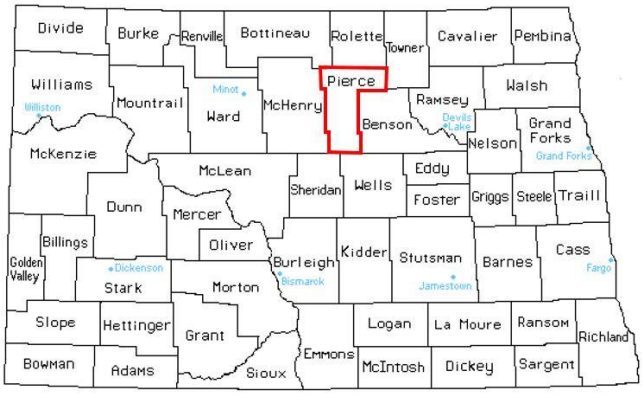
2024 Pierce County, North Dakota Multi-Jurisdictional Multi-Hazard Mitigation Plan

Pierce County, North Dakota



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1. Introduction

Executive Summary

The updating of the Pierce County, N.D. Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP) was conducted over a six-month period. It included the review of hazards, risks, vulnerabilities, and capabilities of the county, and resulting mitigation actions for Pierce County. The review of hazard impacts to the county is ongoing by county officials, as are the efforts to mitigate injuries and damages from natural hazards and man-made threats. The planning process and this plan allow the county's residents, businesses, stakeholders, and federal and state agencies to have input and to identify actions to assure the safety and protection of people and property. A mitigation survey was administered during the planning process. A total of 100 responses were received.

The natural hazards and man-made threats profiled in this plan include:

- Civil Disturbance
- Criminal, Terrorist, or Nation/State Attack
- Cyberattack
- Dam Failure
- Drought
- Fire (Urban & Wildland)
- Flood
- Geologic Hazards
- Hazardous Material Release
- Infectious Disease & Pest Infestations
- Severe Summer Weather
- Severe Winter Weather
- Space Weather
- Transportation Incident

A total of 25 projects were identified. Of the 25 identified projects, two projects are specific to the cities of Balta and Rugby each, and one project is specific to the city of Wolford. The remaining projects address the county and all incorporated jurisdictions and unincorporated jurisdictions.

The following are the six goals that were reviewed, updated and approved:

Goal 1: Implement education and outreach programs to improve public awareness of hazards.

Goal 2: Improve administrative and technical capability to mitigate hazards.

Goal 3: Improve planning and regulatory capability to mitigate hazards.

Goal 4: Reduce impacts of hazards.

Goal 5: Improve resiliency of critical facilities and infrastructure.

Goal 6: Provide places of refuge and early warnings for the public and vulnerable populations to take protective action during hazard events.

To assist in the use, implementation, and updating of this document, the plan includes the federal and state plan approval letters and plan review of this update, and the adoption letters from each of the jurisdictions are included in this document. The chapters and appendices provide a history of the data reviewed and analyzed in the production process of the plan.

Incorporated Jurisdictions

The impact and other issues from natural hazard and manmade threats varies between incorporated cities. Based on information gathered at each jurisdictional meeting, a problem statement was formed to summarize the needs of the community. The problem statement for Pierce County and each incorporated city is shown below.

Pierce County, North Dakota

Pierce County, North Dakota, can be impacted by civil disturbance; criminal, terrorist, or nation/state attack; cyberattack; drought; fire (urban and wildland); flood (overland); geologic hazards; hazardous material release; infectious disease and pest infestations; severe summer weather; severe winter weather; space weather, and transportation incident. Flooding is an issue due to improper drainage and insufficient infrastructure such as the Rugby underpass and several county roads. The city of Balta is not enrolled in the National Flood Insurance Program. Severe summer weather and severe winter weather are frequent and impose property damage. Incorporated communities lack shelters with structural integrity to withstand natural hazards. Economic loss to the agriculture and livestock industry occurs on a frequency basis from natural hazards. The county has existing mitigation capabilities that need to be expanded and upgraded. The county relies on outside sources for funding and to accomplish large-scale mitigation projects.

Improvement and expansion of existing mitigation capabilities; upgrading of existing and installation of new sirens, equipment, and communications; installation of generators at critical facilities and infrastructure; enforcement of building codes; construction of storm shelters, improve drainage and upgrading of critical facilities and infrastructure are a priority for the county.

City of Balta, North Dakota

The city of Balta can be impacted by communicable disease, drought, flood (overland and riverine), hazardous material release, severe summer weather, severe winter weather, urban fire/structure collapse, wildland fire, and windstorm. The city experiences overland flooding from heavy rains or spring snow melt causing damage to property, roads, and critical facilities and infrastructure. Blocked roads from flooding, severe summer weather and severe winter weather limit access for emergency services. Economic loss to the agriculture, hunting and livestock industry occurs on a frequent basis from natural hazards. The city lacks backup generators for critical facilities and infrastructure and does not have an emergency siren. The city is the host of a large annual festival during the summer but does not have an official storm shelter. The city lacks funding for mitigation projects. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Retrofitting/raising of roads, installation of permanent backup power sources, installation of a dispatch-activated emergency siren, construction of an official storm shelter, expansion of planning and regulatory capabilities, and education and outreach are a priority for the city.

City of Rugby, North Dakota

The city of Rugby, North Dakota, can be impacted by civil disturbance; criminal, terrorist, or nation/state attack; cyberattack; drought; fire (urban and wildland); flood (overland); geologic hazards; hazardous

material release; infectious disease and pest infestations; severe summer weather; severe winter weather; space weather, and transportation incident. The city experiences overland flooding causing damage to property, and critical facilities and infrastructure due an inadequate storm water drainage system. Economic loss to the agriculture and livestock industry from natural hazards in the county impacts the city's economy. The city lacks backup generators for critical facilities and infrastructure, does not have adequate storm shelter capacity, and has an outdated early warning system. Local emergency services need upgraded equipment. The city lacks funding for mitigation projects. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Improved drainage (Country Road), retrofitting/upgrading of existing infrastructure (Rugby underpass, sanitary sewer lagoons), installation of permanent backup power sources, upgrade emergency sirens and alerting notifications, upgrade and expand of storm shelters, expansion of planning and regulatory capabilities, and education and outreach are a priority for the city.

City of Wolford, North Dakota

The city of Wolford can be impacted by communicable disease, drought, flood (overland and riverine), hazardous material release, severe summer weather, severe winter weather, urban fire/structure collapse, wildland fire, and windstorm. Blocked roads from severe summer weather and severe winter weather limit access for emergency services. Economic loss to the agriculture, hunting and livestock industry occurs on a frequent basis from natural hazards. The city lacks backup generators for critical facilities and infrastructure, has a manually-activated siren and does not have an official storm shelter. Local emergency services need upgraded equipment. The city lacks funding for mitigation projects. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources, upgrading of emergency siren, construction of an official storm shelter, upgrading of fire protection equipment, expansion of planning and regulatory capabilities, and education and outreach are a priority for the city.

Background

The Pierce County, N.D., Multi-Jurisdictional Multi-Hazard Mitigation Plan (MHMP) was developed and received approval from the Federal Management Agency (FEMA) in 2013. This plan update is the first update to the mitigation plan for Pierce County.

The MHMP Steering Committee understands that the plan must be dynamic and detailed to include the specific risks of threats and hazards to the county and its jurisdictions. Improvements, updates, and revisions will be made constantly to assure this plan continues to mitigate the potential losses and damages that can impact people and property in Pierce County.

Purpose

As defined by the Disaster Mitigation Act of 2000, hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The Act of 2000 was an amendment to the Robert T. Stafford Disaster Relief and Emergency Assistance to authorize a program for pre-disaster mitigation, to streamline the administration of disaster relief, to control the Federal costs

of disaster assistance, and for other purposes. **Per the 2014 State of North Dakota MHMP, for every dollar spent on mitigation, society saves on average four dollars in avoided future losses.** Mitigation can range from infrastructure projects such as raising of roads, burying of power lines, or installation of generators for critical facilities and infrastructure, to public education and outreach programs.

The purpose of this plan is to fulfill federal, state, and local hazard mitigation planning responsibilities; to promote pre- and post-disaster mitigation measures, short and/or 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; to improve quality of life; and to eliminate or minimize conditions which would have an undesirable impact on our citizens, the economy, environment, and well-being of the county.

Objective

The objective of this plan is to establish a methodical process to assist in hazard and threat identification, impact evaluation, and action plan development to decrease the impacts from hazards where possible and to protect lives and property.

Scope

The scope of the Pierce County, N.D., Multi-Jurisdictional Multi-Hazard Mitigation Plan is countywide. The Plan is not necessarily limited to federal, state, or locally declared disasters or emergencies. Any time situations or incidents occur that produce a requirement for mitigation actions, activities, and strategies, etc.; they will be developed and incorporated into the Pierce County, N.D., Multi-Jurisdictional Multi-Hazard Mitigation Plan.

3. County and Jurisdictions Profile and Inventory

Pierce County, North Dakota, and Incorporated Jurisdictions Overview

Pierce County, North Dakota, is in north-central North Dakota and is the 36th largest county in total land area of the 53 counties in the state encompassing 1,082 square miles. Of the 1,082 square miles, approximately 1,012 square miles of it is land areas (94.44 percent) and 70 square miles (5.56 percent) is water surface areas. The county is approximately forty-eight (48) miles from north to south and approximately sixteen (16) miles from east to west for its width from the southern borer to the city of Rugby. At the city of Rugby, the county's eastern border expands resulting in the county's width being thirty-six (36) miles from east to west for its northernmost quarter.

The 2010 population of the county is 4,357 people and has a population density of 4.27 people per square mile. A general map of the county showing jurisdiction locations, transportation routes, airports and bodies of water can be found in Chapter 9, Maps.

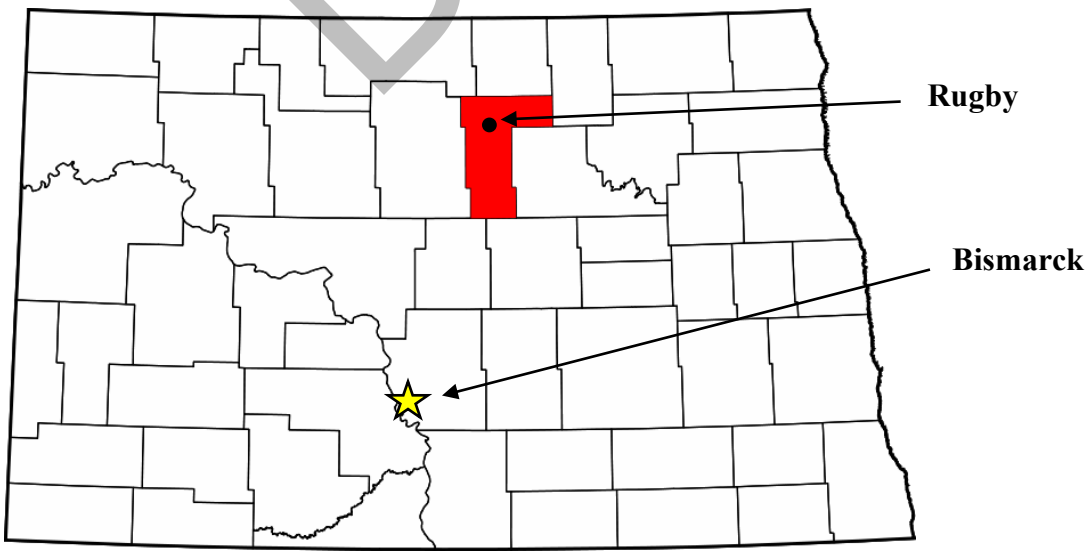
The county is bordered on the north and east by Bottineau County, on the north by Rollette County, on the east by Towner and Benson Counties, on the south by Sheridan and Wells Counties, and on the west by McHenry County. U.S. Highway 2, and N.D. Highways 3, 17 and 19 traverse the county.

The geographical center of North America is in Pierce County, North Dakota, about six miles (6) west of Balta. Rugby has a monument for the center at the intersection of U.S. Highway 2 and N.D. Highway 3.

There are thirty townships in the county and fifteen are organized. The fifteen organized townships are: Alexanter, Antelope Lake, Balta, Elling, Elverum, Hagel, Jefferson, Meyer, Ness, Reno Valley, Rush Lake, Tongerson, Truman, Tuscarora, and White.

Figure 3.1 – Location of Pierce County in the State of North Dakota

Pierce County, highlighted in red, is located north-northeast of the city of Bismarck, the state capitol, in north-central North Dakota. The location of the city of Rugby, the Pierce County Seat, is shown.



The incorporated jurisdictions in the county included in this plan are Balta, Rugby and Wolford. Census-designated places in the county include Barton, Orrin and Selz.

Climate and Geography

Information on climate, archeological and historic sites, geology, and natural resources of Pierce County, North Dakota, is provided in the following section.

The monthly average temperature, monthly average maximum temperature, monthly average minimum temperature, and average total precipitation are shown for Pierce County in Table 3.1. The monthly averages are based on information collected between 1981 and 2010 by the High Plains Regional Climate Center.

- The average temperature ranges from 6.67 degrees in January to 67.91 degrees in July.
- The average maximum temperature ranges from 16.95 in January to 80.55 in July.
- The average minimum temperature ranges from -3.63 in January to 55.16 in July.
- Average total precipitation ranges from approximately 0.45 inches in January to 3.39 inches in June.

Table 3.1 – 1981 to 2010 Pierce County, North Dakota, Average Monthly Climate Summaries

Pierce County	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temp (F)	6.67	11.61	24.05	40.89	53.31	62.75	67.91	66.55	55.74	42.06	25.16	10.43
Average Max. Temp (F)	16.95	22.14	33.89	53.33	66.09	74.79	80.55	80.20	69.15	54.20	35.02	20.45
Average Min. Temp (F)	-3.63	104	14.13	28.35	40.44	50.60	55.16	52.80	42.23	29.82	15.48	1.30
Average Total Precip. (in.)	0.45	0.49	0.76	1.12	2.49	3.39	2.93	2.24	1.62	1.40	0.77	0.54

Source: High Plains Regional Climate Center

Pierce County's geographic location results in a semi-arid continental climate characterized principally by marked fluctuations in daily and seasonal maximum and minimum temperatures, and light to moderate precipitation. The precipitation tends to be irregular in occurrence, amount, and area of coverage. The inconsistency of the county's weather arises from the interaction of three major air masses which originate in distinct global regions: cold, dry air from the polar region; warm, moist air from the Gulf of Mexico; and cool, moist air from the Northern Pacific. Both the temperature and the moisture characteristics of a Northern Pacific air mass change as the air moves across the Rocky Mountains. The resulting air, which is usually mild and dry, reinforces the continental nature of the county's climate. The polar air mass tends to dominate the other two, but its influence is considerably lessened during the summer.

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 32 degrees Fahrenheit (F) or lower in the fall. The length of the freeze-free period

approximates the length of the growing season which ranges from 110 days to 129 days between May 23rd and September 11th. 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.

Archeological Sites

When considering mitigation projects, the jurisdictions will consider the impacts on historic and archeological sites. Pierce County has seven listing on the National Register of Historic Places: 1) Great Northern Passenger Depot (Amtrak Depot), 2) Old Mt. Carmel Cemetery, Wrought-Iron Cross Site, 3) St. Anselm's Cemetery, Wrought-Iron Cross Site, 4) St. Mathias Cemetery, Wrought-Iron Cross Site, 5) U.S. Post Office Rugby, 6) Episcopal Church, and 7) Pierce County Courthouse.

The Rugby Amtrak Depot was built in 1907 as the Great Northern Passenger Depot and is still in use as a depot. In 1987 the Lions Club chapter was among the groups involved in a restoration project for the station. The former Great Northern Depot was placed on the National Register of Historic Places on September 26, 1991.

St. Paul's Episcopal Church is an historic Episcopal building in Rugby. The Late Gothic Revival style of architecture by noted Grand Forks architect Joseph Bell DeRemer was built in 1903 to 1905 of local fieldstone with concrete mortar and wooden gables and roof. Its stained-glass windows which came from Holy Trinity Parish in New York City and arrived in poor condition were refitted by members of the congregation. Around 1968 the church closed and remained vacant until 1991 when a local undertaker bought it. On December 3, 1992, it was added to the National Register of Historical Places. Today it is the Victorian Dress Museum and Boutique.

Pierce County has over 1,400 historic and archeological sites. Of these sites, approximately 298 are prehistoric archeological, 61 are historic archeological, and 623 are architectural standing structures. There are also approximately 432 prehistoric/historic site leads that have not been confirmed.

Geology

Pierce County consists of rolling prairie broken by low hills and ridges with a few sharp peaks. Drainage is well developed in some parts of the county, but poorly developed in others. Drainage to the east consists of Sheyenne River tributaries (Red River of the North basin), and to the west consists of intermittent streams of the Souris River basin. The Devils Lake basin lies between the basins of the Red and Souris Rivers and is generally regarded as a closed basin. The land surface contains numerous not-drained depressions, commonly referred to as sloughs or prairie potholes.

