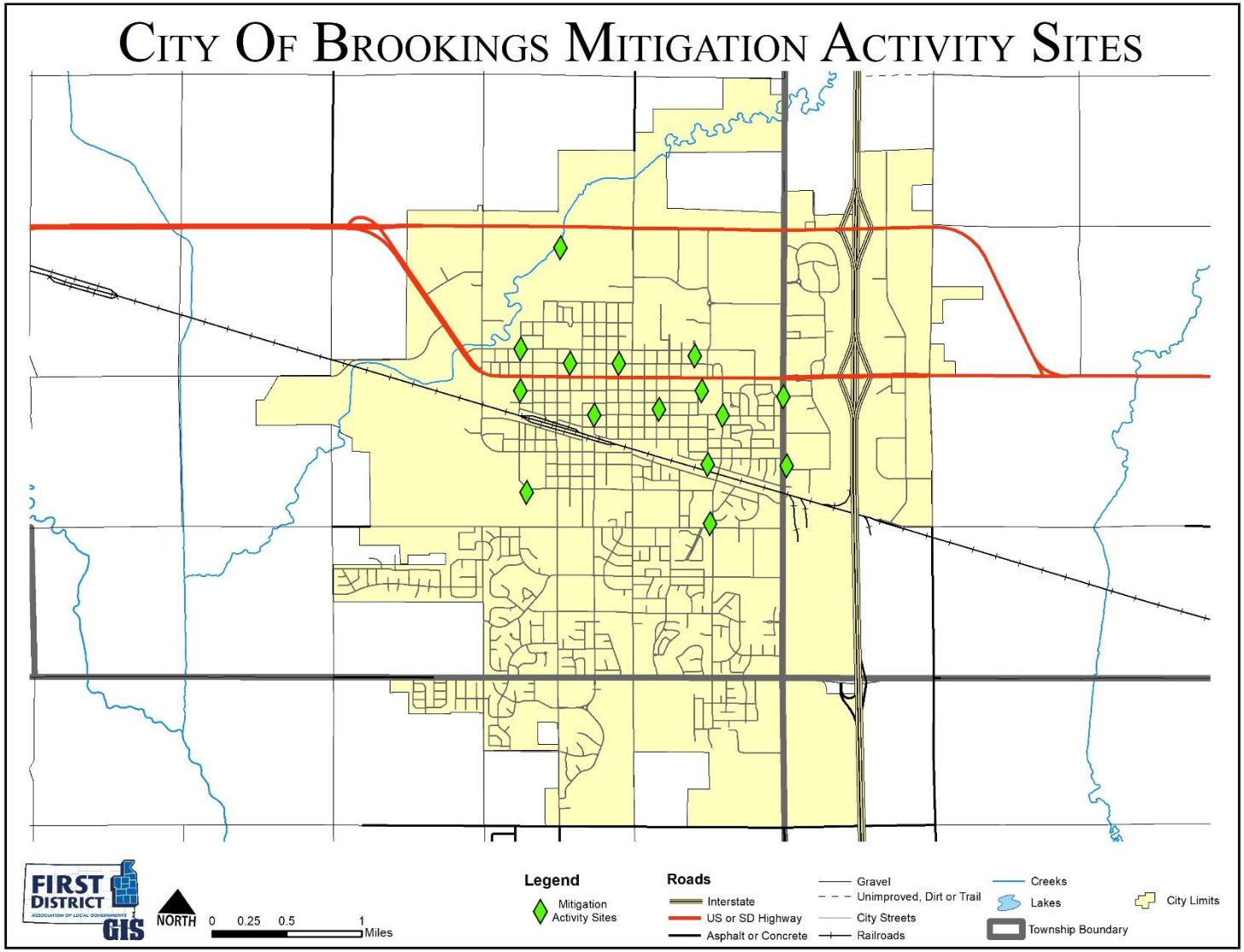


Figure 5.4: City of Bruce Potential Mitigation Project

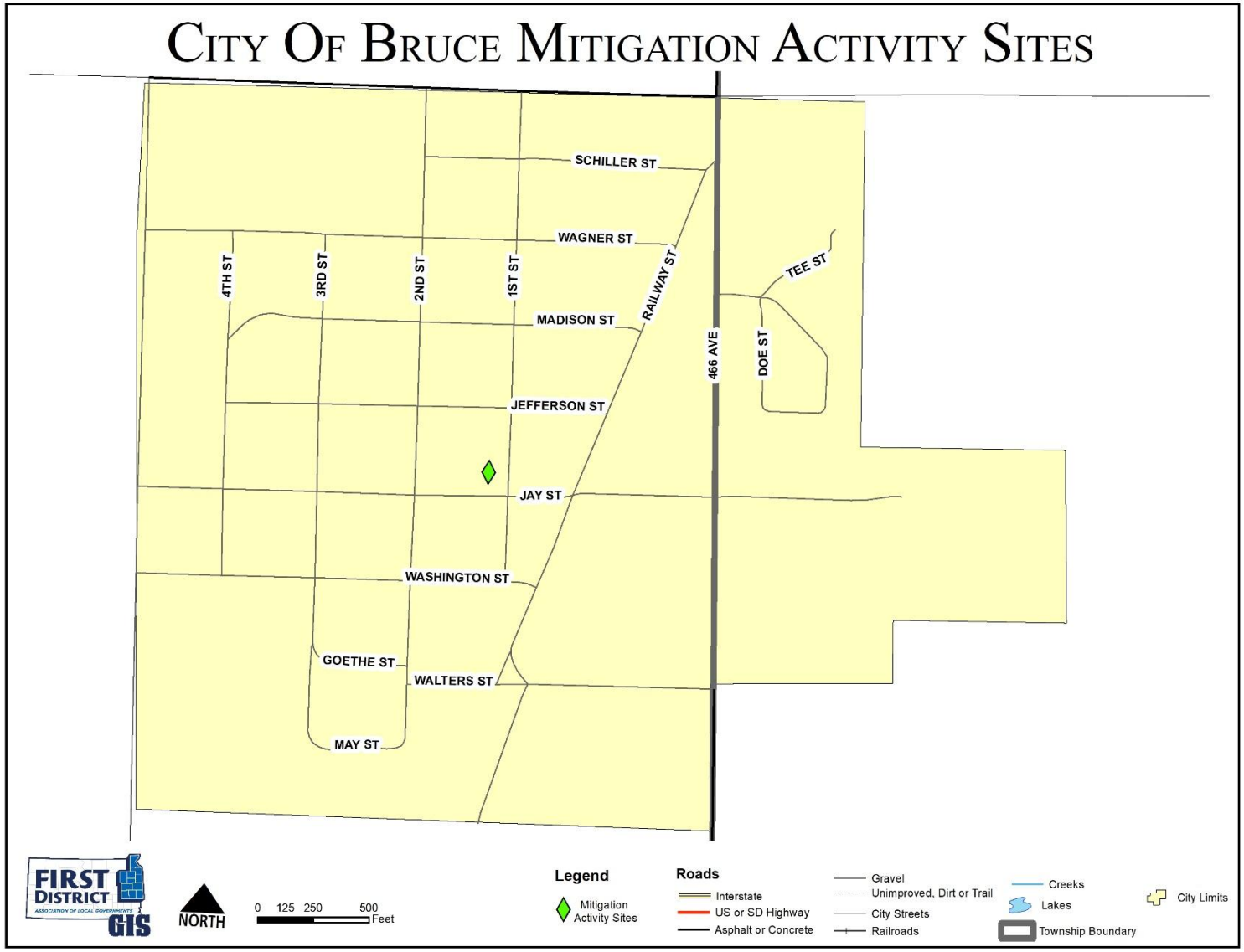


Figure 5.5: City of Bushnell Potential Mitigation Project

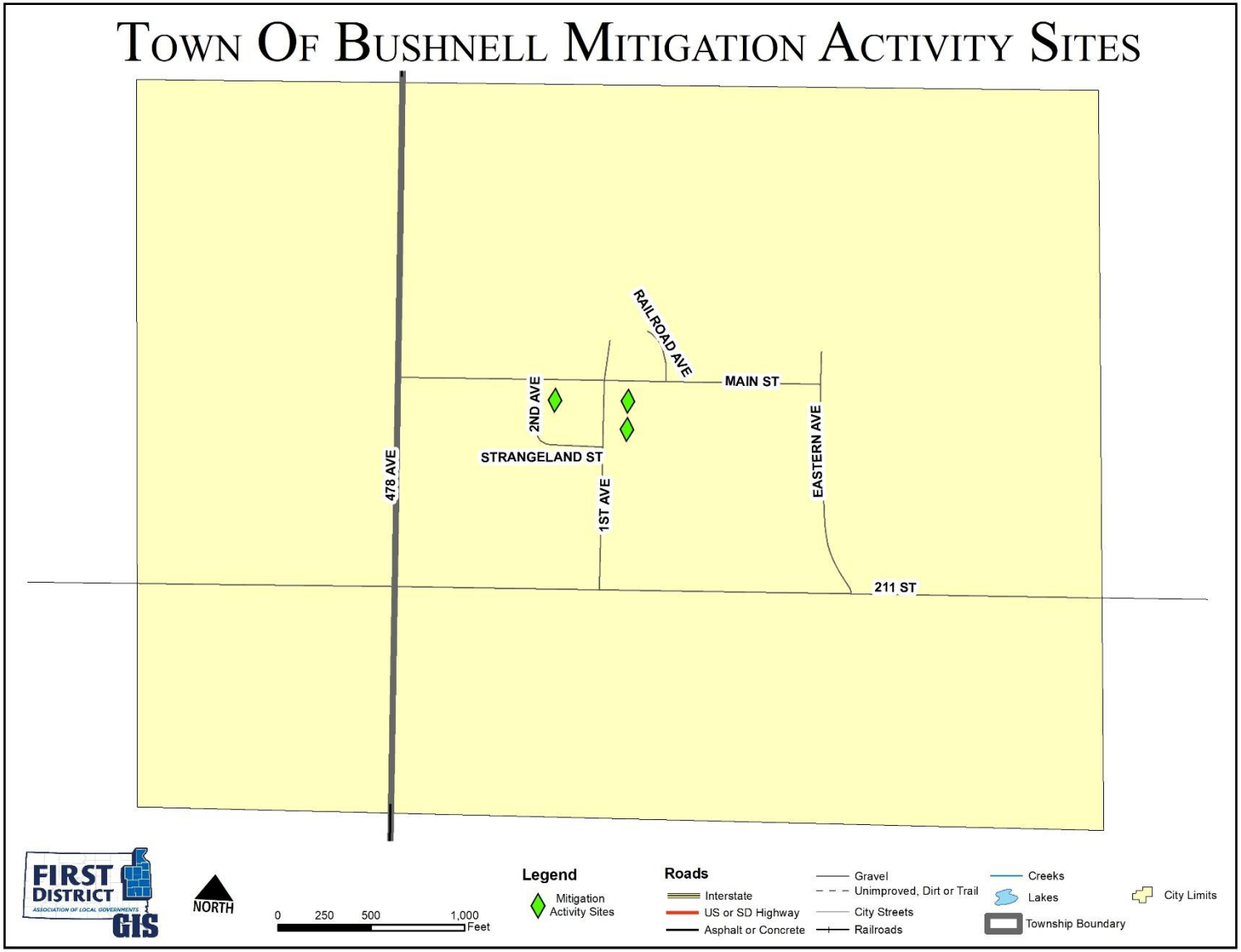


Figure 5.6: City of Elkton Potential Mitigation Project Map

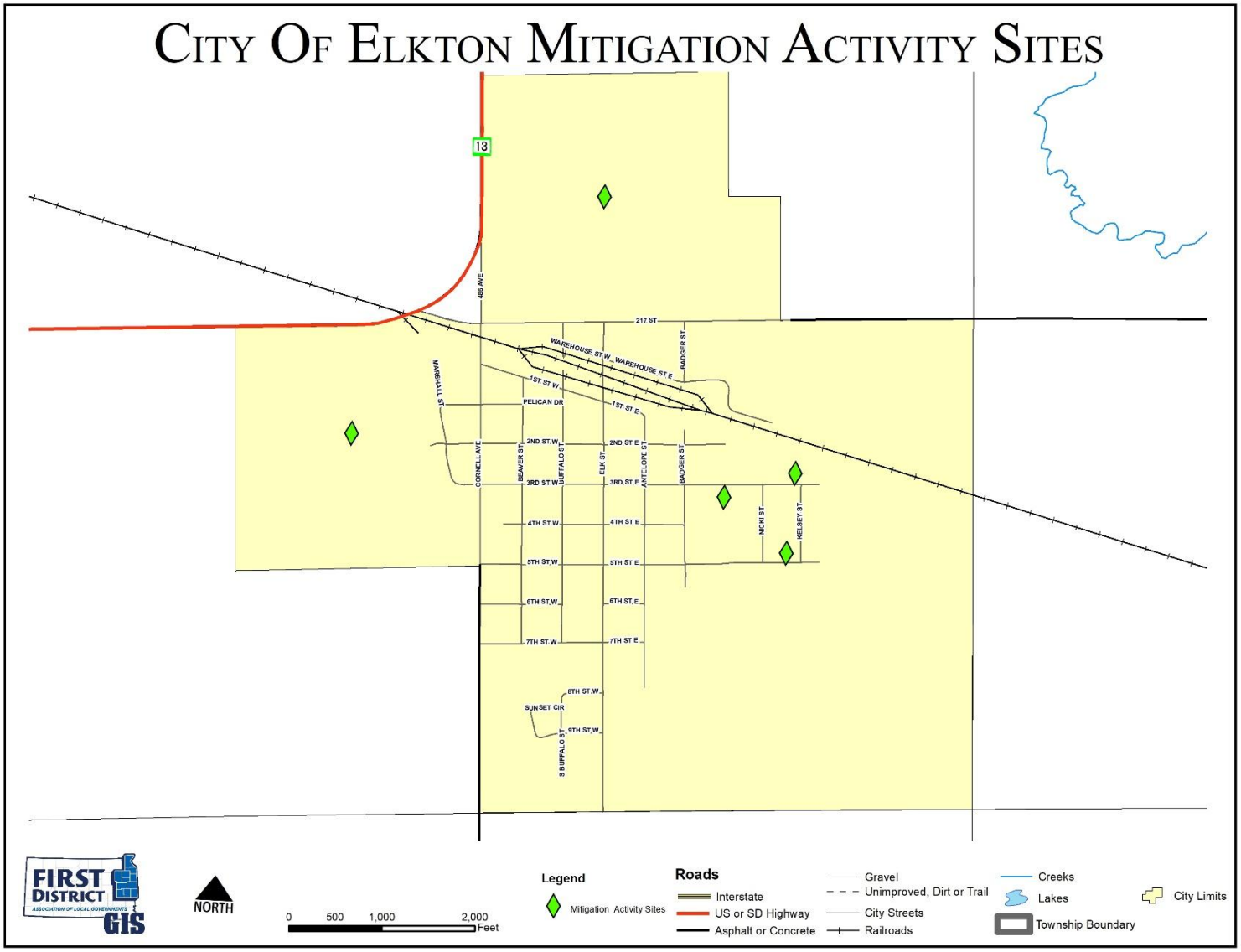


Figure 5.7: Town of Sinai Potential Mitigation Project Map

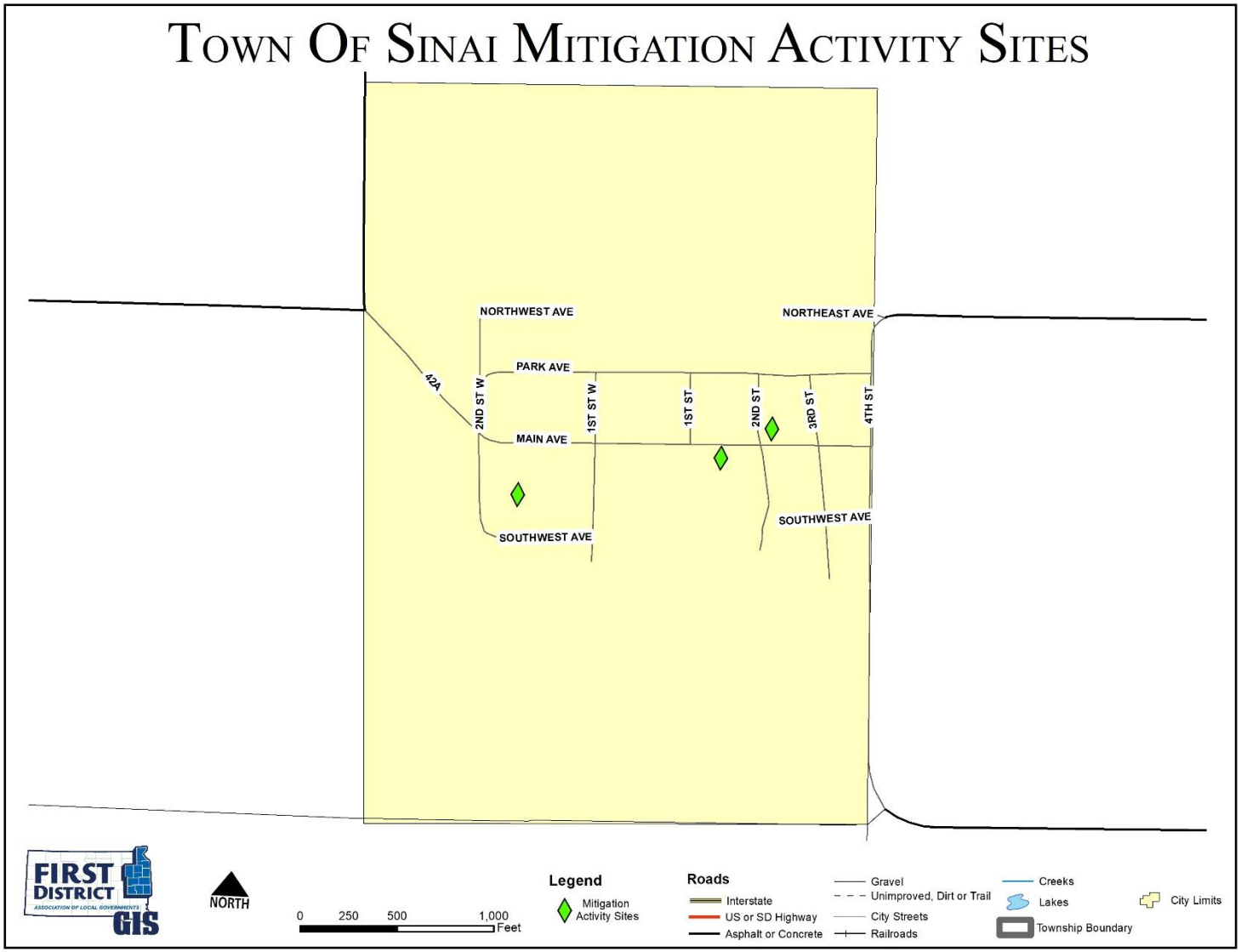


Figure 5.8: City of Volga Potential Mitigation Project Map

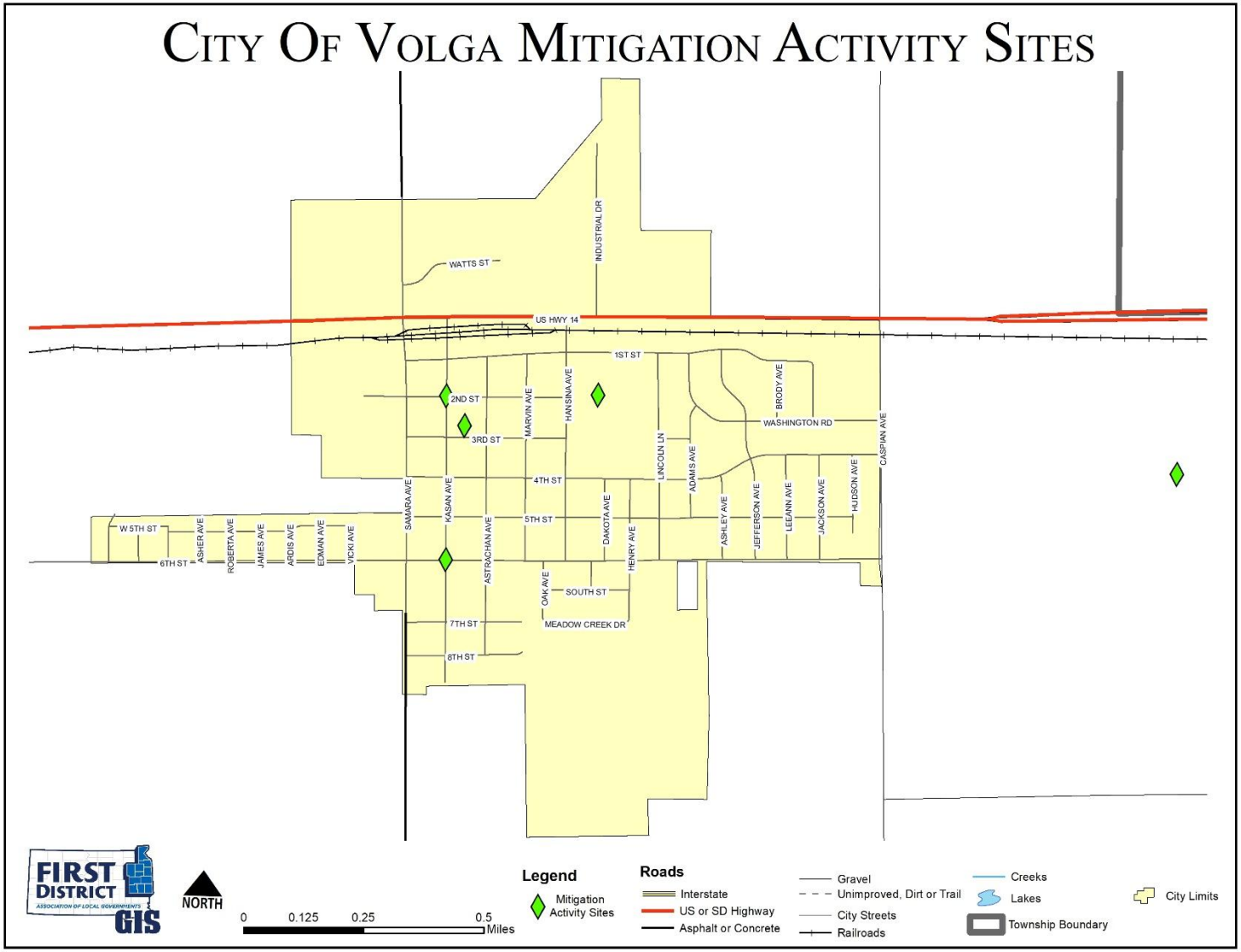
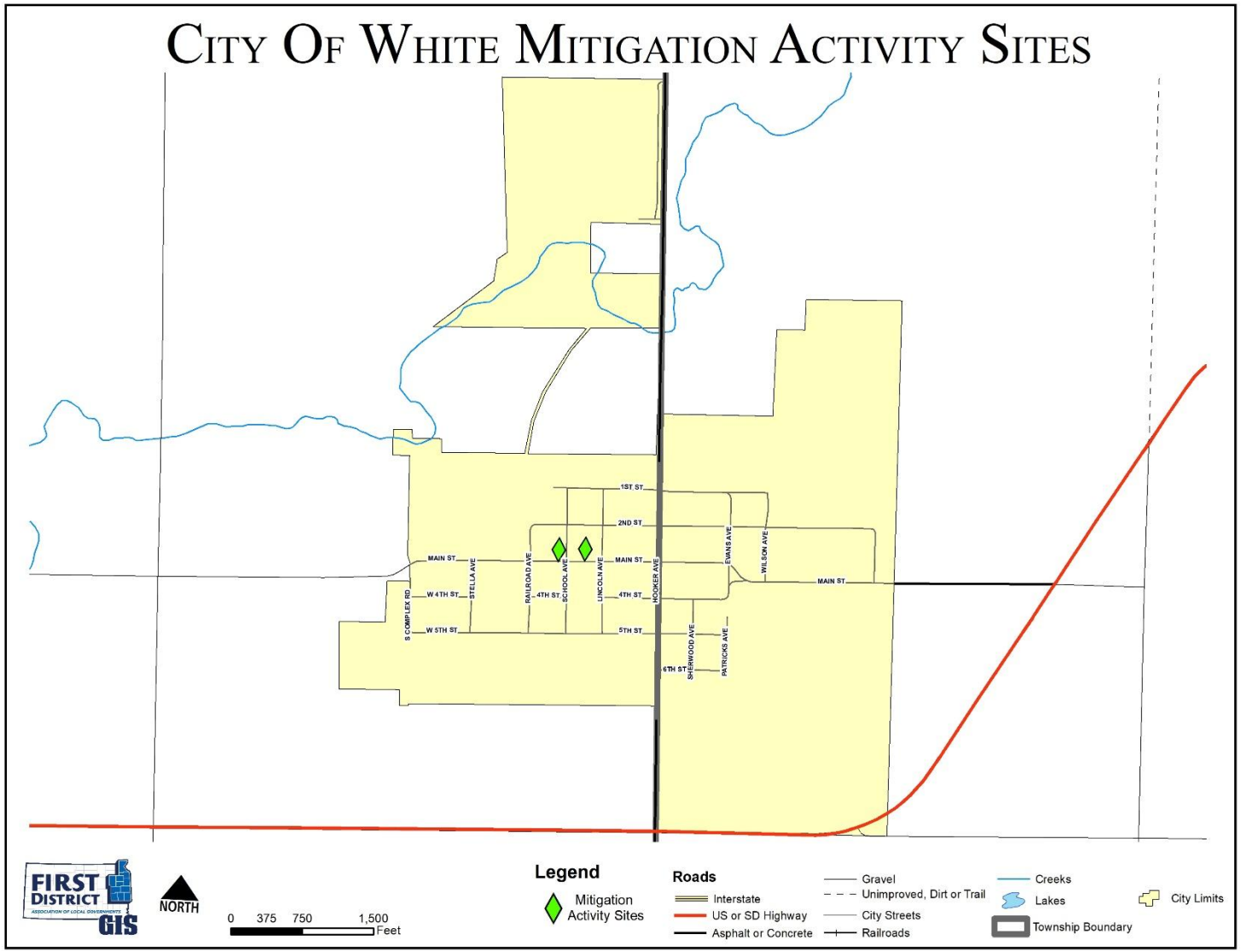


Figure 5.9: City of White Potential Mitigation Project Map



IMPLEMENTATION OF MITIGATION ACTIONS

Requirement 201.6(c)(4)(ii). Local Mitigation Plan Review Tool – D3 (a-c).
Requirement 201.6(d)(3). Local Mitigation Plan Review Tool – E2 (c)

Upon adoption of the updated Brookings County PDM, each jurisdiction will become responsible for implementing its own mitigation actions. The planning required for implementation is the sole responsibility of the local jurisdictions and private businesses that have participated in the PDM update. All of the municipalities have indicated that they do not have the financial capability to move forward with projects identified in the PDM at this time, however, all will consider applying for funds through the State and Federal Agencies once such funds become available. If and when the municipalities are able to secure funding for the mitigation projects, they will move forward with the projects identified. A benefit cost analysis will be conducted on an individual basis after the decision is made to move forward with a project.

The 2007 PDM was the first approved mitigation plan that the County has ever had on file. At that time, the PDM was drafted the requirements for an approved mitigation plan were much different than the current Local Mitigation Plan Review Tool. Since disaster mitigation was a relatively new concept at that time, mitigation plans were approved with less scrutiny. The same depth of planning was not utilized in the 2007 PDM as was used for the 2014 PDM update. The 2007 PDM had the “bare minimum” to meet the FEMA requirements for a mitigation plan, resulting in a lack of relevant information that could be utilized and easily integrated into the County’s and Municipalities’ existing planning mechanisms.

Due to these factors, the 2007 PDM was not used or incorporated into other planning documents or mechanisms. From a practical standpoint the 2014 PDM update required communities to reflect on past disasters, consider future disasters, and think about how or if future disasters would be handled differently, or better. It is anticipated with the amount of time, energy, and professional guidance involved during the drafting process of the updated 2019 PDM, that the County has created a document that has validity and a clear purpose which will be more likely to fit in the existing planning mechanisms that exist county-wide.

Lastly, by involving all the local jurisdictions and bringing the PDM to the attention of neighboring communities, the planning process has brought more awareness of hazard mitigation to the people residing in the County, which will encourage further involvement in the future. The 2014 PDM plan was referenced during the 2019 PDM update process. Similarly, the 2019 PDM plan was referenced during the drafting process for the current 2024 Brookings County PDM plan.

Since 2019 (adoption of last PDM Plan), Brookings County has completed updates of its zoning ordinance and Joint Jurisdiction Zoning Ordinance with the City of Brookings. The City of Elkton has also adopted Comprehensive updates to its zoning ordinances. The County as well as the Cities of Brookings and Elkton each reviewed the respective rules regarding bulk, height, and density of development to determine whether consistent, not only with the established planning principles of the community but also to ensure those regulations practicably employed the goals of the pre-disaster mitigation plan with reference to protection from fire, drought (impacts on water supply), limitation of density in flood prone areas and review of regulations for areas determined to be in a 100-year floodplain.

Updates have been made to the Hazardous Materials Plan and Emergency Operations Plan since 2019. During the revision of those plans the emergency manager reviewed the PDM Plan to ensure harmony. No other plans, policies, regulations have been significantly amended since the 2019 Plan. Thus, changes have not been made to other planning mechanisms to incorporate the 2019 Plan.

MONITORING, EVALUATING, AND UPDATING THE PLAN

Requirement 201.6(c)(4)(iii). Local Mitigation Plan Review Tool – D1.
Requirement 201.6(c)(4)(i). Local Mitigation Plan Review Tool – D2-a-c.

The County and all of the participating local jurisdictions thereof will incorporate the findings and projects of the PDM in all planning areas as appropriate. Periodic monitoring and reporting of the PDM is required to ensure that the goals and objectives for the County PDM are kept current and that local mitigation efforts are being carried out. Communities will establish an annual review of projects and infrastructure listed in the plan. As funding becomes available, projects are completed, or the inevitable new project needs to be added, communities will report to the Brookings County Emergency Management Director.

Communities will utilize Worksheet 10: Plan Update Evaluation Form from the Local Mitigation Planning Handbook (see Appendix I) by October 31 each year and following any disaster to assess strengths, weaknesses, and evaluate potential updates to the existing plan. The Finance Officer or a designated representative from the City Council/Town Board will submit the findings of this review to the Emergency Manager. The Emergency Manager will then compile an annual report summarizing the results for each community and for Clark County, which will be presented to the County Commissioners in November.

During the process of implementing mitigation strategies, the county or communities within the county may experience lack of funding, budget cuts, staff turnover, and/or a general failure of projects. These scenarios are not in themselves a reason to discontinue and fail to update the PDM. A good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for appropriate changes to be made.

CONTINUED PUBLIC PARTICIPATION & INVOLVEMENT

Requirement 201.6(c)(4)(iii). Local Mitigation Plan Review Tool – D1-a.
Requirement 201.6(c)(4)(i). Local Mitigation Plan Review Tool – D2-a-c.

During interim periods between the five-year re-write, efforts will be continued to encourage and facilitate public involvement and input. The PDM will be available for public view and comment at the Brookings County Emergency Management Office located in the Brookings County Sheriff's Office and the First District Association of Local Governments office. The PDM will also be available for review on the web at the First District Association of Local Governments homepage www.1stdistrict.org. Comments will always be received whether orally over the phone, physically by mail, or electronically by e-mail.

All ongoing workshops and trainings will be open to the public and appropriately advertised. Ongoing press releases and interviews will help disseminate information to the general public and encourage participation.

As implementation of the mitigation strategies continues in each local jurisdiction, the primary means of public involvement will be the jurisdiction's own public comment and hearing process. State law as it applies to municipalities and counties requires this as a minimum for many of the proposed implementation measures. Effort will be made to encourage cities, towns and counties to go beyond the minimum required to receive public input and engage stakeholders.

ANNUAL REPORTING PROCEDURES

Requirement 201.6(c)(4)(iii). Local Mitigation Plan Review Tool – D1.
Requirement 201.6(c)(4)(i). Local Mitigation Plan Review Tool – D2-a-c.

The PDM shall be reviewed annually, as required by the County Emergency Management Director, or as the situation dictates such as following a disaster declaration. The Brookings County Emergency Management Director will utilize Worksheet 10: Plan Update Evaluation Form (see Appendix I) from the Local Mitigation Planning Handbook to review the PDM annually in November and ensure the following:

1. The County Elected body will receive an annual report and/or presentation on the implementation status of the PDM;
2. The report will include an evaluation of the effectiveness and appropriateness of the mitigation actions proposed in the PDM, including comments received from specific communities; and
3. The report will recommend, as appropriate, any required changes or amendments to the PDM.

FIVE-YEAR PDM REVIEW

Requirement 201.6(c)(4)(i). Local Mitigation Plan Review Tool – D2-a-c.
Requirement 201.6(c)(4)(ii). Local Mitigation Plan Review Tool – D3-c.

Every five years the PDM will be reviewed, and a complete update will be initiated. All information in the PDM will be evaluated for completeness and accuracy based on new information or data sources. New property development activities will be added to the PDM and evaluated for impacts. New or improved sources of hazard related data will also be included.

In future years, if the County relies on grant dollars to hire a contractor to write the PDM update, the County will initiate the process of applying for and securing such funding in the third year of the PDM to ensure the funding is in place by the fourth year of the PDM. The fifth year will then be used to write the PDM update, which in turn will prevent any lapse in time where the county does not have a current approved PDM on file.

The goals, objectives, and mitigation strategies will be readdressed and amended as necessary based on new information, additional experience and the implementation progress of the PDM. The approach to this PDM update effort will be essentially the same as the one used for the original PDM development.

The Emergency Management Director will meet with the PDM Planning Team for review and approval prior to final submission of the updated PDM.

PLAN AMENDMENTS

PDM amendments will be considered by the Brookings County Emergency Management Director, during the PDM's annual review to take place the end of each county fiscal year. All affected local jurisdictions (cities, towns, and counties) will be required to hold a public hearing and adopt the recommended amendment by resolution prior to considerations by the PDM Planning Team.

INCORPORATION INTO EXISTING PLANNING MECHANISMS

Requirement 201.6(B)(3). Local Mitigation Plan Review Tool – A4.
Requirement 201.6(c)(4)(i). Local Mitigation Plan Review Tool – D2-a-c.
Requirement 201.6(c)(4)(ii). Local Mitigation Plan Review Tool – D3.

All towns with existing comprehensive land use plans will review mitigation projects annually when reviewing their comprehensive land use plan, as is recommended in each of their plans. In addition, all municipalities, including the towns without comprehensive land use plans, will consider the mitigation requirements, goals, actions, and projects when it considers and reviews the budget and other existing planning documents. Preparation of the budget is an opportune time to review the plan since municipalities are required by state law to prepare budgets for the upcoming year and typically consider any expenditure for the upcoming year at that time.

The local jurisdictions will post a permanent memo to their files as a reminder for them to incorporate their annual review of the mitigation actions identified into the budget preparation process. This does not require the projects be included in the budget, it merely serves as a reminder to the city officials that they have identified mitigation projects in the PDM that should be considered if the budget allows for it.

POTENTIAL FUNDING SOURCES

Although all mitigation techniques will likely save money by avoiding losses, many projects are costly to implement. None of the local jurisdictions have the funds available to move forward with mitigation projects at this time; thus, the Potential Funding Sources section was included so that the local jurisdictions can work towards securing funding for the projects. Inevitably, due to their small tax bases and small populations, most local jurisdictions do not have the ability to generate enough revenue to support anything beyond the basic needs of the community. Thus, mitigation projects will not be completed without a large amount of funding support from State or Federal programs.

The County jurisdictions will continue to seek outside funding assistance for mitigation projects in both the pre- and post-disaster environment. Primary Federal and State grant programs have been identified and briefly discussed, along with local and non-governmental funding sources, as a resource for the local jurisdictions.

Federal

The following federal grant programs have been identified as funding sources which specifically target hazard mitigation projects:

Title: Rural Fire Assistance Grants Agency: U.S. Fish & Wildlife Service (DOI)
Each year, the U.S. Fish & Wildlife Service (FWS) provides Rural Fire Assistance (RFA) grants to neighboring community fire departments to enhance local wildfire protection, purchase equipment, and train volunteer firefighters. Service fire staff also assist directly with community projects. These efforts reduce the risk to human life and better permit FWS firefighters to interact and work with community fire organizations when fighting wildfires. The Department of the Interior (DOI) receives an appropriated budget each year for the RFA grant program. The maximum award per grant is $20,000. The DOI assistance program targets rural and volunteer fire departments that routinely help fight fire on or near DOI lands.

Title: Fire Management Assistance Grant Program
Agency: Federal Emergency Management Agency

The Fire Management Assistance Grant (FMAG) program provides grants to states, tribal governments, and local governments for the mitigation, management, and control of any fire burning on publicly (non-federal) or privately owned forest or grassland that threatens such destruction as would constitute a major disaster.

The Fire Management Assistance declaration process is initiated when a state submits a request for assistance to the FEMA Regional Director at the time a “threat of major disaster” exists. The entire process is accomplished on an expedited basis and decisions are rendered within a matter of hours.

However, before a grant can be awarded, a state must demonstrate that total eligible costs for the declared fire meet or exceed the individual fire cost threshold. This applies to single fires or cumulative fire cost threshold. The grants are made in the form of cost sharing with the federal share being 75% of total eligible costs. Eligible firefighting costs may include expenses for: field camps, repair and replacement tools, mobilization and demobilization activities, equipment use, and materials/supplies.

Title: Fire Prevention and Safety (FP&S) Grants
Agency: Federal Emergency Management Agency

The Fire Prevention and Safety grants support projects that enhance the safety of the public and firefighters from fire and other related hazards. The primary goal is to target high-risk populations and reduce injury and prevent death. Eligibility includes fire departments, national, regional, state, and local organizations, tribal organizations, and/or community organizations recognized for their experience and expertise in fire prevention and safety programs and activities. Private non-profit and public organizations are also eligible.

Title: Wildland Urban Interface Community & Rural Fire Assistance
Agency: Bureau of Land Management (DOI)

This program is designed to implement the National Fire Plan and assist communities at risk from catastrophic wildland fires by providing grants, technical assistance, and training for community programs that develop local capability, such as:

Assessment and planning, mitigation activities, and community and homeowner education and action; hazardous fuels reduction activities, including the training, monitoring or maintenance associated with such hazardous fuels reduction activities, on federal land, or on adjacent nonfederal land for activities that mitigate the threat of catastrophic fire to communities and natural resources in high risk areas; and, enhancement of knowledge and fire protection capability of rural fire districts through assistance in education and training, protective clothing and equipment purchase, and mitigation methods on a cost-share basis.

The Rural Fire Assistance (RFA) program funds are appropriated by Congress annually. The maximum award is $20,000. This funding focuses specifically on enhancing fire protection capabilities of rural and volunteer fire departments through training, equipment purchases, and fire prevention work on a cost-shared basis.

Title: Western Wildland Urban Interface Grants
Agency: USDA Forest Service

The National Fire Plan (NFP) is a long-term strategy for reducing the effects of catastrophic wildfires throughout the nation. The Division of Forestry's NFP Program is implemented within the Division's Fire and Aviation Program through the existing USDA Forest Service, State & Private Forestry, and State Fire Assistance Program.

Congress has provided increased funding assistance to states through the U.S. Forest Service State and Private Forestry programs since 2001. The focus of much of this additional funding was mitigating risk in WUI areas. In the West, the State Fire Assistance funding is available and awarded through a competitive process with emphasis on hazard fuel reduction, information and education, and community and homeowner action. This portion of the National Fire Plan was developed to assist interface communities manage the unique hazards they find around them. Long-term solutions to interface challenges require informing and educating people who live in these areas about what they and their local organizations can do to mitigate these hazards.

The 10-Year Comprehensive Strategy focuses on assisting people and communities in the WUI to moderate the threat of catastrophic fire through the four broad goals of improving prevention and suppression, reducing hazardous fuels, restoring fire-adapted ecosystems, and promoting community assistance. The Western States Wildland Urban Interface Grant may be used to apply for financial assistance towards hazardous fuels and educational projects within the four goals of: improved prevention, reduction of hazardous fuels, restoration of fire- adapted ecosystems and promotion of community assistance.

Title: Community Planning Assistance for Wildfire
Agency: Private Community Wildfire Planning Center

Established in 2015 by Headwaters Economics and Wildfire Planning International, Community Planning Assistance for Wildfire (CPAW) works with communities to reduce wildfire risks through improved land use planning. CPAW is a grant-funded program providing communities with professional assistance from foresters, planners, economists and wildfire risk modelers to integrate wildfire mitigation into the development planning process. All services and recommendations are site-specific and come at no cost to the community.

Title: U.S. Bureau of Land Management, Community Assistance Program
Agency: Bureau of Land Management

BLM provides funds to communities through assistance agreements to complete mitigation projects, education and planning within the WUI.

Title: Hazard Mitigation Grant Program Post Fire Grant Program
Agency: Federal Emergency Management Agency

The Hazard Mitigation Grant Program (HMGP) has Post Fire assistance available to help communities implement hazard mitigation measures after wildfire disasters. States, federally recognized tribes and territories affected by fires resulting in a Fire Management Assistance Grant (FMAG) declaration on or after October 5, 2018, are eligible to apply.

The application period for this grant is only open for six months after the state or territory's first FMAG declaration of the fiscal year is made. Prioritized HMGP Post Fire activities include wildfire mitigation, infrastructure retrofit, soil and slope stabilization, and flood prevention.

Title: Urban and Community Forestry (UCF) Program
Agency: USDA Forest Service

A cooperative program of the U.S. Forest Service that focuses on the stewardship of urban natural resources. With 80 percent of the nation's population in urban areas, there are strong environmental, social, and economic cases to be made for the conservation of green spaces to guide growth and revitalize city centers and older suburbs. UCF responds to the needs of urban areas by maintaining, restoring, and improving urban forest ecosystems on more than 70 million acres. Through these efforts the program encourages and promotes the creation of healthier, more livable urban environments across the nation. These grant programs are focused on issues and landscapes of national importance and prioritized through state and regional assessments.

Title: Flood Mitigation Assistance Grant Program
Agency: Federal Emergency Management Agency

The Flood Mitigation Assistance (FMA) program provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program (NFIP). FMA was created as part of the National Flood Insurance Reform Act of 1994 (42 USC 4101) with the goal of reducing or eliminating claims under the NFIP.

FMA is available to states, local communities, and federally recognized tribes and territories on an annual basis.. This funding is available for mitigation planning and implementation of mitigation measures that reduce or eliminate risk of repetitive flood damage to NFIP insured buildings only. The federal cost share for an FMA project is 75%. At least 25% of the total eligible costs must be provided by a non-federal source. Of this, no more than half can be provided as in-kind contributions from third parties.

States administer the FMA program and are responsible for selecting projects for funding from the applications submitted by all communities within the state. FMA funds are very limited, which makes the application selection quite competitive. The state then forwards selected applications to FEMA for an eligibility determination. Although individuals cannot apply directly for FMA funds, their local government may submit an application on their behalf.

Title: Community Development Block Grants
Agency: U.S. Department of Housing and Urban Development

The Community Development Block Grant (CDBG) program provides grants to local governments for community and economic development projects that primarily benefit low and moderate-income households with decent housing, suitable living environments, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, planning, and administration.

Public improvements may include flood and drainage improvements. In limited instances and during times of "urgent need" (e.g., post disaster), CDBG funding may be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event. CDBG funds can be used to match FEMA grants.

Title: Hazard Mitigation Grant Program
Agency: Federal Emergency Management Agency

The Hazard Mitigation Grant Program (HMGP) was created in November 1988 through Section of 404 the Stafford Act. The HMGP is a post-disaster mitigation program that offers assistance to states and local communities in implementing long-term mitigation measures following a Presidential disaster declaration.

HMGP may fund up to 75% of the eligible costs for hazard mitigation projects that will protect property in an area covered by a federal disaster declaration or that will reduce likely damage from future disasters. The state or local cost-share match does not need to be cash; in-kind services or materials may also be used. With the passage of the Hazard Mitigation and Relocation Assistance Act of 1993, federal funding under the HMGP is now based on 15% of the federal funds spent on the Public and Individual Assistance programs (minus administrative expenses) for each disaster.

The HMGP can be used to fund projects to protect either public or private property, so long as the projects in question fit within the state and local governments overall mitigation strategy for the disaster area and comply with program guidelines. Examples of projects include the acquisition, demolition, or relocation of structures from hazard-prone areas, the retrofitting or elevation of existing structures to reduce future damage; and the development of state or local standards to protect the jurisdiction from future damages.

Eligibility for funding under the HMGP is limited to state and local governments, certain private nonprofit organizations or institutions that perform essential public services, Indian tribes, and authorized tribal organizations. Individuals or homeowners cannot apply directly for funding through HMGP, so these organizations must apply on their behalf. In turn, applicants must work through their state because the state is responsible for setting priorities for funding and administering the program.

Title: Building Resilient Infrastructure and Communities Grant Program
Agency: Federal Emergency Management Agency

The Building Resilient Infrastructure and Communities (BRIC) grant program supports states, local communities, tribes, and territories as they undertake hazard mitigation projects to reduce risks from disasters and natural hazards. BRIC replaced the Pre-Disaster Mitigation (PDM) program. The new program is authorized by Section 203 of the Stafford Act.

The BRIC program aims to categorically shift the federal focus away from reactive disaster spending and toward proactive investment in community resilience. Focus is placed on mitigation activities that emphasize infrastructure projects benefiting disadvantaged communities, nature-based solutions, climate resilience and adaptation, and adopting hazard resistant building codes.

As a competitive annual grant program, applicants can apply on a yearly basis. Individuals, businesses, and non-profit organizations are not eligible to apply for BRIC funds; however local governments can apply on their behalf.

HMGP can fund up to 75% of the eligible costs for hazard mitigation activities. The local cost-share match does not need to be cash; in-kind services or materials may also be used. FEMA will provide 100% federal funding for management costs. FEMA may fund up to 90% of eligible mitigation activity costs for small, impoverished communities or disadvantaged rural communities.

Title: Public Assistance (Infrastructure) Program, Section 406
Agency: Federal Emergency Management Agency

FEMA's Public Assistance Program, through Section 406 of the Stafford Act, provides supplemental funding to local governments following a Presidential Disaster Declaration for mitigation measures in conjunction with the repair of damaged public facilities and infrastructure. The mitigation measures must be related to eligible disaster-related damages and must directly reduce the potential for future, similar disaster damages to the eligible facility. These opportunities usually present themselves during the repair/replacement efforts.

Proposed projects must be approved by FEMA prior to funding. They will be evaluated for cost effectiveness, technical feasibility, and compliance with statutory, regulatory, and executive order requirements. In addition, the evaluation must ensure that the mitigation measures do not negatively impact a facility's operation or risk from another hazard.

Public facilities are operated by state, local, and tribal governments and include infrastructure such as:

* Roads, bridges & culverts
* Draining & irrigation channels
* Schools, city halls & other buildings
* Water, power & sanitary systems
* Airports & parks

Private non-profit organizations are groups that own or operate facilities that provide services otherwise performed by a government agency and include, but are not limited to the following:

* Universities and other schools
* Hospitals & clinics
* Volunteer fire & ambulance
* Power cooperatives & other utilities
* Custodial care & retirement facilities
* Museums & community centers

Title: Rural Development Loan and Grant Assistance
Agency: U.S. Department of Agriculture

The USDA provides grants (and loans) to cities, counties, states, tribes, and other public entities to improve community facilities for essential services to rural residents. Projects can include housing, businesses, utilities, and fire and rescue services (funds have been provided to purchase fire-fighting equipment for rural areas). No match is required.

Title: EPA – Hazard Mitigation for Natural Disasters: A Starter Guide for Water and Wastewater Utilities
Agency: US Environmental Protection Agency

The EPA released guidance on how to mitigate natural disasters specifically for water and wastewater utilities.

Title: Various Homeland Security Grants
Agency: U.S. Department of Homeland Security

The DHS enhances the ability of states, local, and tribal jurisdictions, as well as other regional authorities, in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training, and exercise needs. The grants include but are not limited to areas of Critical Infrastructure Protection Equipment and Training for First Responders.

Title: Environmental Quality Incentives Program
Agency: National Resources Conservation Service

The Environmental Quality Incentives Program (EQIP), administered through the NRCS, is a cost-share program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air, and other related natural resources on agricultural land and non-industrial private forestland.

Owners of land in agricultural or forest production or persons who are engaged in livestock, agricultural, or forest production on eligible land and that have a natural resource concern on that land may apply to participate in EQIP. Eligible land includes cropland, rangeland, pastureland, non-industrial private forestland, and other farm or ranch lands.

Title: NOAA Office of Education Grants
Agency: National Oceanic and Atmospheric Administration

The Office of Education supports formal, informal, and non-formal education projects and programs through competitively awarded grants and cooperative agreements to a variety of educational institutions and organizations in the United States.

Title: EPA – Smart Growth in Small Towns and Rural Communities Agency: US Environmental Protection Agency
EPA has consolidated resources just for small towns and rural communities to help them achieve their goals for growth and development while maintaining their distinctive rural character.

Title: STAR Community Rating System Private Agency: Urban Sustainability Directors Network
Consider measuring your mitigation success by participating in the STAR Community Rating System. Local leaders can use the STAR Community Rating System to assess how sustainable they are, set goals for moving ahead and measure progress along the way.

Local

Local governments depend upon local property taxes as their primary source of revenue. These taxes are typically used to finance services that must be available and delivered on a routine basis to the general public. If local budgets allow, these funds are used to match Federal or State grant programs when required for large-scale projects.

Non-Governmental

Another potential source of revenue for implementing local mitigation projects are monetary contributions from non-governmental organizations, such as private sector companies, churches, charities, community relief funds, the Red Cross, hospitals, Land Trusts, and other non-profit organizations.

APPENDIX

Appendix A – Resolution of Adoption by Jurisdiction

Appendix B – PDM Planning Team Agendas, Sign-in Sheets, and Minutes

Appendix C – Community Meeting Agendas and Sign-in Sheets

Appendix D – Hazard Identification/Vulnerability Worksheets

Appendix E – Township Vulnerable and Potential Mitigation Project Site Maps

Appendix F – Online Survey Information

Appendix G – Comprehensive Land Use Maps

Appendix H – Review of 2019 PDM Mitigation Project Implementation

Appendix I – Worksheet 10: Plan Update Evaluation Form

Appendix J – References

Appendix A
Resolution of Adoption by Jurisdiction

Brookings County

City of Bruce

City of Elkton

City of Volga

City of White

Town of Bushnell

Town of Sinai

Appendix B
PDM Planning Team Meeting Materials

PDM Participation Invitation Letter

BROOKINGS COUNTY DEVELOPMENT DEPARTMENT
Emergency Management/Planning, Zoning and Drainage
Brookings City/County Government Center
520 3rd Street, Suite 200
BROOKINGS, SOUTH DAKOTA 57006

ROBERT W. HILL
TELEPHONE (605) 692-5212
FAX (605) 696-8355
E-MAIL rhill@brookingscountysd.gov

To Whom It May Concern:

In 2020 Brookings County (County) received notification from the Federal Emergency Management Agency (FEMA) that its 2019 – 2024 Pre-disaster Mitigation Plan (Plan) had been approved. This plan identifies potential natural disasters, their impact and possible projects to mitigate the impact of said disasters. The County is required by FEMA to update this plan every five years. The County applied for federal funding to assist with the cost of an update and was informed in September 2023 of the grant award. The County has entered into a contract with the First District Association of Local Governments to facilitate the development of the Plan.

The goal of the plan will be to reduce the personal and economic costs of hazard events in the rural and urban areas of Brookings County. The County believes this effort is an investment that will enhance and strengthen the economic structure and long-term stability of the rural and municipal areas of the County.

Through this planning process, projects are identified that will make the next disaster event as uneventful as possible. The goal is to enlist the support of community stake holders to sponsor or support a project. The planning process does not happen overnight. We expect this process to last approximately nine months. While it might take perhaps years for certain projects to be completed, the Plan is the document that will bring all pre-disaster mitigation efforts to a central location.

Your community/school/utility/entity etc. has been identified as a potential partner in this process. I would be pleased if your organization would select an individual to serve on the Pre-disaster Mitigation Planning Team. The Mitigation Planning Team will meet three times over the next six to nine months. I should note that your representative may not have to attend all the scheduled meetings throughout the process.

An organization/familiarization meeting of the Mitigation Planning Team is set for 1:00 P.M. on Tuesday, January 23, 2024. The meeting will be held in the Brookings City and County Government Center in Room 300.

Thank you for your serious consideration of the County's request.

Sincerely,

Robert W. Hill
Director
Brookings County Emergency Management

PDM Team Kickoff Meeting Notice

Brookings County will begin the process of updating the Brookings County Pre-disaster Mitigation Plan. This plan identifies potential natural disasters, their impact and possible projects to mitigate the impact of said disasters. The County is required by the Federal Emergency Management Agency to update this plan every five years. The Brookings County mitigation planning team will meet at 1:00 PM on January 23, 2024 in Room 300 of the Brookings City and County Government Center. The public is welcome to attend. Questions or comments may be directed to Brookings County Emergency Management Director, Bob Hill @ 605-692-5212.

Brookings County
Pre-disaster Mitigation Plan Kickoff Meeting
1:00 p.m. January 23rd, 2024
Brookings City-County Government Center – Room 300
520 3rd St, Brookings, SD 57006

Agenda

- Introduction of PDM Team Members
- What is Mitigation Planning?
- Why is Brookings County updating the Pre-Disaster Mitigation Plan?
- Review plan components
- Review timeline/scope

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING MEETING

Kickoff Meeting

January 23, 2024

Name	Organization	Email*
Jacob Vukovich	Brookings PD	JVukovich@cityofBrookings-SD.go
Joshua Jones	Aurora Mayor	jljones369@gmail.com
Arend Schuurman	Elkton Fire/Ambulance	arend.schuurman@gmail.com
Scott Stueten	Elkton City	medic04sd@yahoo.com
Mark Fontaine	Aurora Fire Dept	[illegible]
Richard Haugen	Brkgs Cnty EM	rhaugen@BrookingsCountySD.gov
Nathan Doll	Brookings Economic Develop	nathan@brookingsedc.com
Bob Hill	Brookings County EM	rhill@brookingscountysd.gov
Mike Frederikse	Elkton School	mike.frederikse@k12.sd.us
Heidi Kretsch	Brookings Health	hkretsch@brookingshealth.org
Charlie Richter	City of Brookings	crichter@cityofbrookings.org
Kevin Muirfield	Brookings Sheriffs Office	kmurfield@brookingscountysd.gov
Thad Dietz	City	tdietz@cityofbrookings-sd.org
Jeremy Scott	BFD	jscott@cityofbrookings-sd.gov
Michael Schulte	City of Volga	michael@volgacity.com
Luke Muller	1st District	
Todd Kays	[illegible]	

Brookings County
Pre-disaster Mitigation Plan Kickoff Meeting
1:00 p.m. January 23rd, 2024
Brookings City-County Government Center – Room 300
520 3rd St, Brookings, SD 57006

Minutes

17 individuals were in attendance:

Last	First	Organization
Drietz	Thad	City of Brookings
Doll	Nathan	Brookings Economic Development
Fredericksen	Mike	Elkton School District
Haugen	Richard	Brookings County EM
Hill	Bob	Brookings County EM
Jones	Joshua	City of Aurora Mayor
Kays	Todd	First District Assn of Local Govts
Kretsch	Heidi	Brookings Health
Marfield	Kevin	Brookings Sheriff Office
Muller	Luke	First District Assn of Local Govts
Potthost	Marc	Aurora Fire Dept
Richter	Charlie	City of Brookings
Schulte	Michael	City of Volga
Schuurman	Arend	Elkton Fire/Ambulance
Scott	Jeremy	Brookings Fire Dept
Stuefen	Scott	City of Elkton
VuKovich	Jacob	Brookings Police Dept

Brookings County Emergency Manager, Robert Hill, welcomed those in attendance and had the Team Members introduce themselves and what entity they represent. Pearson then introduced Luke Muller and Todd Kays of First District Association of Local Governments.

Muller provided an overview of what is mitigation planning and why the county is required to update their Pre-Disaster Mitigation (PDM) Plan. Muller and Kays also provided a review of the components to be included within the plan (risk assessment, vulnerability, proposed mitigation actions).

A general review of the existing Pre-Disaster Mitigation Plan started by defining work responsibilities, having the First District doing background and research, and the PDM Team providing oversight and guidance throughout the process. The timeline and scope of project were reviewed.

Meeting adjourned at 2:00 p.m. Date and time for the next meeting to be scheduled later in fall of 2024.

Minutes recorded by Luke Muller.

PDM TEAM Meetings #2 & #3 Invitation Letter

BROOKINGS COUNTY DEVELOPMENT DEPARTMENT
Emergency Management/Planning, Zoning and Drainage
Brookings City/County Government Center
520 3rd Street, Suite 200
BROOKINGS, SOUTH DAKOTA 57006

ROBERT W. HILL
TELEPHONE (605) 692-5212
FAX (605) 696-8355
E-MAIL rhill@brookingscountysd.gov

To Whom It May Concern:

As Brookings County continues the process of updating the Brookings County Pre-disaster Mitigation Plan (Plan), the Pre-disaster Mitigation Planning Team will be holding its second PDM Team Meeting at noon. on Tuesday, December 10, 2024. The meeting will be held in Room 300 of the Brookings City and County Government Center at 520 3rd Street; Brookings, South Dakota.

Further, the third and final PDM Team Meeting at 1:00 pm on Monday, December 30, 2024. The meeting will also be held in Room 300 of the Brookings City and County Government Center at 520 3rd Street; Brookings, South Dakota.

The plan is available online at: https://association.1stdistrict.org/pdmplans/. This Plan identifies potential natural disasters, their impact, and possible projects to mitigate the impact of said disasters. The County is required by the Federal Emergency Management Agency to update this plan every five years.

It is imperative that we have your participation at these meetings. We do not except the meetings to last over half an hour.

Questions or comments may be directed to myself or Luke Muller at (605) 882-5115 or luke@1stdistrict.org.

Sincerely,

Robert Hill
Emergency Management Director
Brookings County Emergency Management
(605) 692-5212

PDM TEAM Meetings #2 and #3 Public Notice

LEGAL 2413 2X-TCS-11-28-2024/
12-5-2024
BROOKINGS COUNTY PRE-DISASTER MITIGATION PLAN MEETING
As Brookings County continues the process of updating the Brookings County Pre-disaster Mitigation Plan, the Brookings County Pre-disaster Mitigation
Planning Team will meet at noon on Tuesday, December 10, 2024 in Room 300 of the Brookings City and County Government Center at 520 3rd Street;
Brookings, South Dakota.
Further, the third and final PDM Team Meeting at 1:00 pm on Monday, December 30, 2024. The meeting will also be held in Room 300 of the Brookings
City and County Government Center at 520 3rd Street; Brookings, South Dakota.
The plan is available online at: https://association.1stdistrict.org/pdmplans/. This Plan identifies potential natural disasters, their impact, and possible
projects to mitigate the impact of said disasters. The County is required by the Federal Emergency Management Agency to update this plan every five
years.

Published: 12/05/24 Tri-City Star (White, SD) & sdpublicnotices.com
Published: 12/03/24 & 12/03/24 Brookings Register (Brookings, SD) & sdpublicnotices.com
Published: 11/28/24 Volga Tribune (Volga, SD) & sdpublicnotices.com

Brookings County
PDM Planning Team Meeting 2
December 10, 2024
Brookings City-County Government Center – Room 300
520 3rd St, Brookings, SD 57006

Agenda

- Introduction

- Review of Previous Meetings and Plan Development History

- Review of PDM Preliminary Draft

    - PDM Jurisdiction Risk Assessment Review
        - Hazard Identification
        - Hazard Profile
        - Vulnerability Assessment

    - Mitigation Strategy
        - Review of Goals and Objectives
        - Mitigation Strategies
        - Project Identification

- Questions

- Next Steps in PDM Draft Process

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING TEAM

PDM TEAM MEETING #2

DECEMBER 10, 2024

Name	Organization	Email*
Robert Hill	Brookings County EM	rhill@brookingscountysd.gov
Marty Hanusa	Brookings County Sheriff	sheriffmarty@brookingscountysd.gov
Larry Jensen	Brookings County Commission	LJensen@brookingscountysd.gov
Gordon Dekkenga	Brookings Health Sys	gddekkenga@brookingshealth.org
Richard Haugen	Brkgs Cnty EM	rhaugen@brookingscountysd.gov
Michael Drake	City of Brookings Police	—
Jake VanKouwenberg	City of Brookings Police	—
Thad Dietz	C.O.B. Public Works	tdietz@cityofbrookings-sd.gov
Charlie Richter	City of Brookings	crichter@cityofbrookings-sd.gov
Jayme Trygstad	South Dakota State U	jayme_trygstad@sdstate.edu
Jerae Wire	East River Electric Power COOP	jwire@eastriver.coop
DYLAN SCHWARTZ	CITY OF WHITE/WHITE FIRE	schwartz.44@hotmail.com
David Jacobson	Volga Fire	dave@bobcatofbrookings.com

Brookings County
PDM Planning Team Meeting 2
December 10, 2024
Brookings City-County Government Center – Room 300
520 3rd St, Brookings, SD 57006

Minutes

Thirteen people were in attendance:

Last	First	Organization
Hill	Robert	Brookings County Emergency Management Director
Stanwick	Marty	Brookings County Sheriff
Dekkenga	Gordon	Brookings Health System
Muller	Luke	First District Association of Local Govt
Haugan	Richard	Brookings County Emergency Management
Drake	Michael	City of Brookings Police
Vukovich	Jake	City of Brookings Police
Drietz	Thad	City of Brookings Public Works
Richter	Charlie	City of Brookings Engineering
Trygstad	Jayme	SDSU – Emergency Management
Wire	Jerae	East River Electric Power Coop
Schwartz	Dylan	City of White/White FD
Jacobson	David	Volga Fire Department

Luke Muller of the First District provided a review of research and background activities conducted since the last Team meeting.

Muller also provided an overview of the risk assessment conducted with the communities in Brookings County. The risk assessment review with those entities dealt with identification of potential hazards, generating a hazard profile, and vulnerability assessment. After reviewing the risk assessments, Muller provided an overview of historical hazard events in Hamlin County since 2013.

The Team also reviewed goals and objectives of the previous 2019 PDM Plan. It was determined the 2019 goals and objectives were still appropriate for the update PDM plan. Discussed potential mitigation projects throughout the county.

Muller provided a summary and review of the draft Brookings County Pre-Disaster Mitigation Plan. Muller discussed recommended changes and considereations from state hazard mitigation office. The Planning Team decided that it would add a project / strategy to come up with alternative methods of measuring frequency and extent of hazards where information is not as reliable or available.

Consensus of the Team was to spend more time on individual review of the document and to provide First District staff with any corrections/updates.

Meeting adjourned at 12:50 p.m. Final Meeting will be held on December 30, 2024 at 1pm.

Minutes recorded by Luke Muller

Brookings County
PDM Planning Team Meeting 3
December 30, 2024
Brookings City-County Government Center – Room 300
520 3rd St, Brookings, SD 57006

Agenda

- Final Review of PDM Plan
- Recommendation of Approval and Submission to FEMA

Meeting 3 Sign-in Sheet

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING MEETING

Meeting #3

December 30, 2024

Name	Organization
Larry Jensen	County Commission
Robert W. Hill	Brookings County EM
Robbins Haugen	Brkgs County EM
Gordon Dekkenga	BHS
Charlie Richter	City of Brookings

Brookings County
PDM Planning Team Meeting 3
December 30, 2024
Brookings City-County Government Center – Room 300
520 3rd St, Brookings, SD 57006

Minutes

Six people were in attendance:

Last	First	Organization
Hill	Robert	Brookings County Emergency Management Director
Dekkenga	Gordon	Brookings Health System
Muller	Luke	First District Association of Local Govt
Haugan	Richard	Brookings County Community Development
Jensen	Larry	Brookings County Commissioner
Richter	Charlie	City of Brookings Engineering

Luke Muller of the First District noted there were no substantive changes since the previous meeting.

Jensen (Brookings County Commission) made a motion to forward the draft to FEMA subject to any grammatical or non-substantive changes, and changes recommended by Brookings City Engineer. Second by Haugan (Brookings County Community Development). Motion Passed Unanimously.

Muller reviewed the community adoption process.

Meeting adjourned at 1:10 p.m.

Minutes recorded by Luke Muller

Appendix C
Community Meeting Agendas and Sign-in Sheets

Appendix C includes Agendas and "Sign-in Sheets" from the meetings held at the community level for the Brookings County Pre-Disaster Mitigation Plan. Meetings were held at the regular monthly meetings for the following Towns:

Town	Date
Aurora	August 12, 2024
Brookings	August 27, 2024
Bruce	February 13, 2024
Bushnell	March 4, 2024
Elkton	March 6, 2024
Sinai	April 1, 2024
Volga	January 16, 2024
White	April 1, 2024

At all of the previously described meetings, each individual in attendance was asked to identify the probability of each specific hazard's occurrence. Following discussion on each individual hazard, Board members categorized these hazards as high probability to occur, low probability to occur, or unlikely to occur. The result was recorded on a master sheet for each town.

Next, each individual in attendance was asked to identify the town's vulnerability to each specific hazard. Following discussion on each individual hazard, Board members classified the town's vulnerability to each hazard as high vulnerability, low vulnerability, or noted that the hazard was not a hazard in the jurisdiction. The result was recorded on a master sheet for each town. Following the hazard identification and vulnerability exercises the governing body was asked to rate the level to which they agree with the goals of the Pre-Disaster Mitigation Plan. The result was recorded on a master sheet for each town. Finally, the Boards were asked to identify critical infrastructure within the community. All master worksheets compiled at those meetings can be found in Appendix D. A master infrastructure list was compiled for each town in Table 4.17.

At the previously described meetings Board members were first asked to identify potential hazard mitigation projects for their towns. Members then discussed among themselves and staff before determining a timeframe for these projects to be completed (short-term, medium-term, long-term). Short-term indicates a time frame of two years or less. Medium-term indicates a time frame of two to five years. Long-term indicates a time frame of more than five years.

Finally, members assigned a priority level (high, medium, low) to each project. High priority projects have greater importance, unanimous Board agreement, more cost effective, provide more benefits for the entire community as a whole, shorter implementation time and funding availability. These projects should take precedence over similarly costing projects. Medium priority projects are important projects with less urgency, limited benefits, maintenance activities or projects by virtue of their cost and/or necessity is not considered a high priority. The community should begin planning for completion of these projects. Low priority projects are projects that due to their cost and/or potential minimal benefits to the community are considered a lesser priority, maybe a longer-term project that lacks funding availability.

The Board members and Finance Officers were asked to work with First District Staff to identify who would oversee the potential projects and what a projected cost would be. All projects identified at those meetings are included in Table 5.13. Townships maps are included in Appendix E.

CITY OF AURORA

Regular Council Meeting
Monday, August 12, 2024
6:00 p.m.
Aurora Maintenance Shop

Agenda

1. Call to Order – Mayor Jones
2. Pledge of Allegiance
3. Attendance: Geise____ Meyer____ Price___ Schuttloffel___
4. Approval of Agenda
5. Public Comment *Pursuant to SDCL 1-25-1. A time for members of the public to discuss or express concerns to the Council on any issues not on the agenda. Action will not be taken. Speaking limited to 2 minutes.
6. July Minutes
7. July Financial Reports
8. August Bills
9. Project Updates
10. Luke Muller - Brookings County Pre-Disaster Mitigation Plan
11. Developer Agreement on Public Improvements - Spilde Phase III
12. Marty Stanwick
13. Fire Truck sale
14. AEC – Pat Tingle
15. Fundraising Committee – Andrew Underwood
16. Fire Dept. report – Mike Ahartz
17. Maintenance report – Shannon Stuefen
18. Adjourn

City of Aurora Council Meeting

Location: City Maintenance Shop

Date:
AUGUST 12, 2024
Time:
6:00 PM

Name of Attendee	Organization	Phone Number	Email
Josh Jones	Aurora Mayor	695-2704	jljones368@gmail.com
Ryan Mayer	Council Member	690-7685	jsloo1966@hotmail.com
Jon GEISE	COUNCIL MEMBER	496 2347	twoguys@itctel.com
Shannon Freng	City of Aurora Finance Of	605-693-3548	aurcasd@itctel.com
Nancy Price	Council Member	605 690 0959	nprice@ITCTEL.com
David Schuttloffel	Council Member	605-695-3571	gleviaus@itctel.com
Scot Leddy	Banner Associates, Inc		
LANDEN BUSE	BANNER ASSOCIATES, INC		
Mike Jensen	HOOD Mayor		
Jessica Jensen	resident		
Shannon Stuefen	resident		
SHERIFF MARTY STAMPER		605-696-8300	sheriffmail@brookingscountysd.gov
Angie Tingle	resident		
Pat Tingle	resident		
Craig Ulrich	Prescott		
Mike Olson	Fire Dept		
Mike Ahart	Fire Dept	605-695-8738	

MINUTES

The Council met in regular session on Monday, August 12, 2024 at 6:00pm in the Aurora Maintenance Shop.

Mayor Jones called the meeting or order at 6:00pm and started with the Pledge of Allegiance.

Roll Call: Mayor Jones, Council Members -Geise, Meyer, Price and Schuttloffel

Other present: Shannon Freng – Finance officer, Shannon Stuefen – maintenance dept., Scot Leddy – Banner Associates, Luke Muller – First District, Pat Tingle - Aurora Event Committee, Marty Stanwick – Brookings County Sheriff Dept. and few residents.

M/S Price, Geise to approve agenda. Carried.

Mayor Jones stated that each person who wished to speak will have 2 minutes and asks that comments and questions be done during public comment time.

Public Comment: Janii White asked about the CO2 pipeline and when there will be a public meeting on that. Jones stated that the council will not be running the meeting and that will be up to the pipeline company. Craig Ulrich asks if he can ask questions about items on the agenda during the meeting.

M/S Geise, Price to approve July meeting minutes. Carried.

Mayor Jones went over the July financial report. M/S Schuttloffel, Geise to approve July financial reports. Carried.

M/S Geise, Schuttloffel to approve payment of August bills. Carried.

Adapco $1,186.13 – mosquito spray, Allegra $350.24 – envelopes, Aurora Quick Stop $649.62 – gas, Austreim Excavating $66.47 – sewer part, Avid Hawk $98.00 – website fees, Banner Associates $49,138.23 – engineering fees, Brookings County Sheriff $1,667.71 - contract law & animal control, Brookings Municipal Utilities $11,658.35 – Water purchase, Brookings Register $60.24 – publishing, City of Aurora Utilities $1,048.61- city utilities, City of Brookings $25.00 – animal control, Cook's Wastepaper $11,735.33 – garbage collection, Core & Main $23.88 – sewer part, Dept. of Energy $4,212.85 – electric purchase, DGR $1,021.50 – engineering fees, Elkton Fire Dept. $5,000.00 – Compressor Trailer, EFTPS $4,315.52 – withholdings, First Bank & Trust Visa $852.65 – city/fd supplies, Goldeneye LLC $300.00 – spray for lagoons, Halme $516,216.10 – phase II sewer project payment, Heartland $52,315.43 – electric purchase & IRP loan payments, Independent Audit Service $2,250.00 – final audit, ITC $421.24 – phones, internet, Lyle Signs $123.22 – speed limit signs, North Western Energy $32.84 – natural gas, Pioneer Athletics $132.31 – material for baseball field, Pitney Bowes $400.08 – postage meter, Pro Hydro-Testing $1,946.00 – testing FD equipment, Prussman Contracting $900.00 – jetting lift stations, Ramsdell $174.35 – spraying lagoons, Robert Charging

$2,361.90 – wages, Runnings Supply $113.97 – shop supplies, SDRS $ 1,557.88 – retirement, SD State Treasurer $4,118.15 – taxes, Shannon Freng $4,139.65 – wages, Shannon Stuefen $84.08 – reimburse for supplies, Shannon Stuefen $2,394.93 – wages, Skinner Stripping $18,367.38 – road repairs, SD One Call $97.44 – locates, Town & Country Shopper $13.95 – job posting, US Bancorp $22,466.98 – cw03 payment

Scot Leddy and Landen Buse with Banner Associates gave a project update on the Phase II sewer project. Balance to finish project is at $2,190,000. All of the 18" sewer pipe is in and they will be moving onto the 15" sewer pipe as they go East towards Rasmussen St. Halme is hoping to have the concrete work done on Broadway and reopen it by September 4th. Redmond Rd. will be getting paved as soon as the moisture tests pass and the intersection of Broadway and Redmond is complete. The next phase will be going down Railroad St. and heading east towards the Hull St. crossing. Schuttloffel asks about how Halme hit the water main the past week. Landen Buse said it was a little bit of carelessness and accidental. November 1st is substantial completion date for all roads to be open to traffic. Schuttloffel wants to thank Halme for working through the rain storm while fixing the water main repairs. Scot mentions the aeration project for next year and will be having a 90% plans meeting soon with the Council.

Luke Muller with First District was present to discuss the Brookings County Pre-Disaster Mitigation Plan. Luke introduces himself as the Senior Planner with First District. FEMA requires that First District presents at a public meeting in the communities. He goes over the list of Government buildings and other structures in Aurora. Luke asks about tornado shelters, rooms, and backup generators for water tower. Luke talks about large storms and what areas would need to be checked in on first (daycares, schools, apartments, manufactured homes, etc.). Luke goes through the risk assessment worksheet – Hazard Identifications discussing the probability of different types of events. Schuttloffel asks that the snow fall melt/flooding be moved to high in certain areas of Aurora. The vulnerability list was also talked about and few questions were asked because of the past flooding and wind storms. Luke mentions the need for an additional siren on the North end of Aurora and possibly the South side as well as the town develops. There was discussion regarding the storm water drainage improvements on Lilac Ave, East Redmond Rd and a few others areas of concern as well.

There was brief discussion on a developer agreement for Spilde Phase III. There was questions regarding the warranties in place for the infrastructure. M/S Price Meyer to approve the Developer Agreement on Public Improvements for the Spilde Phase III development. Carried.

Marty Stanwick with the Brookings County Sheriff Department was present and he discussed the survey that was sent out to the residents in Aurora. The return on the survey was a very low number, with only about 39. A few of the comments were

about the barking dogs, unsupervised kids running around, traffic noise, the number of semis that come through Aurora speeding, and animal control. Jones asks about having a National Night Out event possibly in Aurora. Marty says that would be a good thing to start up here and we can work on one for next year. He suggests when the City starts putting in more stop signs to get the Sheriff Dept. involved and explains that they are not used for slowing traffic, only for control at a busy intersection. Jones mentions speed bumps. There were few questions and answers. The Law Contract Hours will be on the next agenda for discussion.

M/S Geise, Price to accept the offer on the Pumper Fire Truck for $1,700. Carried.

Pat Tingle – Aurora Events Committee- Pat thanked Marty Stanwick, finance officer and utility manager and Nancy Price for all their help with Gala Days. Pat mentions that the flower bed was redone by the Buchholtz Park.

Mike Ahartz – Fire Dept. report. 4 EMS calls this month and no fire calls. They are working on getting the new gear issued out to the members on the department.

Shannon Stuefen - maintenance report. Water tower was inspected Monday. Stuefen brings up the backup batteries and relay testing on the substation. Motion by Geise to approve relay testing for $9,000, Price second. Carried.

M/S Geise, Schuttloffel to adjourn. Carried.