Soil is the most important natural resource in the county. The crops produced and livestock that graze the grasslands are marketable products derived from the soil. It provides a growing medium for crops and for the grasses grazed by livestock. Economic mineral deposits include the sand and gravel materials, which are favorable for commercial excavation.

In January 1931, an U.S. Geological Survey determined the center of North America in Pierce County. The Survey Bulletin Number 817 states: "The geographic center on an area may be defined as that point

on which the surface of the area would balance if it were a plane of uniform thickness, or in other words the center of gravity of the surface. The triangular station is the reference point for all property lines and city, county, State and international boundaries on the North American Continent that are tied to the national triangulation network of the United States, Canada, Mexico, and Central America. This triangulation station is the base point of origin of geodetic positions and directions in the triangulation net of the United States because it is at the junction of the main east-west transcontinental triangulation arc stretching from the

Atlantic to the pacific Coast and the main north-south arc, which follows approximately the 98th meridian from the Canadian border to the Rio Grande. The following position should be considered as approximations only. North America Continent: Latitude 48° 21' 19" longitude 99 59 57 West.

The center is marked with a monument or cairn that is pyramid form in shape. It is 21 feet high, 6 feet wide at its base, and setting on a heart-shaped foundation. It was built across the highway, northwest of its present location, by W.B. Paterson and E.B. Paterson with the assistance from local Boy Scouts and other young men in the community. The Rugby Lions Club donated cement and other materials used in the construction. It was completed in August 1932. It remained at that location until July 1971 when U.S. Highway 2 became four lanes, and its location was becoming a frontage road. The monument was moved to its present location on the southeast corner of the intersection of U.S. Highway 2 and N.D. Highway 3. In 1955, work was done to beautify the area around the monument with a rock garden, an information board, and three new flagpoles representing each of the countries making up North America. (Canada, United States, and Mexico)

Natural Resources

Most of the county is nearly level to undulating, but some areas are rolling to steep. Native vegetation consists of a wide variety of grasses, forbs, shrubs, and trees. The most common herbaceous plants include bluestem, goldenrod, beggar weed, wheatgrass, grama, indiangrass, and fescue. Shrubs include snowberry, chokecherry, and juneberry. Common wetland plants are smartweed, saltgrass, cordgrass, rushes, sedges, reeds, and cattail. There are approximate 1,600 acres of native woodland. Most of this woodland is bur oak, American elm and green ash. The most common tree species include American elm, green ash, bur oak, quaking aspen cottonwood, boxelder, and various species of willow.

The **North Fork Sheyenne River** runs through the county. The following lakes are also found: Hurricane, Island, Grass, Eileen, Round, Horseshoe, Davis, and Sand. Dams include: Balta and Buffalo Lake.

The **Buffalo Lake National Wildlife Refuge** is a National Wildlife Refuge found in Pierce County. It is managed under J. Clark Salyer National Wildlife Refuge.

Recreation

Outdoor activities are at the center of the county's recreation resources. Hunting opportunities are abundant in the county whether its waterfowl, upland game, or big game. Rugby is located at the center of two major flyways, therefore surrounding them with a large concentration of Snow Geese, Canadian Geese, and many varieties of ducks offering a unique advantage for wildlife enthusiasts. Major

recreational areas in the county include: Sand Lake, Balta Dam, Davis Lake, and Buffalo Lake. Fishing is a popular sport year-round as local lakes offer excellent fishing, swimming, and camping. Major fishing areas available: are Sand Lake, Balta Dam, and Davis Lake. Developed facilities are available for such activities as fishing, boating, swimming, softball, basketball, camping, picnicking, horseshoes, golfing, rodeos, and car racing at the Geographical Center Speedway. The county also offers historical sites that bring history to life: Victorian Dress Museum, Geographical Center of North America, Northern Light Tower, and Niewoehner Bell Tower, Dale and Martha Hawk Museum, and Prairie Village Museum.

Watersheds

Watersheds are basin-like landforms defined by highpoints and ridgelines that descend into lower elevations. The form of the land dictates the flow of water from all streams and rainfall to a common outlet such as the outflow of a reservoir, mouth of a bay, or any point along a stream channel. The hydrography of Pierce County includes five watersheds summarized in Table 3.2. The following are key points describing each watershed. Square miles shown is for the entirety of the watershed and does not represent the extent of the watershed in Pierce County.

Table 3.2 – Pierce County, North Dakota, Watersheds

Watershed	Hydrologic Unit Code (HUC8)	Square Miles*
Devils Lake	09020201	3,840
Lower Souris River	09010003	4,992
Upper Sheyenne	09020202	1,883
Willow Creek	09010004	1,794

Source: N.D. State Water Commission, U.S. Geological Survey

- The Devils Lake Watershed covers the entire northeast section of Pierce County. The city of Wolford is in this watershed.
- The Lower Souris River Watershed covers a small section of Pierce County west of the city of Balta along the border with McHenry County.
- The Upper Sheyenne Watershed covers the southern half of Pierce County, including the city of Balta and the Census-Designated Places of Orrin and Selz.
- The Willow Creek Watershed cover the north-central and northwest portions of Pierce County, including the city of Rugby and Census-Designated Place of Barton.

A map of the watersheds in Pierce County can be found in Chapter 9, Maps.

Wildlife

When considering mitigation projects, the jurisdictions will consider the impacts on wildlife, especially endangered species. Public land provides excellent wildlife habitat. The U.S. Fish and Wildlife manages approximately 3,135 acres as waterfowl production areas and 1,875 acres as refuges. North Dakota Game and Fish manages approximately 3,500 acres of state-owned wildlife management areas.

Private landowners manage some areas of upland and wetland habitat primarily for wildlife. Some landowners, acting in the public interest, have conveyed their drainage rights on 90,207 acres of wetland to the federal government under the Small Acquisition Program.

A variety of seasonal and year-round birds including songbirds, hawks, eagles, falcons, marsh birds, and shorebirds heavily populate the county. Important game bird species include pheasant, partridge, duck, geese, and sharp-tailed grouse. Small mammals located within the area include mink, muskrat, beaver, jackrabbit, skunk, and fox. Larger mammals include white-tailed deer. Several species of fish live in the waters of the county. Among the most prevalent are northern pike, bullhead, and perch.

Endangered species. The only endangered species listed in Pierce County according to a report by the U.S. Fish and Wildlife, North Dakota Field Office, is the Whooping Crane. The Whooping Crane is the tallest bird in North America standing five feet tall with a wingspan of seven feet. The bird is white with black wingtips and red markings on the head. However, the younger birds have a brown-mottled appearance. Whooping cranes inhabit shallow wetland and can also be found in upland areas. The decline in number is due to the loss of habitat and shootings.

Threatened species. The piping plover is listed as threatened in Pierce County meaning that they are species which are likely to become endangered within the foreseeable future. The piping plover is a small shore line bird measuring six and one-half to seven inches long and is whitish on the underside and light brown on the wings, back, and top of head. Distinctive markings include single black bands across the chest and forehead. These birds are located along barren sand and gravel shorelines of lakes and rivers. Loss of habitat through reservoir construction, pesticides, cattle trampling, and wetland have caused the population of these birds to decline.

Candidate species. The U.S. Fish and Wildlife Service maintain a list of candidate species which may warrant listing as endangered or threatened; however, the data are inconclusive. Candidate species are not protected under the Endangered Species Act. In Pierce County, the Sprague's Pipit is listed as a candidate species.

Sprague's pipits are about 5.5 inches in length. The wings and tail are dark brown with two pale indistinct wing-bars and mostly white outer retrices, the crown, nape and upper parts are buffy with blackish streaking and the face is buffy with a pale eye-ring creating a large eyed appearance. Habitat loss, inappropriate management, nest predation, parasitism, energy development, climate change, and droughts are threats that currently or potentially effect Sprague's Pipits populations.

Demographics

Information on population and poverty for Pierce County is provided in the following section.

Population

Table 3.3 summarizes the population statistics for Pierce County. Population statistics for Pierce County for the years 1990, 2000, and 2010, and estimates for 2016, were obtained through the U.S. Census Bureau-Decennial Census. Population projections for 2020 and 2030 were calculated by applying previous decade population growth/decline statistics to 2010 population statistics. Statistics on population trends and projections are needed to understand the distribution of people across the county.

These statistics also highlight where potential future needs will be for emergency services based on population distribution growth and density.

The population of Pierce County has been declining for the past several decades despite efforts to create new businesses and new jobs. The decline in population is primarily due to mechanization of the agriculture sector and subsequent decreases in family size. Between 1990 and 2000, the county lost 7.5 percent of its population and an additional 6.8 percent between 2000 and 2010. However, decline has slowed and there is potential for growth. With an expected resurgence in energy development in the western portion of North Dakota, jobs and support services for this industry will disperse geographically. Thus, population growth and an increase in job opportunities and may occur in Pierce County over the next five years.

Table 3.3 – 1990 to 2030 Pierce County, North Dakota, Population Statistics

Jurisdiction	1990	2000	2010	Percent Change 1990 to 2000	Percent Change 2000 to 2010	Est.	Projections	
						2016	2020	2030
Pierce County	5,052	4,675	4,357	-7.5 percent	-6.8 percent	4,267	4,061	3,784
City of Balta	79	73	65	-7.6 percent	-11.0 percent	63	58	52
City of Rugby	2,909	2,939	2,876	1.0 percent	-2.1 percent	2,815	2,814	2,754
City of Wolford	56	50	36	-10.7 percent	-28.0 percent	35	26	19
Remainder of Co.	2,008	1,613	1,380	-19.7 percent	-14.4 percent	1,354	1,181	1,010

Source(s): 2010 U.S. Decennial Census, 2011 to 2015 American Community Survey 5-Year Estimate, Nexus Planning & Consulting, LLC

Poverty

Statistics on poverty in Pierce County, North Dakota and incorporated jurisdictions are provided by the 2011-2015 American Community Survey, 5-Year Estimate from the U.S. Census Bureau. Information shown includes number and percent of individuals with incomes below and above the poverty level. The 5-year estimate shows data that was collected by sampling households in Pierce County, North Dakota, between 2011 and 2015. Poverty statistics are important to understand where populations in poverty are living, which tend to be more vulnerable to natural hazards and man-made threats.

Table 3.4 summarizes poverty statistics in Pierce County, North Dakota, and incorporated jurisdictions.

Table 3.4 –2011 to 2015 Pierce County, North Dakota, Five-Year Estimate Poverty Statistics

Jurisdiction	TOTAL	Income Below Poverty Level	Income Above Poverty Level	Percent Below Poverty Level	Percent Above Poverty Level
Pierce County	4,204	693	3,511	16.5 percent	83.5 percent
City of Balta	150	33	117	22.0 percent	78.0 percent
City of Rugby	2,921	541	2,380	18.5 percent	81.5 percent
City of Wolford	26	4	22	15.4 percent	84.6 percent

Source(s): 2011-2015 American Community Survey 5-Year Estimates

The lack of reliable public and private transportation, inadequate childcare in rural areas, and everyday needs such as grocery stores, medical clinics, etc. are not readily available in areas of Pierce County, North Dakota, and may contribute to poverty.

Economy

Agriculture is the main economic enterprise in the county. Most of the farms in Pierce County, North Dakota, are diversified and derive income from a mix of commodities. The principal crops in the county are wheat. Other crop produced include, sunflowers, soybeans, oats, hay, alfalfa, flax seed, dry edibles peas, dry edible beans, corn, canola, and barley. (See table below)

Other sectors of the economy are comprised mostly of agricultural-related industries. The city of Rugby is home to a base of manufacturing entities and a regional hospital and clinics, which provide a base of workers in the healthcare industry.

Major Employers

The name and number of people employed by the largest employers in Pierce County, North Dakota, was provided by the Rugby Job Development Authority and is shown below. Information on major employers is important for mitigation measures to understand the extent of response and other resources needed to ensure continued operation of the economy in Pierce County, North Dakota. The following are key points:

- Heart of America Medical Center/Clinic: 300 employees
- TBEI/Rugby Manufacturing: 109 employees
- Rugby Public School: 121 employees
- Cenex/Envision: 68 employees
- City of Rugby: 15 full-time employees, 51 seasonal employees
- Pierce County: 45 employees
- Gooseneck Implement: 40 employees
- Heart of America Correctional and Treatment Center: 34 employees
- Center Mutual Insurance: 23 employees
- Northern Equipment: 19 employees
- Rugby Farmer's Union Elevator: 18 employees

Buildings and Infrastructure Overview

Information on publicly-owned and privately-owned buildings and property, critical facilities and infrastructure, and public services in Pierce County, North Dakota, is provided in the following section. This information is important to understand the value of buildings and property at risk, and resources available for each jurisdiction to use when mitigating natural hazards and man-made threats.

Publicly-Owned Buildings and Property

Table 3.5 summarizes information on publicly-owned buildings and the insurance limit valuation as of October, 2017 in Pierce County, North Dakota. Information on publicly-owned buildings is important in mitigation to understand the potential losses and what public assets are at risk to natural hazards and man-made threats. The insurance limit valuation and the combined total includes the building property, personal-property and outdoor property. More detailed information can be obtained by contacting the Pierce County, North Dakota, Auditor's Office. The following are key points.

- The insurance limit valuation of publicly-owned buildings in Pierce County, North Dakota, totals $9,610,922, of which $7,895,400 is building property, $1,520,886 is personal property and $194,636 is outdoor property. Out of 13 publicly-owned buildings in Pierce County, North Dakota, the city of Rugby contains the most publicly-owned buildings with eight valued at $9,221,674. The remaining publicly-owned buildings in Pierce County are in the cities of Balta (1) and Wolford (1), with the unincorporated communities of Barton, Sand Lake and Selz each containing one publicly-owned building.

- The Pierce County, North Dakota, Courthouse, with a building property insurance valuation of $5,868,900 and $1,193,220 in personal property is the most valuable publicly-owned asset in Pierce County.

Table 3.5 – October 2017 Pierce County, North Dakota, Publicly-Owned Buildings, and Insurance Limit Valuation

City	Number of Properties	Insurance Limit Valuation (total, all properties)
Balta	1	$95,622
Barton (unincorporated)	1	$54,700
Sand Lake (unincorporated)	1	$13,400
Rugby	8	$9,221,674
Selz (unincorporated)	1	$102,303
Wolford	1	$123,223
Total	**13**	**$9,610,922**

Source(s): Pierce County, North Dakota, Auditor's Office; N.D. State Fire and Tornado Fund

Storm Shelters

Storm shelters provide area of refuges for people during incidents of natural hazards or man-made threats. Information on storm shelters is necessary in mitigation planning to help reduce or eliminate loss of life. Table 3.6 shows information on storm shelters in Pierce County, North Dakota. Designated storm shelters in Pierce County, North Dakota, can provide an area of refuge for approximately 17 percent of the county's population. Additional buildings should be identified and retrofitted to increase the sheltering capacity of Pierce County, North Dakota.

Table 3.6 – 2017 Pierce County, North Dakota, Storm Shelters

Facility Name	Capacity	ADA Compliant	Pet Friendly
Memorial Hall	250	Partially	Yes
Rugby Armory	480	Partially	Yes
Total Capacity	**730**		

Source(s): N.D. Dept. of Emergency Services, WebEOC

Jurisdiction Buildings and Services Provided

Tables 3.7 to 3.11 profile the housing units, services, jurisdictional buildings, emergency response services, and utilities of Pierce County, North Dakota, and incorporated jurisdictions. An "X" indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or resource. Narratives detailing information for incorporated jurisdictions can be found in Chapter 8, Jurisdictions.

Structures

Housing units show where populations are located. Table 3.7 shows the number of single-family, multifamily, and mobile home structures in Pierce County, North Dakota, and incorporated jurisdictions. The following are key points:

- Single-family housing units comprise 77.5 percent of all housing units in Pierce County.
- Multifamily housing units comprise 15.1 percent of all housing units in Pierce County.
- Mobile homes comprise 7.4 percent of all housing units in Pierce County.

Table 3.7 – 2011 to 2015 Housing Units in Pierce County, North Dakota,

Housing Units	County – outside cities	City of Balta	City of Rugby	City of Wolford	TOTAL
Single-Family Homes	527	47	1,175	21	1,770
Mobile Homes/Boat/RV/Van	66	3	98	1	168
Multifamily Homes/Units	4	3	337	0	344
TOTAL	**597**	**53**	**1,610**	**22**	**2,282**

Source(s): 2011-2015 American Community Survey 5-Year Estimates

- Pierce County, North Dakota, is highly urbanized with most types of housing units concentrated in the city of Rugby. The city of Rugby contains 66.4 percent of all single-family homes, 58.3 percent of all mobile homes/boat/RV/van, and 98.0 percent of all multifamily homes/units in Pierce County.
- The housing stock in the city of Balta consists of 53 total housing units, of which 47 are single-family homes (88.7 percent), three mobile homes (5.7 percent) and three multifamily homes/units (5.7 percent).
- The housing stock in the city of Wolford consists of 22 total housing units, of which 95 percent are single-family homes (21) with one mobile home and no multifamily homes.
- Single-family homes outside incorporated jurisdictions comprise 29.8 percent of all single-family homes in Pierce County.
- Approximately 39.3 percent of mobile homes in Pierce County, North Dakota, are located outside incorporated jurisdictions.
- There are four multifamily homes located in Pierce County, North Dakota, are outside incorporated jurisdictions.