City of Aurora
Pre-Disaster Mitigation Plan
Community Meeting
August 12, 2024

Introduction

Personal introduction:

Introduce the plan:

Why update the PDM?

Why is your community doing it individually/Why not just county?

What is a PDM?

Hazard review

Hazard Identification

Summer/Thunderstorm

- Hail, Heavy Rain, Lightning, Tornado, Strong Winds

Winter Storm and Extreme Cold

- Freezing Rain, Sleet, Ice, Heavy Snow,

Drought and Extreme Heat

Flood

- Rapid Snow Melt, Ice jam, (heavy rain can go here too)
    - Board determined that rapid snow melt should be moved to high probability. (See discussion in vulnerability.)

Fire

- Urban fire, wildfire (grass fire)
    - Board and public moved urban fire to high probability on basis of annual fire related calls in town. (see discussion in vulnerability.)

Hazard Vulnerability

Summer/Thunderstorm

- Hail, Heavy Rain, Lightning, Tornado, Strong Winds
    - Board noted the remarkably flat topography of the town and areas it is growing into. As a result, a higher percentage of the community is vulnerable to rapid snow melt, heavy rain, and a flooding. Much of the water is due to high water table and saturated soils but water just does not run in these areas without being pumped. (SPECIAL NOTE – 3 weeks prior to this meeting Aurora received over 3" of rain in less than 2 hours.)
    - The Mayor reiterated a point from the kick-off meeting in March: the City receives its water from Brookings Municipal Utilities. Disruption

in service/ability to serve from BMU limits the town's ability to provide water to its residents. In past disasters within the city of Brookings, the City of Aurora has had to go without water/diminished water supply because of the inability of BMU to operate its system.

Winter Storm and Extreme Cold

Drought and Extreme Heat (no change to perceived vulnerability)

- Community's vulnerability to drought is economic. It is unlikely that water supplies would diminish due to drought. County's policies on enacting burn bans limit the likelihood that drought would substantially increase fire risk within city limits. All that said, the community is still perceives a medium vulnerability to drought.

Flood

- Rapid Snow Melt, Ice jam, (heavy rain can go here too) see above

Fire

- Urban fire, wildfire (grass fire)
    - The communities fire department has installed an upgraded pump to decrease the amount of time to load its pump truck from 30 minutes to 10 minutes.

Community Capabilities and Plans review

Aurora has adopted effective flood maps and is prepared to adopt updated maps when elligible.

The city of aurora intends to update its zoning ordinance next year.

Community facilities

Identify/review critical facilities

Are there new facilities/facilities to be removed

- The former city offices/meeting hall collapsed since the last PDM.
- City offices and meeting space is temporarily occupying the City Street Shop. Currently no plan in place to replace city office/hall.
- Post office will be removed
- Address was updated for fire department
- One lift station was missed in previous plans
- New lift station being added in new development. Exact location no listed, general location listed.
- New water tower being constructed west of the existing tower. Roughly 3x the size of the current tower.
- Catholic Church and First Impact Church are in agreement with city to serve as storm shelters. People also come to Fire Department (because people are there.)

Have addresses changed/are they are correct

Where are the populations to protect

Transient/campgrounds

- Roughly 6 camp pads are located in the park downtown (next to city shop).

Poor Populations/economically disadvantaged areas

Schools/children

Elderly

Protected classes (mentally handicapped)

There are no schools or assisted living facilities. The manufactured home court is still located in the city. The City lists the Apartments as populations to protect due to the fact that they are constructed at and above grade with no basements or lower level.

Project review

Review past projects

- Are they completed/still necessary/ongoing

- Existing siren was elevated after the City hall was demolished. However new growth in the community has occurred on the fringes of town (existing siren is in center) and people complain that they cannot hear the siren in areas of new development, with more development planned in the near future.
- Drainage is an ongoing issue within the community. A full fledged drainage study is necessary for the town. Topography limits overland flow and above ground retrofits.

Ask about other projects (not all require FEMA funding)

- Water tower project will help firefighting capabilities and provision of water in emergency situations (better than at the present time.)

Ask about Policies/activities that already help mitigate Disaster

- Community is requiring new development to plan for and implement engineering to move water from areas of known ponding to downstream.
- Community is constructing new water tower to be able to accommodate daily use, emergency water supply, and be prepared for moderately prolonged periods without supply entering the system. The plan also includes a back-up generator.
- As noted, the city upgraded the water pump at the fire department to speed the filling of the pump truck.
- Raising of storm siren should help ability to be heard farther away, but increased growth (has occurred and is planned to occur) will necessitate new sirens.
- During inclement whether, the town utilizes announcements that tell where storm shelters are located, the locations are also listed on the community's web page. The fire department opens those shelters as needed.Community has substantial floodplain which generally experiences a fast flush of stormwater but very little impact due to current policies of water management. The town hires help to ensure culverts keeping ditches are clear for conveyance of water through town to limit ponding.

Conclusion

- The city is currently engaged in sewer and water upgrades, new development on the fringe of town and is seeking funding sources to reconstruct its city offices. If money fell from the sky they would seek avenues to construct a tornado safe room for the community but did not consider any HMGP projects higher priorities than these projects that affect the day to day life of all residents of the town.

BRING YOUR DREAMS.

brookings SOUTH DAKOTA

City of Brookings

Meeting Agenda - Final

City Council

Brookings City Council
Brookings City & County
Government Center
520 3rd St., Suite 230
Brookings, SD 57006
Phone: (605) 692-6281

"We are an inclusive, diverse, connected community that fuels the creative class, embraces sustainability and pursues a complete lifestyle. We are committed to building a bright future through dedication, generosity and authenticity. Bring your dreams!"

Tuesday, August 27, 2024 **6:00 PM** **Council Chambers**

The City of Brookings is committed to providing a high quality of life for its citizens and fostering a diverse economic base through innovative thinking, strategic planning, and proactive, fiscally responsible municipal management.

6:00 PM REGULAR MEETING

1. Call to Order / Pledge of Allegiance.

2. Record of Council Attendance.

3. Action to approve the agenda.

4. Open Forum.

At this time, any member of the public may make a brief announcement or invitation, or request time on the agenda for an item not listed. Items to be added to the agenda will be scheduled at the end of the meeting. Individuals will state their name and city of residence for the record. Public Comment is limited to a maximum of three minutes per person. The comments and views expressed by the public are those of the speakers and do not necessarily reflect the views or positions of the City of Brookings or City Council.

5. Consent Agenda:

Action: Motion to Approve, Request Public Comment, Roll Call

Matters appearing on the Consent Agenda are expected to be non-controversial and will be acted upon by the Council at one time, without discussion. At the request of any one Council Member or the City Manager, an item may be removed from the Consent Agenda and placed on the regular agenda whenever additional discussion on an item is necessary. Items removed from the Consent Agenda will be discussed at the beginning of the formal items.

5.A. ID 24-0415 Action to approve City Council meeting minutes.

Attachments: 8/13/2024 CC Minutes

5.B. ID 24-0417 Action on Temporary Alcohol / Special Event Licenses for existing alcohol license holders with events held on publicly owned property.

Attachments: Memo
SDCL 35-4-124

5.C. RES 24-083 Action on Resolution 24-083, a Resolution Awarding Bids on the 2024-2025 Contractor Snow Removal Equipment Contracts.

Attachments: Memo
Resolution

5.D. RES 24-084 Action on Resolution 24-084, a Resolution declaring surplus property for the City of Brookings.

Attachments: Resolution

6. Presentations/Reports:

6.A. ID 24-0428 Introduction of new City of Brookings employee.

6.B. ID 24-0343 Report: SDSU Student Association.

6.C. ID 24-0426 Presentation on Brookings Pre-Disaster Mitigation Plan

Attachments: Memo
Hazard Identification Worksheet
Hazard Vulnerability Worksheet
Critical Structure-Infrastructure List
Hazard Vulnerability - Critical Infrastructure Map
Mitigation Activity Sites Map
Mitigation Project Worksheet

7. Contracts/Change Orders: NONE

8. Ordinance First Readings:

No vote is required on the first reading of an Ordinance. The title of the Ordinance is read. Public Comment and Council discussion is permitted. The date for the second reading or public hearing is announced.

8.A. ORD 24-029 Introduction and First Reading on Ordinance 24-029, an Ordinance Certifying the 2025 City of Brookings Property Tax Levy to the Brookings County Finance Officer. Second Reading and Action: September 10, 2024.

Attachments: Memo
Ordinance

8.B. ORD 24-028 Introduction and First Reading on Ordinance 24-028, an Ordinance Granting a Franchise to Mediacom Minnesota LLC to Construct, Operate, and Maintain a Cable Television System in the City of Brookings, SD, Setting Forth Conditions Accompanying the Grant of the Franchise; Providing for Regulation and Use of the System; and Prescribing Penalties for the Violation of its Provisions.

Attachments: Memo
Ordinance - clean
Ordinance - marked

8.C. ORD 24-031 Introduction and First Reading on Ordinance 24-031, an Ordinance establishing Reasonable Accommodations Pursuant to the Federal Fair Housing Amendments Act of 1988. Second Reading and Action: September 10, 2024.

Attachments: Memo
Ordinance

8.D. ORD 24-030 Introduction and First Reading on Ordinance 24-030, an Ordinance to permit by Conditional Use a Major Home Occupation Hair Salon on Lot 1 in Block 3 of Moriarty Edgebrook Addition, also known as 1635 17th Avenue South. Public Hearing and Action: September 10, 2024.

Attachments: Memo
Ordinance
Notice - City Council
Notice - Planning Commission
Planning Commission Minutes
Location Map
Conditional Use Permit Application
Major Home Occupation Checklist

9. Public Hearings and Second Readings:

9.A. ORD 24-025 Second Reading and Action on Ordinance 24-025, an Ordinance Authorizing Budget Amendment No. 8 to the 2024 Budget.

Attachments: Memo
Ordinance

Action: Motion, Request Public Comment, Roll Call

Legislative History

8/13/24 City Council read into the record

9.B. ORD 24-026 Public Hearing and Action on Ordinance 24-026, an Ordinance Amending Chapter 82 of the Code of Ordinances of the City of Brookings and Pertaining to the Covering of Vehicle Loads in the City of Brookings.

Attachments: Memo
Ordinance - clean
Ordinance - marked

Action: Motion, Open & Close Public Hearing, Roll Call

Legislative History

8/13/24 City Council read into the record

9.C. ORD 24-027 Public Hearing and Action on Ordinance 24-027, an Ordinance Amending Articles I & II of Chapter 72 - Storm Drainage, of the Code of Ordinances of the City of Brookings, South Dakota.

Attachments: Memo
Ordinance - clean
Ordinance - marked
Legal Notice

Action: Motion, Open & Close Public Hearing, Roll Call

Legislative History

8/13/24 City Council read into the record

9.D. ID 24-0414 Public Hearing and Action on a Commercial Corridor Design Review Overlay District Site Plan for Lot 1 in Block 1 of Reserve Fourth Addition.

Attachments: Memo
Hearing Notice - City Council
Hearing Notice - Planning Commission
Planning Commission Minutes
Location Map
Site Plan
Landscape Plan
Elevations
Renderings
Adjacent Photos

Action: Motion, Open & Close Public Hearing, Roll Call

9.E. RES 24-081 Public Hearing and Action on Resolution 24-081, a Resolution to amend the 2040 Comprehensive Plan's Future Land Use Map.

Attachments: Memo
Resolution
Hearing Notice - City Council
Hearing Notice - Planning Commission
Planning Commission Minutes
Future Land Use Map Exhibits

Action: Motion, Open & Close Public Hearing, Roll Call

10. Other Business:

10.A. RES 24-079 Action on Resolution 24-079, a Resolution Transferring City Manager Contingency Funds to City Departments.

Attachments: Memo
Resolution

Action: Motion, Request Public Comment, Roll Call

10.B. RES 24-078 Action on Resolution 24-078, a Resolution Declaring Boundaries and Recommending Creation of Tax Increment Financing District #16, City of Brookings.

Attachments: Memo
Resolution
Notice - City Council
Notice - Planning Commission
Minutes - Planning Commission
Map

Action: Motion, Request Public Comment, Roll Call

10.C. RES 24-080 Action on Resolution 24-080, a Resolution Adopting the Tax Increment District #16 Project Plan.

Attachments: Memo
Resolution
Project Plan

Action: Motion, Request Public Comment, Roll Call

11. ID 24-0429 City of Brookings Progress Report.

Attachments: Progress Report

12. City Council member introduction of topics for future discussion.

Any Council Member may request discussion of any topic at a future meeting. Items cannot be added for action at this meeting. A motion and second is required which states the topic, requested outcome, and time frame. A majority vote is required.

13. Adjourn.

Brookings City Council: Oepke G.Niemeyer, Mayor; Nick Wendell, Deputy Mayor
Council Members Wayne Avery, Holly Tilton Byrne, Bonny Specker, Brianna Doran, Andrew Rasmussen

Brookings City Council Staff:
Paul M. Briseno, City Manager Steven Britzman, City Attorney Bonnie Foster, City Clerk

Public Comment is limited to a maximum of three minutes per person. Individuals will give their name and city of residence for the record. Public Comment may be submitted prior to the meeting by the following means: 1) Email comments to the City Clerk (cityclerk@cityofbrookings-sd.gov), or 2) participate remotely. Comments provided will become part of the official record and subject to review by all parties and the public. The comments and views expressed by the public are those of the speakers and do not necessarily reflect the views or positions of the City of Brookings or City Council.

Meetings are broadcast live and recorded. Go to www.cityofbrookings-sd.gov for more information. Government Channel Rebroadcast Schedule: Wednesday 1:00 pm / Thursday 7:00 pm / Friday 9:00 pm / Saturday 1:00 pm (Swiftel Channel 20 / MediaCom Channel 9)

Upon request, accommodations for meetings will be provided for persons with disabilities. Please contact the City ADA Coordinator at (605) 692-6281 at least three (3) business days in advance of the meeting.

BROOKINGS CITY COUNCIL
August 27, 2024

The Brookings City Council held a meeting on Tuesday, August 27, 2024 at 6:00 PM, at the Brookings City & County Government Center, Chambers, with the following City Council members present: Mayor Oepke Niemeyer, Council Members Wayne Avery, Brianna Doran, Andrew Rasmussen, Bonny Specker, Holly Tilton Byrne, and Nick Wendell. City Manager Paul Briseno, City Attorney Steve Britzman, and City Clerk Bonnie Foster were also present.

Agenda. A motion was made by Council Member Tilton Byrne, seconded by Council Member Wendell, that the agenda be approved. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

Open Forum. Doug Austreim, Austreim Landscaping, expressed concerns regarding 6-Mile Creek flooding and the channel obstruction on SDSU property north of the Highway 14 Bypass.

Consent Agenda. A motion was made by Council Member Tilton Byrne, seconded by Council Member Doran, to approve the Consent Agenda. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

A. Action to approve the August 13, 2024 City Council Minutes.

B. Action on Temporary Alcohol / Special Event Licenses for existing alcohol license holders: Sodexo Catering (License Holder RB-28249 and RW-28251): SDSU TL24-061, SDSU TL24-062, SDSU TL24-063, SDSU TL24-064, SDSU TL24-065, SDSU TL24-066, SDSU TL24-067, SDSU TL24-068, and SDSU TL24-069.

C. Action on Resolution 24-083, a Resolution Awarding Bids on the 2024-2025 Contractor Snow Removal Equipment Contracts.

RESOLUTION 24-083 - RESOLUTION AWARDING BID FOR 2024-2025 CONTRACTOR SNOW REMOVAL EQUIPMENT CONTRACTS

WHEREAS, the City of Brookings opened bids for Snow Removal Equipment on Tuesday, August 13, 2024 at 1:30 pm at the Brookings City and County Government Center; and

WHEREAS, the City of Brookings received the following bids for Snow Removal Equipment:

Five (5) Motor Graders with Wing: Five (5) bids received.
1. Bowes Construction, Inc. CAT140M, $255.00/hour
2. Bowes Construction, Inc. CAT140M, $255.00/hour
3. Austreim Excavating, LLC JD 772CH, $245.00/hour
4. Austreim Excavating, LLC JD 770G, $245.00/hour
5. Bowes Construction, Inc. CAT140M, $240.00/hour (no wing)

One (1) 3 to 6 Yard Loader: Four (4) bids received.
1. Bowes Construction, Inc CAT966M 5CY, $220.00/hour
2. Winter Contracting, LLC 644K 4.5CY, $217.00/hour
3. Winter Contracting, LLC 624K 3.5CY, $169.00/hour
4. Bowes Construction, Inc CAT950M 4CY, $195.00/hour

Four (4) Loaders with Reversible Blades: Four (4) bids received.
1. Bowes Construction, Inc. CAT938K, $230.00/hour
2. Austreim Excavating, LLC JD544K, $255.00/hour
3. Austreim Excavating, LLC JD544K, II $255.00/hour
4. Austreim Excavating, LLC 624K, $255.00/hour

Four (4) End-Dump Trucks: Ten (10) bids received.
1. Winter Contracting LLC #14 23.00CY, $149.00/hour
2. Prussman Contracting Inc. #19 22.80CY, $145.00/hour
3. Prussman Contracting Inc. #20 22.80CY, $145.00/hour
4. Prussman Contracting Inc. #22 22.20CY, $145.00/hour
5. Prussman Contracting Inc. #21 20.60CY, $145.00/hour
6. Prussman Contracting Inc. #23 19.50CY, $145.00/hour
7. Bowes Construction, Inc. T1 12.00CY, $145.00/hour
8. Bowes Construction, Inc. T28 12.00CY, $145.00/hour
9. Bowes Construction, Inc. T29 12.00CY, $145.00/hour
10. Bowes Construction, Inc. T30 12.00CY, $145.00/hour

Six (6) Side-Dump Trucks: Twelve (12) bids received.
1. Winter Contracting LLC #10 34CY, $179.00/hour
2. Winter Contracting LLC #12 34CY, $179.00/hour
3. Winter Contracting LLC #14 34CY, $179.00/hour
4. Olsen Custom Farms, LLC 116 25CY, $165.00/hour
5. Olsen Custom Farms, LLC 44 25CY, $165.00/hour
6. Olsen Custom Farms, LLC 65 25CY, $165.00/hour
7. Olsen Custom Farms, LLC 61 25CY, $165.00/hour
8. Bowes Construction, Inc. T10 17CY, $170.00/hour
9. Bowes Construction, Inc. T11 17CY, $170.00/hour
10. Bowes Construction, Inc. T5 17CY, $170.00/hour
11. Bowes Construction, Inc. T12 17CY, $170.00/hour
12. Bowes Construction, Inc. T25 17CY, $170.00/hour

NOW, THEREFORE, BE IT RESOLVED, that all bids be accepted.

D. Action on Resolution 24-084, a Resolution declaring surplus property for the City of Brookings.

RESOLUTION 24-084 – DECLARING SURPLUS PROPERTY

WHEREAS, the City of Brookings is the owner of the following described equipment

formerly used at the City of Brookings:

Police Dept.: bicycles: Genesis GX7, Silver & Red, Serial #GS120601, Tag #3804; MGX Denali, Red & Black, Serial #L121301011, Tag #3076; Mongoose Rebel, Black & Silver, Serial #R1016WMDS, Tag #3078; Mongoose Shimmano, Red & Black, Serial #SNFSD08D099, Tab #3090; Hiawatha, Maroon & Brown, Tag #3085; Huffy Rock Creek, Blue & White, Serial #SNHBT23E, Tag #3114; Schwinn Ranger, Blue & Purple, Serial #374009570-0, Tag #3050; Huffy Rockcreek, Black & White, Serial #SNHBT23E13, Tag #3075; Hyper Urban, Gray & Black, Serial #TJ18E)11197, Tag #3071; and Roller, Black, Tag #3016.

WHEREAS, in the best financial interest, it is the desire of the City of Brookings to dispose of as surplus property; and

WHEREAS, the City Manager is hereby authorized to sell or dispose of said surplus property.

NOW, THEREFORE, BE IT RESOLVED by the governing body of the City of Brookings, SD, that this property be declared surplus property according to SDCL Chapter 6-13.

Introduction of new City of Brookings employee. Bonnie Foster, City Clerk, introduced Amber Hanson, as the new Deputy City Clerk for the City of Brookings.

Report: SDSU Student Association. Claire Koenecke, SDSU Students Association Government Affairs Chair, provided an update on SDSU happenings.

Presentation: Brookings Pre-Disaster Mitigation Plan. Luke Muller, First District, presented the Brookings Area Pre-Disaster Mitigation Plan. Public Comment: Jason Albee.

FIRST READING – Ordinance 24-029. Introduction and First Reading was held on Ordinance 24-029, an Ordinance Certifying the 2025 City of Brookings Property Tax Levy to the Brookings County Finance Officer. Second Reading and Action: September 10, 2024.

FIRST READING – Ordinance 24-028. Introduction and First Reading was held on Ordinance 24-028, an Ordinance Granting a Franchise to Mediacom Minnesota LLC to Construct, Operate, and Maintain a Cable Television System in the City of Brookings, SD, Setting Forth Conditions Accompanying the Grant of the Franchise; Providing for Regulation and Use of the System; and Prescribing Penalties for the Violation of its Provisions. Second Reading and Action: September 10, 2024.

FIRST READING – Ordinance 24-031. Introduction and First Reading was held on Ordinance 24-031, an Ordinance establishing Reasonable Accommodations Pursuant to the Federal Fair Housing Amendments Act of 1988. Public Comment: Kara Rossi-

Bianchi, Molly Richter, Nancy Flynn, Ed Hogan, and Tom Bozied. Second Reading and Action: September 10, 2024.

FIRST READING - Ordinance 24-030. Introduction and First Reading was held on Ordinance 24-030, an Ordinance to permit by Conditional Use a Major Home Occupation Hair Salon on Lot 1 in Block 3 of Moriarty Edgebrook Addition, also known as 1635 17th Avenue South. Public Hearing and Action: September 10, 2024.

Ordinance 24-025. A motion was made by Council Member Tilton Byrne, seconded by Council Member Specker, that Ordinance 24-025, an Ordinance Authorizing Budget Amendment No. 8 to the 2024 Budget, be approved. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

Ordinance 24-026. A public hearing was held on Ordinance 24-026, an Ordinance Amending Chapter 82 of the Code of Ordinances of the City of Brookings and Pertaining to the Covering of Vehicle Loads in the City of Brookings. A motion was made by Council Member Specker, seconded by Council Member Doran, that Ordinance 24-026 be approved. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

Ordinance 24-027. A public hearing was held on Ordinance 24-027, an Ordinance Amending Articles I & II of Chapter 72 - Storm Drainage, of the Code of Ordinances of the City of Brookings, South Dakota. A motion was made by Council Member Tilton Byrne, seconded by Council Member Doran, that Ordinance 24-027 be approved. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

Commercial Corridor Design Review Overlay District Site Plan. A public hearing was held on a Commercial Corridor Design Review Overlay District Site Plan for Lot 1 in Block 1 of Reserve Fourth Addition. A motion was made by Council Member Wendell, seconded by Council Member Specker, that the Commercial Corridor Design Review Overlay District Site Plan be approved. Public Comment: Marty Sullivan. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

Resolution 24-081. A public hearing was held on Resolution 24-081, a Resolution to amend the 2040 Comprehensive Plan's Future Land Use Map. A motion was made by Council Member Wendell, seconded by Council Member Specker, that Resolution 24-081 be approved. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

RESOLUTION 24-081 - A RESOLUTION TO AMEND THE BROOKINGS, SOUTH DAKOTA COMPREHENSIVE PLAN 2040

WHEREAS, the Comprehensive Plan provides a Major Street Plan Map, identifies a

Future Land Use Map, projects population figures for the planning period, and describes an integrated land use vision for the City; and

WHEREAS, the following described property will be amended on the Future Land Use Map to wit:

A portion of Outlot 1 in the NW ¼ in Section 6, Township 109, Range 49, City of Brookings, Brookings County, State of South Dakota to be amended from Open Space and Mobile Homes to Urban High Intensity; and

A portion of Government Lot 3 in the SE ¼ of the NW ¼ in Section 6, Township 109, Range 49, City of Brookings, Brookings County, State of South Dakota to be amended from Open Space to Urban High Intensity; and

The North 300 Feet of the East 650 Feet Excluding the North 40 Feet of Government Lot 3 of the NW ¼ in Section 1, Township 109, Range 50, City of Brookings, Brookings County, State of South Dakota to be amended from Medium Density Residential to Urban Medium Intensity; and

Lot 7B and Lot 8 in Block 13 of McClemans Addition to the City of Brookings, Brookings County, State of South Dakota from Open Wetland to Urban Medium Intensity; and

A portion of Block 3B in Prairie Hills Addition to the City of Brookings, Brookings County, State of South Dakota from Urban Low Intensity to Urban Medium Intensity; and

The South 182 Feet of the West 1,113 Feet, Excluding the South 40 Feet in the South-East ¼ of Section 35, Township 110, Range 50, City of Brookings, Brookings County, State of South Dakota to be amended from Urban Low Intensity to Urban Medium Intensity; and

WHEREAS, the City Council of the City of Brookings, SD held a public hearing in accordance with SDCL 11-6-18 on the proposed amendment to the Future Land Use Map of the Brookings, South Dakota Comprehensive Plan 2040; and

WHEREAS, the City Planning Commission of the City of Brookings, SD has recommended approval of the amendments to the Future Land Use Map of the Brookings, South Dakota Comprehensive Plan 2040 in accordance with SDCL 11-6-17.

NOW, THEREFORE, BE IT RESOLVED that said amendment to the Future Land Use Map of the Brookings South Dakota Comprehensive Plan 2040 is hereby adopted by the City of Brookings.

Resolution 24-079. A motion was made by Council Member Specker, seconded by Council Member Wendell, that Resolution 24-079, a Resolution Transferring City Manager Contingency Funds to City Departments, be approved. The motion carried by

the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

RESOLUTION 24-079 - A RESOLUTION TRANSFERRING CITY MANAGER CONTINGENCY FUNDS TO CITY DEPARTMENTS

WHEREAS, the City of Brookings hereby transfers City Manager's contingency funds to fund unplanned operational obligations of the municipality. This resolution is for the purpose of completing a transfer of contingency funds to the following accounts:

431 Street Division	
101-431-5-426-16 Mosquito Control	$23,000
Total Transfers	$23,000

The Financing Source for this transfer is from the following accounts:

101-405-5-856-99 Contingency Fund	$23,000
Total Source of Funding	$23,000

WHEREAS, this resolution is deemed necessary for the immediate preservation of the public peace, health, safety and support of the City, and shall become effective upon publication.

Resolution 24-078. A motion was made by Council Member Rasmussen, seconded by Council Member Wendell, that Resolution 24-078, a Resolution Declaring Boundaries and Recommending Creation of Tax Increment Financing District #16, City of Brookings, be approved. Public Comment: Tim Reed, Brookings Economic Development Corporation. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

RESOLUTION 24-078 - RESOLUTION PROVIDING FOR THE CREATION OF TAX INCREMENT FINANCING DISTRICT #16, CITY OF BROOKINGS

WHEREAS, the Planning Commission has recommended the District Boundaries for Tax Increment Financing District #16, City of Brookings, and has recommended its creation; and

WHEREAS, the City of Brookings has the powers, pursuant to SDCL 11-9-2, to create Tax Increment Financing District #16, City of Brookings, and to define its boundaries.

NOW, THEREFORE, IT IS HEREBY RESOLVED:
1. Authority and Declaration of Necessity. The City of Brookings declares the necessity for the creation of Tax Increment Financing District #16, City of Brookings (hereinafter sometimes referred to as the "District"), pursuant to SDCL Chapter 11-9. Further, the City finds that the improvement of the area within the District is likely to enhance significantly the value of substantially all of the other real property in the District and is necessary for economic development within the city.

2. Findings. The City Council makes the following findings with regard to affordable housing:

a. The proposed improvements will create new jobs and diversity the overall economic base of the City of Brookings through industrial development.
b. The South Dakota Department of Revenue has reviewed the TIF Plan and classified the Tax Increment District #16 of City of Brookings to be Industrial Development.
c. At least 50 percent of the real property within the district will stimulate and develop the general economic welfare and prosperity of the state through the promotion and advancement of housing opportunities.
d. The improvement of the area is likely to significantly enhance the value of substantially all other real property in the district.
e. The aggregate assessed value of the District plus the tax incremental base of all other existing Districts in the city does not exceed 10 percent of the total assessed valuation in the City.

3. Boundaries of District. The Boundaries of the district are determined to be as follows: Outlots, that Portion of SW ¼ Lying S of C & NW RR, INC. Meyers Subdiv. EXC Lot 5A, 5B,6B, & 7B & EXC S .84 AC of L H-11, EXC L H-8 SEC 30-110-49, Also N ½ NW ¼ EXC H-2, & EXC .43 Acres of Lot H-5 (113.06 AC). All located in the City of Brookings, Brookings County, South Dakota including within and adjacent rights-of-ways.

4. Findings of Annual Appropriation TID. Tax Increment District #16 will be designated as an Annual Appropriations TIF to ensure that it does NOT count against constitutional debt.

5. Creation of Tax Increment Fund. There is hereby created, pursuant to SDCL 11-9-31, a City of Brookings Tax Increment Financing District #16 Fund, which shall be a segregated asset account. All tax increments collected pursuant to Tax Incremental District #16 shall be deposited into the Tax Increment Financing District #16 Fund. All funds in the Tax Increment Financing District #16 Fund shall be used solely for those purposes expressly stated and reasonably inferred in SDCL Chapter 11-9.

Resolution 24-080. A motion was made by Council Member Rasmussen, seconded by Council Member Tilton Byrne, that Resolution 24-080, a Resolution Adopting the Tax Increment District #16 Project Plan, be approved. Public Comment: Al Austreim. The motion carried by the following vote: Yes: 7 - Avery, Doran, Niemeyer, Rasmussen, Specker, Tilton Byrne, and Wendell.

RESOLUTION 24-080 - RESOLUTION APPROVING
TAX INCREMENT FINANCING DISTRICT #16

WHEREAS, the Brookings Planning Commission has recommended the approval of the Tax Increment Financing District #16 Project Plan, City of Brookings; and

WHEREAS, the City Council finds that all requirements have been met in order to approve said Tax Increment Plan.

NOW, THEREFORE, BE IT RESOLVED by the City Council

1. Approval of Project Plan. The project plan, a copy of which is on file with the City Finance Officer hereby approved.
2. Findings. The City Council finds that the project plan is feasible and that it conforms to the City's master plan. All findings made in the tax increment financing project plan are included herein by reference.
3. Effective 20 days after publication. This resolution shall become effective 20 days after publication and absent any challenge at law all findings and conclusions in the Tax Increment Financing Project Plan for Tax Increment Financing District Number Sixteen, City of Brookings shall be final.

Progress Report. Samantha Beckman, Assistant to the City Manager, provided a progress report highlighting the City's activities and projects.

City Council Member Introduction of Topics for Future Discussion. Council Member Specker requested a future PFAS Report from 3M / Solventum.

Adjourn. A motion was made by Council Member Tilton Byrne, seconded by Council Member Doran, that this meeting be adjourned at 7:38 p.m. The motion carried by a unanimous vote.

CITY OF BROOKINGS, SD

_____
Oepke G. Niemeyer, Mayor

ATTEST:

_____
Bonnie Foster, City Clerk

Brookings City Design Review Team (Staff) Meeting Minutes
August 22, 2024

IV. Pre-Disaster Mitigation Plan (11:00am) August 22, 2024

Present for The City were Ryan Miller-City Planner, Mike Struck-Director of Community Development, Pete Bolzer-Fire Chief, Thad Drietz-Assistant City Engineer, Steve Britzman-City Attorney, Jared Thomas-Chief Building Official, Eric Witte-Brookings Municipal Utilities W/WW Plant Operations & Engineering Supervisor, Jacob Meshke-Deputy City Manager, Russ Halgerson-Brookings Municipal Utilities Electric Department Manager, Michael Drake-Chief of Police, Curt Kabris- Swiftel Technical & Network Operations Manager, Kristin Zimmerman-Parks, Recreation and Forestry Director, Paul Briseno-City Manager and Steve Meyer Director of Brookings Municipal Utilities. Also present were Luke Muller-First District Association of Local Government and Bob Hill-Brookings County Emergency Manager.

FEMA required the City's Pre-Disaster Mitigation Plan to be updated every 5 years. Maintaining the plan made the community eligible for certain mitigation funding. Hazard identification was a probability assessment based on historical events. The vulnerability assessment was primarily subjective and needed more objective data to back it up. If a concern was rated as "High Vulnerability," there needed to be a project to mitigate the concern.

Beyond economic impact, identify drought concerns in the city. BMU monitored aquifer availability and planned to put more wells in to increase source capacity. The new wells would be by well field 4 miles east and 2 miles north of town and would draw from 2 different aquifer locations for redundancy. The water plants had permanent generators and wells had portable generators. BMU and Public Safety agreed that the water source should be ok within city limits. Everyone agreed that drought was not a major concern in area and more about adjusting watering restrictions so they decided to lower it to medium vulnerability.

During the polar vortex in 2019, damage was well mitigated.

Critical facilities spreadsheet needed to be updated:

-Change name of Swiftel Center to Dacotah Bank Center.

-Swiftel Telecommunications had 1 central office and 3 remote switching offices.

-Brookings County Highway Department was not owned by the city.

-BATA in new facility at 1313 Western Ave.

-SDSU was covered through the state's plan.

-List all manufactured and mobile home courts.

-List all nursing homes or assisted living facilities.

-United Way at 908 Hope Dr.

-Food pantry.

-Campgrounds were Dacotah Bank Center and Sexaur @ 121 west 10th St.

-Domestic Abuse Shelter: Call 692-2113 for location but keep private.

-List City County Government Center as a storm shelter.

The City could opt out of publishing locations of infrastructure by annotating that the information is on file. The unpublished sites would need to be identifiable by the name. The City Attorney advised including addresses for buildings but not substations.

Hazard mitigation activities:

-List tornado shelters in proximity to parks, campgrounds, etc.

-Increased function of City County Government Center by adding generator.

-All new schools are built with storm shelters included. The school may not want unaffiliated adults within the building and storms are typically after school hours so there would not be anyone available to let people in – Ruled Out.

-Dacotah Bank Center was identified as emergency shelter and the backup hospital location but did not have a permanent generator.

-Alternate care facilities needed to be listed.

On August 13, 2024 City Council was presented with an updated Stormwater Master Plan with infrastructure projects to mitigate hazard flooding around community. FEMA's repetitive loss property report, included below, could be used to determine if there were properties that should be bought out. If there were any underserved areas of the community for Public Safety, those should be identified. This would be a presentation at the August 27, 2024 City Council Meeting and it needed to be published as a Pre-Disaster Mitigation Plan with time allotted for community testimony.

City of Bruce Agenda

BRUCE CITY COUNCIL MEETING
February 13th, 2024
6:00 PM

AGENDA (TENATIVE)

- CALL THE MEETING TO ORDER
- INVITATION FOR CITIZENS TO SCHEDULE TIME ON THE AGENDA FOR AN ITEM NOT LISTED.
    - There is a 5-minute limit per person. Anyone wanting to speak during this agenda item must sign in prior to the start of the meeting. No action will be taken during this agenda item. Any requested action will be scheduled for a future meeting.
- APPROVE AGENDA
    - Additions
- APPROVE MINUTES OF THE January 9th MEETING
- APPROVE AND PAY BILLS
- MAINTENANCE REPORT
    - SEWER
    - STREETS
    - PARKS
- MAYOR REPORT
- OFFICE REPORT
    - Equalization Meeting & Appeal Notification

OLD BUSINESS

- Museum Update Estimate
- Stray Cat Committee

NEW BUSINESS

- First District – Association of Local Governments
- Community Club Events – Pay Half Insurance (Done in 2023)
- Building Permit – Nancy Skoglund
- Dean Skoglund – New Rates
- Outlaw Liquor License - Canceled
- Fire Department Roster
- Council Openings – Hawley & Moir

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING MEETING

CITY OF BRUCE

DATE: February 13th, 2024

Name	Organization
Amy Arnold	1st District
Wilma Tillgren	Bruce, SD
Ruby Rabah	Bruce SD
Rinda Ribstein *	Bruce SD
Sabrina Kasper	Bruce, SD
Marisa Skoglund	Bruce, SD
Glenn Skoglund	Bruce SD
Kay Ruden **	Bruce, SD
Andrea Dred **	Bruce, SD
**	Bruce, SD
Marilyn Edler **	Bruce, SD
**	Bruce SD
Dustin Hawley **	Bruce, SD
	" "
Kelli Henricks	1st District

***Finance Officer – Rinda Ribstein (ex officio) ; Amber Hanson (in trainining (not signed in))**
****Elected Officials – Jeff Anderson (Mayor (not signed in)), Marylin Edler, Andrea Diedrich, Kay Ruden, Jon Moir, Dustin Hawley, Mick Cook.**

BRUCE CITY COUNCIL MEETING
February 13th, 2024

Mayor Anderson called the Bruce City Council to order on Tuesday February at 6:00 p.m. at the Bruce City Office with Councilmembers Elder, Diedrich, Hawley, Moir, Cook, Ruden, Finance Officer Amber Hanson and Maintenance Cody Behlings.

The floor opened to those community members that signed in 5 minutes prior to City Council meeting being called to order.

RR asked about the previous year's light pole basket decorations, as stated from the previous 2 City Council meetings they were damaged. They will be repaired/replaced for next year. Also inquired about city employee W-2's, was reminded that she was informed that Intuit issued them incorrectly. There was a 30-day extension filed with the IRS and they will be sent out as soon as corrected.

Motion by Hawley and seconded by Ruden to approve the agenda; all present voted in favor of the motion. Motion carried.

Motion by Ruden and seconded by Haeley to approve the minutes of the January 2023 meeting as written. All present voted in favor of the motion. Motion carried.

Motion by Cook and seconded by Edler to approve and pay the following claims presented by the Finance Officer. All present voted in favor of the motion. Motion carried.

January Bills -
General- Mediacom $230.71; Ottertail-$1129.51; SV Energy $26.34; Brookings Duel Rural Water $50.00; Walmart $80.37; Quickbooks $191.16; Amazon $82.52; Straight Talk $32.98; Roden $1187.30; M&M Service $291.62; Runnings $59.99; RFD News $4.16; Lowes $115.94; Post Office $53.64; Kerrys Landscaping $266.45; Brookings County Treasurer $58.35; Department of Agriculture $51.25; Bobcat $6.12; Estelline Community Oil $1115.70; SDML $2078.00; Randy Wilmon Gravel $750.00
GARBAGE—Cook's Wastepaper-$1222.44 **PAYROLL—**Duane Walburg, December AC wages/mileage--$200.44; Cody Behlings, January wages $1270.99; Cody Behlings, January wages $1401.67; Amber Hanson, January wages $1684.08; Amber Hanson January wages $1742.50; Cody Behlings, 2023 Bonus $500.00; Amber Hanson 2023 Bonus $500.00
PAYROLL TAXES—Payroll Taxes 941/943/944 $2706.11

Maintenance Report; sewer cleaning being done regularly, pond levels fluctuating, streets are needing work because of the moisture, branches are being cleaned up and will continue to do.

Office Report; year end report, Equalization Meeting in February, Utility mapping available, Resolution for City Employee 2024 pay.

Motion by Hawley and seconded by Cook to leave the mayor wage at $200.00 per meeting attended for regular, special and per phone conference; leaving council wages at $150.00 per meeting attended for regular, special and per phone conference; Seasonal Employee/Operator at $15.00-25.00 per hour; Election Workers at $13.00 per hour; Animal Control at $25.00 per hour and .50 (fifty cents) per mile. Finance Officer Amber Hanson $27.30 per hour per hour. City Maintenance Cody Behlings $21.00 per hour. All members voted in favor of the motion to adopt the following Resolution 2024-01, motion carried.

Old Business; Museum update quote totaled $25,000.00 – Motion by Cook and seconded by Hawley to table decision and request various quotes for the project. All present voted in favor of the motion. Motion carried.

Stray Cat Committee; Frank Feltis reported on his research to find the cats appropriate care. Conversation concluded with Hawley informing the council that he had found a veterinarian that would do spay and neuters for a reduced rate for groups of cats. Mr. Feltis will follow up and look for fundraising opportunities.

New Business; 1st District – Association of Local Government presented the Pre-Disaster Mitigation plan as required by FEMA. They covered disaster possibilities and what we have in place to be prepared for these disasters.

Dean Skoglund presented the 2024 insurance pack. There is a $3000.00 increase.

Community Club has picked dates for the 2024 BFest. Council was asked to cover half of the insurance for the summer activities. Motion by Diedrich and seconded by Hawley to table until next month when the council has the total cost. All present voted in favor of motion. Motion carried.

Nancy Skoglund filed a Application for Variance to vacate part of Tee Street and Jackson Addition. She stated the reason for variance is that it will never be developed. Decision on variance was tabled to confirm with resident that all of Tee Steet and the Jackson Addition would be dissolved, not just a portion.

Outlaw Bar & Grill never filed a for a 2024 license with the city and state.

There are 2 openings on the City Council for 2024. Hawley in Ward 1 and Moir in Ward 2.

Motion by Cook and seconded by Moir that the meeting be adjourned at 6:59 p.m. All present voted in favor of the motion. Motion carried.

Dated this 14th day of February 2024 in Bruce, South Dakota.

Amber Hanson
Finance Officer
City of Bruce [unapproved minutes]

Outline
Pre-Disaster Mitigation Plan
Community Meetings

I. Hazard review

A. Hazard Identification

Community would like to move ice jam from low to high – they have issues on the SW side of town 1-2 times a year where the ice will cause the water to back up before it finally breaks free. They didn't feel like it affected more than 5% of the community so didn't see a need to move the hazard vulnerability.

B. Hazard Vulnerability

City recommended no changes to hazard vulnerability list.

II. Community Capabilities and Plans review

- *City Council approves/issues building permits. Community is not zoned.*

III. Community facilities

A. Identify/review critical facilities

1. Are there new facilities/facilities to be removed
   a) *Add campground – 418 Madison St, Ball Field – 213 2nd St and Park – 308 Wagner St to list.*
2. Have addresses changed/are they correct
   a) *correct address for Community Club is 409 Jefferson St*
   b) *Sanitary Sewer lagoon is NOT on the NW Side of town – move point to east end of Jay St and remove point from fish ponds*
   c) *Move Lift station point to SW corner of 2nd St and Jay St and remove water services point*
   d) *correct address for City Shop is 608 Jay St*
3. Where are the populations to protect
   a) *Transient/campgrounds*
   b) *Poor Populations/economically disadvantaged areas*
   c) *Schools/children*
   d) *Elderly*
   e) *Protected classes (mentally handicapped)*

IV. Project review

A. Review past projects

- City of Bruce did purchase a portable back up generator.
- They implemented drainage improvements on the west side of town.
- In 2018 they purchased new city sirens.
- They had a company come in and camera their entire sewer system and found no issues. All in really good condition.
- They currently use the Community Club as a storm shelter. It doesn't have solid walls but has a basement and is a safe place for those in need.

B. Ask about other projects (not all require FEMA funding)

An actual tornado shelter near the Park/Campground.

Curb and Gutter to help with water runoff.

Buring powerlines was discussed but most liked the idea of them being above ground – Ottertail currently provides and maintains power/powerlines. Possible tree trimming instead to alleviate the chances of branches falling on lines but all agreed Ottertail does a good job at this where they can get within easements.

Town of Bushnell

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING MEETING

TOWN OF BUSHNELL

Name	Organization
Kelli Henricks	1st District of Local Governments
Danita Fischer	Finance Officer - Bushnell
Brian Jaacks	President of Board
Charlotte Meyer	Board trustee
Terry Schultz	Board Trustee
Kim Hubek	
Kris Eighmy	Resident
Brenda Eighmy	Resident
Eric Wenger	Resident

Bushnell PDM Meeting 03/04/2024 Meeting Notes

- Prerequisite for federal funding/grants you have to have in order to qualify
- Hazard mitigation project examples: Storm shelter, sirens, power line burials, tree branch trimming, drainage channels, etc. Projects that help to stave off probably emergency issues
- FEMA requires some sort of plan in place in order to qualify for the 80/20
    - FEMA says we need to prepare this plan to help minimize the chaos during emergency recovery efforts
    - Some events happen on a regular basis, sometimes, or almost never
- How likely are events to occur?
- ALWAYS GET COPY OF AGENDA
- When county updates premitigation plan so does the city
    - Updated every 5 years
- Worksheet #1
    - Council/public present had no issues or questions about which current boxes were checked.
    - Leave as is
- Worksheet #2
    - Move Extreme Heat from low to medium
    - Move Hail from Medium to High
    - Move Heavy Rain from low to Medium
    - Move lightning from low to medium
    - Move Thunderstorm from NA to High (council was very confused as to why this was marked NA back in 2019)
- Critical Infrastructure from 2019-24
    - No changes, everything is the same. No new improvements or additions
- Map of Hazard Vulnerability/Critical Infrastructure
    - Remove R in Strangeland St (should be Stangeland St)
- Bushnell Mitigation Activity Sites
    - Remove R in Strangeland St (should be Stangeland St)
- Table
    - Has not purchased back up generator
    - No construction of tornado shelter yet
        - Use town hall still
    - No installation of water tank for emergency purposes
- Wishlist Items
    - Tornado Shelter
    - Bury powerlines
    - Tree trimming (Ottertail coming in /storm took out a lot)
    - Updated siren in 2016-2018 (couldn’t remember which year) but still in great working condition
    - No sanitary sewer
    - No water lines- all private wells or rural water
    - No public utilities all privately owned

City of Elkton

Elkton City Council Agenda
March 6, 2024

6:00 PM **Roll Call**

Pledge of Allegiance

***Approval of Agenda**

Approval of Minutes
1. *February 5, 2024 – Regular Meeting Minutes

Citizen Comments

Pre-Disaster Mitigation Plan (1st District)

Petitions & Communications
1. Temp Liquor permit – EYSA for Dueling Duo March 22nd

City Employee Reports
1. Public Works Supervisor
2. Bar Manager
3. Finance Officer
4. Fire Department
5. Ambulance
   a. Garage location
6. Library
7. Park & Rec

Financial Reports
1. *2024 Budget Overview

Committee Reports

Ordinances & Resolution
1.

Unfinished Business
1. City Infrastructure projects
2. Community Center Roof
3. Traffic lines painting at school

New Business
1. Water tower maintenance contract
2. Sewer line televising
3. Clean up day

***Approval Claim Payments (Bills)**

Information Only (FYI)
1. Sheriff's Report –

Executive Session – if needed

Adjourn

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING MEETING

TOWN OF ELKTON

Name	Organization
Kelli Henricks	1st District of Local Governments
Susan Schuurman	City of Elkton, PO
Dood Berman	Elkton City Council
Rick Webbe	City of Elkton
Charles Remund	City of Elkton
[illegible]	City of Elkton
Bill Kuell	City of Elkton
Jordan Beck	City of Elkton
Gabby Fink	Elkton Record
[illegible]	Bar
Mike Frederickson	Elkton School
Brian Sandal	Elkton School
Shea Jensen	City of Elkton

Elkton City Council Minutes
March 6, 2024

The Elkton City Council meeting was called to order by Mayor Charles Remund at 6:00 PM. Council members present were Jordan Beck, David Bierman, Tal Farnham, Bill Kuehl and Rick Weible. Council member Scott Stuefen was not in attendance.

Motion by Weible second by Beck to approve the agenda as presented. All in favor – motion carried.

Motion by Weible, second by Kuehl to approve the February 5th regular meeting minutes. All in favor - motion carried.

During citizen comments, Elkton School Superintendent, Brian Jandahl was on hand to speak with the council about the parking and safety issue during pick up time for the elementary at the north end of the school. The parking area at the north end of the school has been designated as a pickup and drop off area only, staff have been instructed to park elsewhere. This seems to be working out well. After school lets out the city crew will work with the school to remove some of the yellow no parking area and repaint parking lines to accommodate more vehicles on the west side. Discussion was held on the possibility of painting lines on the road to stop individuals from crossing the center line to park in the opposite direction that they were driving. Inquiries will need to be made to see if this is feasible based on room and laws.

Council member Tal Farnham informed the council that the Boys and Girls Club is looking to come to Elkton in the near future. They are planning to approach the school about the possibility of using the school building for the time being until they are able to build a permanent home. A location for this building is a concern, the city will see if there are any lots that could be of use to the club.

Kelli Henricks a GIS Specialist with First District Association of Local Governments was on hand with a packet for the council to go thru and update for the Brookings County Pre-Disaster Mitigation plan. This plan is required to be updated every 5 years. The council made a few changes to the plan.

A temporary liquor permit was requested by the Elkton Youth Sports Association for the fundraiser event on March 22nd. Motion by Farnham, second by Weible to approve the temporary permit. All in favor – motion carried.

Public Works Director, Steve Jensen was on hand to give his report. Jensen and Nelson attended a training session in Brookings on February 27th. Sever water leaks were fixed. The gravel is being dragged and smoothed on the boulevards and alleys. Installation of the new batteries for the water meters continues with only about 100 left to be installed.

Jennifer McBrien, Bar Manager was on hand to give her report. The ice machine continues to not keep up on busy days and weekends. This unit only makes 150 pounds per day, which is not enough. At one point GES offered to upgrade the unit, McBrien will reach out and find out their options through GES. Buck Euchre tournament was well attended last weekend. Karaoke will be held on March 16th. The bar is still looking for new bartenders to fill in part time.

Susan Schuurman, Finance Officer was on hand and gave her report. The council will meet for the Board of Equalization on March 18th at 6 PM to hear any grievances submitted by March 14th. Motion by Weible, second by Beck to move the April meeting to Thursday, April 4th at 6 PM. All in favor – motion carried.

The fire department will hold a fish fry on March 29th.

The ambulance plans to submit some grant application for equipment needed for the new ambulance. They are also planning a breakfast fundraiser in May. Plans for the new ambulance garage are still in the works.

City Librarian, Sherry Bauman was not in attendance, but left her report. Story hour and Daycare deliveries continue. Work on the Annual Public Library survey to the SD State Library is being done to have the document submitted by the end of March. Bauman continues to plan for the summer reading program. The next library board meeting is March 13th at 5 PM.

No applications for the Park and Rec position have been received.

The council reviewed the budget overview for February.

In unfinished business, regarding the infrastructure projects, Schuurman asked if there were any updates on the updated application that is due to the state on March 8th. Jensen will reach out to SPN in the morning. Council member Beck will speak with Elkton Lumber to make sure the community center shingles are replaced this summer.

The water tower is due to be inspected and cleaned this summer. The council was given two option by Maguire Iron. First is a contract for one year service at the price of $2,650.00, the second is an option to sign a contract locking in the $2,650.00 rate for the next 10 years, the full cost being due the first year. The council decided to go with the one year contract. Motion by Farnham, second by Weible to approve a 1 year contract for the water tower maintenance. All in favor – motion carried.

In regard to the infrastructure project there is a need to televise some of the sewer lines. This includes a section on the north end of Beaver Street to determine the condition of the line underneath the railroad tracks. Also, the sewer line on 4th Street, to determine how far east of Badger Street the line goes and if it ties into the manhole in the park. This project will cost approximately $1,000.00. Motion by Bierman, second by Farnham to approve the televising. All in favor – motion carried.

The council discussed a date for the spring clean up. They chose April 26th or May 3rd if the dates were still available with the contractor.

Motion by Beck, second by Bierman to approve payment of the March bills. All in favor – motion carried.

With no further business before the council. Motion by Farnham, second by Weible to adjourn the meeting at 7:08 PM. All in favor – motion carried.

March 2024 payments

Aflac 27.04 insurance; A-OX welding 40.19 shop supplies; Aramark 869.72 bar, c-ctr mats, supplies; AT&T 170.07 cell service; Austreim Excavating 87.50 south road maintenance; Avid Hawk 45.00 website monthly fee; BankStar 9.62 petty cash; BankStar 128.10 insurance; Beal Distributing 5149.60 beer purchases; Britzman, Steven 160.00 lawyer fees; Br. Co. Sheriff's Dept 2862.44 contract law enforcement; Br. Deuel Rural Water System 4750.60 water purchased; Capital One 21.22 finance office supplies; Century Business Products 71.76 library copier lease, copies; Chesterman 401.90 pop purchased; CHS 1281.35 propane, supplies; City of Elkton 347.40 utility fees; Colonial Life 306.94 insurance; Cook's Wastepaper 4128.72 contract garbage; Core & Main 49,500.00 new meter batteries; Dakota Beverage Co 3808.00 beer purchases; Dakota Pump & Control 1040.82 install temp sewer pump; Dakota Toms 185.60 bar supplies; *Dept of Revenue 16.70 title & registration fees; Dept of Revenue 2304.14 sales tax remittance; DMI 154.50 JCB maintenance; EFTPS 5094.77 federal tax payments; Green Energy Solution 219.30 ice machine maintenance; Harry's Frozen Food 1109.25 pizzas for bar; Henry's 4075.18 bar supplies; Innovative Office Solutions 186.38 building permit cards; ITC 792.70 phone & internet service; Jensen, Steve 70.00 phone reimbursement; Johnson Bros 2563.49 liquor purchases; LEAF 41.00 finance office copier lease; Lowes 48.82 shop supplies; Lyle Signs 67.31 street signs; McBrien, Jennifer 30.00 phone reimbursement; Nelson, Terry 30.00 phone reimbursement; Nova Entertainment 450.00 bar entertainment; One Office Solution 16.94 copier maintenance, copies; Ottertail 2014.30

electricity; Pepsi 48.00 pop purchased; Postmaster 227.00 postage; *Practice Sports 900.00 pickleball posts, nets; Republic Beverage Company 446.50 liquor purchases; Rubber Flooring 22,493.16 pickleball flooring; Runnings 5.58 shop supplies; Schuurman, Susan 51.42 phone, mileage reimbursement; SD Retirement 2336.68 retirement payment; Sioux Valley Energy 56.00 lagoon electricity; Skyview 235.50 fuel purchases; Southern Glazer's 559.60 liquor purchases; Vadim Municipal Software 16.16 ebilling fee; Visa 4233.97 bar, library, finance, park supplies; Visa – Street 321.33 shop supplies; Visa – Bar 134.56 bar supplies; Wellmark BC/BS 3339.91 health insurance; Wex 206.07 fuel purchases.

***denotes already pd. *Payroll:** Mayor/Council 860.06; Finance 4771.49; C-ctr 167.58; Street 3532.44; Library 1486.79; Bar 8961.62; Water 3983.32; Sewer 3532.42.

Elkton PDM Meeting 03/06/2024 Meeting Notes

- Prerequisite for federal funding/grants you have to have in order to qualify
- Hazard mitigation project examples: Storm shelter, sirens, power line burials, tree branch trimming, drainage channels, etc. Projects that help to stave off probably emergency issues
- FEMA requires some sort of plan in place in order to qualify for the 80/20
    - FEMA says we need to prepare this plan to help minimize the chaos during emergency recovery efforts
    - Some events happen on a regular basis, sometimes, or almost never
- How likely are events to occur?
- ALWAYS GET COPY OF AGENDA
- When county updates premitigation plan so does the city
    - Updated every 5 years
- Worksheet #1
    - Move drought from low to high
    - Move flood from low to high
    - Can categories be added?
        - Want to add high winds as they have been experiencing high winds the past few years that does damage on occasion (ripping off siding, shingles, blowing down trees, etc)
        - Can Solar Flares category be added? With the increase in demand for telecommunications or technology solar flares have been increasing (due to ozone thinning) that it is causing havoc on grid power or telecommunication outages.
- Worksheet #2
    - Move Drought from NA to medium
    - Move Flood from NA to high (city is so flat that if they flood everyone is impacted)
    - Move Hail from medium to high
    - Move Heavy rain from medium to high
    - Move Heavy snow from medium to high
    - Move Thunderstorm from medium to high
    - Can categories be added?
        - Strong winds (see worksheet 1 note)
        - Solar flares (see worksheet 1 note)
- Critical Infrastructure List
    - No changes.
- Map of Critical Infrastructure
    - No changes.
- Map of Mitigation Activity Sites
    - No changes.
- City of Elkton Problems
    - Bury Overhead powerlines
        - Not done
    - Tree replacement Program
        - Haven't implemented. Have removed trees, but haven't started a program to replace them.
        - Ottertail has been removing trees that damage or impact power lines
    - Install storm siren

        - Not done
    - Develop and Implement Emergency Plan for Tornados
        - Not done
    - Construction of Tornado Shelter
        - Not done. Community center acts as a storm shelter to get out of thunderstorms but not safe enough for tornados council felt
    - Comprehensive Drainage Study
        - Yes has had part of the town done with the street projects
    - Establish living snow fence
        - Not done
    - Other Items Discussed:
        - Burying powerlines would be nice, but Ottertail owns them and has been slowly doing it. They are also doing tree trimming and removals as needed.
        - Better water storm drains with various street constructions
        - Sanitary and water in great condition in parts of town.
            - They are currently on 3rd phase of replacing water and sewer and will have a 4th phase.
            - Currently half the town is done with brand new water/sewer and the goal is to finish the entire town.
            - West side of town has drain tile to help with drainage issues
        - Partner with the school for storm shelter as another location to help get more people to safety
        - Fliers to help make people aware of where to go during storm events
        - Bank during tornados as a safety shelter?
            - School would be #1 storm shelter location to go but possibly the bank as a tornado shelter?
        - CO2 pipeline- communities prevention/chain of command for what should be done during CO2 pipeline burst
            - What plan of action? Who to contact? What to do with local residents?
            - 5-10 mile dispersement so now part of the community is impacted.
            - Want to get a Hazard plan of Action for CO2 Pipeline burst for everyone impacted, proper training for City staff & residents, proper equipment.
            - Ethanol industry might impact this/need to have a safety plan in place and will work with local communities?
            - Bob Hill will need to coordinate with

Town of Sinai

SINAI TOWN COUNCIL MEETING AGENDA
April 1, 2024 @6:00PM
Sinai Fire Hall

ATTENDEES:

CALL MEETING TO ORDER

PLEDGE OF ALLEGIENCE

ROLL CALL

APPROVAL OF AGENDA

OLD BUSINESS:

- Review meeting notes from March meeting
- Review Financial Report
- Review property cleanup efforts
- Discuss finance plan for street projects
- Other old business

NEW BUSINESS:

- Sinai Residents – updates (for monthly billing)
- Review Municipality Calendar for upcoming events and deadlines
- First District (Kelli Henricks) – review mitigation plan
- Other new business
- Open Forum / Public Comments (note: limited to 5 minutes per person – no action will be taken during meeting)

ADJOURN

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING MEETING

TOWN OF SINAI

Firehall

Name	Organization
Julie Wosje	Sinai Finance Officer
Doyle Johns	Sinai Mayor
Brad Mitchell	Town Council
Kent Eldson	Town Council
Jim Miller	Laborer
Julli Hem	1st District

Sinai PDM Meeting 04/01/2024 Meeting Notes

- Prerequisite for federal funding/grants you have to have in order to qualify
- Hazard mitigation project examples: Storm shelter, sirens, power line burials, tree branch trimming, drainage channels, etc. Projects that help to stave off probably emergency issues
- FEMA requires some sort of plan in place in order to qualify for the 80/20
    - FEMA says we need to prepare this plan to help minimize the chaos during emergency recovery efforts
    - Some events happen on a regular basis, sometimes, or almost never
- How likely are events to occur?
- ALWAYS GET COPY OF AGENDA
- When county updates premitigation plan so does the city
    - Updated every 5 years
- Worksheet #1
    - Leave as is. Council was in agreement everything looked fine in the current categories
- Worksheet #2
    - Leave as is. Council was in agreement everything looked fine in the current categories
- Critical Infrastructure from 2019-24
    - Lots of updates to addresses. Julie sent a list with information to update. See list below
        - Sinai City Hall (this is actually our maintenance garage or what we call the "pumphouse") 318 Main Street
        - Sinai Fire Dept (where we had our meeting) 311 Main Street
        - American Legion Hall (legion disbanded, FD now owns bldg) 309 Main Street
        - Storm Siren (located next to Brookings County Maint Shed) 302 Main Street
        - City Sewer Lagoons (south of town) 458th Ave and 217th St
        - Sewer Lift Station (west end of town) 2nd St W & Main Ave
        - City Park (west end of town, 2nd St W & Park Ave) 111 Park Avenue
        - Red Shed (maintenance shed for tractor, equipment storage) 216 2nd St
        - Old sewer bldg (storage) 2nd St W
- Town of Sinai Hazard Vulnerability/Critical Infrastructure Map
    - Add items listed above
- Town of Sinai Mitigation Activities Map
    - No changes to be made.
- Table of Problem Statements
    - Construction of Tornado Shelter
        - Not built.
    - Complete required drainage improvements from engineering study.
        - Not done yet.
    - Other comments:
        - Use basement of church for tornado shelter currently
        - Sioux Valley owns all the power lines and maintains them.
            - This summer they will be burying all lines.

        - They also maintain tree trimming along power line routes
- Brand new siren, still in good shape about 15 years old
- Would like generators if had the money to buy them
- Sanitary sewer is only a few years old, same with lagoon
- Rural water installed all new water lines
- No flood issues so no need for levees or issues of ice jams

City of Volga

Regular City Council Meeting
Volga City Hall - 226 Kasan Ave
Tuesday, January 16, 2024
12:00 PM

1. CALL TO ORDER

2. PLEDGE OF ALLEGIANCE

3. ROLL CALL

_____ Mayor Ken Fideler _____ Bev Cotton ___ Philip Madsen _____ Stacy Sahr
_____ Vickie VanderWal _____ Matt Jaquet _____ Mike Larson

4. APPROVAL OF AGENDA AND CONSENT AGENDA

4.1 Approve December 29, 2023 Special City Council Meeting Minutes

4.2 Approve January 2, 2024 Regular City Council Meeting Minutes

5. PUBLIC HEARINGS, SCHEDULED VISITORS, & TIMELY ITEMS

5.1 Scheduled Visitor - Luke Muller, First District
Letter from Brookings County

6. COMMITTEE REPORTS

7. Public Safety Report - Cotton & VanderWal

8. Community Development Report - Larson & Sahr

8.1 Motion to Approve Resolution #2024-04 - 2024 Garbage Rates

8.2 Motion to Approve Resolution #2024-05 - 2024 Charges, Fees, Fines, & Rates

8.3 Motion to Approve Renewal of an Annual Contract with Code Enforcement Specialists, LLC.

8.4 Motion to Approve the First Reading of Ordinance #2024-01 - Traffic & Vehicle Operation on One-Way Streets

9. Public Works Report - Madsen & Larson

9.1 Motion to Approve Resolution #2024-02 - 2024 Water & Wastewater Rates
Banner Rate Study & Recommended Rates

9.2 Motion to Approve Pay Request #17 to Caldwell Tanks for $27,450 Contingent on Reaching the Substantial Completion Date

9.3 Motion to Approve Advertisement for Sealed Bids for Chip & Crack Sealing

10. Parks, Recreation, and Buildings Report - Sahr & Cotton

11. Electric Report - Jaquet & Madsen

11.1 Motion to Approve Resolution #2024-03 - 2024 Electric Rates

12. Finance & Economic Development Report - VanderWal & Jaquet

12.1 Motion to Approve Claims

13. OTHER BUSINESS

13.1 Discussion – Topics for Future Discussion

13.2 Update – Future Meetings or Events

13.3 Public Comments (Limited to 5 Minutes Per Citizen. Name and Address Must Be Stated. No Voting Action Will Be Taken)

14. ADJOURN

Volga SOUTH DAKOTA
You'll love it here!

PO Box 217, Volga, South Dakota 57071 605.627.9113

January 16, 2024

City of Volga City Council Meeting Sign In Sheet

Name	Business/Organization
Krista Larson	City of Volga
Michael Schulte	City of Volga
Ben Cottrn	City of Volga
Gabby Fink	Volga Tribune
Luke [illegible]	ISG District
Lindsey Grabow	City of Volga
Tom [illegible]	Sheriffs Office
Steve Britzman	City Attorney, City of Volga
Mike Larson	City of Volga Councilor, Ward 3
Philip Madson	City of Volga Councilor, Ward 1
Kenneth Fideler	City of Volga (Mayor)
[illegible]	City of Volga
Vickie Vandenbol	City of Volga

Meeting Minutes

MINUTES OF REGULAR MEETING

The City Council of the City of Volga, SD met for a regular meeting Tuesday, January 16, 2024 at 12:04 PM in the conference room of City Hall; Mayor Ken Fideler presiding. Members present: Bev Cotton, Stacy Sahr, Vickie VanderWal, Mike Larson, and Philip Madsen. Members absent: Matt Jaquet. Also present: City Administrator Michael Schulte, City Attorney Steve Britzman, Officer Krista Larson, Deputy Finance Officer Ashley VanMaanen, Community Engagement Coordinator Lindsey Grabow, Officer Thom Chester, Luke Muller with First District, and Gabby Fink with the Volga Tribune.

Following the Pledge of Allegiance, Motion by Jaquet, seconded by Sahr, to approve the agenda and consent agenda as presented. All in favor. Motion carried 4 – 0. The consent agenda included the December 29, 2023 City Council Special Meeting Minutes and the January 2, 2024 City Council Regular Meeting Minutes.

VanderWal joined the meeting at 12:09 PM.

Public Hearings, Scheduled Visitors, and Timely Items

Scheduled visitor, Luke Muller with First District, addressed the council and gave an overview of First District's involvement and planning efforts on City of Volga projects. First District is currently working on updating the county pre-disaster mitigation plan. Various aspect of the plan were discussed and outlined. Council members were encouraged to read through the provided materials and provide feedback on any additional changes to the plan. First District will also provide guidance during the strategic planning process.

Public Safety

Cotton and Sahr noted safety concerns near the school drop off zone.

Community Development

Motion by Larson, seconded by Cotton, to approve Resolution #2024-04 the 2024 Garbage Rates. Schulte noted rates were recently established and approved when Cook's was awarded the bid contract in 2023 and have not changed. On roll call: Cotton, Yes; Madsen, Yes; Sahr, Yes; VanderWal, Yes; Larson, Yes. Motion Carried 5 – 0.

RESOLUTION #2024-04 A RESOLUTION CONTINUING CERTAIN RESIDENTIAL CHARGES FOR GARBAGE SERVICES OF THE CITY OF VOLGA CITY OF VOLGA, SOUTH DAKOTA

BE IT RESOLVED by the City Council of the City of Volga, South Dakota, that effective January 1, 2024, the following garbage charges shall apply to customers receiving garbage collection services billed through the City of Volga: Residential Garbage Collection Service. A minimum monthly base rate of Sixteen and 65/100 ($16.65) Dollars shall be charged for garbage collection service provided to each separate residential unit in the City. An optional second garbage container will be charged an additional Nine and 00/100 ($9.00) Dollars per month. Garbage collection provided by Cook's Wastepaper shall occur every Friday with recycling service occurring on the second and fourth Friday of every month. A separate garbage and recycling container will be provided to every paying customer for weekly garbage pickup and twice a month recycling pickup. Residential Senior Garbage Collection Service. A minimum monthly base rate of Nine and 00/100 ($9.00) Dollars shall be charged for garbage collection service provided to each separate residential senior unit in the City. Senior garbage is defined as anyone 65 years of age or older and living alone can request senior garbage. Garbage collection provided by Cook's Wastepaper shall occur every Friday with recycling service occurring on the second and fourth Friday of every month. A separate garbage and recycling

Outline
Pre-Disaster Mitigation Plan
Community Meetings
City of Volga, SD

Introduction

Personal introduction:

All individuals in attendance introduced themselves.

Introduce the plan: Luke Muller of FDALG introduced the group to the PDM planning process and the community's role in the process, discussing the following:

Why update the PDM?
Why is your community doing it individually/Why not just county?
What is a PDM?

Hazard review

Hazard Identification

Summer/Thunderstorm
- Hail, Heavy Rain, Lightning, Tornado, Strong Winds

Winter Storm and Extreme Cold
- Freezing Rain, Sleet, Ice, Heavy Snow,

Drought and Extreme Heat
Flood
- Rapid Snow Melt, Ice jam, (heavy rain can go here too)

Fire
- Urban fire, wildfire (grass fire)

The City of Volga reviewed the previous PDM's Risk Assessment worksheet (Hazard Identification – Probability) and made no changes.

Hazard Vulnerability

Summer/Thunderstorm
- Hail, Heavy Rain, Lightning, Tornado, Strong Winds

Winter Storm and Extreme Cold
- Freezing Rain, Sleet, Ice, Heavy Snow,

Drought and Extreme Heat
Flood
- Rapid Snow Melt, Ice jam, (heavy rain can go here too)

Fire
- Urban fire, wildfire (grass fire)

The City of Volga reviewed the previous PDM's Risk Assessment worksheet (Hazard Identification – Vulnerability) and made no changes.

Community Capabilities and Plans review

The City manager administers the zoning ordinance and would like to update the city's comprehensive land use plan and zoning ordinance. The city is currently undergoing

a capital improvement plan update with ISG and an update to its strategic plan with FDALG.

Community facilities

Identify/review critical facilities

Are there new facilities/facilities to be removed

- *The city pool should be added to the list of populations to protect. Have addresses changed/are they correct - city staff will review the addresses and communicate with FDALG.*

Discussed the populations to protect

Transient/campgrounds
Poor Populations/economically disadvantaged areas
Schools/children
Elderly
Protected classes (mentally handicapped)

Project review

Review past projects

- All past projects should be retained

Ask about other projects (not all require FEMA funding)

The city needs to upsize storm sewer in certain locations, manage storm water gathering and containment better, install sirens downtown

Ask about Policies/activities that already help mitigate Disaster

City imposes watering restrictions in dry conditions, has added water storage and wells for water services, the city has added generators to wells and lift stations and has a portable generator for general use.

Electrical lines in town have been buried

The city cleared out a portion of the creek in town to allow stormwater to move more freely (in 2023) and are eager to monitor to see if it works. (Relatively dry 2024)

City of White

City of White

Date | time April 1st, 2024 | 7:00 pm | *Meeting* April Regular Meeting

City Council Meetings will be held in the Legion Room at the McKnight Community Center. Members of the public can participate in the meetings in person. Meeting minutes will be posted on the website and Tri-City Star as standard.

Time	Item
7:00 pm	Call to order

1. Pledge of Allegiance
2. Roll call ___Cutler ___Schwartz __Sunderland__ Lagerstrom __ Haines__ Wright
3. Approval of Agenda
4. Approval of minutes from March 18th 2024 meeting.
5. Approval of bills as presented
6. Public Comment *Pursuant to SDCL 1-25-1. A time for members of the public to discuss or express concerns to the Council on any issues not on the agenda. Action will not be taken. Speaking limited to 3 minutes.
7. Pre-Disaster Mitigation (Amy Arnold)
8. Dueling Pianos Ambulance Fund Raiser (Lori Colberg)
9. Singles Dance
10. Building Permit Rates
11. Malt Beverage & SD Farm Wine License Renewal
12. Finance Report
    - *Finance Officer Training
    - * Garbage Rates (increase by 4%)
    - *Annual Report
    - *CD Renewal (Electrical)
    - *Delinquent Notices
13. Maintenance Report

Executive Session Pursuant to SDCL 1-25-2(1,2,3,4,5)

Adjournment

PLEASE SIGN IN

City Council Meeting - White, South Dakota	APRIL 1st, 2024	Time: 7:00 P.M.

Please note: This is to obtain the correct spelling of names and keep a record of those addressing the council.

Name (Print)	Address or Company/Business Representing
MOHLER, CHARLES M.	
Amy Arnold	First District
Sheila Hanson	
Heather Shaw	
Lori Colberg	
Donna Wilson	
Susan Halida	
Pam Elsen	

City of White
April Regular Meeting
April 1st, 2024

The White City Council held a regular meeting on Monday April 1st,2024, at 7pm at the McKnight Community Center. Mayor Gladis called the meeting to order at 7:00pm. Roll call was taken, council members present were Cutler, Schwartz, Sunderland, Lagerstrom, Haines, and Wright. Others present were Chuck Mohler, Amy Arnold, Sheila Hanson, Heather Shaw, Lori Colberg, Donna Wilson, Susan Halida, and Paul Ekern. All motions were unanimous unless otherwise noted.

Mayor Gladis began the meeting with the Pledge of Allegiance, followed by roll call.

Motion by Cutler, seconded by Wright to approve the agenda

Motion by Wright, seconded by Haines to approve meeting minutes from March 18th,2024 Regular Meeting

Motion by Lagerstrom, seconded by Sunderland to approve the following claims:

SD Department of Revenue	$2,274.22	Feb 2024 Taxes
Core&Main	$2,724.85	New Fire Hall Project
EFTPS	$1,682.09	Payroll Taxes
First Bank & Trust CC	$494.85	Supplies
B&B Auto Service	$122.86	Repairs & Maintenance
ITC	$399.47	Telephone & Internet
Riteway	$147.73	Payroll Checks
DeBoer Construction	$52,373.24	New Fire Hall Project
Bizzy Bee Cleaning	$275.00	Cleaning Service
Hendricks Farmers Lumber	$2,575.77	New Fire Hall Project
Scott Gladis	$412.08	Mileage
First Bank & Trust	$10.32 `	Bank Fees
Brookings Municipal Utilities	$450.00	Electric Disconnect
Bioag Energy Service	$449.59	Gas/Diesel
City Of White	$1,275.97	Utilities
Resmen Electric	$2097.35	Underground Power
SDML Workers Compensation	$53.00	Workers Comp Insurance
Department of Health and Human Services	$168.00	Public Health Laboratory

Public Comments:

Matt Lagerstrom wanted to remind everyone of the Purple Heart Day Meal on April 14th from 5pm-6pm. It will be a burger bar with sides. This will be a free will donation meal.

Amy Arnold came to talk to the Board about our Pre-Disaster Mitigation Plan. The Board reviewed it with Amy and few changes were noted. Amy will follow up with the finance officer to make the changes so the Board can approve at a later date.

Lori Colberg came to talk about the Ambulance Fundraiser coming up April 25th. There will be a burger bar from 5-6. All are welcome to join in the meal. Tickets are $40.00 to watch the Dueling Duos that will follow after the meal. Half of all earnings from the Community Club will also be donated towards the fundraiser. Lori also wanted to thank the City for donating the McKnight Hall for this fundraiser. Any questions please reach out to her.

Board member Sunderland wanted to revisit the pricing for the singles dances. The McKnight Hall seems to be rented out more frequently. He feels that the rentals are revenue for the City. He feels that maybe they should pay the full price for the usage of the hall. The Board discussed this and decided to stay the same rate through the end of the year. It will be readdressed in the December 2024 Board Meeting.

A motion was made by Lagerstrom, seconded by Cutler to make a flat fee of $10.00 for doors and windows. Previously it was per door and per window. It now will be $10.00 for the permit.

A malt beverage & farm wine license was up for renewal but tabled until the May 2024 meeting.

Finance officer report was given by Kayla. There is a Finance Officer training in June 2024 in Spearfish. She asked the Board for travel to attend this training. A motion for approval by Sunderland and seconded by Lagerstrom. A CD has come due from First Bank & Trust. The new rate was quoted at 4.25% for 12months. Wright motioned and Lagerstrom seconded to go ahead with the CD rate given for 12 months.

Chad was asking the board for travel to a training in Rapid City for Rural water. He would receive 10 hours of continuing education. Motion by Schwartz to approve and seconded by Lagerstrom.

Motion to adjourn by Schwartz, seconded by Lagerstrom to adjourn at 8:05pm

The next regular meeting will be May 6th, 2024, at 7pm in the McKnight Hall Legion Room.