Table 3.8 shows the services provided in the county and city jurisdictions.

Table 3.8 – Services Provided in Pierce County, North Dakota, Jurisdictions

	Services	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Garbage Collection: Rugby Sanitation	X		X	
2	Garbage Collection: Waste Management		X	X	X
3	Inert Landfill	X		X	
4	Lagoon cells		1	4	
5	Landfill	*	*	*	*
6	Lift Station(s)		1	8	
7	Newspaper: Minot Daily News	X	X	X	X
8	Newspaper: Pierce County Tribune	X	X	X	X
9	Sanitary Sewer System		X	X	
10	Septic Systems	X		X	X
11	Storm Water System		X	X	
12	Water: All Seasons Water Users District	X	X	X	X
13	Water: Central Plains Water District	X			
14	Water: Individual Well	X	X	X	X
15	Water: Municipal Well			X	

*Denotes services available to jurisdictions through another jurisdiction or private companies located in neighboring jurisdictions.

1. Rugby Sanitation is a private entity providing garbage collection services to Pierce County residents outside incorporated jurisdictions and the city of Rugby.
2. Waste Management does not provide garbage collection services Pierce County residents outside incorporated jurisdictions.
3. Pierce County does not have an inert landfill. The city of Rugby maintains an inert landfill which is open to all Pierce County residents for a fee.
4. Pierce County does not maintain a county-wide sanitary sewer system and therefore does not have lagoon cells.
5. Pierce County does not maintain a county-wide landfill. Rugby Sanitation which provides garbage services to county residents and has a landfill.
6. Pierce County does not maintain a county-wide sanitary sewer system and therefore does not have any lift stations.
7. Minot Daily News is delivered to Pierce County residents outside incorporated jurisdictions by mail.
8. The Pierce County Tribune is the official newspaper for Pierce County.
9. Pierce County does not maintain a county-wide sanitary sewer system.
10. Septic systems are utilized by Pierce County residents outside incorporated jurisdictions.
11. The storm water system for Pierce County consists of drainage ditches and culverts maintained by the Pierce County Road Department.
12. All Seasons Water Users District provides drinking/potable water to Pierce County residents outside incorporated jurisdictions.

13. Central Plains Water District provides drinking/potable water to Pierce County residents living in unincorporated Selz and Hagel Township.
14. There are residents in Pierce County that obtain drinking/potable water by individual wells.
15. Pierce County does not have or maintain a municipal drinking/potable water system.

Table 3.9 shows the emergency response services and facilities in each jurisdiction. Due to the small size of some jurisdictions, services are provided by outside entities or jurisdictions.

1. Heart of America Medical Center (HAMC) provides ambulance services to Pierce County residents.
2. Harvey Ambulance provides ambulance service to Hagel, Truman, White, Hillside, Alexanter and Antelope Lake Townships in southern Pierce County.
3. Pierce County does not maintain a county-wide ambulance service and therefore does not have an ambulance hall.
4. Pierce County does not have a crash rescue unit. A crash rescue unit is available through Rugby Fire Department and Rugby Rural Fire Protection District.
5. Pierce County does not maintain a county-wide volunteer fire department. The Rugby Rural Fire Protection District, Wolford Rural Fire Protection District and fire departments/districts in neighboring counties provides fire protection services to Pierce County residents outside incorporated jurisdictions.
6. Pierce County does not maintain a county-wide volunteer fire department and therefore does not have a fire hall.
7. The Pierce County Sheriff's Office has first responders specific to Pierce County residents. Heart of America Medical Center maintains a program identifying first responders specific to county townships.
8. The hazardous materials response unit in the city of Devils Lake is called when response to hazardous material incidents is necessary in Pierce County.
9. Heart of America Medical Center (HAMC) is a regional hospital located in the city of Rugby serving Pierce County and the surrounding area.
10. Pierce County Sheriff's office provides law enforcement services to Pierce County residents outside incorporated jurisdictions.
11. The Rugby Police Department serves the city of Rugby and is located in the Pierce County Law Enforcement Center.
12. The Pierce County Law Enforcement Center located in the city of Rugby is the law enforcement center for the county and all incorporated jurisdictions.
13. The Rugby Rural Fire Protection District has a quick response unit.
14. All specialty units for response purposes such as bomb squad or search and rescue are available from emergency services located in the cities of Devils Lake and Minot.
15. The N.D. Bureau of Criminal Investigation and the N.D. Highway Patrol have offices in the Pierce County Law Enforcement Center located in the city of Rugby.

The Heart of America Medical Center, located in Rugby, provides hospital services, clinic services, ambulance services, and nursing home care for the county. The county relies upon a major trauma center located in Minot, N.D., about 70 miles west of Rugby.

Table 3.9 – Pierce County Jurisdictional Emergency Response Services and Facilities

	Emergency Response Services/Facilities	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Ambulance Service: Heart of America Medical Center	X	X	X	X
2	Ambulance Service: Harvey Ambulance	X			
3	Ambulance Hall			X	
4	Crash Rescue Unit				
5	Fire Department	*	*	X	X
6	Fire Hall			X	X
7	First Responders	X		X	X
8	Hazardous Materials Response Unit: Devils Lake	*	*	*	*
9	Hospital: Heart of America Medical Center	*	*	X	*
10	Law Enforcement: Pierce County Sheriff's Office	X	*	X	*
11	Law Enforcement: Rugby Police Department	*	*	X	*
12	Law Enforcement Building: Pierce County Law Enforcement Ctr.	X	*	X	*
13	Quick Response Unit	*	*	X	X
14	Specialty Units (Bomb Squad, Dive Rescue, Search & Rescue, etc.):	*	*	*	*
15	State Specialty Units: Bureau of Criminal Investigation, N.D. Highway Patrol	X	*	X	*

*Denotes emergency response services available to jurisdiction through another jurisdiction or private companies located in neighboring jurisdictions.

Table 3.10 shows the publicly-owned buildings in each jurisdiction by type. A majority of publicly owned buildings in Pierce County are in the city of Rugby. Building marked with an asterisk (*) are considered publicly-owned by the county and located in a specific city, or the building is a shared resource with another community.

1. The city of Rugby has an airport located outside city limits in Pierce County.
2. Pierce County does not have an American Red Cross Shelter. However, the Armory, Memorial Hall and the Pierce County Courthouse have been designated by the American Red cross as temporary shelters during emergency incidents.
3. Pierce County has an Armory, but it is owned by the city of Rugby and is in the city of Rugby.
4. Pierce County has a Memorial Hall owned and operated by the county but is in the city of Rugby.
5. Pierce County does not have a city hall.
6. Pierce County does not maintain city shops.
7. Pierce County does not have a community center.
8. Pierce County maintains county shops in the cities of Balta, Rugby and Wolford, and in unincorporated Selz.
9. The Pierce County Courthouse is in the city of Rugby.
10. The Pierce County Fairgrounds is in the city of Rugby.
11. There are no federal buildings in Pierce County located outside of the city of Rugby.
12. Pierce County does not maintain a county-wide volunteer fire department and therefore does not have a fire hall.

13. The city of Rugby has a golf course located outside city limits in Pierce County.
14. The Pierce County Public Health Department is in the Pierce County Courthouse in the city of Rugby.
15. The Pierce County Road Department is in the Pierce County Courthouse in the city of Rugby.
16. The Pierce County Law Enforcement Center in the city of Rugby is the law enforcement center for the county and all incorporated jurisdictions.
17. Pierce County maintains a public library in conjunction with the city of Rugby.
18. Pierce County maintains public parks in unincorporated Barton, and recreation areas adjacent to the Balta Dam, Buffalo Lake and Sand Lake
19. Pierce County does not have a public school.
20. The Pierce County Road Department serves as the public works department for the county.
21. All Seasons Water Users District operated a maintenance building in the city of Rugby.
22. The Pierce County Sheriff's Office is in the Pierce County Law Enforcement Center in the city of Rugby.
23. The North Dakota Highway Department maintains a state shop in the city of Rugby.
24. Pierce County does not have an American Red Cross Shelter. However, the Armory, Memorial Hall and the Pierce County Courthouse have been designated by the American Red cross as temporary shelters during emergency incidents.
25. Pierce County does not have a community swimming pool.
26. The U.S.D.A. has an office in Pierce County in the city of Rugby.
27. Pierce County does not have a U.S. Post Office.
28. Pierce County does not have a university or secondary education. Distance-based learning options are available for public school students in the city of Rugby.
29. Pierce County has a water resource board with an office in the Pierce County Courthouse in the city of Rugby.

Table 3.10 – Pierce County Publicly-Owned Jurisdictional Buildings

	Jurisdictional Buildings	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Airport	*		*	
2	American Red Cross Shelter	*		*	X
3	Armory or American Legion	X*		X*	
4	Auditorium or Memorial Hall	*		*	
5	City Hall		X	X	X

* denotes that the publicly-owned building is both listed under county and the city of Rugby, the county seat, or another jurisdiction.

Table 3.10 – Pierce County, North Dakota, Publicly-Owned Jurisdictional Buildings - Continued

	Jurisdictional Buildings	Pierce County	City of Balta	City of Rugby	City of Wolford
6	City Shop			X	X
7	Community Center			X	X
8	County Shop	*	*	*	*
9	Courthouse	*		*	
10	Fairgrounds	*		*	
11	Federal Buildings			*	X
12	Fire Hall			X	X
13	Golf Course	*		*	
14	Health Department	*		*	
15	Highway/Road Department	*		*	
16	Law Enforcement Center	*		*	
17	Library	*		*	X
18	Park	X	X	X	X
19	Public School			X	X
20	Public Works	X		X	
21	Rural Water District	*		*	
22	Sheriff's Office	*		*	
23	State Shop			X	
24	Storm Shelter	*		*	X
25	Swimming Pool			X	
26	U.S.D.A. Farm Services Agency	*		*	
27	U.S. Post Office			X	X
28	University or Secondary Education				
29	Water Resource Board	*		*	

* denotes that the publicly-owned building is both listed under county and the city of Rugby, the county seat, or another jurisdiction.

Table 3.11 shows the utility providers for jurisdictions in Pierce County. Some providers for utilities, such as fuel oil and propane are unknown as residents choose providers on an individual basis.

1. Dish Network provides cable to Pierce County residents outside incorporated jurisdictions.
2. Midcontinent provides cable to Pierce County residents outside incorporated jurisdictions.
3. N.D. Telephone Company provides cable to Pierce County residents outside incorporated jurisdictions.
4. Cable is also provided via Satellite/DirecTV/Dish Network to Pierce County residents outside incorporated jurisdictions.
5. North Central Electric Cooperative provides electricity to Pierce County residents outside incorporated jurisdictions in northern portions of the county.
6. Northern Plains Electric Cooperative provides electricity to Pierce County residents outside incorporated jurisdictions in central portions of the county.

7. Otter Tail Power Company does not provide electricity Pierce County residents outside incorporated jurisdictions.
8. Verendrye Electric Cooperative provides electricity to Pierce County residents outside incorporated jurisdictions in southern portions of the county.
9. Fuel oil is provided by individual entities to Pierce County residents outside incorporated jurisdictions.
10. Midcontinent provides internet services to Pierce County residents outside incorporated jurisdictions.
11. N.D. Telephone Company provides internet services to Pierce County residents outside incorporated jurisdictions.
12. Internet service is also provided via Satellite/DirecTV/Dish Network to Pierce County residents outside incorporated jurisdictions.
13. Natural gas service is not available to Pierce County residents.
14. Cellular phone service is provided by AT&T and Verizon, and Smart Talk/Trac Phones to Pierce County residents.
15. Midcontinent provides landline phone service to Pierce County residents outside incorporated jurisdictions.
16. N.D. Telephone Company provides landline phone service to Pierce County residents outside incorporated jurisdictions.
17. Propane is provided by individual entities to Pierce County residents outside incorporated jurisdictions.
18. All Seasons Rural Water District provides drinking/potable water to Pierce County residents outside incorporated jurisdictions.
19. Central Plains Water District provides drinking/potable water to Pierce County residents outside incorporated jurisdictions.
20. There are residents in Pierce County that obtain drinking/potable water by individual wells.
21. Pierce County does not have or maintain a municipal drinking/potable water system.

Table 3.11 – Utility Providers Serving Pierce County, North Dakota, and Incorporated Cities

	Utility Providers	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Cable: Dish Network	X	X	X	X
2	Cable: Midcontinent			X	
3	Cable: N.D. Telephone Company	X		X	
4	Cable: Satellite/DirecTV	X	X	X	X
5	Electricity: North Central Electric Cooperative – northern county	X			
6	Electricity: Northern Plains Electric Cooperative – central	X			X
7	Electricity: Ottertail Power Company		X	X	X
8	Electricity: Verendrye Electric Cooperative	X			

Table 3.11 – Utility Providers Serving Pierce County, North Dakota, and Incorporated Cities - Continued

	Utility Providers	Pierce County	City of Balta	City of Rugby	City of Wolford
9	Fuel Oil	X	X	X	X
10	Internet: Midcontinent	X	X	X	X
11	Internet: N.D. Telephone Company	X	X	X	X
12	Internet: Satellite/DirecTV/Dish Network	X	X	X	X
13	Natural Gas				
14	Phone (cellular): AT&T, Verizon, Smart Talk/Trac Phones		X	X	X
15	Phone (landline): Midcontinent	X	X	X	
16	Phone (landline): N.D. Telephone Company		X	X	X
17	Propane	X	X	X	X
18	Water: All Seasons Rural Water District	X		X	X
19	Water: Central Plains Water District	X			
20	Water: Individual Well	X	X	X	X
21	Water: Municipal Well	X		7	

Transportation

Transportation systems are critical to continued economic operation of any jurisdiction. The mitigation strategy for Pierce County identifies mitigation measures specific to the county's transportation system in Pierce County. This section provides information to assist in accomplishing these mitigation measures.

Airports

Information regarding airports in Pierce County is summarized in Table 3.12 and was obtained from the N.D. Aeronautics Commission (NDAC) and Air NAV. The NDAC was established in 1947 by the state legislature, assigning responsibility for state aviation functions and serves the public by providing economic and technical assistance for the aviation community. Air NAV is a website that publishes aeronautical and airport information released by the Federal Aviation Administration (FAA).

There is not a commercial passenger airport in Pierce County. The Rugby Municipal Airport Authority owns and operates the Rugby Municipal Airport approximately two miles northwest of the city of Rugby. The data shown for aircraft operations was collected for a 12-month period ending October 21, 2014. The Rugby Municipal Airport experienced an average of 78 aircraft operations per week, consisting of 64 percent local general aviation, 27 percent transient general aviation, seven percent air taxi and one percent military.

It should be noted that despite information being available for one airport in Pierce County, many private airstrips are located throughout the county and are used for spraying of crops or other economic or

agricultural purposes. The location and size of these airstrips is not available. An aerial map of the Rugby Municipal Airport is shown in Chapter 9, Maps.

Table 3.12 – Pierce County, North Dakota, Airports

Airport	Jurisdiction	Airport Operational Statistics
Rugby Municipal Airport	City of Rugby	• Operations avg. 78/week • 64 percent local general aviation • 27 percent transient general aviation • Seven percent air taxi • One percent military

Sources: N.D. Aeronautics Commission, AirNAV

Bridges

Bridges are critical links in creating and maintaining a unified transportation system. Information on the condition of bridges in Pierce County assists local leaders in development mitigation projects prioritizing funding for bridges. The N.D. Dept. of Transportation classifies all bridges, regardless of jurisdiction oversight, as structurally deficient or functionally obsolete. The classifications are as follows:

- **Structurally Deficient:** Bridge condition warrants attention and does not mean it is unsafe.
- **Functionally Obsolete:** Bridge does not meet certain design standards and has nothing to do with structural integrity of the bridge.
- **Scour-Critical:** Bridge foundation is determined to be unstable for the calculated scour conditions. Scour-critical bridges may be vulnerable during flooding.

The following information on bridges in Pierce County was provided by the 2014 N.D. Multi-Hazard Mitigation Plan.

- Pierce County has four structurally deficient county bridges
- Pierce County does not have any functionally obsolete bridges
- Pierce County does not have scour-critical bridges

Railroad (Freight and Passenger)

The railroad is another critical link in a unified transportation system. The railroad system in Pierce County consists of freight and passenger railways. Both systems are necessary in mitigation to support economic well-being and reduce and/or eliminate secondary impacts from natural hazards and man-made threats. The freight railroad system in Pierce County is part of the Burlington Northern Santa Fe (BNSF) Twin Cities Division and Subdivisions. Those systems are shown in Table 3.13.

Table 3.13 – 2017 Pierce County, North Dakota, Railroads

Railroad	Subdivision	Length	Max. Speed	Max. Gross Weight Per Car
BNSF	Westhope	40.1 Miles	25 to 30 mph	286,000
BNSF	KO	203.2 Miles	70 mph	286,000
BNSF	Devils Lake	149.9 Miles	45to 60 mph	286,000

* Tons generated are based on a 3-year average from 2002 to 2003.

Source(s): 2040 North Dakota State Rail Plan, Dec. 2017

Passenger Rail. Passenger rail service is provided by Amtrak. Daily passenger service is available going east and west from the Rugby Amtrak Depot. Of the seven North Dakota stations served by Amtrak, Rugby was the least-busiest in 2016, accommodating approximately 4,160 passengers that year. Ridership in 2016 is down 2,896 (41.04 percent) from its peak of 7,057 in 2012. The platform, tracks, and station are all owned by BNSF Railway. Table 3.14 shows Amtrak ridership by station in North Dakota.

Table 3.14 – 2008 to 2018 North Dakota Amtrak Rail Ridership by Station

Station	2008	2009	2010	2011	2012	2013	2014	2015	2016
Devils Lake	6,860	5,740	6,148	4,569	5,505	5,142	3,555	3,512	4,223
Fargo	24,142	21,514	21,286	16,968	20,304	22,947	23,314	22,829	21,495
Grand Forks	21,942	17,928	19,641	16,935	20,028	19,141	13,976	12,131	13,882
Minot	41,754	38,418	39,585	28,217	36,285	40,595	34,834	31,827	29,424
Rugby	7,048	5,906	6,409	6,106	7,057	5,637	4,053	4,254	4,161
Stanley	3,694	3,921	4,549	6,146	10,234	9,411	7,036	6,514	5,133
Williston	23,619	21,793	24,586	29,920	54,324	51,076	44,013	38,477	27,845

Source(s): 2040 North Dakota State Rail Plan, Dec. 2017

Roads

Roads are also a critical link in a unified transportation system. The primary source of passenger transportation in Pierce County occurs on roads. The road system in Pierce County consists of national, state and county highways and is critical in mitigation as road projects are some of the most complex projects to accomplish.

National. U.S. Highway 2 is an east-west national highway traversing 2,571 miles from Maine to Washington (state). The highway is a four-lane divided highway like the interstate but does not have grade-separated crossing or entry/exit points.

State. The state highway system in Pierce County consists of N.D. Highways 3, 17 and 19.

County. The county highway system consists of 1,100 miles of bladed gravel county roads.

New and Future Development

New and future developments for incorporated jurisdictions in Pierce County are discussed below. . Analyzing development trends is important for mitigation to understand where projects are needed and funding is best allocated. Additional information for new and future development occurring over the last five years can be obtained by contacting the mayor of each city.

Pierce County, North Dakota

New Development. in Pierce County over the last five years includes: development of a residential subdivision in Hillside Township and conversion of the old jail into the county social services office.

Future Development. New development in Pierce County includes construction of hog barns outside the city of Wolford and potential expansion of the existing Rugby Wind Farm.

City of Rugby, North Dakota

New Development. The following new development has occurred in the city of Rugby since the 2011 mitigation plan.

- Construction of the First International Bank at the intersection of U.S. Highway 2 and N.D. Highway 3
- An addition onto the Rugby High School
- Farm Credit Services and Gooseneck Implement constructed new facilities along U.S. Highway 2 in southeastern Rugby
- Rugby Farmer's Union Elevator expanded its elevator in the city of Rugby and added storage units
- Ideal Seeds constructed a new building in the Rugby Extraterritorial Area
- Construction of the Cobblestone Motel
- New car wash by Cenex
- Family Dollar
- La Bella Vita Salon
- The city averages construction of four new single-family homes annually.

Future Development. The following future development is planned or proposed in the city of Rugby:

- Chalmers Addition consisting of 44 lots designated for development of single-family or multifamily homes
- Annexation of approximately 140+ acres for commercial and industrial development in the southeastern portion of the city.
- The Rugby Economic Development Corporation has approximately four lots for commercial and/or industrial development in the Rugby Industrial Park.
- The Rugby Farmer's Union Elevator is currently expanding its elevator and constructed addition storage units.
- The Rugby underpass is slated for complete reconstruction by the N.D. Dept. of Transportation started in 2018 and ending in 2020.

4. Threat and Hazard Identification and Risk Assessment (THIRA)

Pierce County, North Dakota, has a history of damages to crops, livestock, people and property from natural hazards and man-made threats. The Steering Committee, county and city officials, and members of the public identified nine hazards and threats to be included in this plan because risk analysis showed that mitigation, planning, response, and preparedness would assist in limiting injury, loss of life, and loss of property. The following sections of this chapter detail the risk assessment and profile each natural hazard and man-made threat for Pierce County, North Dakota, and its jurisdictions.

The 14 natural hazards and man-made threats are:

- Civil Disturbance
- Criminal, Terrorist, or Nation/State Attack
- Cyberattack
- Dam Failure
- Drought
- Fire (Urban/Structure & Wildland)
- Flood (Overland & Riverine)
- Geologic Hazards
- Hazardous Material Release
- Infectious Disease & Pest Infestations – Animal, Human & Plant
- Severe Summer Weather
- Severe Winter Weather
- Space Weather
- Transportation Incident

Pierce County, North Dakota, history shows a high risk of damage from disasters. The North Dakota Presidential Disaster Declaration map in Figure 4.1 shows that North Dakota and Pierce County, North Dakota, are among areas in the nation with the most presidential disaster declarations in the past 50+ years.

As indicated in Figure 4.1, Pierce County, North Dakota, parts of central North Dakota and the eastern third of North Dakota have had high frequencies of Presidential Disaster Declarations as shown by the dark shading of the counties. The frequency of declarations for severe storms and flooding highlights the need for continued mitigation in Pierce County, North Dakota, pertaining to these disasters. The following are key points:

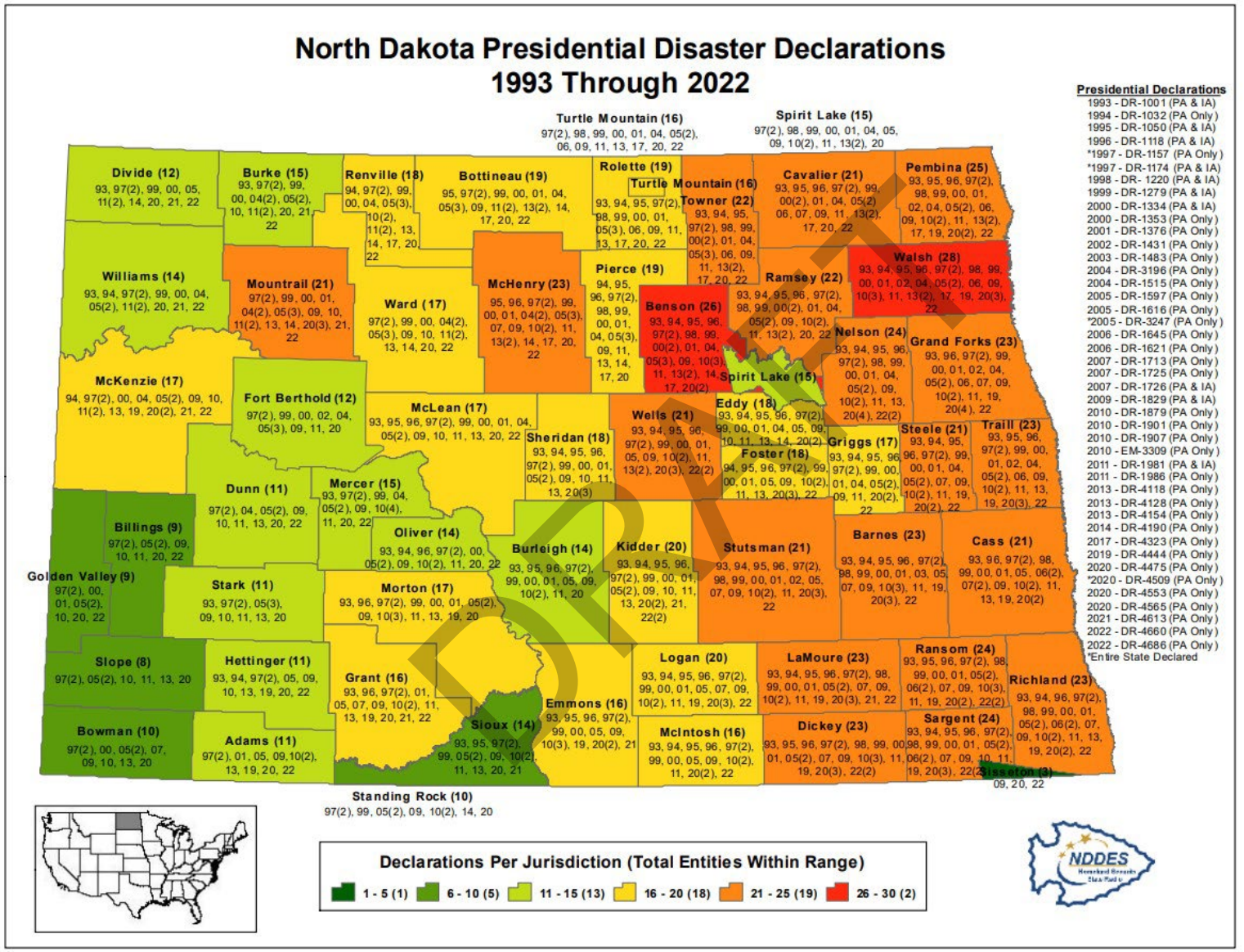
- Pierce County has had 23 Presidential Disaster Declarations (Table 4.1), including declarations for blizzards, flooding, ground saturation, ice jams, severe storms, and snowmelt.

- Approximately 74.0 percent of the declarations (17) have occurred during the months of April, May, June, and July of any given year.

- No declarations have been declared in Pierce County, North Dakota, during the months of February, October, or December.

- These declarations highlight the level of losses experienced in Pierce County, North Dakota, and the value of mitigation to reduce and/or eliminate losses to people and property.

Figure 4.1 – 1993 to 2022 North Dakota Presidential Disaster Declarations



Source(s): N.D. Dept. of Emergency Services (NDDES), Federal Emergency Management Agency (FEMA)

Table 4.1 – 1953 to 2022, Pierce County, North Dakota, Presidential Disaster Declarations

Year	Disaster Description/Title	Disaster Number
1969	Flooding	256
1974	Heavy Rains, Snowmelt & Flooding	434
1979	Severe Storms, Snowmelt & Flooding	581
1994	Severe Storms, Flooding	1032
1995	Severe Storms, Flooding, and Ground Saturation	1050
1996	Severe Storms, Flooding, & Ice Jams	1118
1997	Severe Winter Storms and Blizzard Conditions	1157
1997	Severe Flooding, Severe Winter Storms, Snowmelt, Spring Rains	1174
1998	Flooding, Ground Saturation, Severe Storms	1220
1999	Severe Storms, Flooding, Snow, Ice Ground Saturation, Landslides, and Mudslides	1279
2000	Severe Storms, Flooding and Ground Saturation	1334
2001	Severe Storms, Flooding, & Ground Saturation	1376
2004	Severe Storms, Flooding, and Ground Saturation	1515
2005	Hurricane Katrina Evacuation	3247
2005	Severe Storms, Flooding, and Ground Saturation	1597
2005	Severe Winter Storm and Record and/or Near Record Snow	1616
2009	Severe Storms and Flooding	1829
2011	Flooding	1981
2013	Severe Storms and Flooding	4128
2014	Severe Storms and Flooding	4190
2017	Flooding	4323
2020	Biological	3477
2020	Biological	4509

Source: FEMA

Risk Assessment Methodology

A risk assessment is process that collects information on the risk of natural hazards and man-made threats to incorporated jurisdictions, and assigns values to those risks to assist with:

1. Identifying and/or comparing courses of action
2. Developing priorities for future mitigation
3. Inform decision-making on creating a local mitigation strategy
    - Foundation for mitigation strategy development

The risk assessment was conducted using the scoring and ranking process found on the following pages.

Table 4.2 summarizes the risk assessment scoring of the natural hazards and man-made threats for Pierce County, North Dakota, and incorporated jurisdictions, and is repeated in Chapter 8, Jurisdictions.

IMPACT is what damage or losses the hazard causes in a community.

Scored 1 Negligible – Minimal damage to jurisdiction infrastructure, people, and/or property
Scored 2 Limited – Noticeable damage to jurisdiction infrastructure, people, and/or property
Scored 3 Critical – Considerable damage to jurisdiction infrastructure, people, and/or property
Scored 4 Catastrophic – Substantial damage to jurisdiction infrastructure, people, and/or property

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FREQUENCY is how often the hazard occurs.

Scored 1 Never – history of events shows the hazard/threat has never occurred
Scored 2 Occasional – history of events shows the hazard/threat occurs every few years
Scored 3 Frequent – history of events shows the hazard/threat occurs once or twice annually
Scored 4 Very Frequent – history of events shows the hazard/threat is commonplace

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LIKELIHOOD is how probable it is that the hazard will happen.

Scored 1 Unlikely – No chance hazard/threat will occur
Scored 2 Possible – 25% chance hazard/threat will occur
Scored 3 Likely – 50% chance hazard/threat will occur
Scored 4 Highly likely – 100% chance hazard/threat will occur

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VULNERABILITY is the amount of:

1. vulnerable areas: mobile home neighborhoods, infrastructure, low-lying elevation, blocked roads
2. vulnerable population: individuals with special needs, day cares, elderly, care centers, and schools
3. resources: such as jurisdiction equipment, staff, plans, policies, services, and funding or lack thereof.

Who and what is affected? When? Identify specific areas of vulnerability. Who responds to the hazard/threat impact? What you have or lack: Equipment, vehicles, services available, shelters, buildings, and infrastructure

Scored 1 **No vulnerability:** No areas/populations and sufficient resources to address any hazard/threat
Scored 2 **Moderate vulnerability:** Some areas/populations and various resources in the jurisdiction
Scored 3 **High vulnerability:** Areas/populations and little resources in the jurisdiction
Scored 4 **Very high vulnerability:** Numerous areas/populations and no resources in the jurisdiction

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CAPABILITY is the ability of jurisdictions to mitigate hazard with resources (i.e., buildings, infrastructure, equipment, personnel, plans, technical, financial/tax base). Capabilities are divided into four categories:

Scored 1 **No capability:** Little to no ability of the jurisdiction to implement mitigation actions
Scored 2 **Moderate capability:** Some abilities of the jurisdiction to implement mitigation actions
Scored 3 **High capability:** Sufficient abilities of the jurisdiction to implement mitigation actions
Scored 4 **Very high capability:** Exceptional abilities of the jurisdiction to implement mitigation actions

The formula to determine the total is: Impact plus Frequency plus Likelihood plus Vulnerabilities minus Capabilities equals Total. Higher total scores indicate more vulnerability, and lower scores indicate less vulnerability.

Table 4.2 – Pierce County, North Dakota, Jurisdiction Risk Assessment Scoring Summary

Risk Assessment			**Jurisdiction:**	**Pierce County, North Dakota**		
Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Civil Disturbance	3	2	2	2	1	**8**
Criminal, Terrorist or Nation-State Attack	2	3	3	3	1	**10**
Cyberattack	4	2	4	4	3	**11**
Dam Failure	4	1	2	2	4	**5**
Drought	4	4	4	4	2	**14**
Fire – Urban/Structure Collapse	4	3	3	2	3	**9**
Fire – Wildland (including Rural)	4	3	4	4	2	**13**
Flood	4	4	4	4	2	**14**
Geologic Hazards	2	3	4	2	2	**9**
Hazardous Material Release	4	2	4	3	2	**11**
Infectious Disease – Human	4	4	4	3	2	**13**
Infectious Disease – Animal & Plant	4	4	4	3	2	**13**
Severe Summer Weather	4	4	4	3	2	**13**
Severe Winter Weather	4	4	4	4	1	**15**
Space Weather	4	1	4	4	2	**11**
Transportation Incident	4	2	4	3	2	**11**

Risk Assessment			**Jurisdiction:**	**City of Balta, North Dakota**		
Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Civil Disturbance						
Criminal, Terrorist or Nation-State Attack						
Cyberattack						
Dam Failure						
Drought						
Fire – Urban/Structure Collapse						
Fire – Wildland (including Rural)						
Flood						
Geologic Hazards						
Hazardous Material Release						
Infectious Disease						
Severe Summer Weather						
Severe Winter Weather						
Space Weather						
Transportation Incident						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.2 – Pierce County, North Dakota, Jurisdiction Risk Assessment Scoring Summary

Risk Assessment			**Jurisdiction:**	**City of Rugby, North Dakota**		
Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Civil Disturbance						
Criminal, Terrorist or Nation-State Attack						
Cyberattack						
Dam Failure						
Drought						
Fire – Urban/Structure Collapse						
Fire – Wildland (including Rural)						
Flood						
Geologic Hazards						
Hazardous Material Release						
Infectious Disease						
Severe Summer Weather						
Severe Winter Weather						
Space Weather						
Transportation Incident						

Risk Assessment			**Jurisdiction:**	**City of Wolford, North Dakota**		
Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Civil Disturbance						
Criminal, Terrorist or Nation-State Attack						
Cyberattack						
Dam Failure						
Drought						
Fire – Urban/Structure Collapse						
Fire – Wildland (including Rural)						
Flood						
Geologic Hazards						
Hazardous Material Release						
Infectious Disease						
Severe Summer Weather						
Severe Winter Weather						
Space Weather						
Transportation Incident						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

4.1 Civil Disturbance

Including events arising due to political grievances, economic disputes or social discord, terrorism, or foreign agitators.