Outline
Pre-Disaster Mitigation Plan
Community Meeting – White, SD
April 1st 2024

Introduction

Hazard review

Hazard Identification

- Leave as is – Council didn't see a need to move anything from the previous plan

Hazard Vulnerability

- Move rapid snow melt from NA to Low Vulnerability. In the past 5 years the City has experienced rapid snow melt up around the golf course and did use FEMA funding to help rebuild roads. Left at low vulnerability due to the percent of jurisdiction that is affected.

Community Capabilities and Plans review

- *No changes*

Community facilities

Identify/review critical facilities

Are there new facilities/facilities to be removed

NEW Facilities –

- White Sports Athletic Complex – 511 W 5th St
- New Fire Hall – 210 W Main St
- White Medical Clinic -
- 2 in home daycares
  - 301 N Hooker Ave
  - 206 W 1st St

Have addresses changed/are they correct

- Verify address change for Fire Hall with Kayla – 210 W Main

Project review

Review past projects

- The City will have a back up generator at the new Fire Hall when that is completed.
- Ottertail has taken the initiative and buried the majority of the overhead lines in town.
- They are currently in the process of building a new Fire Hall.

Ask about other projects (not all require FEMA funding)

Ask about Policies/activities that already help mitigate Disaster

Appendix D - Hazard Identification/Vulnerability Worksheets

Appendix D includes master worksheets for Hazard Identification and Vulnerability for jurisdictions compiled as described in Appendix C. Lists were gathered at meetings as described below:

Entity	Date
Aurora	August 12, 2024
Brookings	August 27, 2024
Bruce	February 13, 2024
Bushnell	March 4, 2024
Elkton	March 6, 2024
Sinai	April 1, 2024
Volga	January 16, 2024
White	April 1, 2024

Master worksheets for Hazard Identification and Vulnerability for generated by the participating jurisdictions (communities and Brookings County) are listed below.

Brookings County Commission

Brookings County PDM
Worksheet #1 (Commissioners)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (May have occurred in the past but do not occur on a yearly basis)	**Unlikely to Occur** (Never occurred in the area before or are unlikely to occur)
Dam Failure		X	
Drought		X	
Earthquake		X	
Extreme Cold	X		
Extreme Heat	X		
Flood	X		
Freezing Rain/Sleet/Ice	X		
Hail	X		
Heavy Rain	X		
Heavy Snow		X	
Ice Jam			X
Landslide		X	
Lightning		X	
Rapid Snow Melt	X		
Strong Winds	X		
Subsidence	X		
Thunderstorm			X
Tornado	X		
Urban Fire		X	
Wildfire	X		

Brookings County Commission

Brookings County PDM
Worksheet #2 (Commissioners)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Brookings County PDM
Worksheet #2 (Brookings County)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (for example, destructive, damage to more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (causing partial damage to 5-10% of the jurisdiction, and irregular occurrence)	**Low Vulnerability** Little damage potential (minor damage to less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				X
Drought			X	
Earthquake				X
Extreme Cold		X		
Extreme Heat		X		
Flood		X		
Freezing Rain/Sleet/Ice		X		
Hail		X		
Heavy Rain		X		
Heavy Snow		X		
Ice Jam				X
Landslide				X
Lightning		X		
Rapid Snow Melt		X		
Strong Winds		X		
Subsidence				X
Thunderstorm		X		
Tornado		X		
Urban Fire		X		
Wild Fire		X		

Brookings county commission reviewed materials from previous plan and clarified hazards that pose a threat in the county. They used it as an opportunity to review community projects and policies in conjunction with theirs. The county chose to add general support to regional water providers such as “Project Mainstem” to create future redundancy of water services in case capacity is exhausted by either supply, demand, or contamination.

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING MEETING

BROOKINGS COUNTY COMMISSION

Name	Organization
Luke Muller	
[illegible]	Commission
Nancy Stewart	
Bob Hill	Planning Director
Sharon Larson	Citizen
Rosemary Wagner	Citizen
Dave Miller	citizen
[illegible]	citizen finance officer
[illegible]	SHERIFF
Brian Gustad	Highway Supt.
Mondell Keck	Newspaper
Dan Nelson	State's Attorney
Stacy Steffensen	Commission Dept. Director, Brkg Co.
Larry Jensen	Commission
Shawn Hostler	Commissioner
Ryan Krogman	Commission
Kelly VanderWal	Commissioner
Jenna Baker	Finance Office

City of Aurora

Brookings County PDM
Worksheet #1 (Aurora)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (May have occurred in the past but do not occur on a yearly basis)	**Unlikely to Occur** (Never occurred in the area before or are unlikely to occur)
Dam Failure			**X**
Drought		**X**	
Earthquake			**X**
Extreme Cold	**X**		
Extreme Heat	**X**		
Flood		**X**	
Freezing Rain/Sleet/Ice	**X**		
Hail	**X**		
Heavy Rain	**X**		
Heavy Snow	**X**		
Ice Jam			**X**
Lightning	**X**		**X**
Rapid Snow Melt	**X**		
Strong Winds	**X**		
Subsidence			**X**
Thunderstorm	**X**		
Tornado		**X**	
Urban Fire	**X**		
Wildfire		**X**	

Brookings County PDM
Worksheet #2 (Aurora)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (5-10% of the jurisdiction and/or irregular occurrence)	**Low Vulnerability** Little damage potential (less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				**X**
Drought		**X**		
Earthquake				**X**
Extreme Cold		**X**		
Extreme Heat		**X**		
Flood		**X**		
Freezing Rain/Sleet/Ice			**X**	
Hail		**X**		
Heavy Rain		**X**		
Heavy Snow			**X**	
Ice Jam				**X**
Lightning		**X**		
Rapid Snow Melt		**X**		
Strong Winds	**X**			
Subsidence				**X**
Thunderstorm		**X**		
Tornado	**X**			
Urban Fire		**X**		
Wildfire		**X**		

City of Brookings

Brookings County PDM
Worksheet #1 (Brookings)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (May have occurred in the past but do not occur on a yearly basis)	**Unlikely to Occur** (Never occurred in the area before or are unlikely to occur)
Dam Failure			**X**
Drought		**X**	
Earthquake			**X**
Extreme Cold	**X**		
Extreme Heat	**X**		
Flood	**X**		
Freezing Rain/Sleet/Ice	**X**		
Hail	**X**		
Heavy Rain	**X**		
Heavy Snow	**X**		
Ice Jam		**X**	
Lightning	**X**		
Rapid Snow Melt		**X**	
Strong Winds	**X**		
Subsidence			**X**
Thunderstorm	**X**		
Tornado		**X**	
Urban Fire	**X**		
Wildfire		**X**	

Brookings County PDM
Worksheet #2 (Brookings)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (5-10% of the jurisdiction and/or irregular occurrence)	**Low Vulnerability** Little damage potential (less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				**X**
Drought	**X**			
Earthquake				**X**
Extreme Cold			**X**	
Extreme Heat			**X**	
Flood		**X**		
Freezing Rain/Sleet/Ice			**X**	
Hail			**X**	
Heavy Rain		**X**		
Heavy Snow			**X**	
Ice Jam			**X**	
Lightning			**X**	
Rapid Snow Melt		**X**		
Strong Winds			**X**	
Subsidence				**X**
Thunderstorm			**X**	
Tornado	**X**			
Urban Fire			**X**	
Wildfire			**X**	

City of Bruce

Brookings County PDM
Worksheet #1 (Bruce)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (May have occurred in the past but do not occur on a yearly basis)	**Unlikely to Occur** (Never occurred in the area before or are unlikely to occur)
Dam Failure			**X**
Drought		**X**	
Earthquake			**X**
Extreme Cold	**X**		
Extreme Heat	**X**		
Flood		**X**	
Freezing Rain/Sleet/Ice	**X**		
Hail	**X**		
Heavy Rain	**X**		
Heavy Snow	**X**		
Ice Jam	**X**		
Lightning	**X**		
Rapid Snow Melt		**X**	
Strong Winds	**X**		
Subsidence			**X**
Thunderstorm	**X**		
Tornado		**X**	
Urban Fire		**X**	
Wildfire		**X**	

Brookings County PDM
Worksheet #2 (Bruce)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (5-10% of the jurisdiction and/or irregular occurrence)	**Low Vulnerability** Little damage potential (less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				**X**
Drought			**X**	
Earthquake				**X**
Extreme Cold			**X**	
Extreme Heat			**X**	
Flood	**X**			
Freezing Rain/Sleet/Ice			**X**	
Hail			**X**	
Heavy Rain		**X**		
Heavy Snow			**X**	
Ice Jam			**X**	
Lightning			**X**	
Rapid Snow Melt			**X**	
Strong Winds		**X**		
Subsidence				**X**
Thunderstorm			**X**	
Tornado	**X**			
Urban Fire			**X**	
Wildfire		**X**		

Town of Bushnell

Brookings County PDM
Worksheet #1 (Bushnell)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (May have occurred in the past but do not occur on a yearly basis)	**Unlikely to Occur** (Never occurred in the area before or are unlikely to occur)
Dam Failure			**X**
Drought		**X**	
Earthquake			**X**
Extreme Cold	**X**		
Extreme Heat	**X**		
Flood		**X**	
Freezing Rain/Sleet/Ice	**X**		
Hail	**X**		
Heavy Rain	**X**		
Heavy Snow	**X**		
Ice Jam			**X**
Lightning	**X**		
Rapid Snow Melt		**X**	
Strong Winds	**X**		
Subsidence			**X**
Thunderstorm	**X**		
Tornado		**X**	
Urban Fire		**X**	
Wildfire		**X**	

Brookings County PDM
Worksheet #2 (Bushnell)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (5-10% of the jurisdiction and/or irregular occurrence)	**Low Vulnerability** Little damage potential (less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				**X**
Drought		**X**		
Earthquake				**X**
Extreme Cold		**X**		
Extreme Heat		**X**		
Flood				**X**
Freezing Rain/Sleet/Ice	**X**			
Hail	**X**			
Heavy Rain		**X**		
Heavy Snow	**X**			
Ice Jam				**X**
Lightning		**X**		
Rapid Snow Melt				**X**
Strong Winds	**X**			
Subsidence				**X**
Thunderstorm	**X**			
Tornado	**X**			
Urban Fire	**X**			
Wildfire	**X**			

City of Elkton

Brookings County PDM
Worksheet #1 (Elkton)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (Hazards that may have occurred in the past or could occur in the future but do not occur on a yearly basis)	**Unlikely to Occur** (Hazards or disasters that have never occurred in the area before and are unlikely to occur)
Dam Failure			**X**
Drought	**X**		
Earthquake			**X**
Extreme Cold	**X**		
Extreme Heat	**X**		
Flood	**X**		
Freezing Rain/Sleet/Ice	**X**		
Hail	**X**		
Heavy Rain	**X**		
Heavy Snow	**X**		
Ice Jam		**X**	
Lightning	**X**		
Rapid Snow Melt		**X**	
Strong Winds	**X**		
Subsidence			**X**
Thunderstorm	**X**		
Tornado		**X**	
Urban Fire		**X**	
Wildfire		**X**	

Brookings County PDM
Worksheet #2 (Elkton)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (for example, destructive, damage to more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (causing partial damage to 5-10% of the jurisdiction, and irregular occurrence)	**Low Vulnerability** Little damage potential (minor damage to less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				**X**
Drought		**X**		
Earthquake	**X**			
Extreme Cold	**X**			
Extreme Heat	**X**			
Flood	**X**			
Freezing Rain/Sleet/Ice	**X**			
Hail	**X**			
Heavy Rain	**X**			
Heavy Snow	**X**			
Ice Jam				**X**
Lightning			**X**	
Rapid Snow Melt			**X**	
Strong Winds	**X**			
Subsidence				**X**
Thunderstorm	**X**			
Tornado	**X**			
Urban Fire			**X**	
Wildfire			**X**	

Town of Sinai

Brookings County PDM
Worksheet #1 (Sinai)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (May have occurred in the past but do not occur on a yearly basis)	**Unlikely to Occur** (Never occurred in the area before or are unlikely to occur)
Dam Failure			**X**
Drought		**X**	
Earthquake			**X**
Extreme Cold	**X**		
Extreme Heat	**X**		
Flood		**X**	
Freezing Rain/Sleet/Ice	**X**		
Hail	**X**		
Heavy Rain	**X**		
Heavy Snow	**X**		
Ice Jam			**X**
Lightning	**X**		
Rapid Snow Melt		**X**	
Strong Winds	**X**		
Subsidence			**X**
Thunderstorm	**X**		
Tornado		**X**	
Urban Fire		**X**	
Wildfire		**X**	

Brookings County PDM
Worksheet #2 (Sinai)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (5-10% of the jurisdiction and/or irregular occurrence)	**Low Vulnerability** Little damage potential (less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				**X**
Drought			**X**	
Earthquake				**X**
Extreme Cold			**X**	
Extreme Heat			**X**	
Flood			**X**	
Freezing Rain/Sleet/Ice	**X**			
Hail		**X**		
Heavy Rain			**X**	
Heavy Snow			**X**	
Ice Jam				**X**
Lightning			**X**	
Rapid Snow Melt			**X**	
Strong Winds	**X**			
Subsidence				**X**
Thunderstorm			**X**	
Tornado	**X**			
Urban Fire	**X**			
Wildfire				**X**

City of Volga

Brookings County PDM
Worksheet #1 (Volga)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (May have occurred in the past but do not occur on a yearly basis)	**Unlikely to Occur** (Never occurred in the area before or are unlikely to occur)
Dam Failure			**X**
Drought		**X**	
Earthquake			**X**
Extreme Cold	**X**		
Extreme Heat	**X**		
Flood		**X**	
Freezing Rain/Sleet/Ice	**X**		
Hail	**X**		
Heavy Rain	**X**		
Heavy Snow	**X**		
Ice Jam			**X**
Lightning	**X**		
Rapid Snow Melt		**X**	
Strong Winds	**X**		
Subsidence			**X**
Thunderstorm	**X**		
Tornado		**X**	
Urban Fire		**X**	
Wildfire		**X**	

Brookings County PDM
Worksheet #2 (Volga)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (5-10% of the jurisdiction and/or irregular occurrence)	**Low Vulnerability** Little damage potential (less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				**X**
Drought			**X**	
Earthquake				**X**
Extreme Cold		**X**		
Extreme Heat		**X**		
Flood			**X**	
Freezing Rain/Sleet/Ice		**X**		
Hail			**X**	
Heavy Rain			**X**	
Heavy Snow		**X**		
Ice Jam				**X**
Landslide				**X**
Lightning			**X**	
Rapid Snow Melt			**X**	
Strong Winds		**X**		
Subsidence				**X**
Thunderstorm		**X**		
Tornado		**X**		
Urban Fire			**X**	
Wildfire			**X**	

City of White

Brookings County PDM
Worksheet #1 (White)
Risk Assessment Worksheet – Hazard Identification

What is the probability of occurrence of the following hazards?

Hazard	**High Probability to Occur** (At least once in a year)	**Low Probability to Occur** (May have occurred in the past but do not occur on a yearly basis)	**Unlikely to Occur** (Never occurred in the area before or are unlikely to occur)
Dam Failure			**X**
Drought		**X**	
Earthquake			**X**
Extreme Cold	**X**		
Extreme Heat	**X**		
Flood		**X**	
Freezing Rain/Sleet/Ice	**X**		
Hail	**X**		
Heavy Rain	**X**		
Heavy Snow	**X**		
Ice Jam			**X**
Lightning			**X**
Rapid Snow Melt	**X**		
Strong Winds	**X**		
Subsidence			**X**
Thunderstorm		**X**	
Tornado		**X**	
Urban Fire		**X**	
Wildfire		**X**	

Brookings County PDM
Worksheet #2 (White)
Risk Assessment Worksheet – Hazard Vulnerability

How vulnerable is the community from the following hazard? In other words, if the hazard occurs is there a potential to impact the community? If so, what would be impacted?

Hazard	**High Vulnerability** Significant risk/major damage potential (more than 10% of the jurisdiction and/or regular occurrence)	**Medium Vulnerability** Moderate damage potential (5-10% of the jurisdiction and/or irregular occurrence)	**Low Vulnerability** Little damage potential (less than 5% of the jurisdiction)	**NA** Not a hazard to the jurisdiction
Dam Failure				**X**
Drought			**X**	
Earthquake				**X**
Extreme Cold		**X**		
Extreme Heat		**X**		
Flood			**X**	
Freezing Rain/Sleet/Ice		**X**		
Hail		**X**		
Heavy Rain		**X**		
Heavy Snow		**X**		
Ice Jam				**X**
Lightning			**X**	
Rapid Snow Melt			**X**	
Strong Winds		**X**		
Subsidence				**X**
Thunderstorm			**X**	
Tornado	**X**			
Urban Fire			**X**	
Wildfire			**X**	

Appendix E
Township Vulnerable and Potential Mitigation Project Site Maps

In January of 2024, First District mailed a request to the Township Clerk or Road Supervisor of every township in Brookings County. They were requested to list any critical infrastructure and identify (on a map) any areas which are most vulnerable to natural hazards, specifically flooding. The Association of Brookings County Townships Annual Meeting was held on February 29th, 2024. Townships in attendance were requested to complete the maps and hazard information, if they had not responded to the maps that had been previously mailed to them. Of the 23 requests sent, all maps were returned with vulnerable areas identified (see table below).

Township Name	Response
Afton Township	Returned/ No vulnerabilities
Alton Township	Returned/ No changes to identified vulnerabilities
Argo Township	Returned/ No changes to identified vulnerabilities
Aurora Township	Returned/ No changes to identified vulnerabilities
Bangor Township	Returned/ No changes to identified vulnerabilities
Brookings Township	Returned/ No changes to identified vulnerabilities
Elkton Township	Returned/ No changes to identified vulnerabilities
Eureka Township	Not returned/ No changes to identified vulnerabilities
Lake Hendricks Township	Returned/ No changes to identified vulnerabilities
Lake Sinai Township	Returned/ No changes to identified vulnerabilities
Laketon Township	Returned/ No changes to identified vulnerabilities
Medary Township	Returned/ No changes to identified vulnerabilities
Oak Lake Township	Returned/ No vulnerabilities
Oakwood Township	Returned/ No vulnerabilities
Oslo Township	Returned/ No vulnerabilities
Parnell Township	Returned/ No vulnerabilities
Preston Township	Returned/ No changes to identified vulnerabilities
Richland Township	Returned/ No changes to identified vulnerabilities
Sherman Township	Returned/ No changes to identified vulnerabilities
Sterling Township	Returned/ No changes to identified vulnerabilities
Trenton Township	Returned/ No changes to identified vulnerabilities
Volga Township	Returned/ No changes to identified vulnerabilities
Winsor Township	Returned/ No changes to identified vulnerabilities

Maps identifying vulnerable areas for those townships which identified such areas are shown below.

First District Association of Local Governments
418 18th Ave NE ■ PO Box 1207 ■ Watertown, SD 57201
Phone: (605) 882-5115 Fax: (605) 882-5049
Serving counties and communities for over 50 years

MEMO TO: Brookings County Townships

FROM: Amy Arnold, First District Association of Local Governments

DATE: January 12th, 2024

RE: Pre-Disaster Mitigation Plan Information

As you may be aware, the First District is assisting Brookings County in the update of the county's Pre-Disaster Mitigation (PDM) Plan. Brookings County is required to update its PDM Plan every five years in order to maintain eligibility for federal funding for disaster mitigation projects and other federal funding/programs. For the purposes of this plan, Townships are considered participating units of government under the umbrella of the County. One of the components of the PDM Plan involves identifying critical infrastructure to be protected from potential hazards.

Attached you will find a map of your township. This is **different** than the DOT Road Report Map you will receive from First District. Please review the map to verify the location of any critical infrastructure (if any) which is owned, operated, and/or maintained by your Township. Also review the areas where the township, as a result of natural hazards, has repeatedly experienced the following: water over the road, soft spots in the road, undersized or washed-out bridges/culverts, or other projects which may minimize the impact of natural disasters in your township. Please mark and label these locations on the map included.

I have enclosed a self-addressed, stamped envelope for your use; or you may email (amye@1stdistrict.org) to send in your responses. We would appreciate receiving your information by March 1st, 2024 to include them in the initial PDM plan draft. Please contact me (605-882-5115) regarding any questions, comments, or for any discussion regarding the information requested here. I look forward to hearing from you soon.

Sincerely,

Amy Arnold
First District Association of Local Governments

/

Brookings County Annual Weed & Pest Board Meeting
(in conjunction with the Towns and Townships Meeting)
February 29, 2024, 1:00 PM
BCOAC 2810 22nd Ave S, Brookings, SD

1. Call to Order: 1:00 PM, Thursday February 29, 2024 @ Brookings County Outdoor Adventure Center

2. Invitation for a citizen to schedule time on the BCWP Board agenda for an item not listed.
Anyone wanting to speak during this agenda item must sign in prior to the start of the meeting. Any requested action items must be scheduled for a future meeting date.

3. Determination of a quorum
Three board members must be present for a quorum; Note who is present via teleconference.

4. Approval of Agenda
Action: Motion to approve, Comments, Voice Vote

5. Approval of Minutes – March 2, 2023
Action: Motion to approve, Comments, Voice Vote

6. Scheduled agenda items
   A. 1:00 PM
      Misty Moser -Brookings County Weed & Pest Supervisor

   B. 1:30 PM
      Jacob Brehmer – Director of equalization

   C. 1:50 PM
      Jeremiah Phelps- Weed and Pest Program Specialist

   D. 2:15 PM
      Marty Stanwick- Brookings County Sheriff

   E. 2:30 PM
      Bob Hill- Brookings County Emergency Management Director

   F. 2:45
      Kim Larson- Finance Assistant
   G. 3:00 PM
      Door Prizes

   H. Adjournment
Action: Motion to approve, Comments, Voice Vote

BROOKINGS COUNTY PRE-DISASTER MITIGATION PLANNING MEETING

BROOKINGS TOWNSHIP

Name	Organization / Township
Kelli Henricks	1st District
Joel Ripley	Road + Post Board
Mike Vande Weerd	Sterling
Earl R. Hamer	Eureka
Charlie Ramaker	Eureka
Arlene Doescher	Winsor
Charlie Olson	Bangor
Spencer Diedrich	Parnell
John Neill	Parnell
Gert Friedrich	Parnell
Nathan Thieken	Parnell
Troy Johnson	Brookings
Steve Johnson	Brookings
Danny Nelson	Volga
Paul Johnson	Afton

Brookings County Annual Weed & Pest Board Meeting

February 29,2024

BCOAC 2810 22nd Ave S

Brookings, SD

1:00PM

February 29, 2024

Steve Olson Called the February 29, 2024, meeting to order @ 1:00 PM.

Approval of agenda Meyer approved and Olson 2nd approval of the minute Steve Olson as written.

Misty spoke to the towns and townships about communication please call email text if there is a concern. Misty also stated that she needs to know if the townships have questions or would like her to attend any township meeting, please let her know. Misty spoke about weeds in the fence line and how we really need to not over spray with roundup. Fence lines look better with grass in them rather than weeds.

Jacob Brehmer- Director of Equalization spoke on township packet parcels. Jacob attended the whole meeting to hand out township packets.

Kim Larsen- Finance Assistant spoke on township information and new forms that they must fill out.

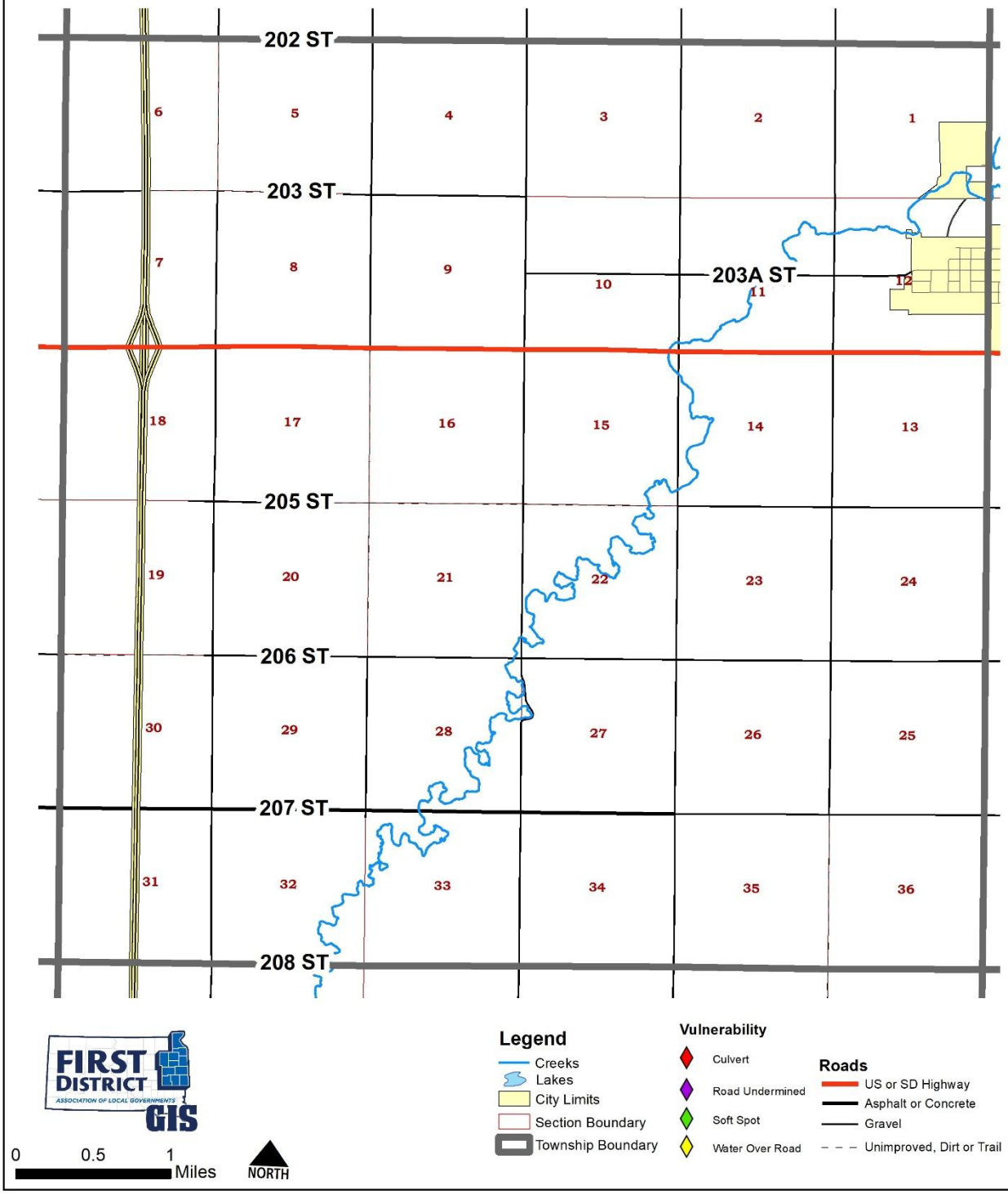
Jeremiah Phelps South Dakota State department of Ag. Spoke on bio control and noxious weeds and weeds to be on the lookout. Jeremiah also talked about Bio control.

Marty Stanwick Brookings County sheriff spoke on the scams going on in and around Brookings please be smart in giving out your information.

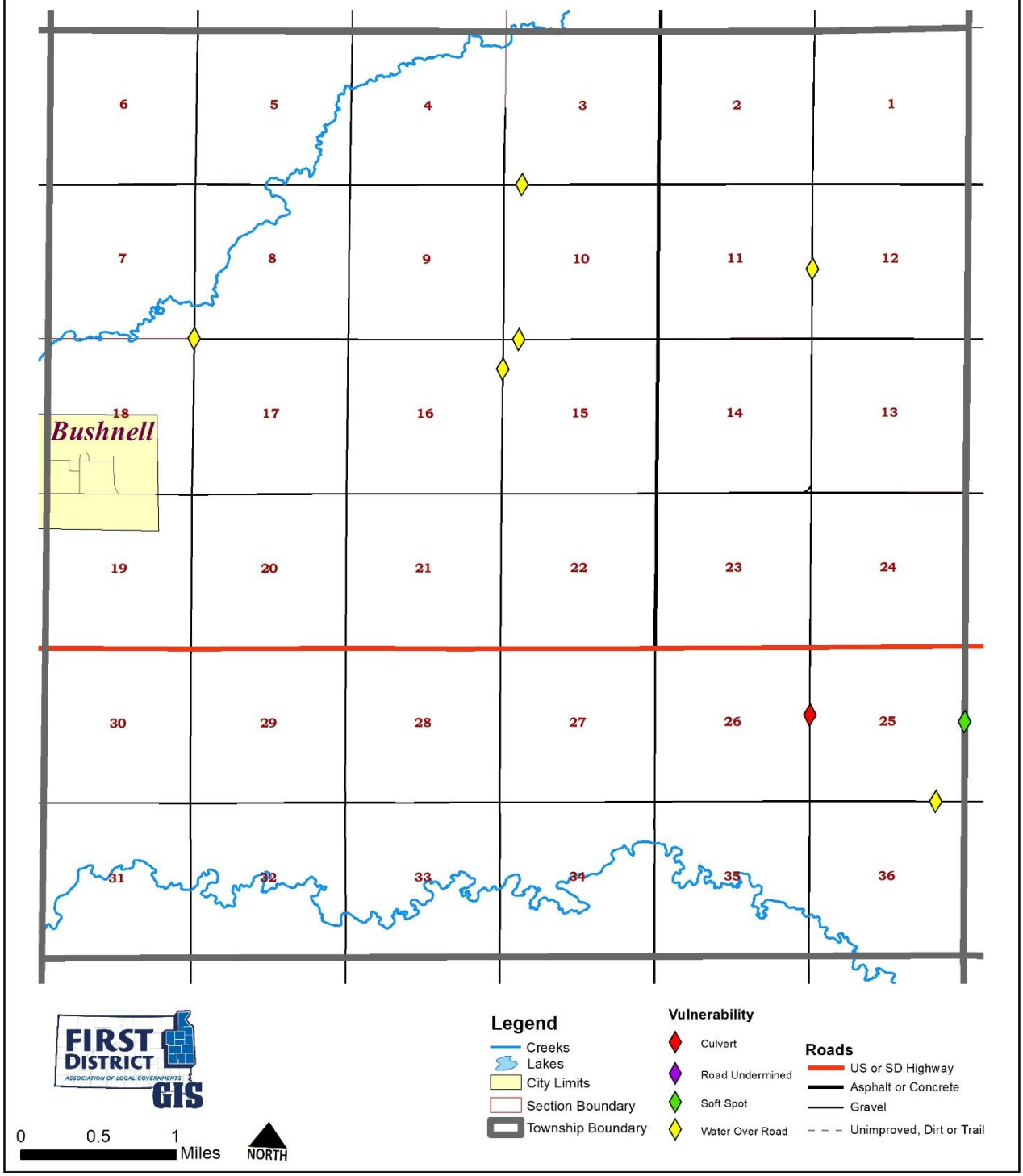
Bob hill Brookings County Emergency Management invited Kelly Henricks from first district to speak about association of local governments and emergency management.

Misty & Terri Thanked all the speakers and suppliers, Bel brands, Valley Queen Cheese Marty Stanwick True North steel for their donations. Misty also thanked BCOAC for everything they have done. Thanks next annual meeting is February 27, 2025. Motion by Curt Fredrick and 2nd by Kelly Meeting adjourned at 2:42 PM.

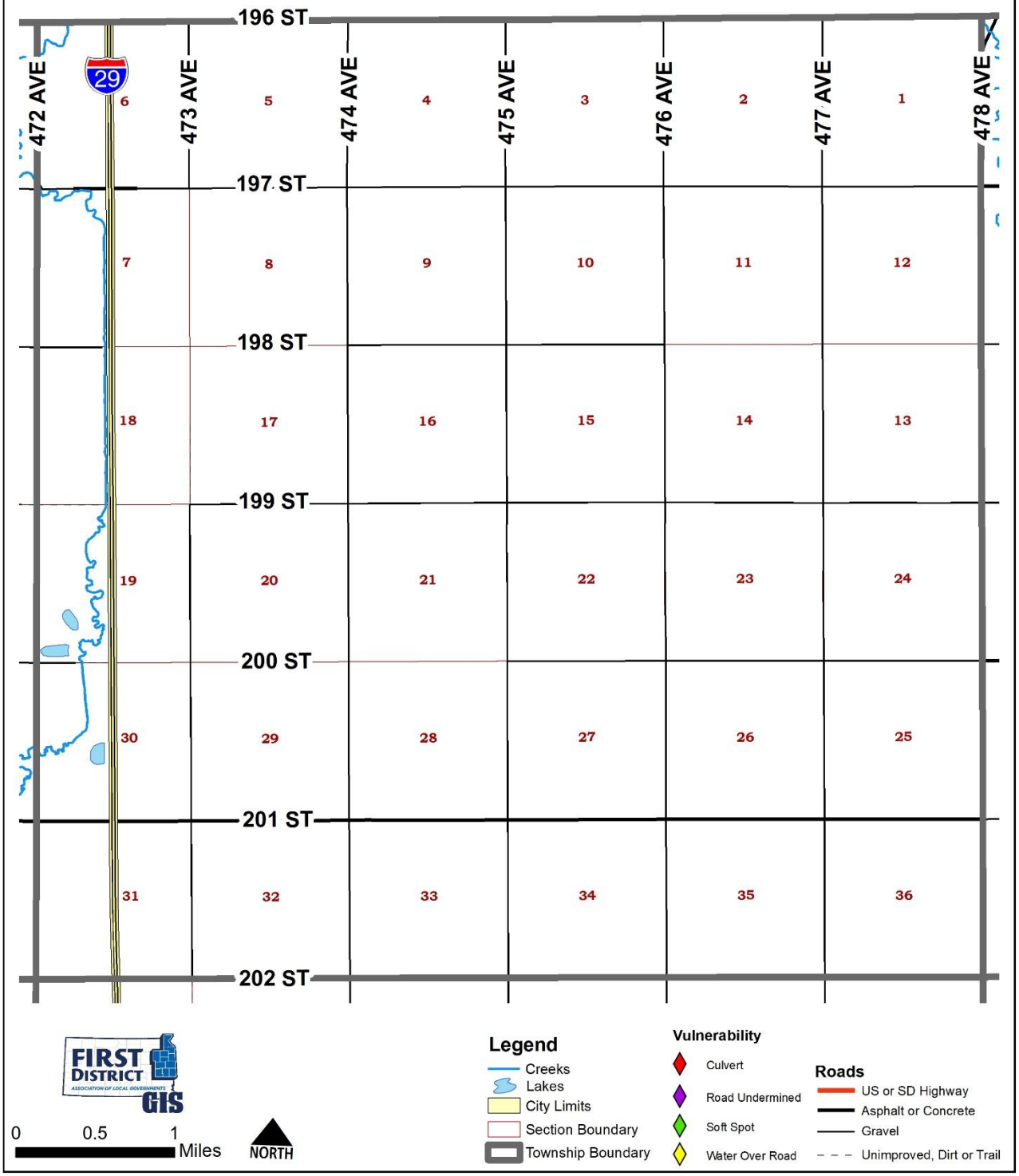
Afton Township
Hazard Vulnerability / Mitigation Project Sites



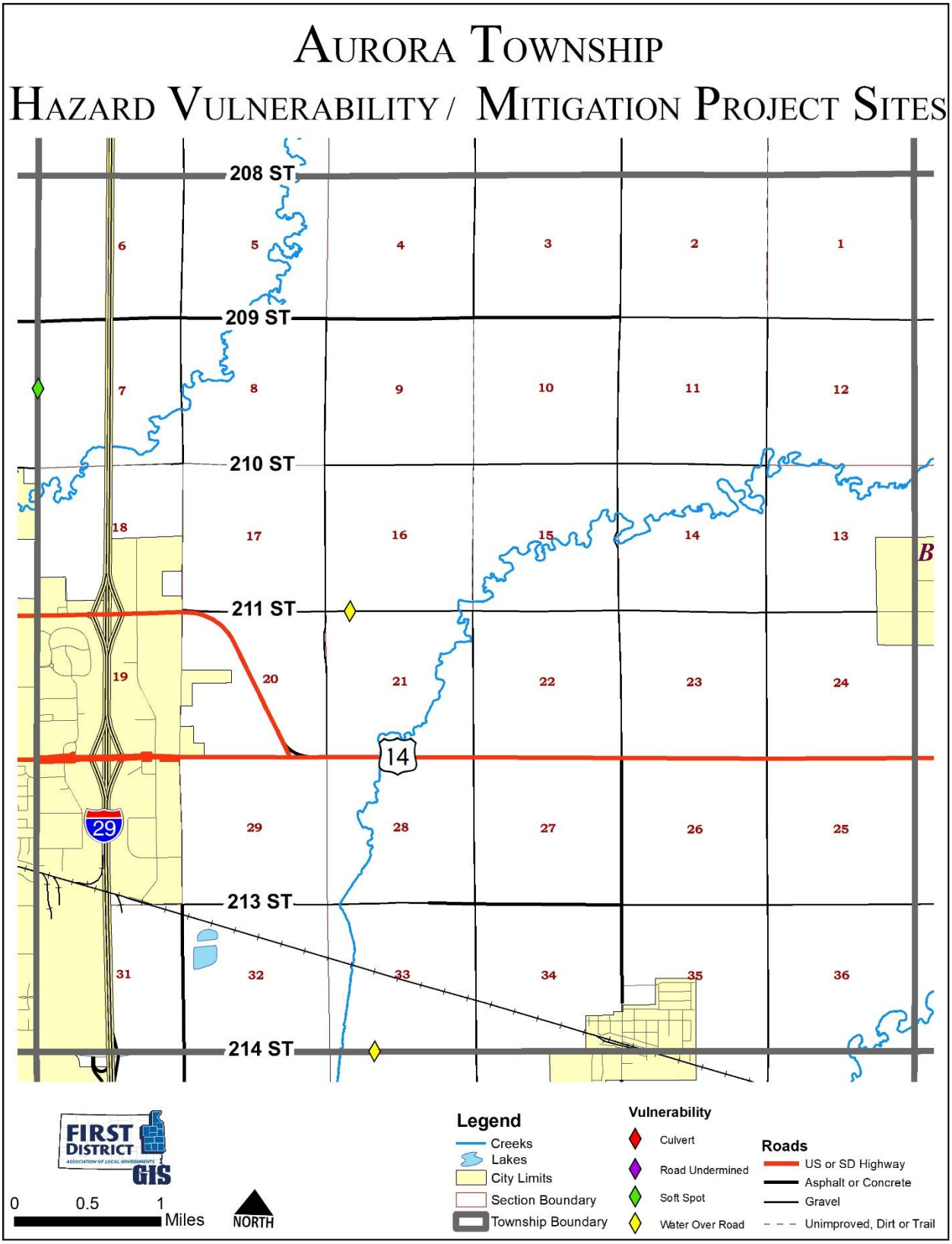
Alton Township
Hazard Vulnerability / Mitigation Project Sites