Characteristics

Civil disturbance is activity from large groups, organizations, or distraught individuals with potentially disastrous or disruptive results.

Seasonal Pattern	None. Extreme winter weather can limit or eliminate activity altogether. More domestic activity during holidays.
Duration	Minutes/hours/days/weeks/months/potentially a year or more.
Speed of Onset	Little to no warning or several days/weeks.
Location	The total geographic extent of Pierce County, North Dakota. Most likely targeting critical facilities and infrastructure such as government facilities (city halls, courthouses, fire halls, public works), medical facilities, major employers, roads/highways, and railroad infrastructure, or chemical and oil and gas infrastructure such as pipelines and Tier II Sites. • Pierce County Courthouse • Heart of America Medical Center • Heart of America Correctional and Treatment Center (which serves as the Pierce County Law Enforcement Center, Rugby Police Station, N.D. Highway Patrol satellite office, and N.D. Bureau of Criminal Investigation (BCI) field office, and public service answering point (PSAP) for Pierce County) • Ely Elementary School • Rugby High School • U.S. Highway 2/52 • N.D Highway 3 • Tier II Sites • Alliance Natural Gas Pipeline • Enbridge Crude Oil Pipeline • Pembina Hazardous Liquid Pipeline • Burlington Northern Santa Fe (BNSF) Railroad • Canadian Pacific (CP) Railway

For more information regarding civil disturbance please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

According to Pierce County Sheriff's Office, Rugby Police Department, and Pierce County Emergency Management, one incident of civil disturbance has occurred in Pierce County while another incident of significance occurred in North Dakota requiring mutual aid from the Pierce County Sheriff's Office.

- Black Lives Matter (BLM) march occurred in the city of Rugby in 2020.

Dakota Access Pipeline

One significant civil disturbance event occurred in North Dakota that garnered national and international attention and activated mutual aid with Pierce County law enforcement agencies.

- Dakota Access Pipeline (DAPL). The protest began when a 1,134-mile-long crude oil pipeline was proposed for installation across North Dakota and several other states, traversing under the Missouri River near the Standing Rock-Sioux Tribe Indian Reservation. The protest began as a peaceful and environmental-focused event but transitioned into a seven-month long unlawful protest on August 10, 2016, when individuals attempted to block access to construction activities associated with the pipeline. The protest resulted in acts of trespassing, vandalism, riots, fires set to hay bales and tires, intimidation tactics directed at local landowners as well as law enforcement and their families, poaching, theft, and killing of local livestock and other animals. Approximately 709 protesters were arrested during the event. It is estimated that up to 10,000 people attended the protest at its peak. The Pierce County Sheriff's Office provided law enforcement assistance via mutual aid during the protest.

There has been no declared disaster/emergency pertaining to a civil disturbance in Pierce County.

Probability

The probability of a hazard or threat is how likely it will happen. Civil disturbances are hard to predict but are most probable at or near large venues and locations of significance such as stadiums, public schools, or government facilities like the Pierce County Courthouse or public schools.

Profile meeting participants ranked the probability of civil disturbance as possible meaning that there is a 25 percent probability in the next year of an incident. It is likely a civil disturbance will occur at some point in the future in Pierce County and/or in North Dakota.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damage or losses either caused or could occur in a community. Extent/magnitude of a civil disturbance can vary from a small protest at a government facility or health care clinic to large-scale at industrial sites, state capitols, or culturally sensitive areas.

Profile meeting participants ranked the extent/magnitude of a civil disturbance as catastrophic meaning substantial damage to jurisdiction infrastructure, people and/or property can be affected.

Risk Assessment

Table 4.1.1 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for civil disturbance. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.1.1 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.1.1 – Pierce County, North Dakota, Civil Disturbance Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County	4	2	3	4	3	**10**
City of Balta	4	1	2	2	1	**8**
City of Rugby	4	2	3	4	3	**10**
City of Wolford	4	1	2	2	1	**8**

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.1.2 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of civil disturbance in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property are vulnerable to civil disturbances as any government building can be targeted. Facilities supporting functions key to daily operations of the county and incorporated jurisdictions, such as the Pierce County Courthouse, Heart of America Medical Center, Heart of America Correctional and Treatment Center (which serves as the Pierce County Law Enforcement Center, Rugby Police Station, N.D. Highway Patrol satellite office, and N.D. Bureau of Criminal Investigation (BCI) field office, and public service answering point (PSAP) for Pierce County), public schools, or buildings supporting emergency services such as ambulance and fire halls, would be the most vulnerable to a civil disturbance. **The level of vulnerability depends on the activities performed or a level of security at a specific facility.**

A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, the vulnerability of critical facilities and infrastructure to civil disturbance is imminent. Critical facilities such as the Pierce County Courthouse, Pierce County Highway Department shops, Heart of America Medical Center, Heart of America Correctional and Treatment Center (which serves as the Pierce County Law Enforcement Center, Rugby Police Station, N.D. Highway Patrol satellite office, and N.D. Bureau of Criminal Investigation (BCI) field office, and public service answering point (PSAP) for Pierce County), ambulance and fire halls, and infrastructure such as electric power, water/wastewater facilities, and Tier II sites are vulnerable to the threat. In Pierce County, one N.D. State Radio Tower, Pierce County's communication tower, electrical substations throughout the county, rural water infrastructure, city of Rugby water wells and water treatment plant,

Rugby Municipal Airport, and cellular communication towers are critical infrastructure vulnerable to civil disturbance.

Vulnerabilities to New and Future Development

Civil disturbances are hard to predict and, therefore, vulnerabilities to new and future development cannot be determined. However, large influxes of people in a short period of time into sparsely populated areas can be a source of civil disturbance and impact new development. New and future developments that are located at or adjacent to politically or culturally sensitive areas, near energy pipelines, or constructed near environmentally sensitive areas, may be targeted by a civil disturbance.

Table 4.1.2 – Pierce County, North Dakota, Civil Disturbance Risk Assessment

Impact	• Blocked Roads • Business Interruptions • Delayed Emergency Response • Financial Hardship/Strain (public and private) • HAZMAT Release – Tier II Sites or transportation vehicles • Human Injury/Death • Increased Public Safety Runs	• Loss/Overcrowded Medical Facilities • Loss of Potable Water • Loss of Power • Mass Casualties/Fatalities • Property Damage (Structure) • Property Damage (Vehicle)
Frequency	• Black Lives Matter (BLM) march occurred in the city of Rugby in 2020.	
Likelihood	More Likely • Increasing hostility/turmoil directed at the energy industry • Increasing political turmoil at all levels of government • Social discord from the COVID-19 and social media • **Presence of Tier II Sites and pipelines** • **CP and BNSF railroads** • **U.S. Highways 2/52, & N.D. Highways 3, 17, 19, and 60**	Less Likely • Sparse population and rural area of the state/country • County not located near a major metropolitan population, international airport, stadiums, or significant tourist attraction • Lack of major television station in Pierce County • No interstate highway
Vulnerability	More Vulnerable • Increasing hostility/turmoil directed at the energy industry • Increasing political turmoil at all levels of government • Social discord from the COVID-19 and social media • **Funding of extreme groups by "Dark Money" from billionaires/crowd-funding websites** • **Limited law enforcement in rural areas of county** • **Inadequate mental health services in county/state** • **Presence of Tier II Sites and pipelines** • **CP and BNSF Railroad** • **U.S. Highways 2/52, & N.D. Highways 3, 17, 19, and 60**	Less Vulnerable • Sparse population and rural area of the state/country • County not located near a major metropolitan population, international airport, stadiums, or significant tourist attraction • Lack of major television station in Pierce County • Minor energy pipeline traversing the county • No interstate highway • Pierce County Sheriff's Office and Rugby Police Dept. • N.D. State and Local Intelligence Center (SLIC) • Civic participation by location population in neighborhood watch-like activities reporting suspicious behavior • The courthouse, HACTC, and public schools have cameras and door locking systems
Capability	• See Chapter 7 for a list of capabilities to address civil disturbance.	

Data Limitations and Other Key Documents

Due to the confidentiality of information pertaining to civil disturbances, law enforcement agencies are limited in the ability to share detailed information about incidents.

This plan incorporates data from the following documents and information herein will be used in future updates.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Civil Disturbance Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Evacuation Plan through Pierce County Emergency Management
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Mass Care Plan through Pierce County Public Health
- Pierce County Shelter Plan through Pierce County Emergency Management
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

4.2 Criminal, Terrorist or Nation/State Attack

Including armed assault, biological, chemical, explosive, food/food production, nuclear, radiological, and vehicular attacks.

Characteristics

Any intentional adversarial human-caused incident, domestic or international, that causes mass casualties, large economic losses, or widespread panic. Universities, industry, government officials and buildings, power grids, telecommunication systems, dams, water supplies, and pipelines are potential terrorism targets. Another potential terrorist activity that must be considered is violence in the workplace.

Seasonal Pattern	None. More likely during political unrest or social discord. Extreme winter weather can limit or eliminate activity altogether.
Duration	Minutes/hours/days/weeks/months/potentially a year or more.
Speed of Onset	Little to no warning or several days/weeks.
Location	The total geographic extent of Pierce County, North Dakota. Most likely targeting information databases at critical facilities and infrastructure such as government facilities (city halls, courthouses, fire halls, public works), medical facilities, major employers, roads/highways, and railroad infrastructure, or chemical and oil and gas infrastructure such as pipelines and Tier II Sites. • Pierce County Courthouse • Heart of America Medical Center • Heart of America Correctional and Treatment Center (which serves as the Pierce County Law Enforcement Center, Rugby Police Station, N.D. Highway Patrol satellite office, and N.D. Bureau of Criminal Investigation (BCI) field office, and public service answering point (PSAP) for Pierce County) • Ely Elementary School • Rugby High School • U.S. Highway 2/52 • N.D Highway 3 • Tier II Sites • Alliance Natural Gas Pipeline • Enbridge Crude Oil Pipeline • Pembina Hazardous Liquid Pipeline • Burlington Northern Santa Fe (BNSF) Railroad • Canadian Pacific (CP) Railway

For more information regarding criminal, terrorist, or nation/state attack please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

The following information on incidents of criminal, terrorist, or nation/state attack in Pierce County was provided by the Pierce County Sheriff's Office, Pierce County Emergency Management, and the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan.

- Bomb threat at Ely Elementary School occurred in 1994.
- Escaped prisoner from detention center in 2014.
- High frequency of vehicle theft in 2017.
- The Heart of America Correctional and Treatment Center housed several federally charged inmates related to activity from DAPL. The Sheriff's Office received some threatening messages on social media.
- In response to the terrorist attacks on September 11, 2001, public schools in Pierce County implemented controlled access by only allowing all students, staff, and visitors to enter and exit through one entrance.
- Property crime, theft, vandalism, and drugs are the most commonplace type of crime occurring in Pierce County.
- Pierce County has a low frequency of sexual criminal activity against children.

2018 N.D. Enhanced Mitigation MAOP

According to the 2018 N.D. Enhanced Mitigation MAOP, the following criminal, terrorist, or nation/state attack events occurred either in Pierce County or nearby. Table 4.2.1 shows vandalism and theft claims paid on critical facilities insured by the state in Pierce County between 1989 and 2018.

Table 4.2.1 – 1989 to 2018 Pierce County, North Dakota, Vandalism and Theft Claims Paid on Critical Facilities Insured by State

Jurisdiction	State Agencies	Adjutant General	State Universities	Local Governments	School Districts	Total
Pierce County	$0	$0	$0	$871.00	$3,328.00	**$4,199.00**

Source(s): 2018 N.D. Enhanced Mitigation MAOP; N.D. Dept. of Emergency Services

- Vandalism and theft claims paid on state facilities and other critical facilities insured by the state since 1989 resulted in zero paid to state agencies, the adjutant general, and state universities. Approximately $871.00 and $3,328.00 had been paid to local governments and school districts in Pierce County for vandalism and theft claims paid, respectively.

There have been no declared disasters or emergencies pertaining to a criminal, terrorist, or nation/state attack in Pierce County.

Probability

The probability of a hazard or threat is how likely it will happen. Criminal, terrorist, or nation/state attacks are hard to predict but are most probable at or near jurisdictions with large, dense populations near major attractions or buildings/infrastructure of significance. According to the 2018 N.D. Enhanced Mitigation MAOP, Pierce County was the 22nd most densely populated county in North Dakota with 4.3 persons per square mile.

During jurisdictional meetings, meeting participants said there is always a chance for an incident to occur at any time and no community is immune to the threat. However, the probability is much lower in jurisdictions without schools since schools in the United States have had numerous incidents involving active shooters over the past three decades.

The Pierce County Courthouse, Heart of America Correctional and Treatment Center, and public schools in Pierce County implemented access control measures and security camera surveillance systems in recent years and will continue investments where necessary.

Profile meeting participants ranked the probability of criminal, terrorist, or nation/state attack as possible meaning that there is a 25 percent probability in the next year of an incident. It is likely a criminal, terrorist or nation/state attack will occur at some point in the future in Pierce County and in North Dakota.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damage or losses either caused or could occur in a community. Extent/magnitude of a criminal, terrorist or nation/state attack can vary from an extreme event such as one that affects the national or agricultural economy or requires deployment of military personnel and drafting of soldiers, or smaller extent/magnitude events such as specialized attacks on schools or businesses involving active-shooters, homemade bombs and/or hostages. **An incident of any size at a school could have a large extent and/or magnitude.**

Energy. An attack on existing pipelines, energy-related or agriculture-related infrastructure would likely cause a hazardous material release and/or fire and an explosion. The attack may result in significant environmental damage, depending on where the attack occurred and the overall impact on the existing infrastructure. This type of attack may also cause the shutting down of regional commerce that would have a spill-over effect into intrastate and national economic systems.

Food. An adversarial threat to food is the potential for interruption within the production and distribution of food, and the potential for adulteration, obstruction of operation, or intentional damage to a facility or product. If successful, the extent/magnitude of this type of attack could be widespread and result in mass casualties/fatalities. With the economy of Pierce County largely based on agriculture, an incident involving the agriculture sector or at a manufacturing facility has the potential to be disastrous and large in extent/magnitude if targeting food or hazardous chemicals. However, the likelihood is low, and the impact would be limited based on food inspection practices and other regulations.

Infrastructure. The most likely scenario would be targeting the drinking/potable water systems in incorporated jurisdictions. An attack of this nature could result in widespread illness or even mass casualties/fatalities.

Transportation systems. The most likely scenario would be impacts from an interruption of the transportation system. Transportation systems have far less oversight and regulations than food production and supply chains, and water treatment and infrastructure. This type of attack could impact a substantial area and result in the shutting down of regional commerce. With the presence of two U.S. highways, but a lack of a major interstate traversing Pierce County, the extent/magnitude would be minor if an incident involved the local road system, and major if involving a U.S. highway or the railroad.

Risk Assessment

Table 4.2.2 shows the risk assessment as determined by individual jurisdictions and the Steering Committee for criminal, terrorist, or nation/state attack. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.2.2 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.2.2 – Pierce County, North Dakota, Criminal, Terrorist or Nation/State Attack Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County	4	2	3	4	3	**10**
City of Balta	4	1	2	2	1	**8**
City of Rugby	4	2	3	4	3	**10**
City of Wolford	4	1	2	2	1	**8**

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.2.3 provides information on the specific impact, frequency, likelihood, vulnerability and capability of criminal, terrorist, or nation/state attack in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property are vulnerable to civil disturbances as any government building can be targeted. Facilities supporting functions key to daily operations of the county and incorporated jurisdictions, such as the Pierce County Courthouse, Heart of America Medical Center, Heart of America Correctional and Treatment Center (which serves as the Pierce County Law Enforcement Center, Rugby Police Station, N.D. Highway Patrol satellite office, and N.D. Bureau of Criminal Investigation (BCI) field office, and public service answering point (PSAP) for Pierce County), public schools, or buildings supporting emergency services such as ambulance and fire halls, would be the most vulnerable to a civil disturbance. **The level of vulnerability depends on the activities performed or a level of security at a specific facility.**

A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Table 4.2.3 – Pierce County, North Dakota, Criminal, Terrorist or Nation/State Attack Risk Assessment

Impact	• Blocked Roads • Delayed Emergency Response • HAZMAT Release • Human Injury/Death & Mass Casualties/Fatalities • Increased Public Safety Runs • Loss of Economy • Loss/Overcrowded Medical Facilities	• Loss of Potable Water or Power • Disruption of services to maintain economic activity/daily life • Potential population loss due to harm to reputation of county as a safe place to reside and raise a family • **Shutting down of regional commerce indefinitely if an attack targets transportation – specifically bridges and railroads** • **Potential for mass casualties or widespread sickness if water or wastewater infrastructure was targeted**
Frequency	• Bomb threat at Ely Elementary School in 1994. • Escaped prisoner from detention center in 2014. • High frequency of vehicle theft in 2017.	• Heart of America Correctional and Treatment Center housed several federally charged inmates related to activity from DAPL. The Sheriff's Office received threatening social media messages.
Likelihood	More Likely • Increasing hostility/turmoil directed at the energy industry • Increasing political turmoil at all levels of government • Social discord from the COVID-19 and social media • **Presence of Tier II Sites and pipelines** • **CP and BNSF railroads** • **U.S. Highways 2/52, & N.D. Highways 3, 17, 19, and 60**	Less Likely • Sparse population and rural area of the state/country • County not located near a major metropolitan population, international airport, stadiums, or significant tourist attraction • Lack of major television station in Pierce County • No interstate highway
Vulnerability	More Vulnerable • Increasing hostility/turmoil directed at the energy industry • Increasing political turmoil at all levels of government • Social discord from the COVID-19 and social media • **Funding of extreme groups by "Dark Money" from billionaires/crowd-funding websites** • **Limited law enforcement in rural areas of county** • **Inadequate mental health services in county/state** • **Presence of Tier II Sites and pipelines** • **CP and BNSF Railroad** • **U.S. Highways 2/52, & N.D. Highways 3, 17, 19, and 60**	Less Vulnerable • Sparse population and rural area of the state/country • County not located near a major metropolitan population, international airport, stadiums, or significant tourist attraction • Lack of major television station in Pierce County • Minor energy pipeline traversing the county • No interstate highway • Pierce County Sheriff's Office and Rugby Police Dept. • N.D. State and Local Intelligence Center (SLIC) • Civic participation by location population in neighborhood watch-like activities reporting suspicious behavior • The courthouse, HACTC, and public schools have cameras and door locking systems
Capability	• See Chapter 7 for a list of capabilities to address criminal, terrorist or nation/state attack.	

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, the vulnerability of critical facilities and infrastructure to civil disturbance is imminent. Critical facilities such as the Pierce County Courthouse, Pierce County Highway Department shops, Heart of America Medical Center, Heart of America Correctional and Treatment Center (which serves as the Pierce County Law Enforcement Center, Rugby Police Station, N.D. Highway Patrol satellite office, and N.D. Bureau of Criminal Investigation (BCI) field office, and public service answering point (PSAP) for Pierce County), ambulance and fire halls, and infrastructure such as electric power, water/wastewater facilities, and Tier II sites are vulnerable to the threat. In Pierce County, one N.D. State Radio Tower, Pierce County's communication tower, electrical substations throughout the county, rural water infrastructure, city of Rugby water wells and water treatment plant, Rugby Municipal Airport, and cellular communication towers are critical infrastructure vulnerable to civil disturbance.

Vulnerabilities to New and Future Development

Civil disturbances are hard to predict and, therefore, vulnerabilities to new and future development cannot be determined. However, large influxes of people in a short period of time into sparsely populated areas can be a source of civil disturbance and impact new development. New and future developments that are located at or adjacent to politically or culturally sensitive areas, near energy pipelines, or constructed near environmentally sensitive areas, may be targeted by a civil disturbance.

Agriculture. The agricultural industry, with its increasing mechanization and industrialization, is not always located in urban areas, but is at risk to a criminal, terrorist, or nation/state attack.

Energy Development. The anticipated continuation of development of the oil and gas industry in the western portion of the state will result in transportation of energy products/materials, whether by pipeline, rail, or road, will also contribute to an increased risk of a criminal, terrorist, or nation/state attack due to past events and an increasing focus on political intervention and climate change.

Immigration. Illegal immigration to the United States by-way of Canada. Due to the county's proximity to the Canadian border, and far less-scrutiny versus the southern border, this method of immigration may contribute to a criminal, terrorist, or nation/state attacks.

Population. The population density of North Dakota's major cities continues to increase as people leave rural areas in favor of urban lifestyles. This trend increases the vulnerability of cities to a criminal, terrorist or nation/state attack as higher density living situations are the primary target for this threat.

Data Limitations and Other Key Documents

The probability and vulnerability of a criminal, terrorist or nation/state attack is hard to quantify given its isolated nature and the little recorded history of its impact to North Dakota, until recent large-scale events such as the Dakota Access Pipeline protest in the western portion of the state.

This plan incorporates data from the following documents and information herein will be used in future updates.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Civil Disturbance Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Evacuation Plan through Pierce County Emergency Management
- Pierce County Local Emergency Operations Plan
- Pierce County Mass Care Plan through Pierce County Public Health
- Pierce County Shelter Plan through Pierce County Emergency Management
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

4.3 Cyberattack

An attack or hijack of digital/technological information and/or infrastructure critical to the functions controlled by computer networks such as: operating, financial, communications, and trade systems.

Characteristics

Any cyberattack that creates unrest, instability, or negatively impacts confidence of citizens/consumers can be considered cyber terrorism. According to N.D. Information Technology (NDIT), the seven common types are Advanced Persistent Threats, Distributed Denial of Service, Doxing, Malware, Media Threats, Password Phishing Attacks, and Socially Engineered Malware. The following information details the extent of cyberattack in Pierce County.

Seasonal Pattern	None. More frequent during Christmas/holidays and after final testing at schools. Increased activity is experienced during other hazardous events such as a pandemic (COVID-19).
Duration	Varies based on the type of attack method used. Seconds/minutes/hours/days/weeks/months/potentially a year or more.
Speed of Onset	Little to no warning or up to several days/weeks.
Location	Total geographic extent of Pierce County – most likely targeting information databases at critical facilities and infrastructure such as the Pierce County Courthouse, Heart of America Medical Center, Heart of America Correctional and Treatment Center, public school districts, chemical or oil and gas infrastructure, major employers, etc.

For more information regarding cyberattack please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The plan can be accessed by following the links:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

According to information technology support for Pierce County, no cyberattacks have been executed on the digital/technological infrastructure at the Pierce County Courthouse in Rugby.

According to the Ely Elementary School and Rugby High School Pierce County Public School in the city of Rugby, no cyberattacks have been executed on the digital/technological infrastructure at both public schools.

2018 N.D. Enhanced Mitigation MAOP

According to the 2018 N.D. Enhanced Mitigation MAOP, the following Cyberattack events occurred either in Pierce County or the state.

- In December 2017, several North Dakota Counties experienced a Cryptominer Virus that was eating CPU. The virus infected 81 computers. The spread of the virus was stopped at the firewall

level and the antivirus vendor performed cleanup and extended monitoring. NDIT assisted with eradication and remediation of the virus. The incident lasted for approximately one day.

- **Dakota Access Pipeline (DAPL**). During the protest, personal information of law enforcement officers across the state who assisted in response to the protest was released with the intent to harass and/or intimidate them and their families. Doxing was the type of cyberattack used. There was also a significant increase in network traffic with intent to access state systems. This increased traffic required the state to increase its capacity with a larger firewall.

United States

- On May 7, 2021, Colonial Pipeline (an American oil pipeline company) was the target of a ransomware cyberattack that impacted computerized equipment responsible for managing the pipeline. The company shut down the pipeline to contain the attack. The company was ordered to pay a requested ransom of $4.4 million to regain control of its pipeline and did so within hours of the attack. DarkSide was the criminal hacking group responsible for the attack.

  The Federal Motor Carrier Safety Administration issued a regional emergency declaration for 17 states and Washington D.C. to keep fuel supply lines open on May 9, 2021. It was the largest cyberattack on oil infrastructure in United States History.

According to EMSISoft, a New Zealand-based blog focusing on malware protection, the following information on ransomware attacks occurred in the United States:

- In 2019, the U.S. was hit by an unprecedented and unrelenting barrage of ransomware attacks that impacted at least 966 government agencies, educational establishments and healthcare providers at a potential cost more than $7.5 billion. The impacted organizations included 113 state and municipal governments and agencies, 764 healthcare providers, and 89 universities, colleges and school districts, with operations at up to 1,233 individual schools potentially affected.

  The incidents were not simply expensive inconveniences; the disruption they caused put people's health, safety and lives at risk.

  - Emergency patients had to be redirected to other hospitals;
  - Medical records were inaccessible and, in some cases, permanently lost;
  - Surgical procedures were canceled, tests were postponed and admissions halted;
  - services were interrupted;
  - Dispatch centers had to rely on printed maps and paper logs to keep track of emergency responders in the field;
  - Police were locked out of background check systems and unable to access details about criminal histories or active warrants;
  - Surveillance systems went offline;
  - Badge scanners and building access systems ceased to work;
  - Jail doors could not be remotely opened, and
  - Schools could not access data about students' medications or allergies.

Other effects of the incidents included:

- Property transactions were halted;
- Utility bills could not be issued;
- Pierces to nonprofits were delayed by months;
- Websites went offline;
- Online payment portals were inaccessible;
- Email and phone systems ceased to work;
- Driver's licenses could not be issued or renewed;
- Payments to vendors were delayed;
- Schools closed;
- Students' grades were lost, and
- Tax payment deadlines had to be extended.

There have been no declared disasters or emergencies pertaining to cyberattack in Pierce County.

Probability

The probability of a hazard or threat is how likely it is it will happen. Cyberattacks are hard to predict but most probable at all levels of government (federal, local, and state), private businesses employing large numbers of people, and organizations/institutions. According to the 2018 N.D. Enhanced Mitigation MAOP, due to widespread and growing use of technology and the prevalence of ever-changing cyberattack methods, the probability of cyberattacks is very high.

Profile meeting participants ranked the probability of cyberattack as highly likely meaning that there is a 100 percent probability in the next year of an attack, which does not always result in an incident.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount and/or number of damages or losses either actualized in a community or estimated based on known assets and levels of risk. The extent/magnitude of a cyberattack can vary from a loss of personal information such as an individual's pictures and music to high extent/magnitude events such as one that affects the national or agricultural economy, or information systems of critical facilities and infrastructure.

According to the 2018 N.D. Enhanced Mitigation MAOP, loss estimates for cyberattack incidents in North Dakota are not available. However, the following national cyberattacks provide insight into the potential impacts of the threat.

- The 2017 WannaCry ransomware attack caused $4 billion in financial losses.
- The 2017 NotPetya attack caused an estimated $300 million in economic losses for FedEx subsidiary TNT Express and another $300 million in losses for shipping. The attack originated in Ukraine.
- Lloyds of London, an insurance underwriter, developed a scenario for an attack on the Eastern Interconnection, which is one of two major electrical grids in the United States serving half the

country. The economic loss of an attack was estimated at $243 billion. The 2003 Northwest Blackout resulted in economic losses of between $4 billion and $10 billion.

Risk Assessment

Table 4.3.1 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and participants at the profile meeting for cyberattack. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.3.1 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.3.1 – Pierce County, North Dakota Cyberattack Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County	4					
City of Balta	2					
City of Rugby	4					
City of Wolford	1					

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.3.2 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of cyberattack in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property are vulnerable to cyberattack as all state and local governments, businesses, and organizations/institutions use digital/technological systems. As day-to-day and extended operations become more reliant on digital/technological infrastructure to operate, the vulnerability to publicly-owned buildings and property will increase. Facilities supporting functions key to daily operations of the county and incorporated jurisdictions, such as the Pierce County Courthouse, Heart of America Medical Center, Heart of America Correctional and Treatment Center, city halls, state and federal agencies located in Pierce County, and public schools would be the most vulnerable to a cyberattack. **Any digital/technological systems not protected by a firewall are more vulnerable than those with firewall protection.**

A summary of publicly-owned buildings and property in Pierce County is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, the vulnerability of critical facilities and infrastructure to cyberattacks is imminent as all state and local governments, businesses, and organizations/institutions use digital/technological systems. Digital/technological systems used by emergency services and branches of government such as GIS mapping or financial software, and utilities such as electric and natural gas are types of critical facilities and infrastructure most at risk to a cyberattack. In addition, the vulnerability

from the threat to public works infrastructure for incorporated jurisdictions such as drinking/potable water and wastewater treatment systems will increase if digital water meters and SCADA systems are installed.

Table 4.3.2 – Pierce County, North Dakota, Cyberattack Risk Assessment

Impact	• Delayed Emergency Response • HAZMAT Release • Increased Public Safety Runs • Government Interruptions • Loss of Communication Systems – Loss of 9-1-1 • Loss of Economy • Loss of Potable Water • Loss of Power • Mass Casualties/Fatalities • Loss/Overcrowded Medical Facilities	• **Increased and unforeseen public and private costs due to response and recovery requirements** • **Loss of websites and information for critical facilities** • **Shutting down of infrastructure systems resulting in loss of economy activity as technological systems are used in nearly all industries, both public and private** • **Targeting of emergency services personnel** • **Loss of public confidence in city and county government** • **Loss of archived data and records** • **Shutting down of the Pierce County Courthouse, Heart of America Medical Center, Heart of America Correctional and Treatment Center**
Frequency	• Significant increase in network traffic with intent to access state systems. This increased traffic required the state to increase its capacity with a larger firewall.	• **NDIT indicated an average of 5.7 million cyberattack attempts every month on the state level, but all do not result in an event/incident.**
Likelihood	<u>More Likely</u> • Digital economy with nation-wide banks and other institutions electronically linked to the state and county • Growing automation of daily tasks • Social media • Digital/technological systems used in nearly all industries	<u>Less Likely</u> • State installed larger firewall – has a direct impact on county functions • Increased investment in security measures to the public sectors by the state (i.e., firewalls, Cortex XDR, Tenable, Security Awareness Training, Dark Web Monitoring, etc.) • Ongoing investment in preventative education and enhanced countermeasures • NDIT and NDSLIC • Redundancies in state and county technology and power systems • Pierce County is fully migrated over to NDIT's Cortex XDR security package and replaced switches in 2020 • **Public schools have firewalls through NDIT**

Table 4.3.2 – Pierce County, North Dakota, Cyberattack Risk Assessment - Continued

Vulnerability	More Vulnerable • **All state and local governments, businesses, and organizations/institutions that use digital/technological systems** • Growing automation of daily tasks in individual's lives, and private and public sectors • Social media • Technological systems used in nearly all industries • Elderly population relying largely on landlines for communication purposes, remote medical care and equipment monitoring • Pierce County lacks ESET Endpoint Security which adds another layer of protection on all workstations and servers and renews every year	Less Vulnerable • NDIT has a Cyberattack Incident Response Plan that covers Sheridan County systems • State installed larger firewall after DAPL protest • Ongoing investment in preventative education and enhanced countermeasures • NDIT and NDSLIC • **66th Legislative Assembly of ND, Senate Bill 2110 to amend and reenact sections 54-50-01 and 54-59-05 of the N.D. Century Code. NDIT setting strategies and advising all branches of government for cyberattack and counter measures – signed on April 12, 2021** • Redundancies in state and county technology and power systems • High regulation of banking and other industries to mitigate cyberattacks • K20W Initiative – training school-aged kids on cyber education • Pierce County is fully migrated over to NDIT's Cortex XDR security package and replaced switches in 2020 • **Public schools have firewalls through NDIT** • **Heart of America Medical Center has a firewall**
Capability	• See Chapter 7 for a list of capabilities to address cyberattack • Ely Elementary School Technology Plan (includes a statement on cybersecurity) • NDIT Cyberattack Incident Response Plan - includes Pierce County systems • Pierce County Local Emergency Operations Plan, Cyberattack Response Plan • Rugby High School Technology Plan (includes a statement on cybersecurity)	

Vulnerabilities to New and Future Development

Cyberattacks target digital information and technological systems and therefore should have little to no impact on new and future development. However, with the increasing use of internet-connected technological systems in American households and the world economy, the understanding of the vulnerability to new and future development is evolving/expanding.

Data Limitations and Other Key Documents

The probability and vulnerability of a cyberattack are hard to quantify given the multitude of plausible scenarios for an event. The threat has had little recorded history in North Dakota, until DAPL.

This plan incorporates data from the following documents. Information from this plan will be incorporated in the update of said documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Ely Elementary School Cyberattack Response Plan
- North Dakota Continuity of Operations Plan
- North Dakota Cybersecurity Framework (NDCSF)
- North Dakota Emergency Operations Plan, Cyberattack Annex
- NDIT Cyberattack Incident Response Plan - includes Pierce County systems
- NDIT Security Incident Response Plan
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Local Emergency Operations Plan, Cyberattack Annex
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)
- Rugby High School Cyberattack Response Plan

4.6 Fire

Including urban fire/structure collapse, rural fire, and wildland fire.

Characteristics

Fire is the rapid oxidation of a material in the exothermic chemical process of combustion, releasing heat, light, and various reaction products.

Structure-Urban Fire. Structure fire is the result of three components: a heat source, a fuel source, and an oxygen source per the U.S. Fire Administration. When combined, these three sustaining factors will allow a fire to ignite and spread. Within a structure, a small flame can get completely out of control and turn into a major fire within seconds. Thick black smoke can fill a structure within minutes. The heat from a fire can be 100 degrees Fahrenheit at floor level and rise to 600 degrees at eye level. In five minutes, a room can get so hot that everything in it ignites at once; this is called flashover.