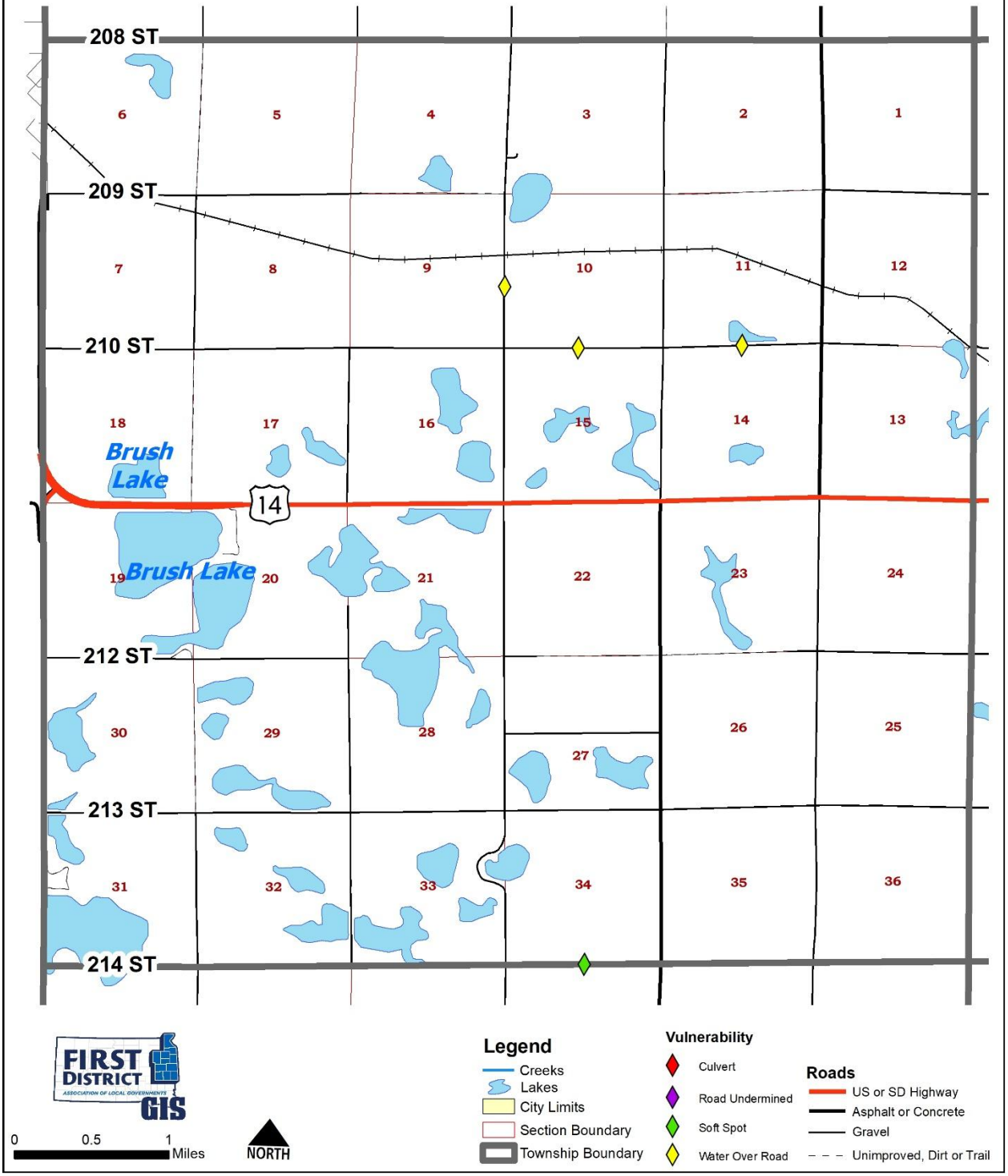
Argo Township
Hazard Vulnerability / Mitigation Project Sites



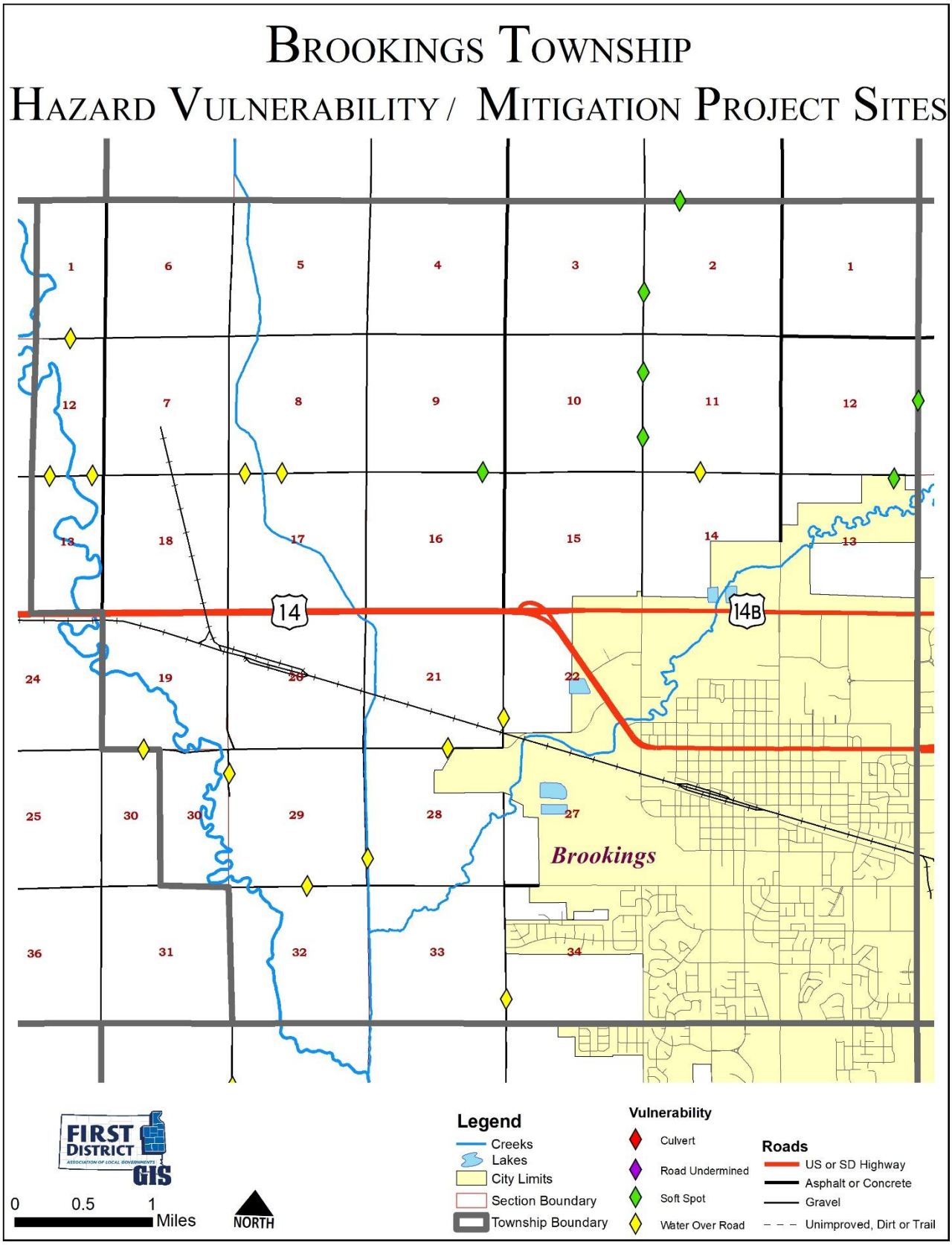
Aurora Township
Hazard Vulnerability / Mitigation Project Sites



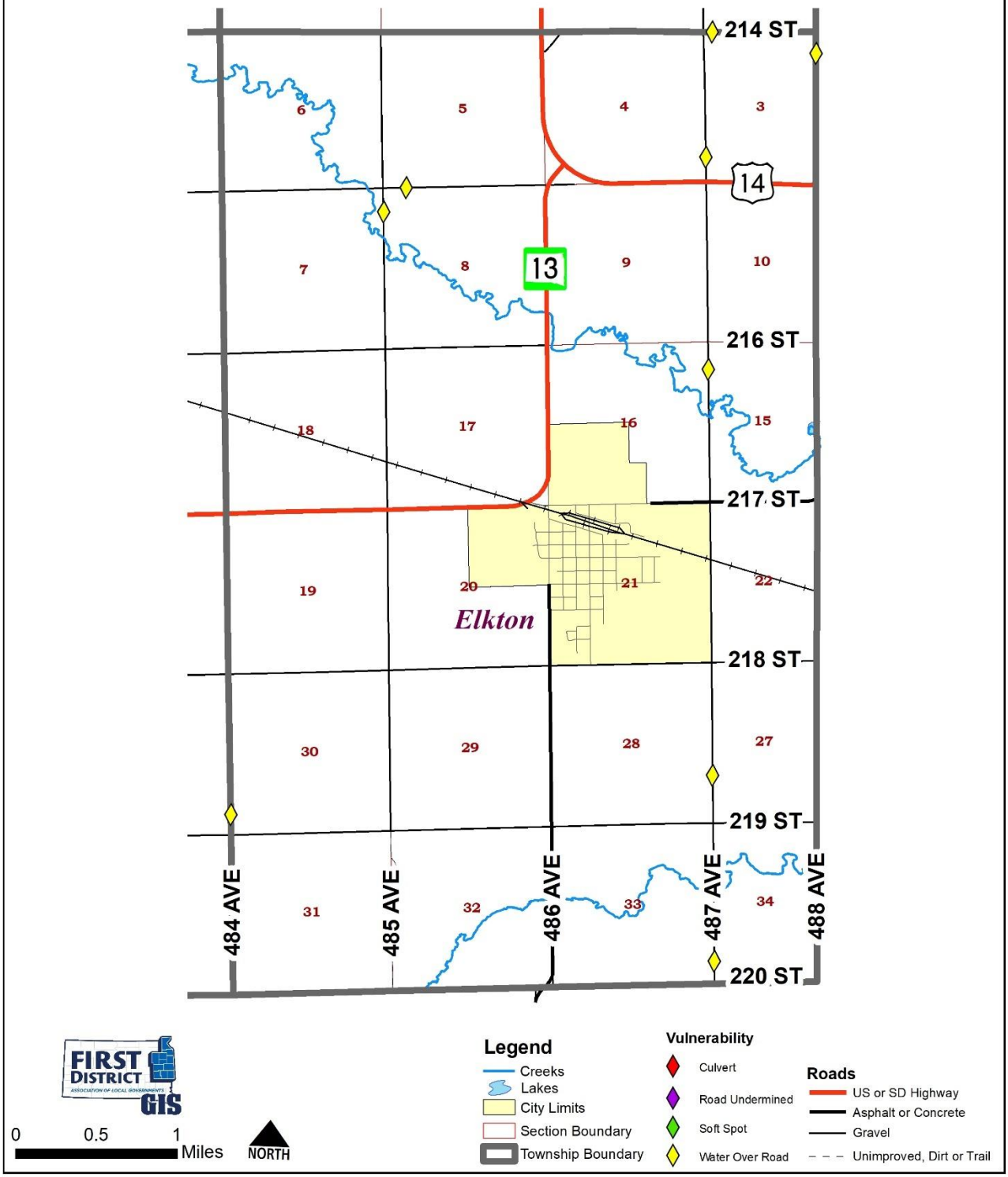
Bangor Township
Hazard Vulnerability / Mitigation Project Sites



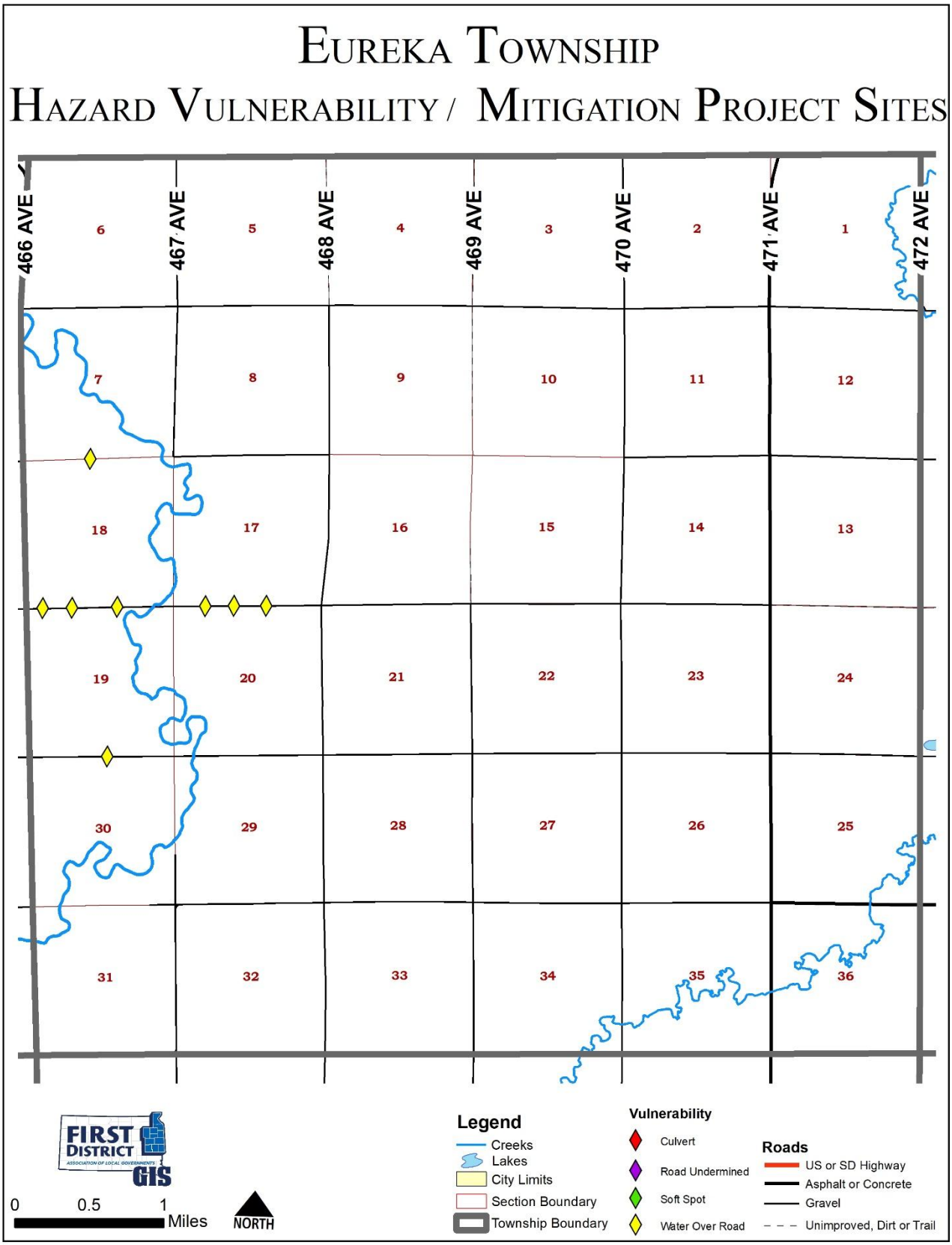
Brookings Township
Hazard Vulnerability / Mitigation Project Sites



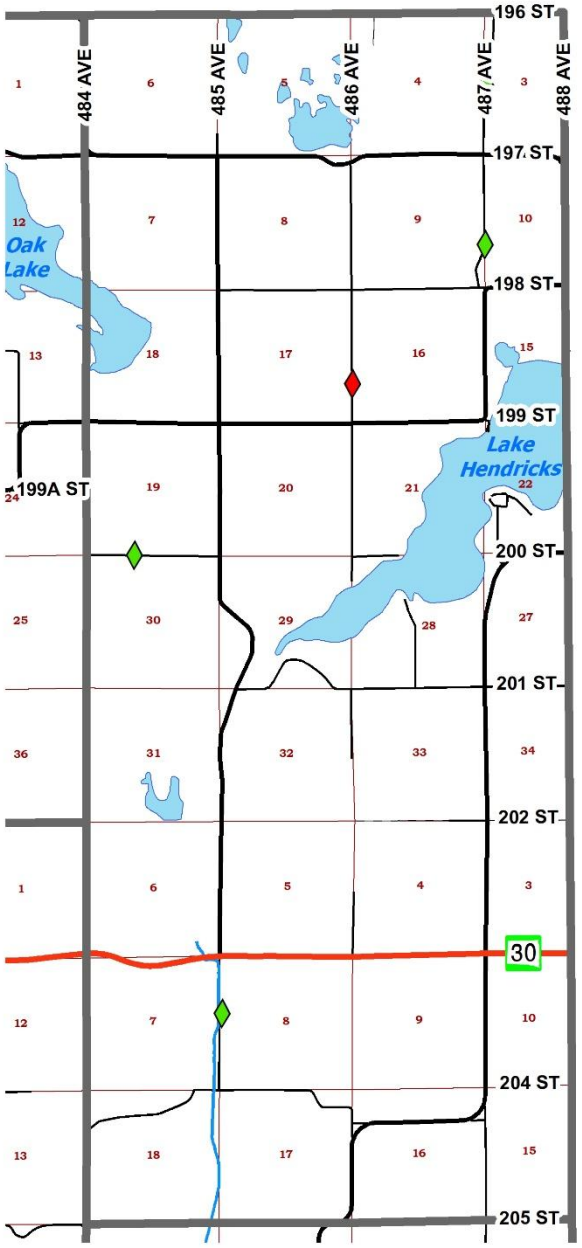
Elkton Township
Hazard Vulnerability / Mitigation Project Sites



Eureka Township
Hazard Vulnerability / Mitigation Project Sites



Lake Hendricks Township
Hazard Vulnerability / Mitigation Project Sites



FIRST DISTRICT ASSOCIATION OF LOCAL GOVERNMENTS GIS

0 0.75 1.5 Miles

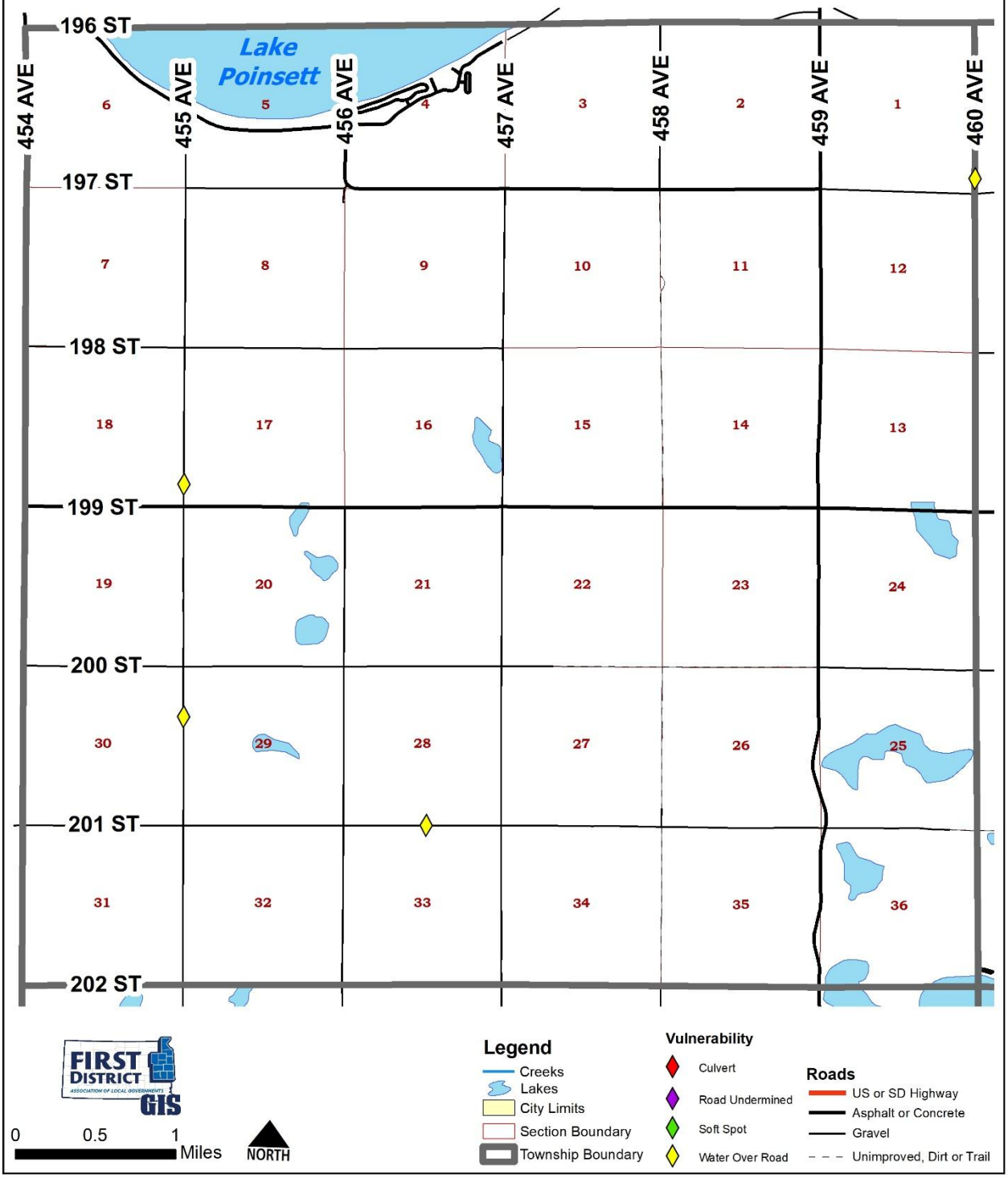
NORTH

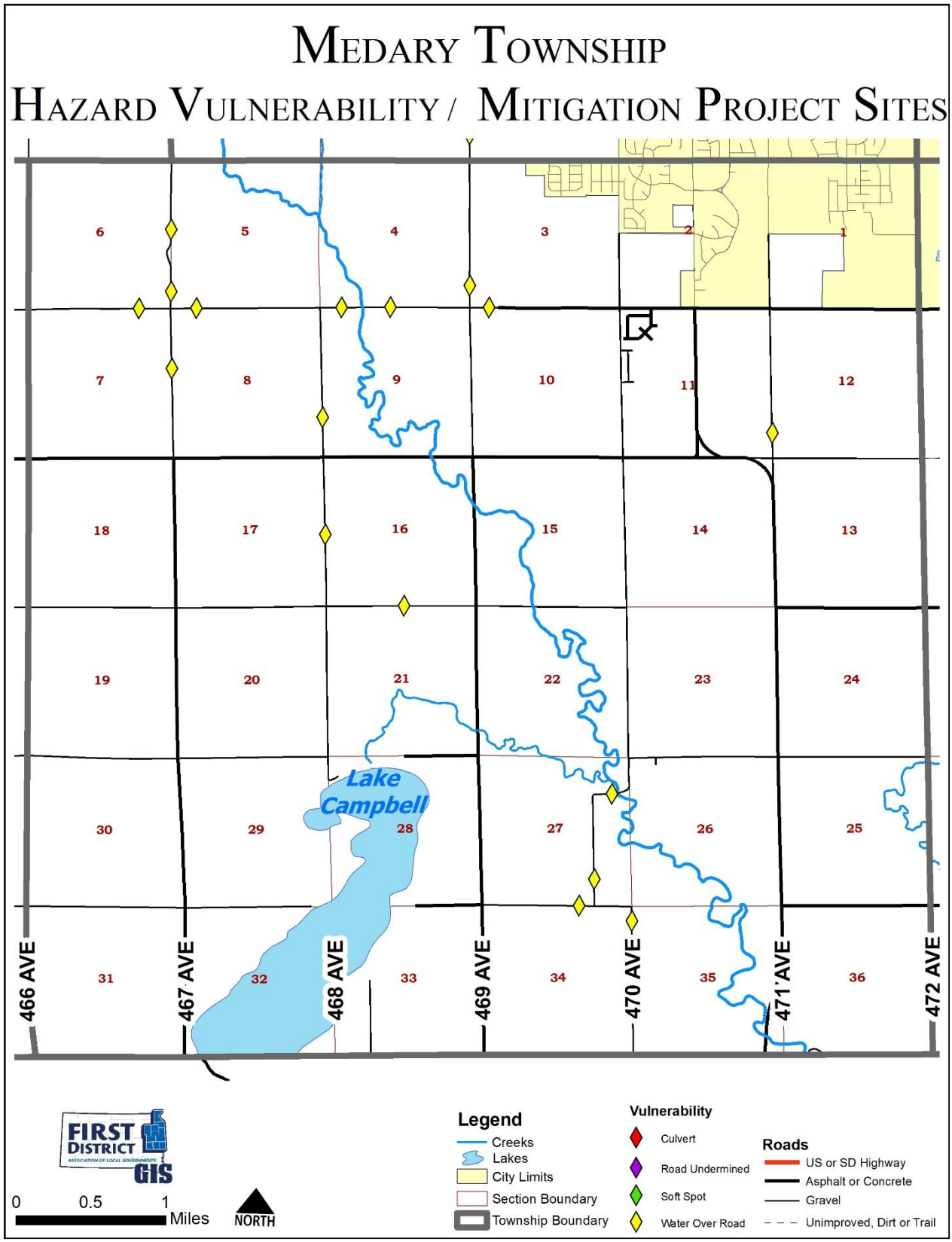
Legend
- Creeks
- Lakes
- City Limits
- Section Boundary
- Township Boundary

Vulnerability
- Culvert
- Road Undermined
- Soft Spot
- Water Over Road

Roads
- US or SD Highway
- Asphalt or Concrete
- Gravel
- Unimproved, Dirt or Trail

LAKETON TOWNSHIP
HAZARD VULNERABILITY / MITIGATION PROJECT SITES




MEDARY TOWNSHIP
HAZARD VULNERABILITY / MITIGATION PROJECT SITES
6
5
4
3
2
1
7
8
9
10
11
12
18
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FIRST DISTRICT ASSOCIATION OF LOCAL GOVERNMENTS GIS
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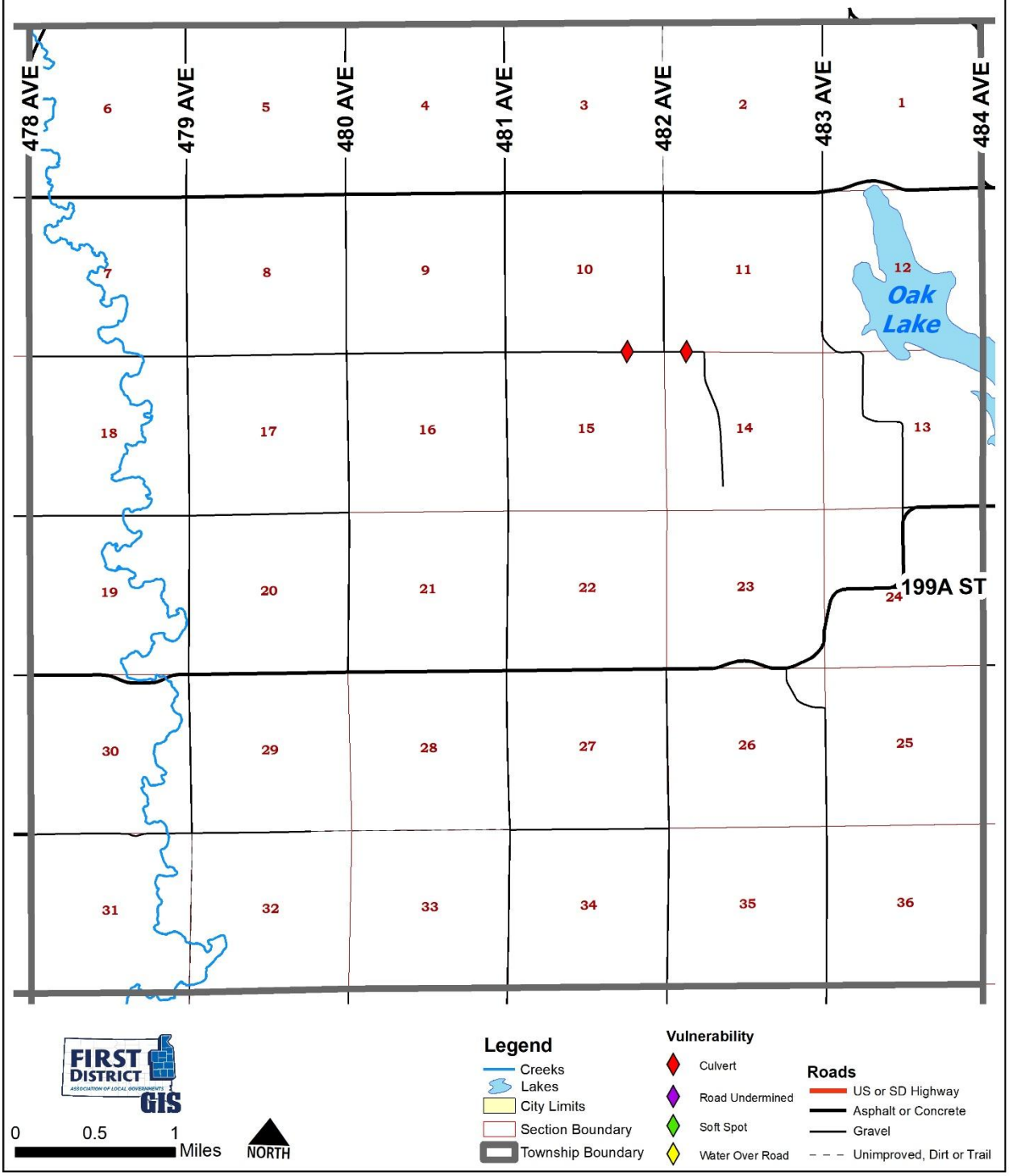
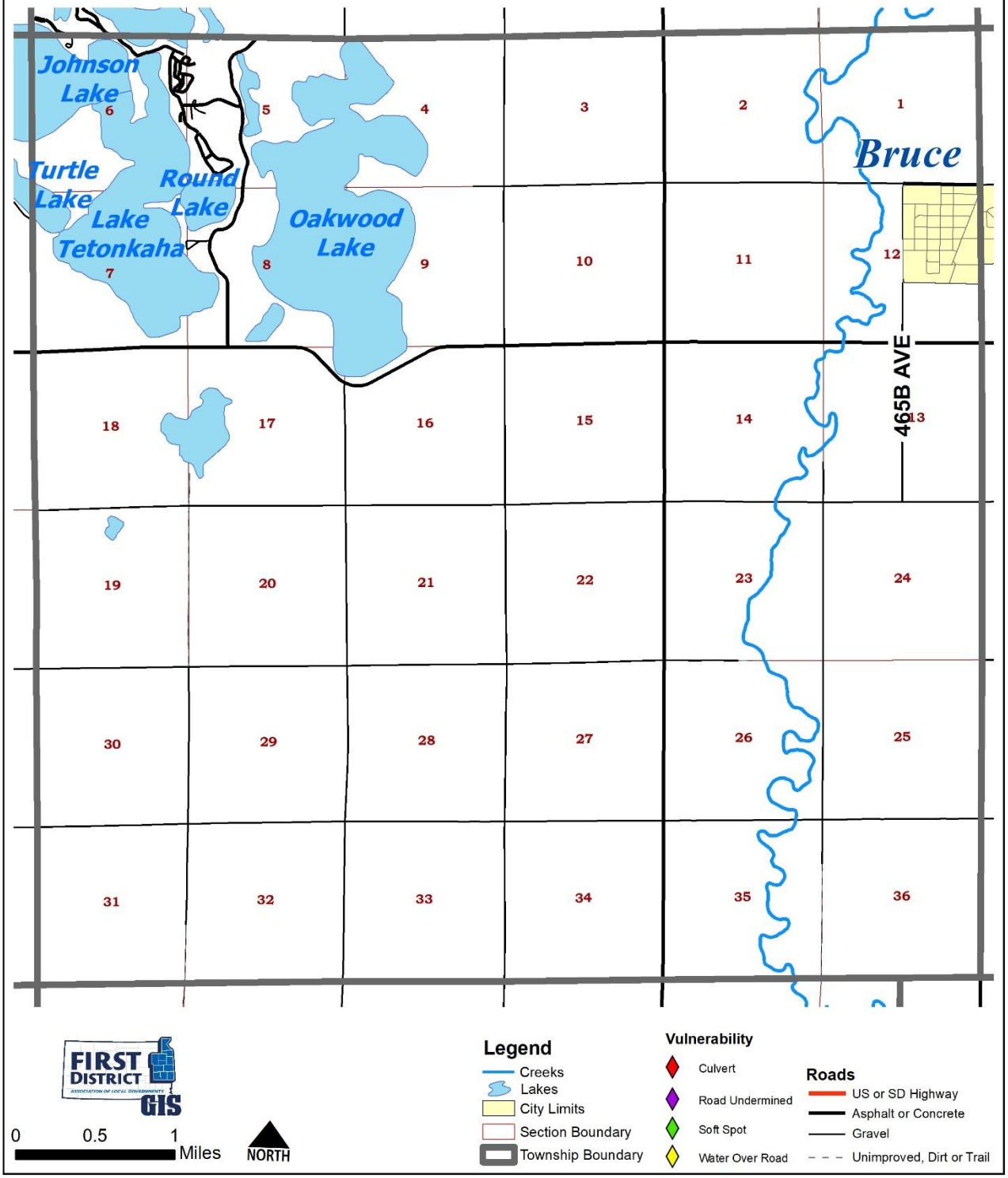
Miles
NORTH
Legend
Creeks
Lakes
City Limits
Section Boundary
Township Boundary
Vulnerability
Culvert
Road Undermined
Soft Spot
Water Over Road
Roads
US or SD Highway
Asphalt or Concrete
Gravel
Unimproved, Dirt or Trail

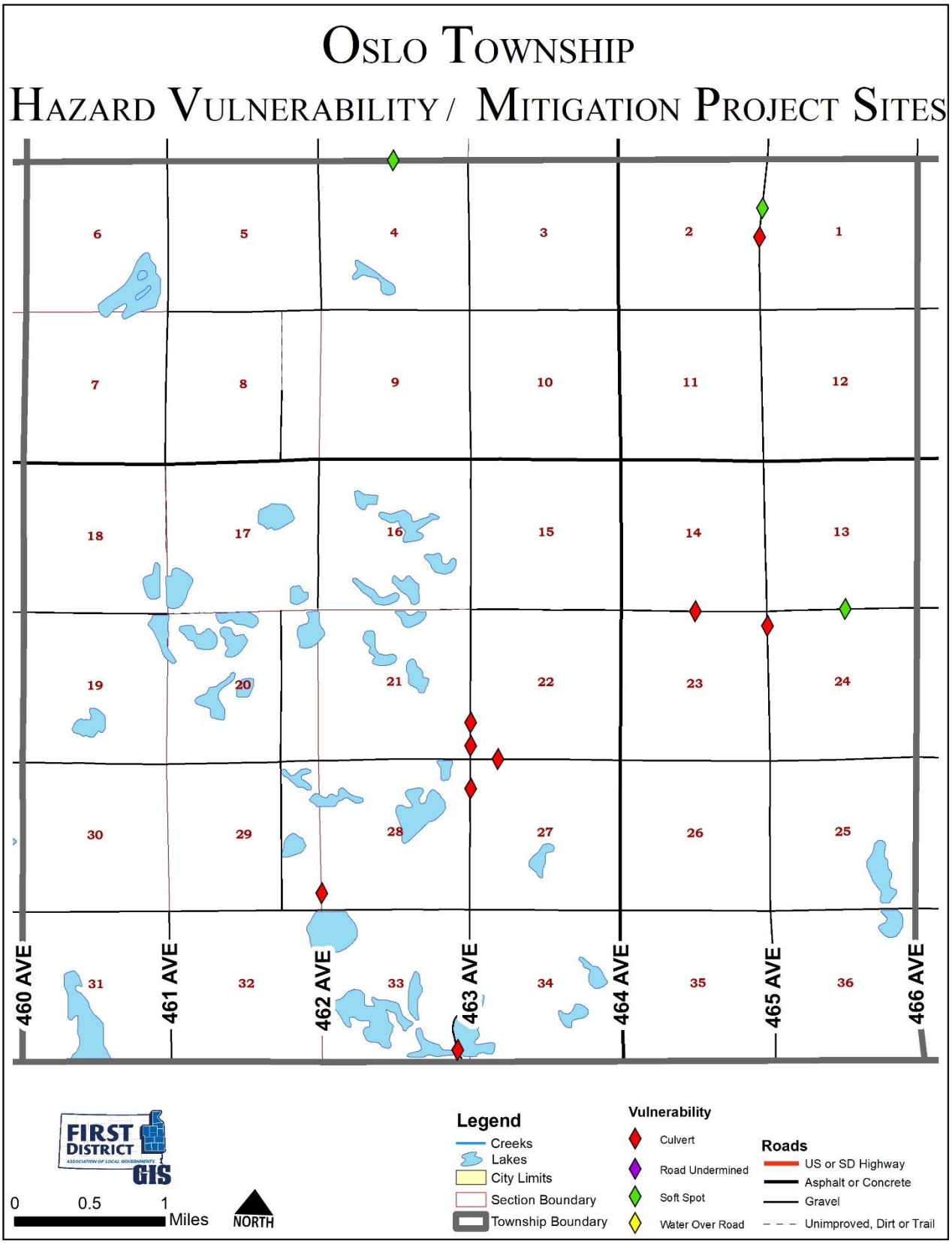
Oaklake Township
Hazard Vulnerability / Mitigation Project Sites