Structure Collapse. Structure collapse occurs when the forces of gravity or other external forces overcome the structural integrity of a building. The reasons for structure collapse can vary from poor construction to explosions to extreme winds to heavy snow loads. Structure collapse can trap occupants and damage property. In Pierce County, North Dakota, numerous commercial, private elevators and large storage bins could be subject to structure collapse. Cattle operations have large cattle confinement structures that are also at risk of collapse. Urban fire/structure collapse can happen independently from other incidents.

Rural Fire. Rural fires result from farming activities whereby farm equipment may ignite a fire while haying, harvesting and other farming activities.

Wildland Fire. A wildland fire is an uncontrolled fire in a vegetated area. Wildland fires are a natural part of the ecosystem. They have a purpose in nature and following years of fire suppression, many areas have built up fuels that can lead to larger, more intense fires.

Seasonal Pattern	**Urban Fire/Structure Collapse** – None. Probability is always more prevalent in urban areas due to large concentrations of structures . **Rural and Wildland Fire** – More prevalent during summer months
Duration	**Rural and Urban Fire/Structure Collapse** – Minutes/hours/days **Wildland Fire** – Minutes/hours/days, up to weeks in exceptional cases
Speed of Onset	Little to no warning. Wildland onset is quicker during drought/low humidity, high winds, etc.
Location	**Urban Fire/Structure Collapse** – incorporated jurisdictions – Balta, Rugby, and Wolford **Rural and Wildland Fire** – rural areas of the county but may spread to incorporated jurisdictions

For more information regarding urban fire/structure collapse and wildland fire please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan
https://www.des.nd.gov/planning

Chapter 4.6.1 profiles urban fire/structure collapse and Chapter 4.6.2 profiles wildland fire.

4.6.1 Urban Fire/Structure Collapse

History

Statistical information on incidents of urban fire/structure collapse is provided by the National Fire Incident Reporting System (NFIRS), Pierce County Emergency Management, the Rugby Fire Department, Wolford Fire Department, and the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).

National Fire Incident Reporting System

Table 4.6.1.1 illustrates the history of urban fire/structure collapse in Pierce County between January 1, 2000, and December 31, 2022. The following are key points.

- There were 81 structure fires, 22 vehicle fires, and 37 other fires, for a total of 109 fire calls in Pierce County, North Dakota.
- Local fire agencies responded to 24 rescue calls (22 medical and two other). Fire departments are included on medical calls when they are in response to an accident, lift assistance or a specialized rescue.
- Fire losses from fire only totaled $3,785,611.00 while combined with other losses totaled $4,719,461.00 during the same period.

Table 4.6.1.1 – January 1, 2000, to December 31, 2021, Pierce County, North Dakota Urban Fire/Structure Collapse Hazard History Summary

	Fires				Rescue Calls			Losses	
Fire Protection Agency	Structure	Vehicle	Other	Total	Medical	All Others	Total	Total Fire	Total Loss
Rugby Fire Dept.	50	22	37	109	22	2	24	$1,512,310.00	$1,661,260.00
Rugby Fire Prot. Dist.	26	64	237	327	72	9	81	$2,209,301.00	$2,994,201.00
Wolford Fire Prot. Dist.	5	10	21	36	9	0	9	$64,000.00	$64,000.00
TOTAL	**81**	**96**	**295**	**472**	**103**	**11**	**114**	**$3,785,611.00**	**$4,719,461.00**

Note: All fires, rescue calls and loss statistics are from January 1, 2005 to December 31, 2021.

Source: National Fire Incident Reporting System Summary By Incident Type

The National Fire Incident Reporting System (NFIRS) data is summarized by fire department and district and the number of structure fires, vehicle fires, and unclassified (other) fires from January 1, 2000, through December 31, 2021. This information is used to help better understand the risk of urban fire/structure collapse in Pierce County. The data was provided by the N.D. State Fire Marshal's Office. A detailed hazard history for Pierce County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

Pierce County, North Dakota, Emergency Management

The history of urban fire/structure collapse from Pierce County Emergency Management is summarized in the following section.

Fire departments from neighboring counties have coverage over parts of Pierce County, North Dakota, either through mutual aid agreements or their respective fire district extends into the county. Total number of fires reported may be more than what occurred in the county. As such, data from departments in neighboring counties was excluded to avoid skewing of data history and is shown for supportive purposes of the continued need for investment of funding into fire departments and districts in Pierce County, North Dakota.

Rugby Fire Department/Fire Protection District

- Apartment building located at 3rd St SE and 2nd Ave in city of Rugby, North Dakota.
- **2014.** There were two shop fires resulting in $905,500.00 in damage.
- **2011.** Don's Drive In burned down resulting in $378,500.00 in losses.
- **2013.** A fire occurred at the pumphouse for the Kinder Morgan pipeline in southern Pierce County, North Dakota.
- **April 24, 2020.** A vacant home at 602 3rd St. SW caught fire in early morning hours. The fire appeared to have started in the home's garage. Approximately 25 firefighters responded to the incident. The cause of the fire was unknown.
- **December 4, 2020.** A family was left homeless after a fire in their single-family residence. The fire broke out after 9 p.m. in the 300 block of 4th St. Southeast. The fire started in the attic and the property sustained mainly water damage. A pet turtle died as its habitat was close to the fire.
- **January 21, 2022.** A large grain dryer at the Rugby Farmers Elevator occurred when the elevator was drying soybeans. Firefighters had to drain all the grain, about 4,500 bushels, to put out the fire. Local emergency crews spent six hours extinguishing the blaze.
- **June 4, 2022.** A structure fire occurred at 624 Parkland Dr. in the Parkland Dr. Trailer Court in the city of Rugby, North Dakota.

Wolford Fire Department

2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

- According to the 2018 N.D. Enhanced Mitigation MAOP, urban fire is ranked as high for Pierce County, North Dakota.

Probability

The probability of a hazard or threat is how likely it is it will happen. Per Tables 4.6.1.1, the probability of urban fire/structure collapse in Pierce County, North Dakota, is 100 percent.

Profile meeting participants indicated the probability of urban fire/structure collapse in Pierce County, North Dakota, as possible meaning there is between a one and 10 percent chance of an incident in the next year.

National Fire Incident Reporting System (NFIRS)

- Fire departments in Pierce County, North Dakota, respond to an average of 3.68 fire calls per year between January 1, 2000, and December 31, 2021. Pierce County, North Dakota, experiences, on average, $172,073.23 in fire losses and $214,520.95 in other losses annually.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount and/or number of damages or losses either actualized in a community or estimated based on known assets and levels of risk. The extent/magnitude of a structure fire can range anywhere from negligible for small exterior or interior fires extinguished without professional help to catastrophic for fires threatening structural integrity of critical facilities and infrastructure, sometimes resulting in loss of service or demolition. A catastrophic incident would be the total loss of the Pierce County Courthouse, Heart of America Medical Center, Heart of America Correctional and Treatment Center, an emergency services building such as a fire or ambulance hall, public schools, churches serving as storm shelters, care centers, major employers, or transportation infrastructure. In addition, if an incident were to occur at an industrial subdivision, pipeline, or Tier II site, a catastrophic hazardous material release may occur with the potential to result in tens of millions of dollars in property damage, lost economic activity, shutting down of major transportation infrastructure, or mass casualties/fatalities.

- Profile meeting participants indicated the extent/magnitude or impact of urban fire/structure collapse as catastrophic meaning more than 50 percent of the jurisdiction and its people could be affected, depending on the structure. The extent/magnitude for structure fires in terms of human life can be categorized as catastrophic as any loss of life would have a significant impact on a community.

National Fire Incident Reporting System (NFIRS)

- Fire losses from fire only totaled $3,785,611.00 between January 1, 2000, and December 31, 2021, while combined with other losses totaled $4,719,461.00 during the same period.

Pierce County, North Dakota Emergency Management

- **2020.** The Rugby Fire Department responded to a call. Resulted in $141,500 in fire losses.

Rugby Fire Department

Wolford Fire Department

2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

Threat and Hazard Identification Risk Assessment (THIRA)

Table 4.6.1.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for urban fire/structure collapse. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in the table represents the sum of each jurisdiction's impact,

frequency, likelihood and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.6.1.2 – Pierce County, North Dakota, Urban Fire/Structure Collapse Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County						
City of Balta						
City of Rugby						
City of Wolford						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.6.1.3 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of urban fire/structure collapse in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.6.1.3 – Pierce County, North Dakota, Urban Fire/Structure Collapse Risk Assessment

Impact	• Blocked Roads • Building Collapse • Business Interruptions/Loss of Economy • Delayed Emergency Response • Evacuation (Localized) • Explosion	• Human Injury/Death • Increased Fire Potential • Mass Casualties/Fatalities • Loss of Power/Downed Power Lines • **Level of impact depends on the structure**
Frequency	• Annual occurrences of structures/vehicle fires • Significant fire once every 5 to 10 years • House burned near Wolford November 2017 • Loss of five businesses in city of Rugby since the 1970s due to structure fires **– Don's Drive In in 2009**	• Local fire agencies based in Pierce County responded to 81 structure fires, 22 vehicle fires, and 37 other fires, for a total of 109 fire calls in Pierce County, North Dakota between January 1, 2000, and December 31, 2021.
Likelihood	More Likely • Close spacing and age of some structures • Increased use of electric heaters and devices • Outdated electric wiring and heating systems in older homes/buildings • Older trees and unkept vegetation in cities • Agriculture-related industries based in county • Increase in fuel costs will lead to more wood burning	Less Likely • Better building standards and maintenance of buildings • Smoke detectors required by code • Adequately-equipped fire departments with trained volunteers • Annual inspections of commercial properties by the local and state fire marshal • Updated furnaces and/or heating devices • Pierce County Burn Restrictions • Rugby Fire Dept. Fire Safety Prevention Week
Vulnerability	More Vulnerable • Close spacing and age of some structures • Increased use of electric heaters and devices • Outdated electric wiring and heating systems in older homes/buildings • Older trees and unkept vegetation in cities • Agriculture-related industries based in county • Old apartment building located at 3rd St SE and 2nd Ave in city of Rugby • Lack of building code enforcement	Less Vulnerable • Better building standards and maintenance of buildings • Smoke detectors required by code • Well-equipped fire departments with volunteers • Annual inspections of commercial properties by the local and state fire marshal • Less people burn wood in fireplaces in homes • Updated furnaces and/or heating spaces • Pierce County Burn Restrictions • Rugby Fire Dept. Fire Safety Prevention Week

	• Sprinkler systems at Haaland Home, Heart of America Medical Center, Heart of America Correctional and Treatment Center (HACTC) • **Lack of shrinking volunteerism for fire protection**
Capability	• See Chapter 7 for a list of capabilities to address urban fire/structure collapse.

Vulnerabilities to Publicly-Owned Buildings and Property

All publicly-owned buildings and property are vulnerable to urban fire/structure collapse. The risk to the hazard depends on the location of the building and if it is equipped with fire suppression mechanisms, such as sprinkler systems and smoke detectors, among others. Risk to publicly-owned buildings and property also depends on the proximity of fire suppression equipment and response times from fire departments/districts. The Pierce County Courthouse and Rugby City Hall lack sprinkler systems and possess outdated electrical wiring. Older publicly-owned buildings may be more susceptible to fire being built prior to building and electrical codes. Publicly-owned buildings with flat roofs are more at risk to building collapse from snow loads. Flat-roofed buildings, whether publicly-owned or privately owned, are typically located in the downtown area or older and/or more established neighborhoods of incorporated jurisdictions.

A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, critical facilities and infrastructure are vulnerable to urban fire/structure collapse. If an incident were to occur, the critical facility or infrastructure impacted could result in loss of or delay in services. A fire affecting critical infrastructure such as power lines, water wells, or lift stations could leave residents without power, drinking/potable water, or sanitary sewer, depending on the severity of the incident. Loss of communications (the Pierce County Public Service Answering Point at the Heart of America Correctional and Treatment Center) from fire can also occur and result in an outage of local 9-1-1 dispatching services, or daily operations of critical facilities and infrastructure. Communication infrastructure suspended in the air and not buried underground is most vulnerable.

Vulnerabilities to New and Future Development

New and future development could be more vulnerable in communities that lack building codes. Buildings in jurisdictions that lack building codes could be more susceptible to snow loads, structural instability, and may lack fire suppression systems. Pierce County and incorporated jurisdictions have adopted the state building codes, which cover new and future development in the county. Adoption and enforcement of building codes should reduce the risk and vulnerability to new and future development. However, no incorporated jurisdictions in Pierce County have building code enforcement.

An inventory of household units by type by jurisdiction in Pierce County is shown in Chapter 3, Profile and Inventory.

Strengthening and enforcement of building codes would mitigate impacts from the hazard as populations grow and more people are at risk of injury and potential death. This mitigation project for the county can be found in Chapter 6, Mitigation Strategy.

Data Limitations and Other Key Documents

The NFIRS data does not distinguish between an urban fire and structure collapse. As a result, there is difficulty in determining the true probability and overall impact of structure collapse. Fire department and

district boundaries also cross county lines as fire departments/districts from neighboring counties have coverage over parts of Pierce County through mutual aid agreements. As a result, the total number of fires reported may be more than what occurred in the county. Smaller and rural fire departments/districts do not tabulate history and therefore, it is difficult to determine impact, frequency, likelihood and overall probability. Also, the lack of a definition of the 'Other Fires' category in data from NFIRS limits the understanding of the hazard to develop appropriate mitigation strategies.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Annual Reports – local fire departments
- City of Rugby, North Dakota, Fire Department Standard Operations Procedures (SOP)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Fire Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Comprehensive Plan (2019)
- Pierce County Commercial Animal Feed Operation Ordinance
- Pierce County Evacuation Plan through Pierce County Emergency Management
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Mass Care Plan through First District Health Unit, Pierce County
- Pierce County Shelter Plan through Pierce County Emergency Management
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

4.6.2 Wildland Fire (including Rural)

History

Statistical information on incidents of wildland fire is provided by the NDSU/N.D. Forest Service; Pierce County Emergency Management; USDA, Risk Management Agency, and the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).

NDSU/N.D. Forest Service

- Table 4.6.2.1 shows wildland fire history in Pierce County, North Dakota, from 2017 to 2022. A total of 73 wildland fires were reported between 2017 and 2022 impacting a total of 2,101.50 acres. On average, 12 wildland fires occur in Pierce County annually impacting 350.25 acres.

Pierce County, North Dakota, Emergency Management

- **April 1 to April 3, 2021.** A wildland fire occurred at unincorporated Pleasant Lake in neighboring Benson County impacting approximately 300 acres. Rugby Fire Department responded to the incident for three days due to re-ignition of the fire from surrounding vegetation and fuel.

U.S. Dept. of Agriculture, Risk Management Agency

- Crop loss from wildland fire is tracked by the U.S. Dept. of Agriculture, Risk Management Agency (RMA). The RMA provides data on the crop type affected, damage cause description, determined acres and indemnity amount. The damage cause description identities the cause of damage, determines acres identifies the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. **Between January 1, 2001, and December 31, 2020, Pierce County experienced one incident of crop loss due to wildland fire impacting approximately 43.00 acres of crops totaling $1,323.00 in losses.**

2018 N.D. Enhanced Mitigation MAOP

A statewide fire emergency declaration and burn restrictions are issued in response to extremely dry conditions, local/tribal burn bans and fire restrictions declared throughout the state, Fire Weather Watches, and Red Flag Warnings issued by the National Weather Service, unseasonably warm temperatures, low humidity, and high winds. Table 4.6.2.2 shows the history of statewide fire emergency declarations in North Dakota. **According to the 2018 N.D. Enhanced Mitigation MAOP, between 1980 and June 26, 2017, the state of North Dakota had declared 17 fire emergencies.**

There have been no locally declared disasters or emergencies pertaining to wildland fire in Pierce County. See Table 4.6.2.2 for a list of statewide fire emergencies declared in North Dakota.