Oakwood Township

Hazard Vulnerability / Mitigation Project Sites




OSLO TOWNSHIP
HAZARD VULNERABILITY / MITIGATION PROJECT SITES
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FIRST DISTRICT ASSOCIATION OF LOCAL GOVERNMENTS GIS
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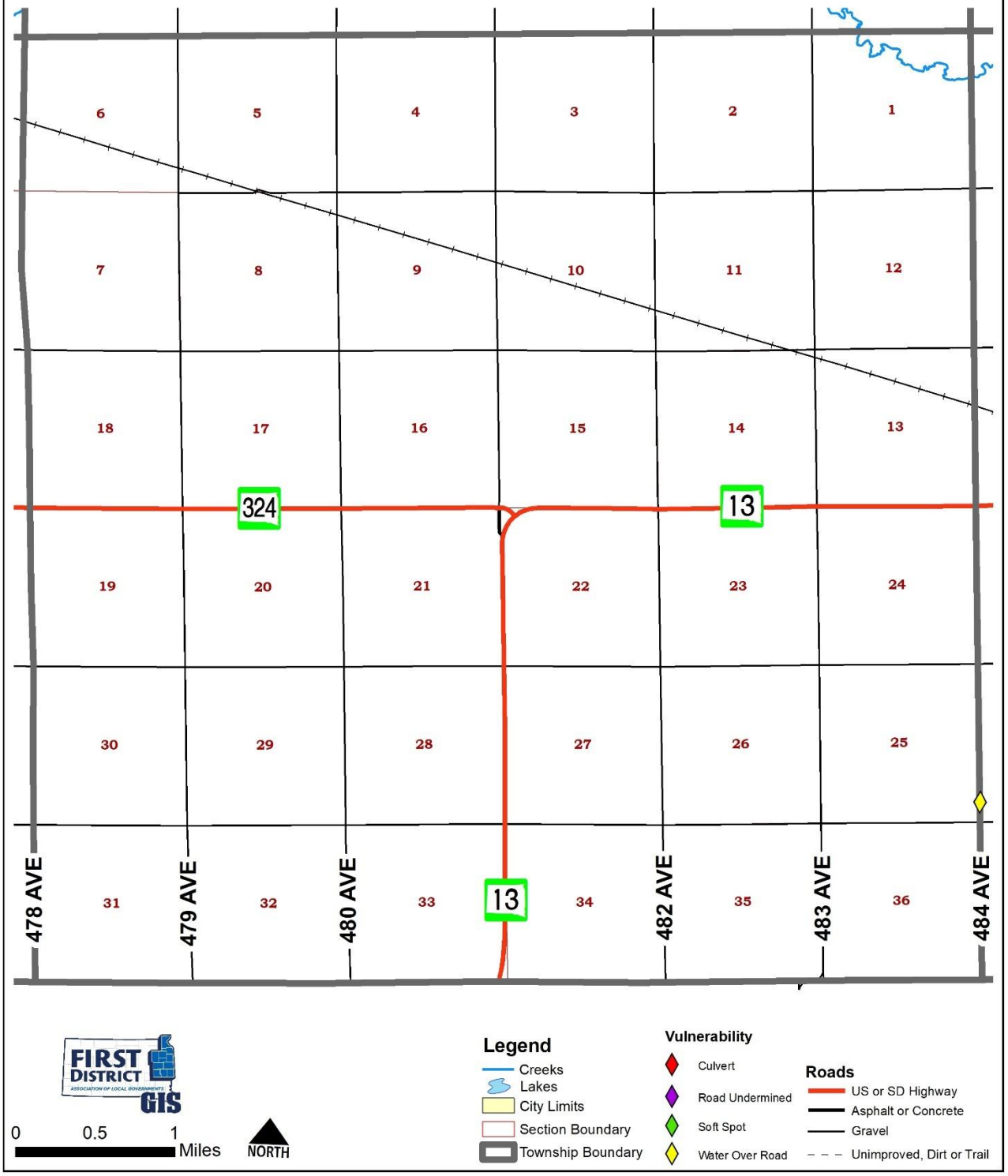
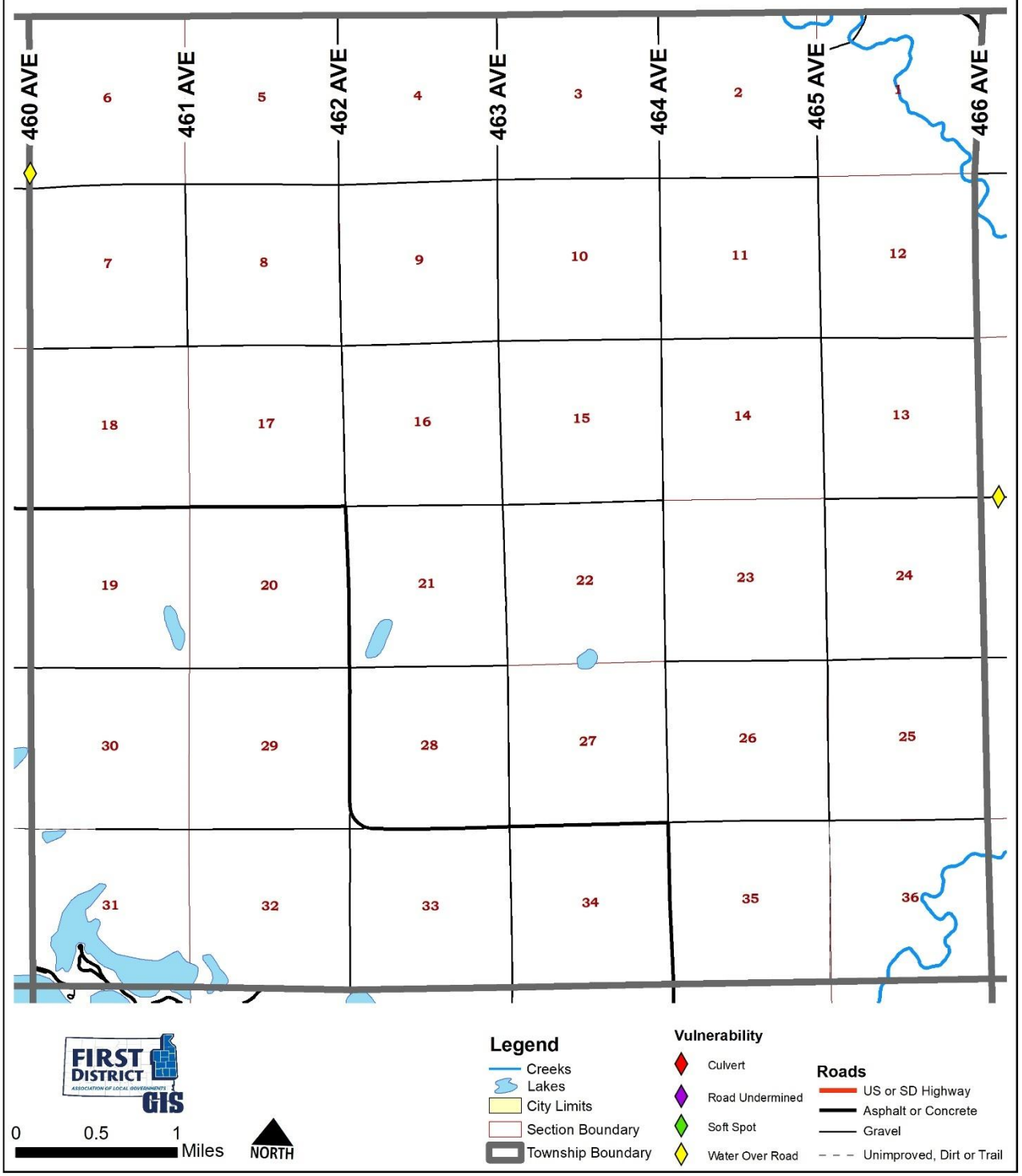
Miles
NORTH
Legend
Creeks
Lakes
City Limits
Section Boundary
Township Boundary
Vulnerability
Culvert
Road Undermined
Soft Spot
Water Over Road
Roads
US or SD Highway
Asphalt or Concrete
Gravel
Unimproved, Dirt or Trail

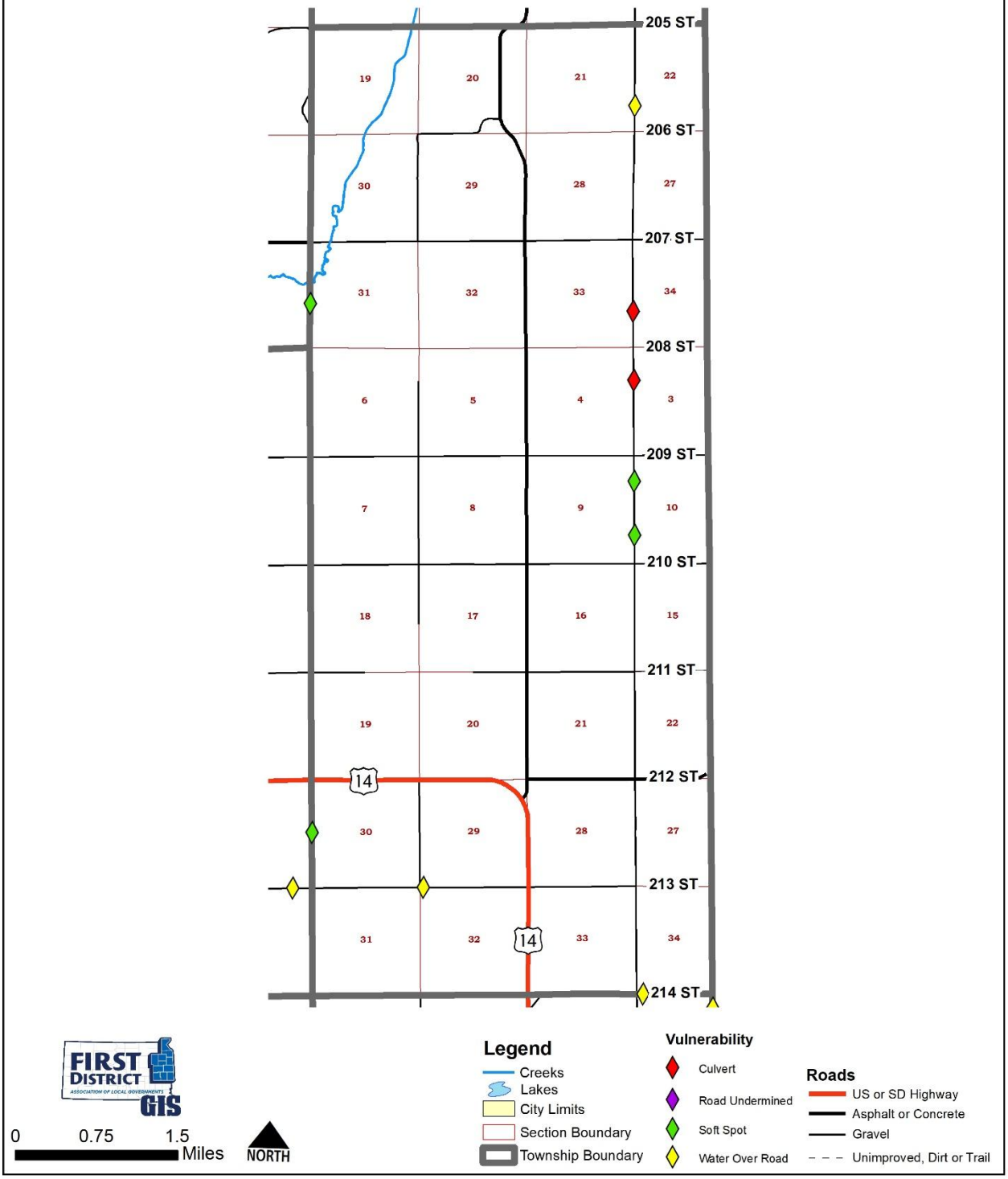
Parnell Township
Hazard Vulnerability / Mitigation Project Sites



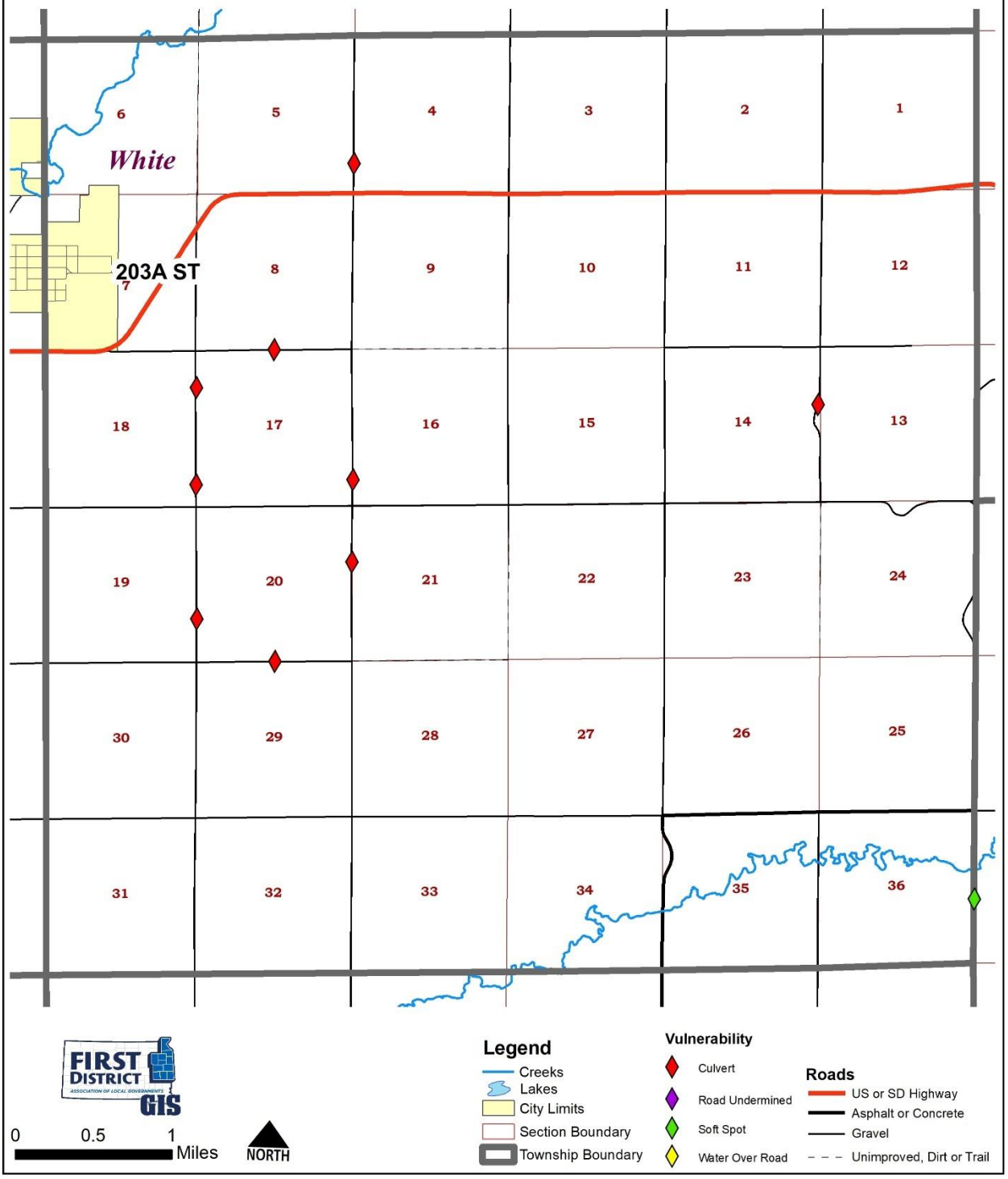
Preston Township
Hazard Vulnerability / Mitigation Project Sites



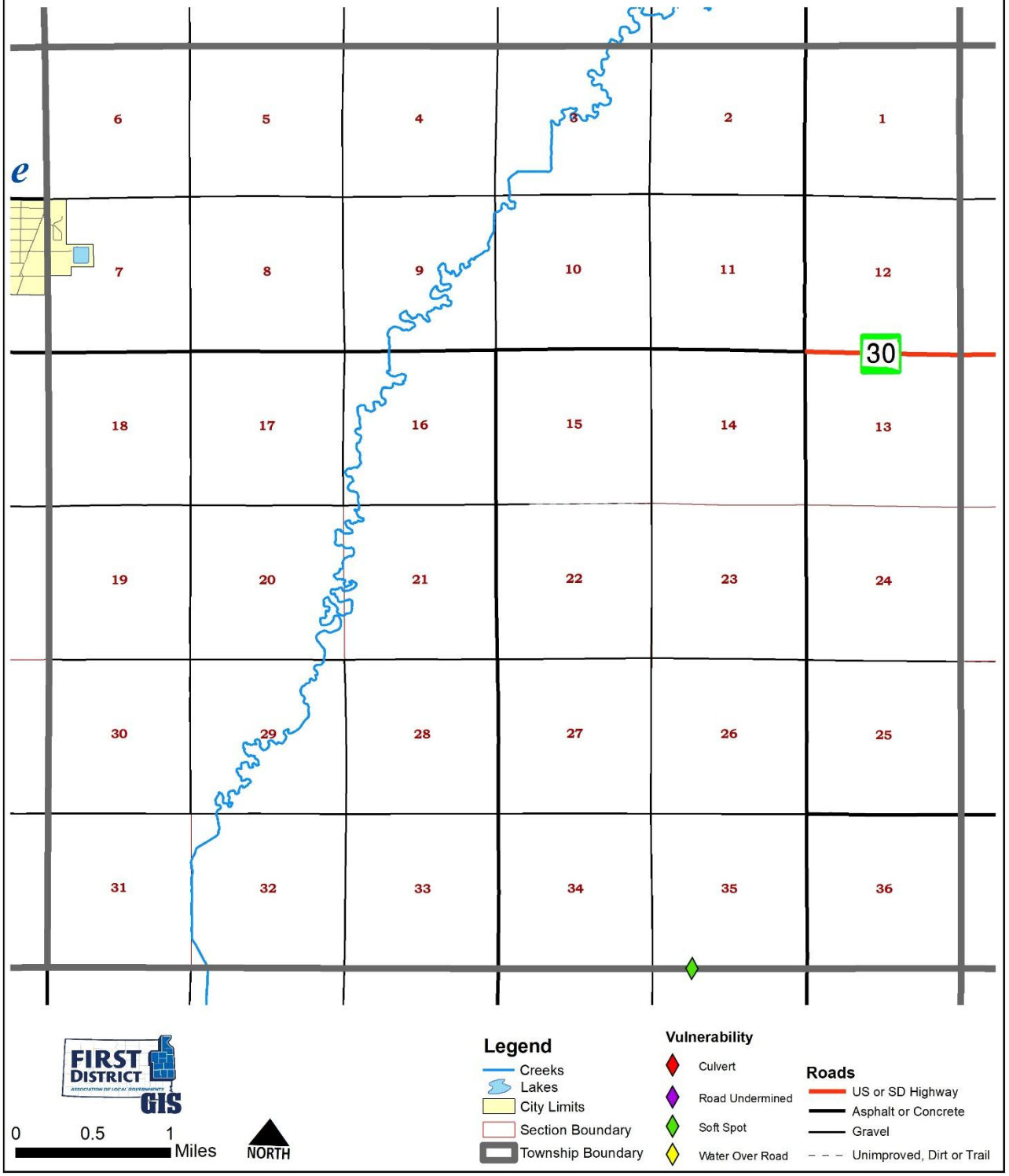
Richland Township
Hazard Vulnerability / Mitigation Project Sites



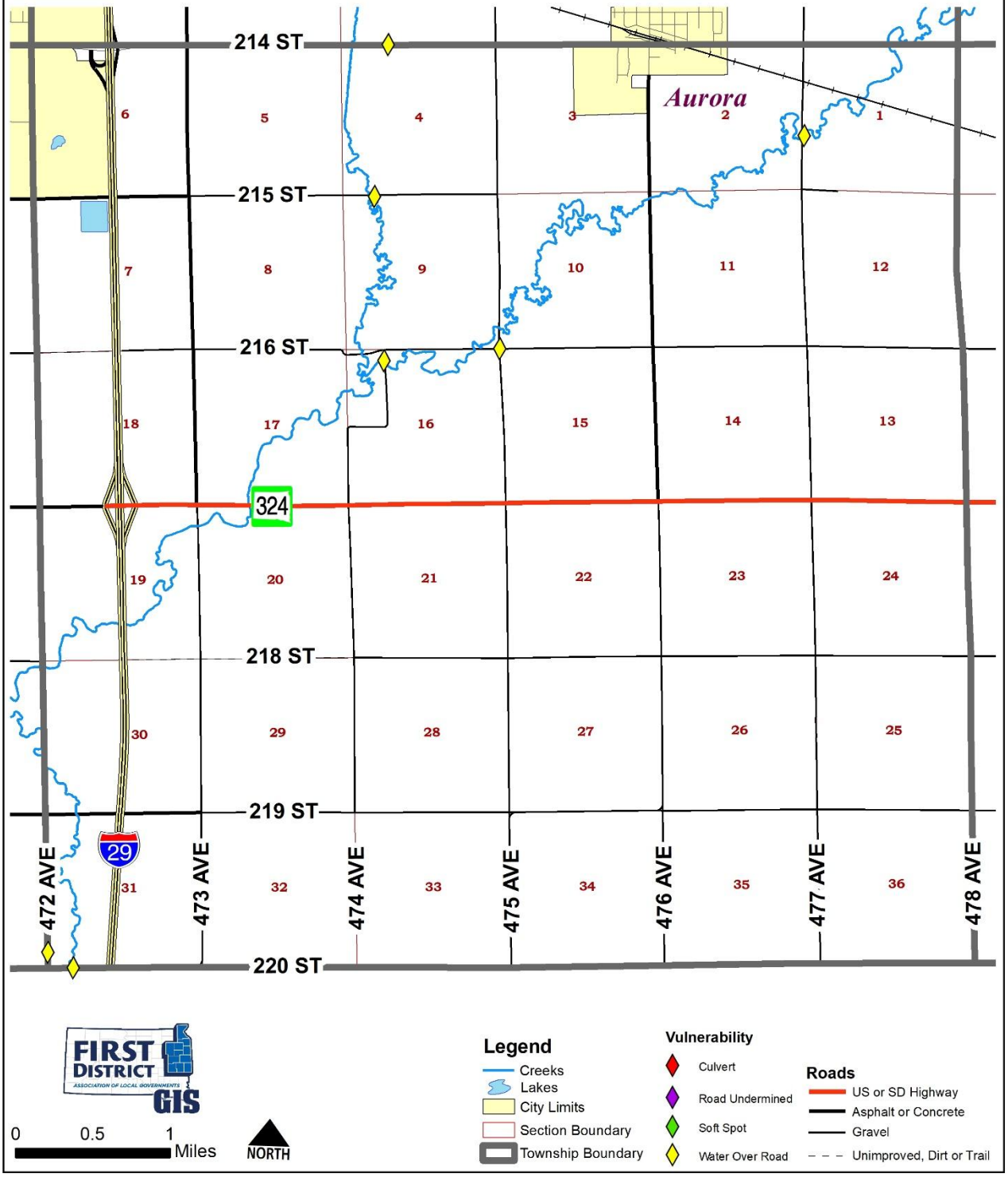
Sherman Township
Hazard Vulnerability / Mitigation Project Sites



Sterling Township
Hazard Vulnerability / Mitigation Project Sites

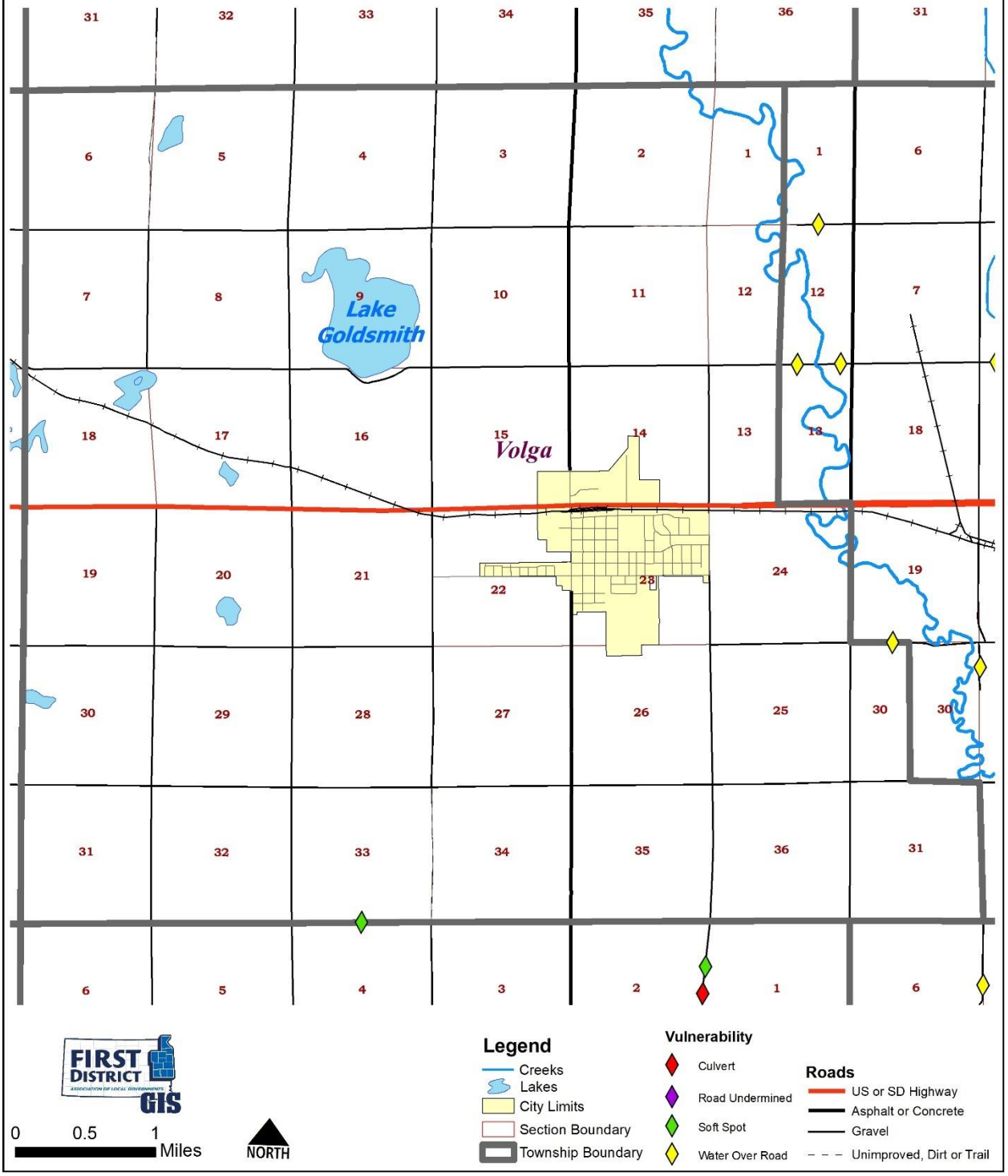


Trenton Township
Hazard Vulnerability / Mitigation Project Sites

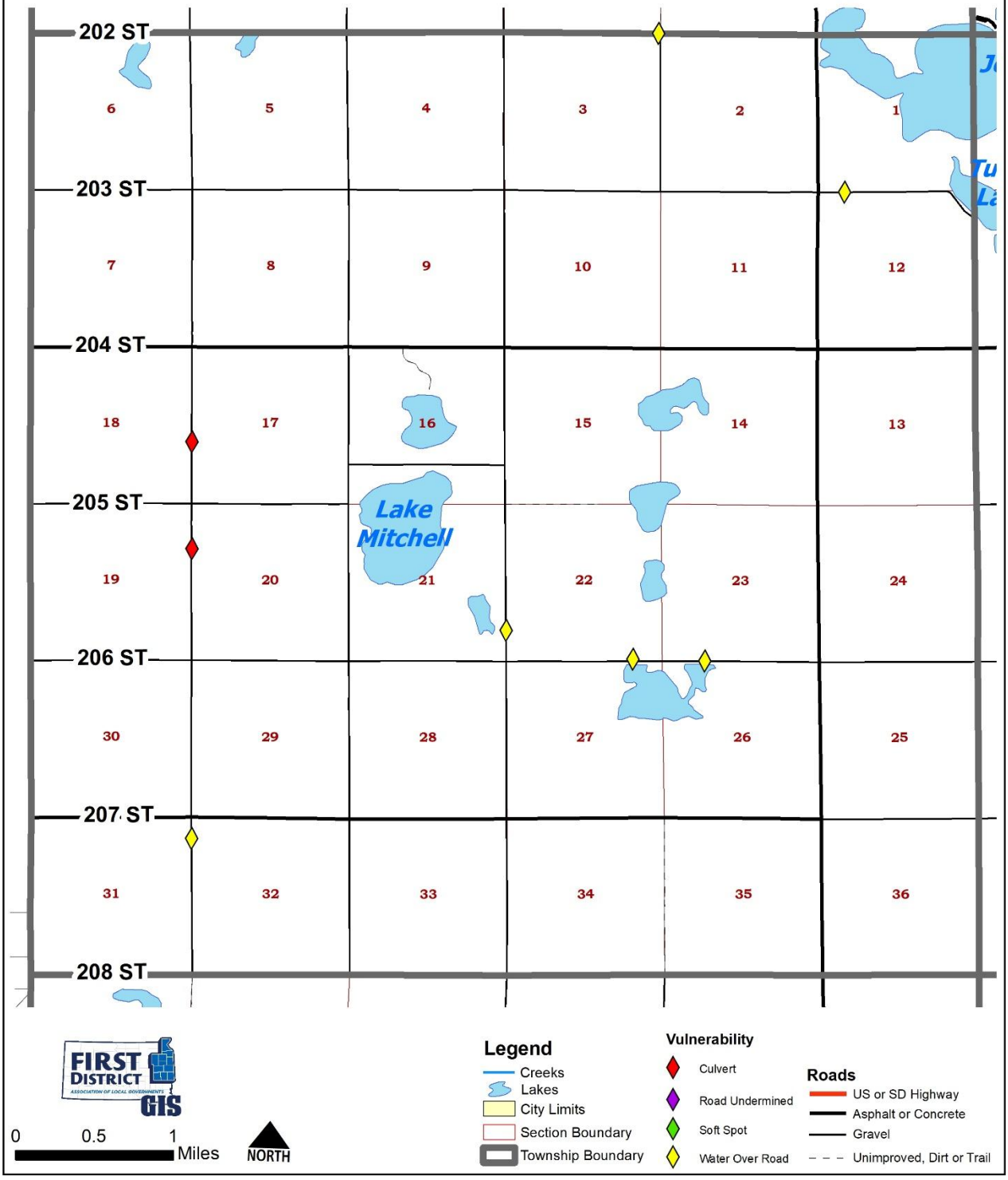


Volga Township

Hazard Vulnerability / Mitigation Project Sites



Winsor Township
Hazard Vulnerability / Mitigation Project Sites



Appendix F – Online Survey Information

Survey Notice to Participate

INVITATION TO PARTICIPATE IN HAMLIN COUNTY PDM PLANNING PROCESS

Hamlin County, including its communities, are updating their Pre-Disaster Mitigation Plan to meet Federal Emergency Management Agency regulations. The purpose of the Plan is to better understand the natural hazards that pose a threat to the area and develop actions that reduce the risk associated with these hazards. You are invited to participate in this survey to help gauge local household and business preparedness for disasters and to identify actions that would reduce risk and loss from natural hazards. The information you provide will help prioritize local risk reduction activities. To participate, use the following link to access the survey https://survey.alchemer.com/s3/7675679/HamlinPDM. The deadline for completing this survey is April 1, 2024. Your participation will be greatly appreciated.

Brett Schutt
Hamlin County Emergency Manager

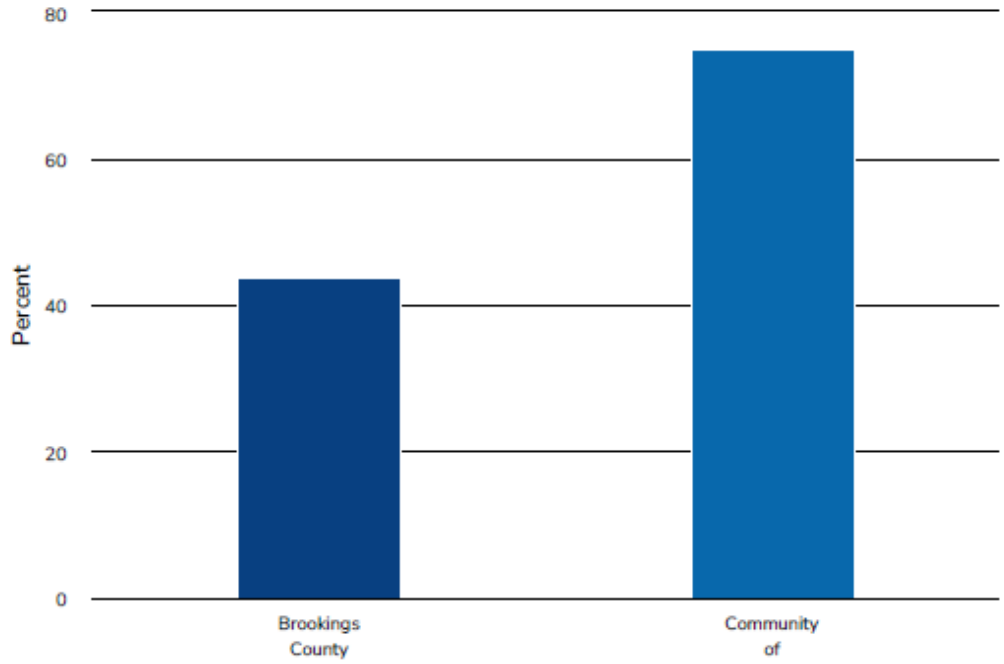
Report for Brookings County PDM

Response Counts

Completion Rate:	**100%**		
	Complete		17

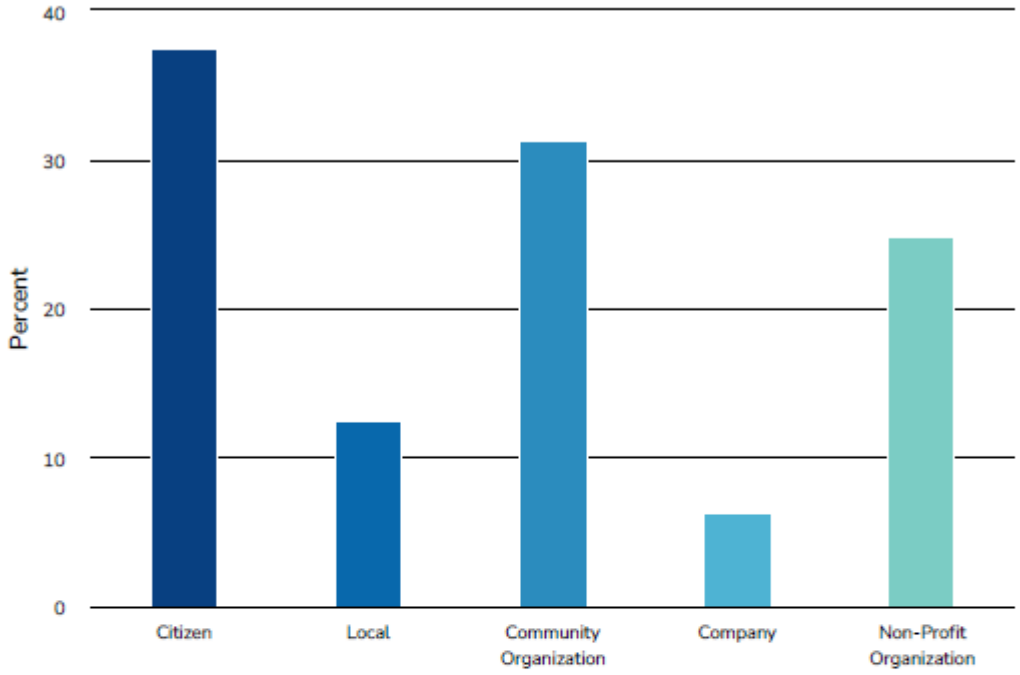
Totals: 17

1. Please indicate the municipality you reside in:



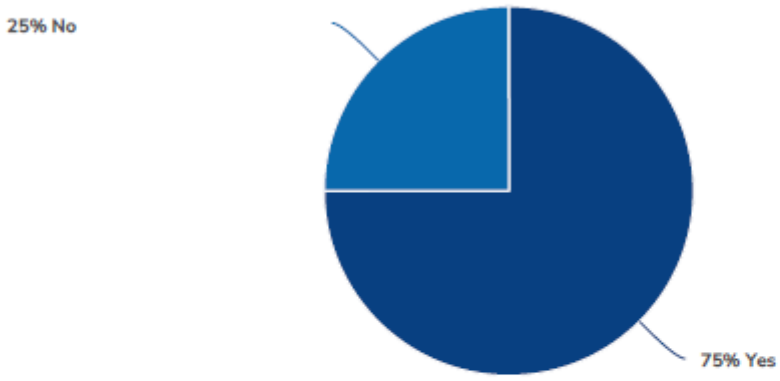
Value	Percent	Responses
Brookings County	43.8%	7
Community of	75.0%	12

2. Are you responding as:



Value	Percent	Responses
Citizen	37.5%	6
Local	12.5%	2
Community Organization	31.3%	5
Company	6.3%	1
Non-Profit Organization	25.0%	4

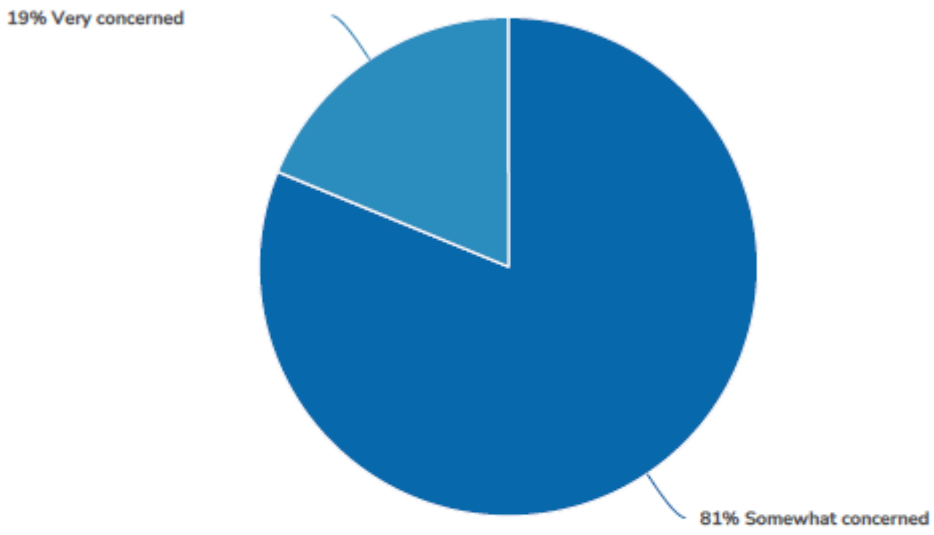
3. Have you ever experienced or been impacted by a natural disaster?



Value	Percent	Responses
Yes	75.0%	12
No	25.0%	4

Totals: 16

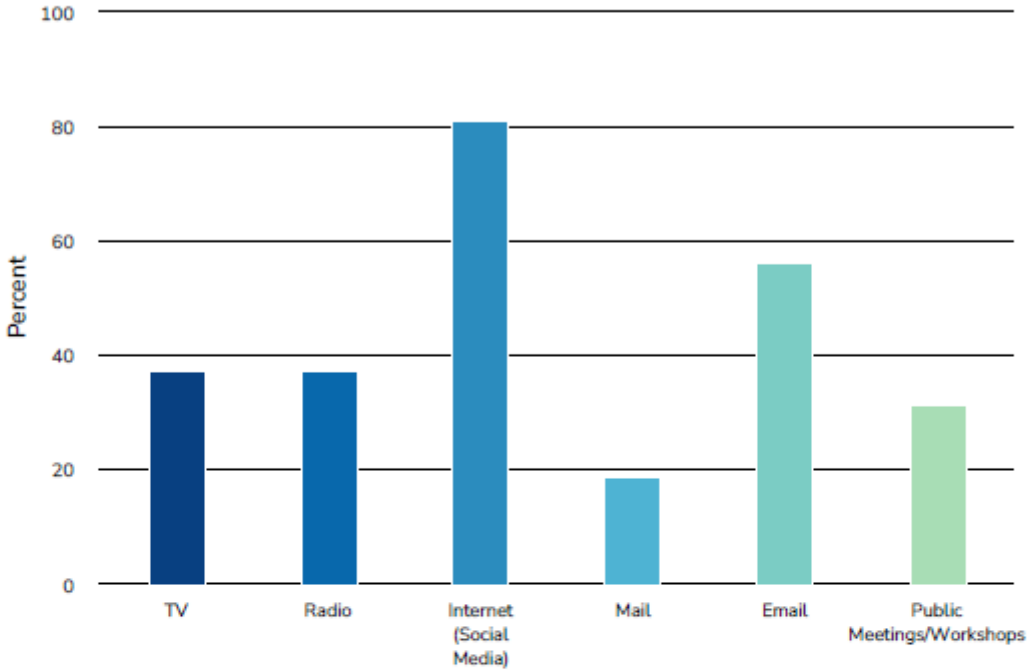
4. How concerned are you about the possibility of your community being impacted by a natural disaster?



Value	Percent	Responses
Somewhat concerned	81.3%	13
Very concerned	18.8%	3

Totals: 16

5. What is the most effective way for you to receive information about how to protect your family and prepare your home from hazard events? Select all that apply.

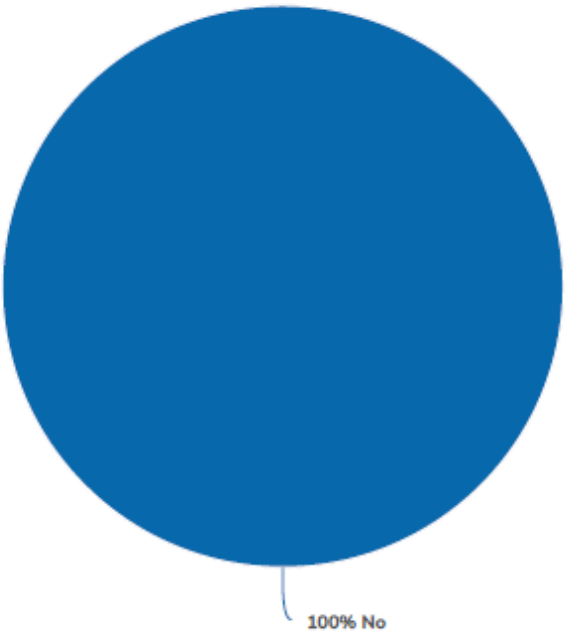


Value	Percent	Responses
TV	37.5%	6
Radio	37.5%	6
Internet (Social Media)	81.3%	13
Mail	18.8%	3
Email	56.3%	9
Public Meetings/Workshops	31.3%	5

6. Please rank the following hazards according to the degree of threat faced by your community. One (1) represents the highest/greatest threat and twelve(12) represents the lowest/least threat. Use each number once.

Item	Overall Rank	Rank Distribution	Score	No. of Rankings
Tornado	1		149	15
Severe Winter Warning	2		144	15
Thunderstorm (Including Lightning/Hail)	3		136	14
Flood	4		134	16
High Wind	5		134	14
Drought	6		111	16
Extreme Temperatures	7		91	13
Urban Fire	8		67	13
Wildfire	9		63	13
Ice Jam	10		53	14
Dam Failure	11		27	12
Earthquake	12		22	12

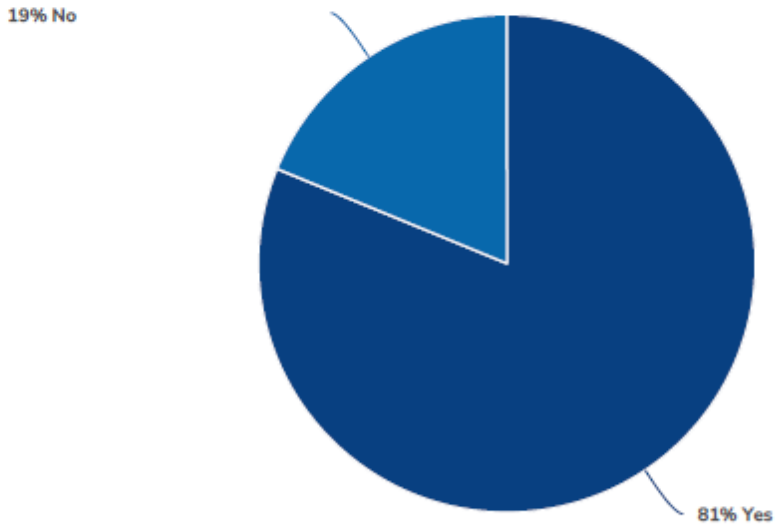
7. Is there another significant natural hazard that is a threat to your community that is not listed above?



Value	Percent	Responses
No	100.0%	15

Totals: 15

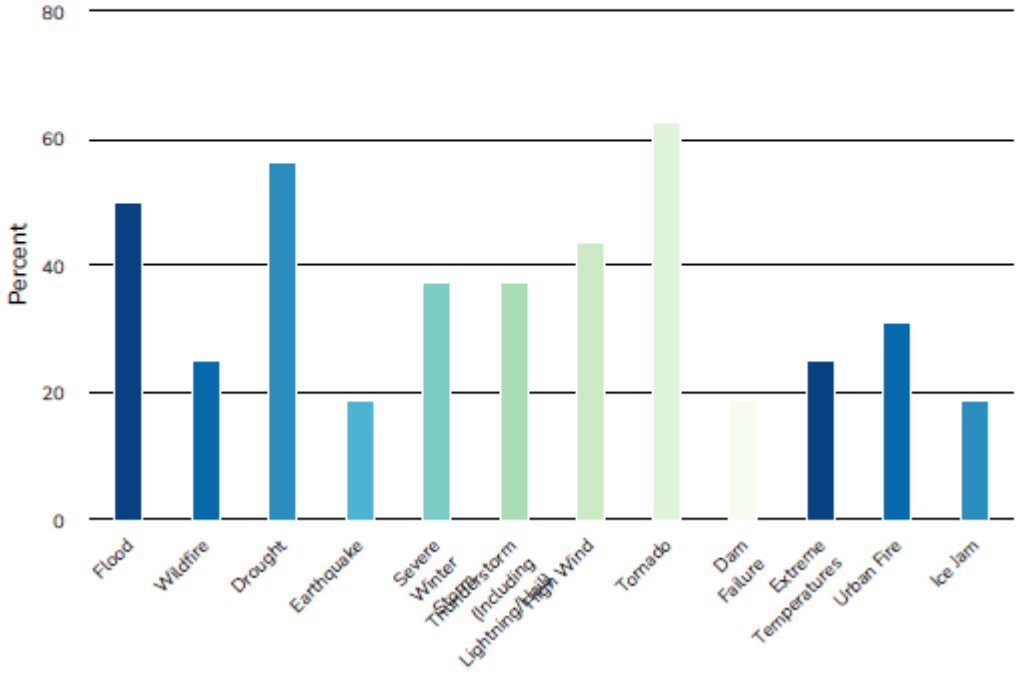
8. Have you or your community taken any actions to make your home or community more resistant to hazards?



Value	Percent	Responses
Yes	81.3%	13
No	18.8%	3

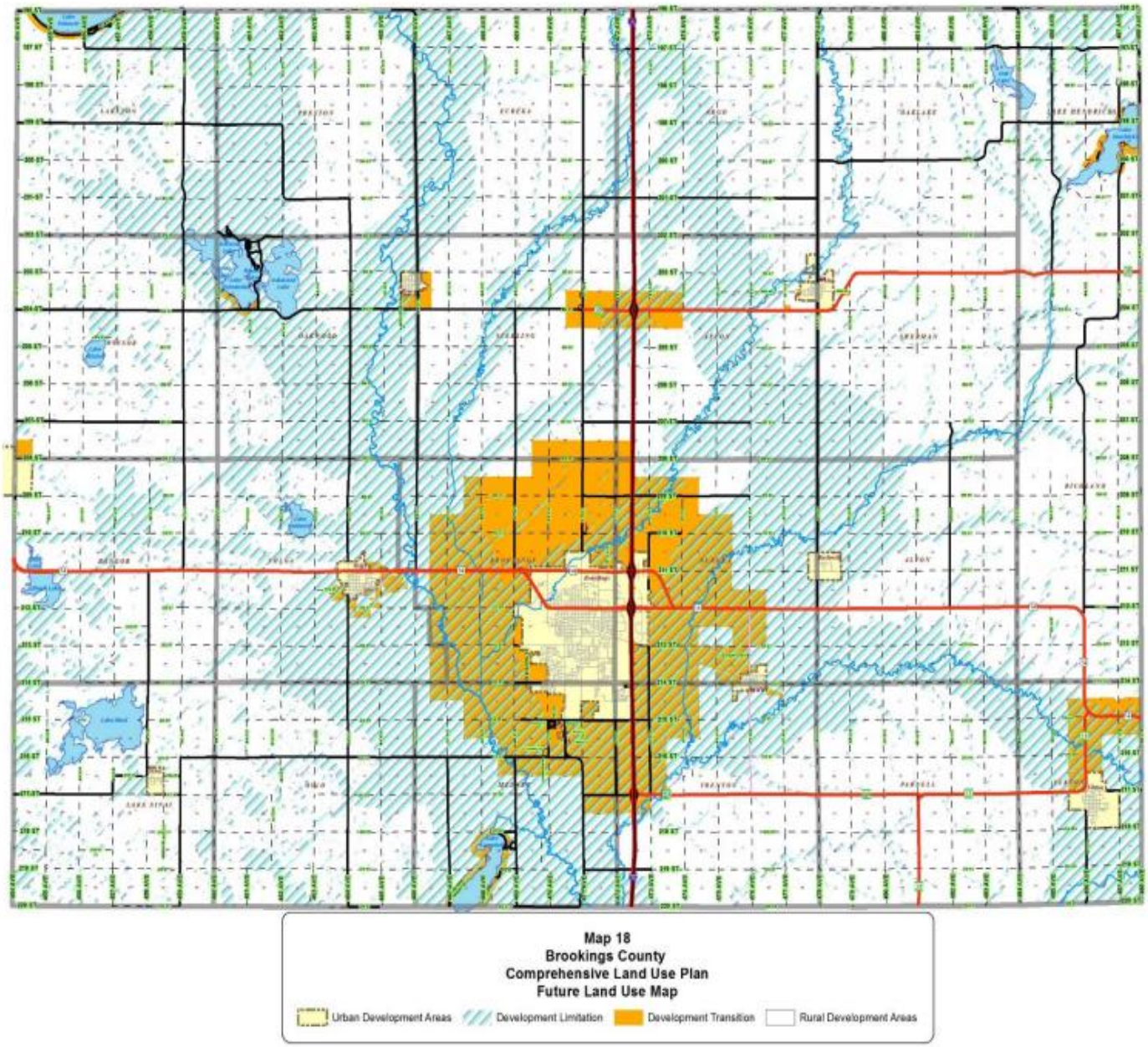
Totals: 16

9. We would like your opinion on how to best reduce risk from the natural hazards in your community. Please briefly describe at least one project to mitigate each of the following hazards. Examples of projects are creating green spaces, floodproofing structures, designating emergency shelters, construction of tornado safe rooms etc.

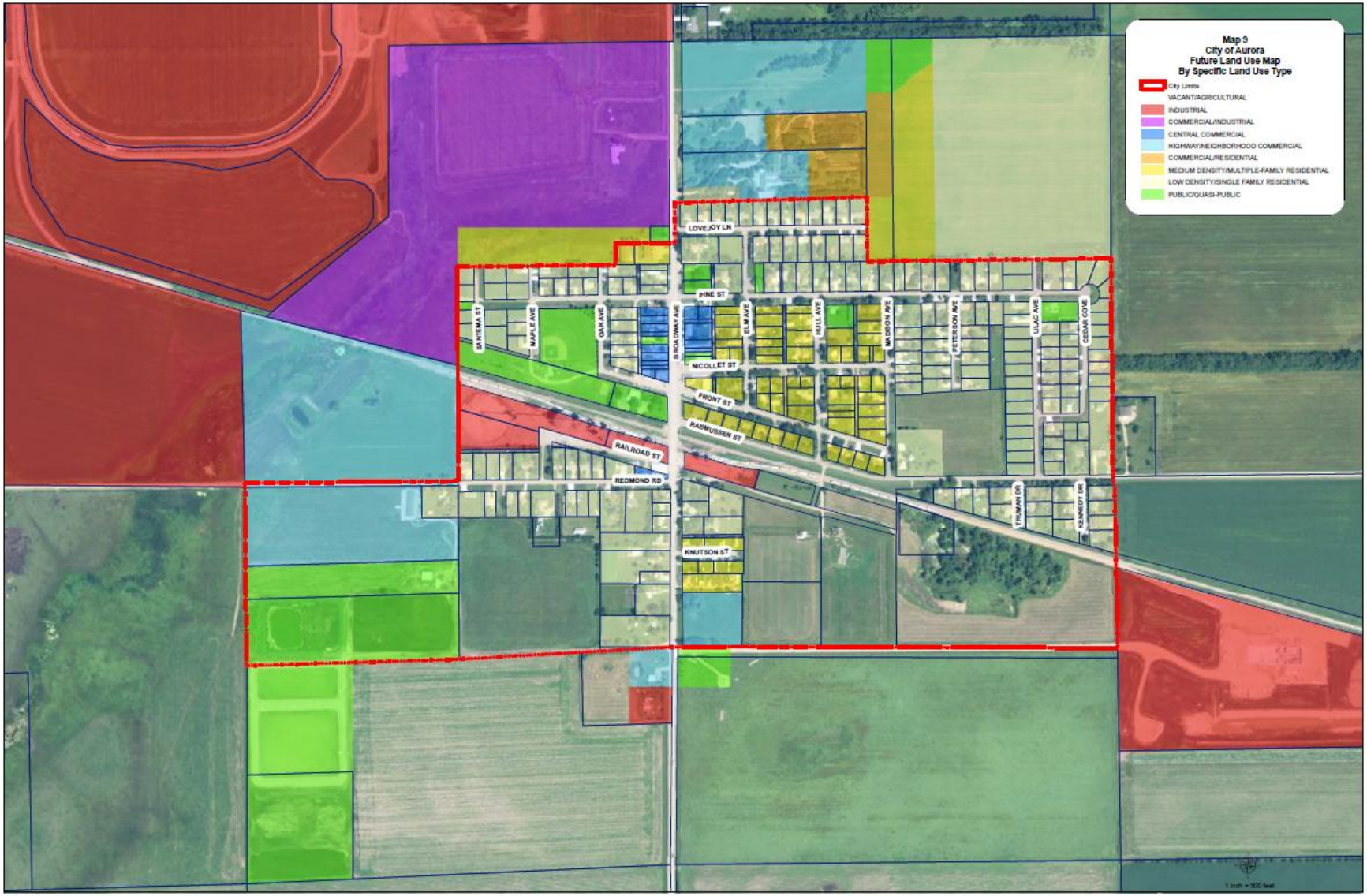


Appendix G – Comprehensive Land Use Maps

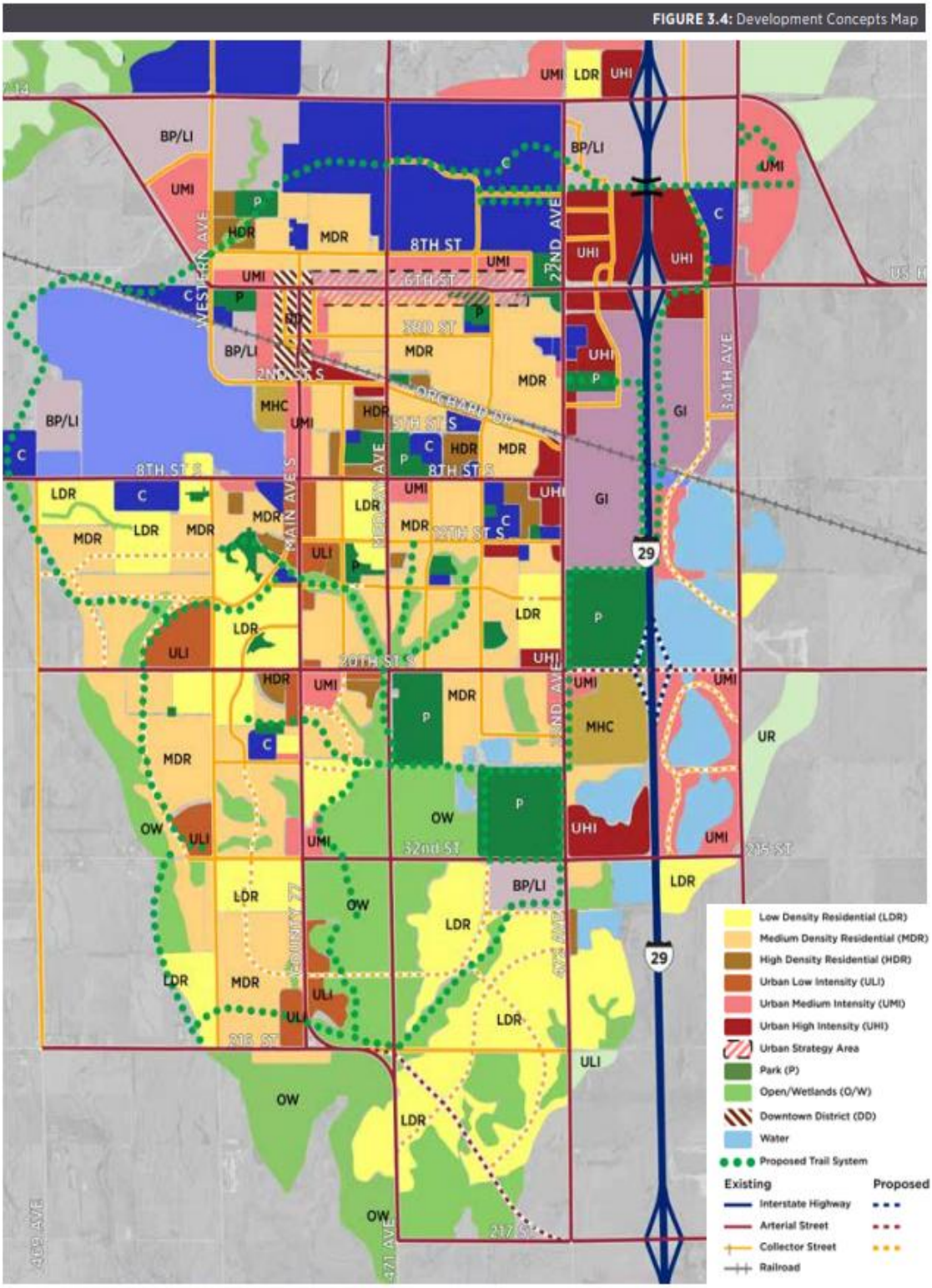
Brookings County Future Land Use Map



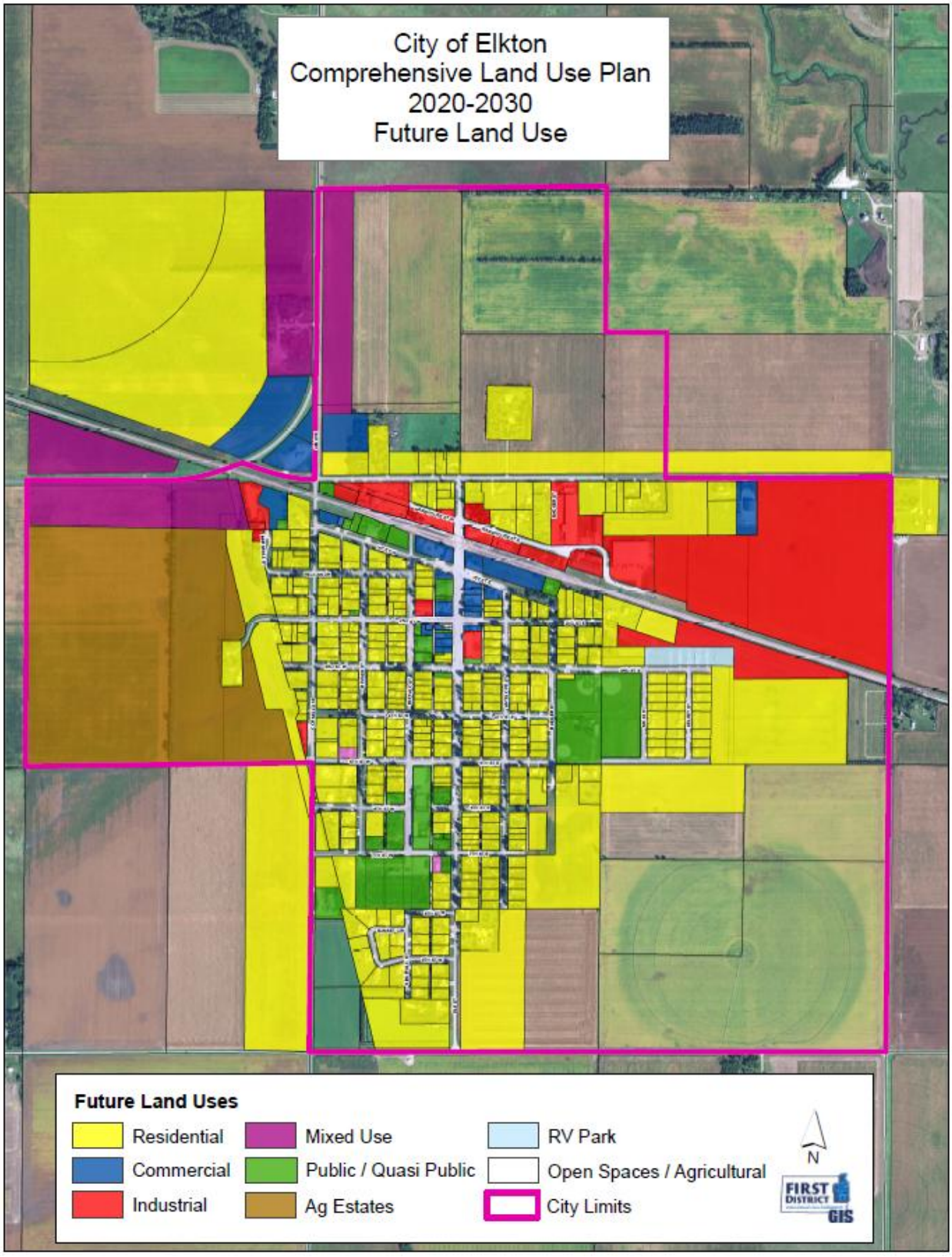
City of Aurora Future Land Use Map



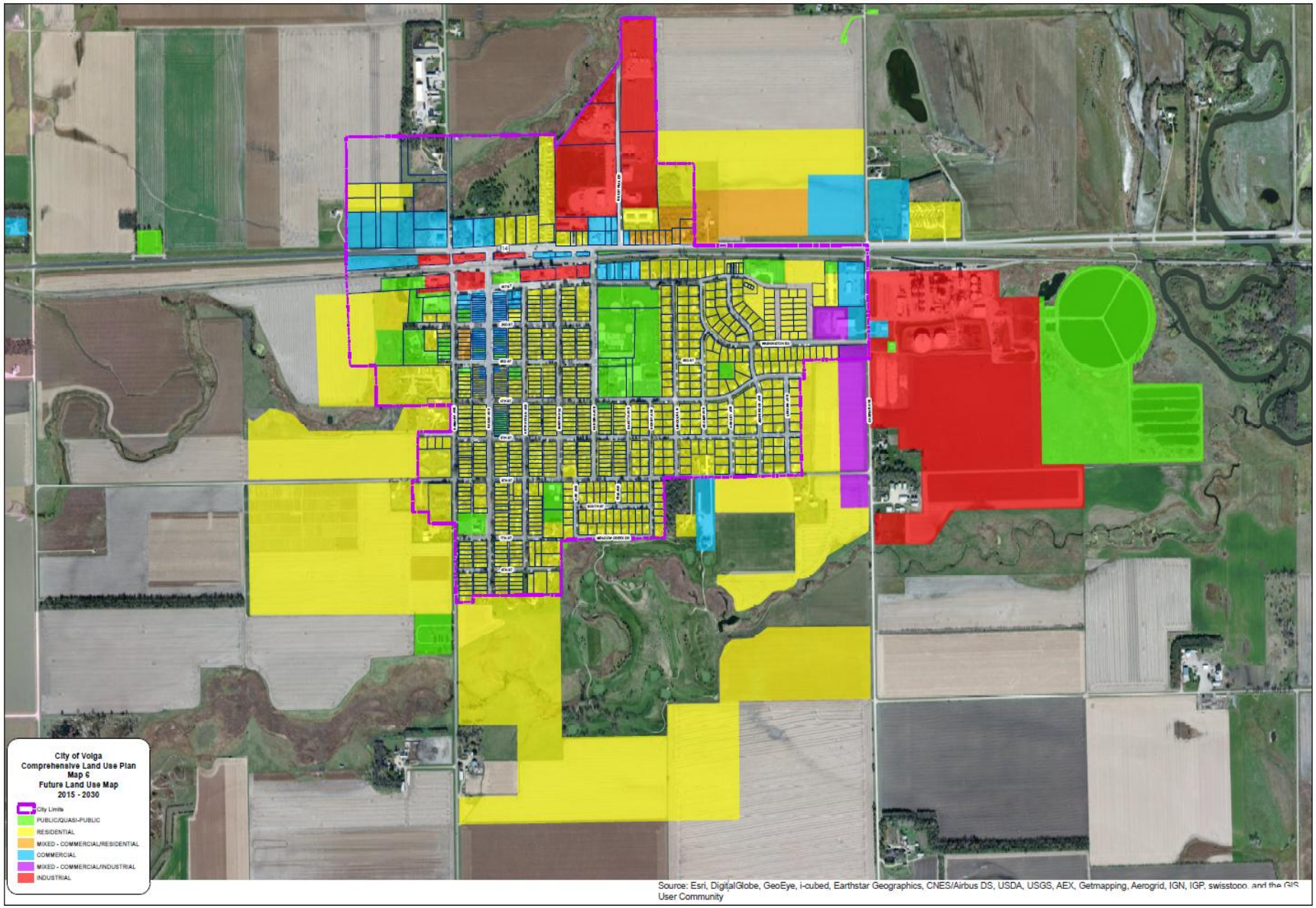
City of Brookings Future Land Use Map



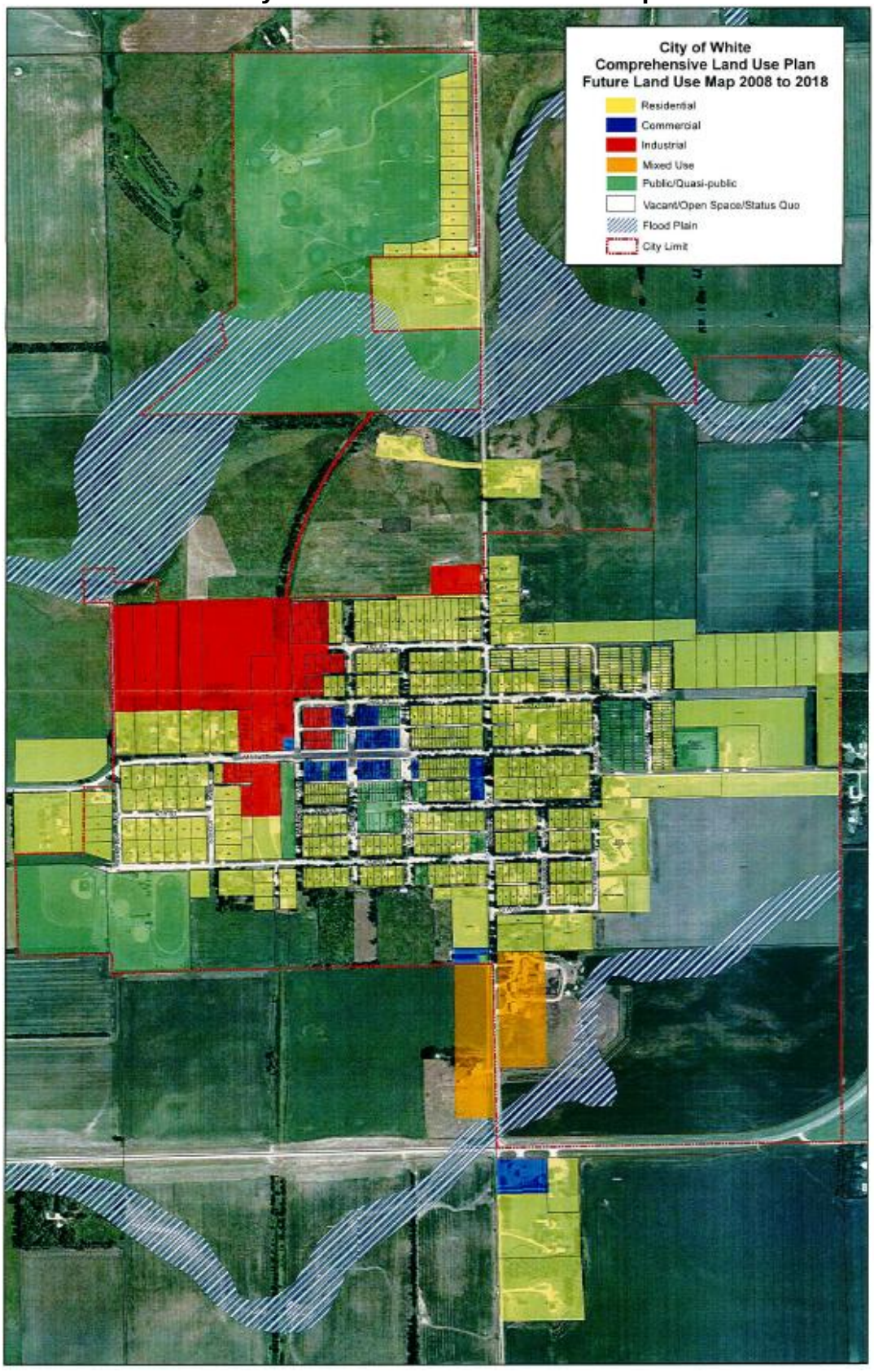
City of Elkton Future Land Use Map



City of Volga Future Land Use Map



City of White Future Land Use Map



Appendix H – Review of Previous PDM Mitigation Project Implementation

2019 PDM Plan Mitigation Project Implementation

COMMUNITY	POTENTIAL MITIGATION PROJECTS	HAZARD	INCLUDED IN 2024 PLAN?	STATUS
City of Brookings	Purchase Back-up Generator for Government Center	All Hazards	No	Completed/Removed from Table 5.13
Bruce	Perform study and inspection of sewer infrastructure.	Severe Weather Hazards	No	Complete/ Removed from Tables 5.1-5.13
Bruce	Purchase new emergency city sirens.	Severe Weather Hazards	No	Complete/ Removed from Tables 5.1-5.13
Bruce	Study and implement stormwater drainage improvements targeting problem areas.	Flooding	No	Complete/ Removed from Tables 5.1-5.13
Bruce	Purchase a portable backup generator.	Severe Weather Hazards	No	Complete/ Removed from Tables 5.1-5.13
Elkton	Replace old trees with new/trim old trees.	Severe Weather Hazards	Yes	Ongoing/Included in Tables 5.1-5.13
Volga	Portable generator for water system.	Severe Weather Hazards	No	Complete/ Removed from Tables 5.1-5.13
Volga	Portable generator for lift stations.	Severe Weather Hazards	No	Complete/ Removed from Tables 5.1-5.13
Volga	Implement stormwater drainage improvements.	Floding	Yes	Ongoing/Included in Tables 5.1-5.13
White	Construct new Fire Hall.	Fire	No	In progress/ Removed from Tables 5.1-5.13
White	Bury overhead powerlines.	Severe Weather Hazards	No	Completed
White	Purchase backup generator for McKnight Hall.	Severe Weather Hazards	No	In progress/ Removed from Tables 5.1-5.13

*****Any projects/activities listed in the 2019 PDM Plan that are not referenced in this section were retained in this Plan, with or without modification, and listed in Tables 5.1 - 5.13.

Appendix I – Worksheet 10: Plan Update Evaluation Form

PLANNING PROCESS

Participants

Should new jurisdictions be invited to participate in future plan updates?

How have communities and agencies helped to carry out mitigation actions?

Could anything from the initial planning process be done more efficiently?

Have there been any changes in public support or priorities about hazard mitigation?

Is there anything else you would like to consider?

Public Involvement

Has the public been actively involved in the plan's implementation? How can public participation improve?

Have there been any ongoing public outreach activities for the plan?

Is there anything else you would like to consider?

RISK ASSESSMENT

Hazard History

Have there been any recent disaster events? If so, how did they affect your community?

Should the list of hazards addressed in the plan be updated? If so, which hazards should be added or removed?

Have there been any new issues with hazards in a certain area of your community?

Is there anything else you would like to consider?

New Data

Are any new data sources available (e.g., studies, reports, maps, etc.)?

Do any new critical facilities or infrastructure need to be added to the asset lists?

Have any changes in development trends occurred that could create additional risks?

Does any new development *reduce* risk?

Is there anything else you would like to consider?

MITIGATION STRATEGY

Capabilities

Have jurisdictions adopted new policies, plans, regulations, or reports that could support the plan?

Are there different or new education and outreach programs and resources available for mitigation activities?

Has NFIP participation changed in the participating jurisdictions?

Is there anything else you would like to consider?

Actions

Is the mitigation strategy being carried out as expected? Were the cost and timeline estimates accurate?

Are there new projects to consider?

Should existing mitigation actions be revised or removed from the plan?

Are there new funding sources to consider?

Have parts of the plan been worked into other planning mechanisms?

What challenges were there, and how can those be overcome over time?

Is there anything else you would like to consider?

Appendix J - References

Brookings County Comprehensive Land Use Plan – First District Association of Local Governments, 2000.

Brookings County Pre-Disaster Mitigation Plan, 2019.

City of Aurora Comprehensive Land Use Plan and Zoning Ordinance - First District Association of Local Governments, 2012.

City of Elkton Comprehensive Land Use Plan and Zoning Ordinance - First District Association of Local Governments, 2006.

City of Volga Future Land Use Map and Major Street Plan – First District Association of Local Governments, 2015.

City of White Comprehensive Land Use Plan and Zoning Ordinance - First District Association of Local Governments, 2008.

Federal Emergency Management Agency. 2011. Local Hazard Mitigation Planning Tool.

Local Hazard Mitigation Planning Tool – Federal Emergency Management Agency, 2011.

NFIP Flood Insurance Rate Maps, FEMA.

State of South Dakota Hazard Mitigation Plan. South Dakota Office of Emergency Management. 2019.

South Dakota State University - 2024 Annual Security and Fire Safety Reports.

Brookings, SD Comprehensive Plan 2040, 2018.

City of Brookings (South Dakota) Master Drainage Plan – July 2024; ISG Inc.

City of Brookings (South Dakota) Six Mile Creek Feasibility Study – May 2024; Re/Spec Inc. & Banner Engineering Corp.