Table 4.6.2.1 – 2017 to 2022 Pierce County, North Dakota, Wildland Fire History

	2017		2018		2019		2020		2021		2022	
Cause	**Fires**	**Acres**	**Fires**	**Acres**	**Fires**	**Acres**	**Fires**	**Acres**	**Fires**	**Acres**	**Fires**	**Acres**
Arson	--	--	--	--	--	--	--	--	--	--	--	--
Children	--	--	--	--	--	--	--	--	--	--	--	--
Debris Burning	4	17.00	1	15.00	10	481.00	2	6.00	7	1,185.00	1	12.00
Equipment Use	--	--	--	--	--	--	--	--	4	23.00	--	--
Lightning	--	--	--	--	--	--	1	1.00	--	--	--	--
Miscellaneous	9	25.00	11	23.00	5	8.50	7	15.00	6	33.00	2	4.00
Railroads	--	--	--	--	2	251.00	--	--	--	--	--	--
Smoking	1	2.00	--	--	--	--	--	--	--	--	--	--
TOTAL	**14**	**44.00**	**12**	**38.00**	**17**	**740.50**	**10**	**22.00**	**17**	**1,241.00**	**3**	**16.00**
Class	**Fires**	**Acres**	**Fires**	**Acres**	**Fires**	**Acres**	**Fires**	**Acres**	**Fires**	**Acres**	**Fires**	**Acres**
Class A - 0.25 acres or less	--	--	--	--	--	--	1	0	1	0	1	0
Class B - 0.26 to 9 acres	14	44.00	11	23.00	9	20.50	9	22.00	7	16.00	1	4.00
Class C - 10 to 99 acres	--	--	1	15.00	4	70.00	--	--	5	150.00	1	12.00
Class D - 100 to 299 acres	--	--	--	--	4	650.00	--	--	3	575.00	--	--
Class E - 300 to 399 acres	--	--	--	--	--	--	--	--	1	500.00	--	--
TOTAL	**14**	**44.00**	**12**	**38.00**	**17**	**740.50**	**10**	**22.00**	**17**	**1,241.00**	**3**	**16.00**

Source(s): NDSU/N.D. Forest Service

Table 4.6.2.2 – 1980 to June 26, 2017, North Dakota, Statewide Fire Emergency Declarations

Declaration	Location	Date	Magnitude
State EO	North Dakota	1980	State Declared Fire Disaster
State EO	North Dakota	1981	State Declared Fire Disaster
State EO	North Dakota	1988	State Declared Fire Disaster
State EO	North Dakota	1990	State Declared Fire Disaster
State EO	North Dakota	1999	State Declared Fire Disaster
State Request	North Dakota	2000	Governor's Request for USDA assistance for Montana Wildfires
State EO	North Dakota	2000	State Declared Fire Disaster
State EO	North Dakota	2002	State Declared Fire Disaster
State EO	North Dakota	2004	State Declared Drought Disaster/Fire Danger Emergency
State EO	North Dakota	2005	State Declared Fire Disaster
State EO 2005-01	North Dakota	3/10/2005	State declared drought disaster and fire danger emergency
State EO 2006-06	North Dakota	6/28/2006	State declared rural fire emergency potential
State EO 2008-01	North Dakota	4/25/2008	State declared fire emergency
State EO 2012-02	North Dakota	3/30/2012	State declared fire emergency
State EO 2012-09	North Dakota	9/5/2012	State declared fire emergency
State EO	North Dakota	4/1/2015	State declared fire emergency
State EO 2017-07	North Dakota	6/26/2017	Statewide fire and drought emergency

Source(s): 2018 N.D. Enhanced Mitigation MAOP

Probability

The probability of a hazard or threat is how likely it is it will happen. Profile meeting participants indicated the probability of wildland fire in Pierce County is highly likely meaning there is a 100 percent chance in the next year of an occurrence of the hazard.

The probability of a wildland occurrence can be measured by the presence and extent of the wildland-urban interface. The population living and/or number of housing units in rural residential areas in Pierce County has increased over the last five years.

NDSU/N.D. Forest Service

- Table 4.6.2.1 shows wildland fire history in Pierce County, North Dakota, from 2017 to 2022. A total of 73 wildland fires were reported between 2017 and 2022 impacting a total of 2,101.50 acres. On average, 12 wildland fires occur in Pierce County annually impacting 350.25 acres.

2018 N.D. Enhanced Mitigation MAOP

- The probability of wildland fires can be linked to emergency declarations. Table 4.6.2.3 shows statewide fire emergency declarations in North Dakota between 1980 and June 2017. A total of 17 fire emergency declarations were issued resulting in an overall probability of 45 percent.

2013 West Side Wildfire Risk Assessment (WWA)

- The 2013 West Side Wildfire Risk Assessment (WWA) is a wildfire risk assessment and report for 17 western states and is developed by the Oregon Dept. of Forestry. Figure 4.6.1 is the fire risk index based on the WWA. The probability of a wildland fire is high to moderate across northern Pierce County, North Dakota.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount and/or number of damages or losses either actualized in a community or estimated based on known assets and levels of risk. Profile meeting participants indicated the magnitude or impact of wildland fire as catastrophic meaning more 50 percent of people and property in Pierce County, North Dakota, could be affected. In terms of extent/magnitude, smaller and less severe fires are more frequent with larger and more severe fires happening sparingly. The probability of wildland fires fluctuates based on season, local weather patterns, traffic conditions, among other variables. The chance of wildland fires increases during summer months when the agriculture sector is in full force and natural vegetation can become dry due to extreme heat. Larger fires can skew averages as one large incident can offset many smaller incidents.

NDSU/N.D. Forest Service

- The extent/magnitude of wildland fire in Pierce County, North Dakota, can be measured by the single-largest wildland fire occurring within the county. According to data provided by the NDSU/N.D. Forest Service, Class E wildland fires are those impacting between 300 and 999 acres. In 2021, a fire impacting 139.0 acres occurred in Pierce County, North Dakota.

2018 N.D. Enhanced Mitigation MAOP

The extent/magnitude of wildland fire in Pierce County, North Dakota, can also be determined by using data provided by the 2018 N.D. Enhanced Mitigation MAOP. The following are key points.

- Pierce County, North Dakota, has $2,859,500.00 (2013 dollars) in housing unit values in high and moderate wildfire risk areas.

- Pierce County, North Dakota, has 66 people and 35 housing units in the High and Moderate Wildland Urban Interface Threat Zones; 44 people and 26 housing units in high-risk areas, and 22 people and nine housing units in moderate risk areas.

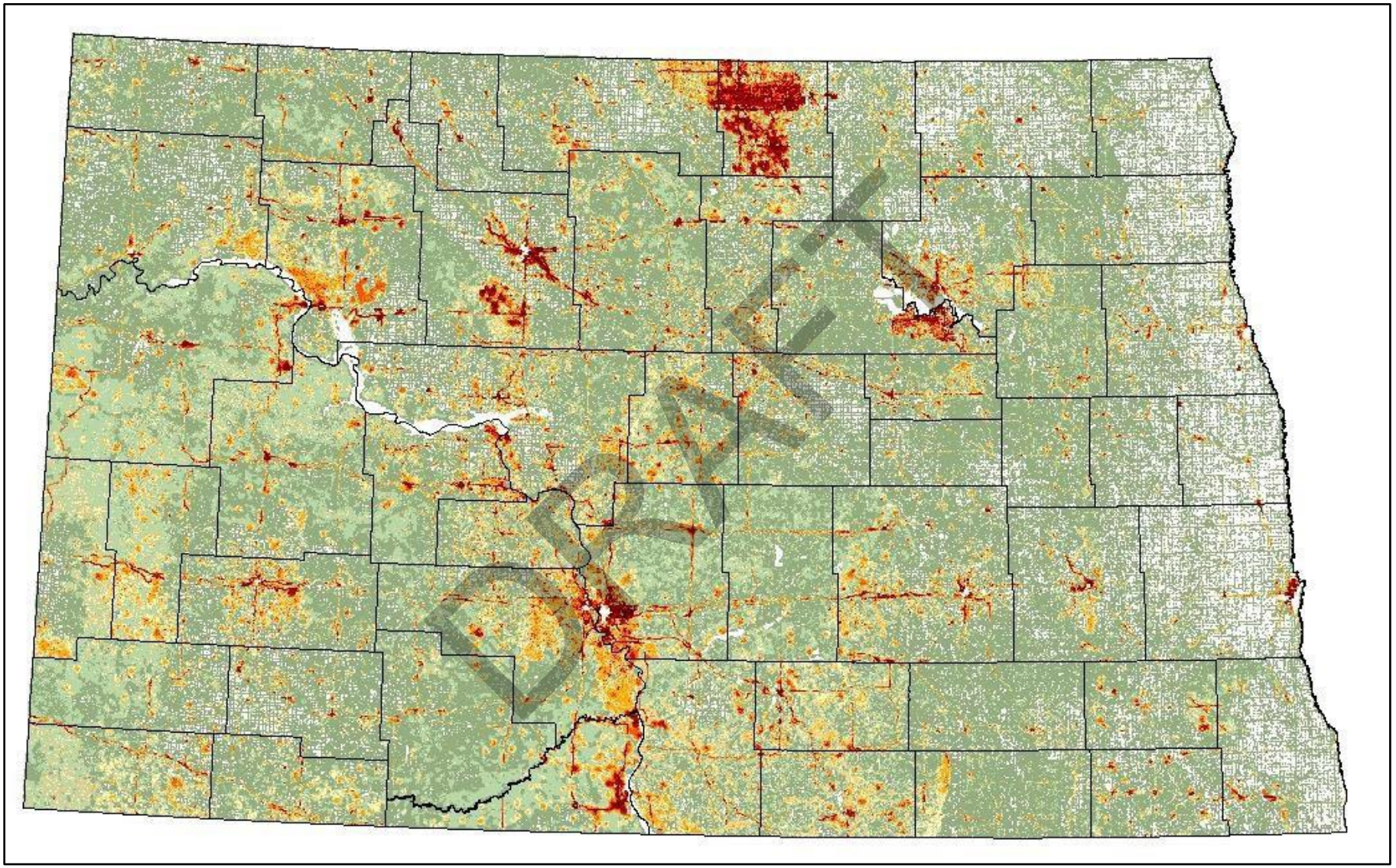
Wildland-Urban Interface (WUI)

The probability of wildland fire impacting people and property depends on the Wildland-Urban Interface (WUI). WUI is the zone of transition between unoccupied land and human development. Communities that are within 0.5 miles of the zone may also be included. These lands and communities adjacent to and surrounded by wildlands are at risk from wildland fires. There are two types of WUI: intermix and interface.

- **Intermix** refers to areas where housing and vegetation intermingle.
- **Interface** refers to areas with housing near contiguous wildland vegetation.

Figures 4.6.2.2 to 4.6.2.4 show the WUI for the cities of Balta, Rugby, and Wolford. The areas colored in yellow indicate the interface while areas colored in orange indicate intermix. Area colored in red indicate low and high housing density.

Figure 4.6.2.1 – North Dakota Fire Risk Index Based on 2013 WWA



Source(s): 2018 N.D. Enhanced Mitigation MAOP; 2013 West Wide Wildfire Risk Assessment (WWA)

Figure 4.6.2.1 – City of Balta, North Dakota, Wildland-Urban Interface (WUI)

Source: University of Wisconsin, Silvis Lab – Spatial Analysis for Conservation and Sustainability

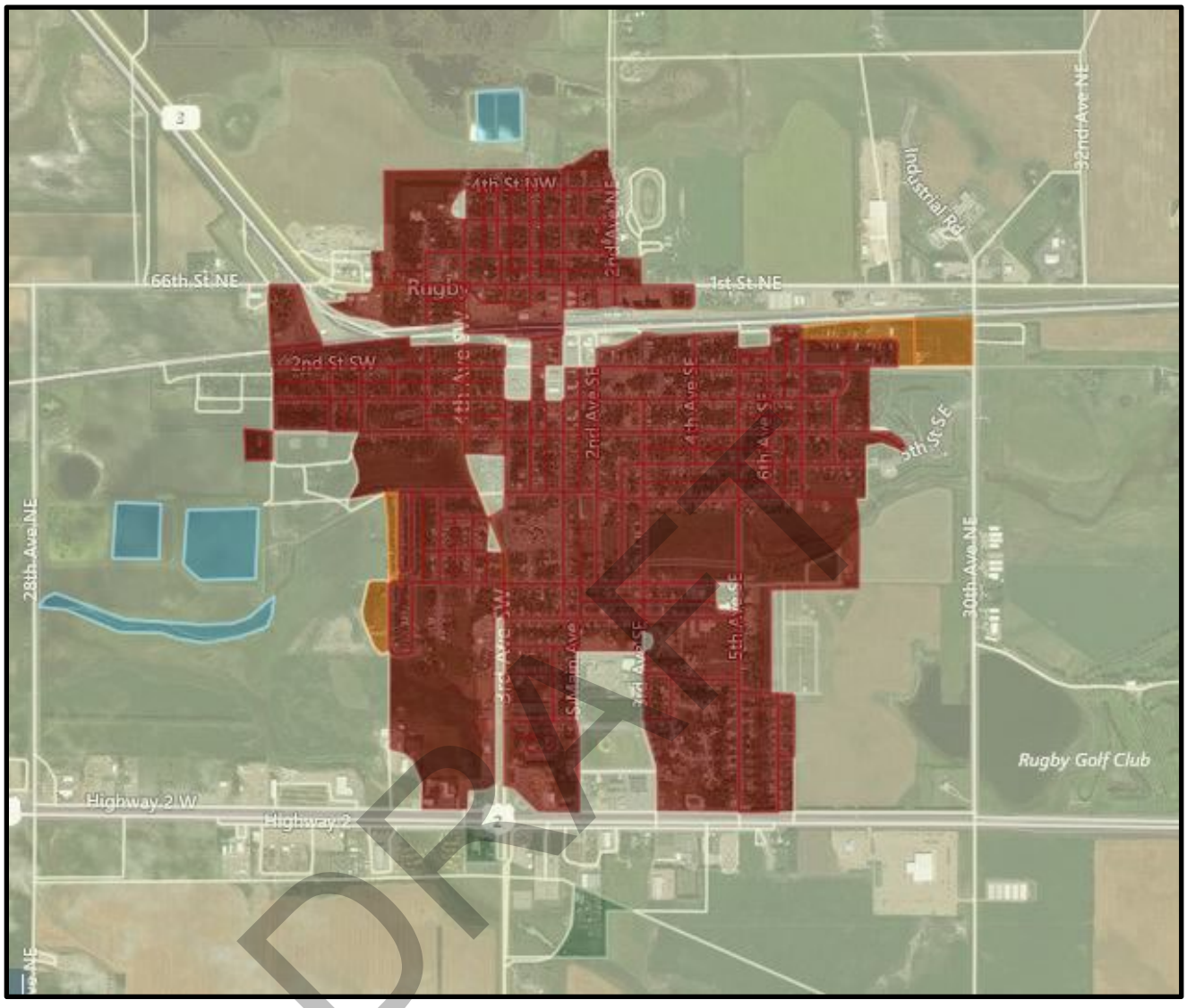
LEGEND
Wildland-Urban Interface (WUI)
- Interface
- Intermix

Non-WUI Vegetated
- No housing
- Very low housing density

Non-vegetated or Agriculture
- Low and very low housing density
- Medium and high housing density
- Water

The city of Balta, North Dakota, does not have a wildland fire interface or intermix according to the WUI map above. Therefore, it is assumed the city is at a lower risk to wildland fire than jurisdictions with an interface or intermix present.

Figure 5.11.2 – City of Rugby, North Dakota, Wildland-Urban Interface (WUI)



Source: University of Wisconsin, Silvis Lab – Spatial Analysis for Conservation and Sustainability

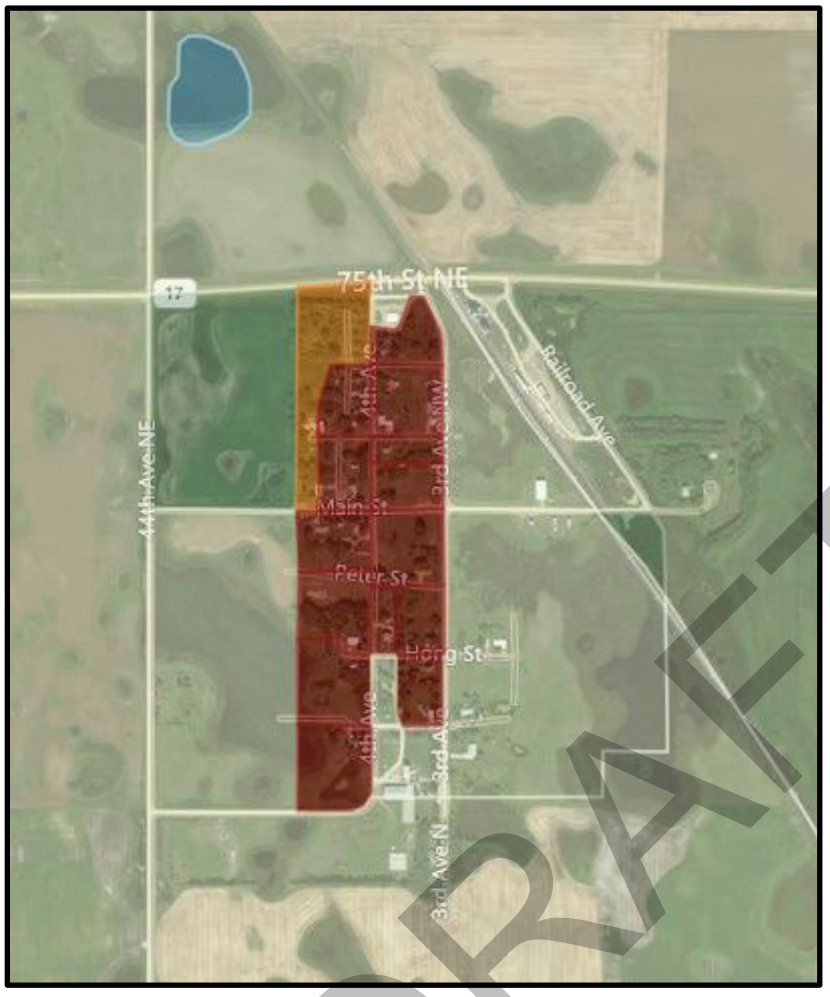
LEGEND
Wildland-Urban Interface (WUI)
- Interface
- Intermix

Non-WUI Vegetated
- No housing
- Very low housing density

Non-vegetated or Agriculture
- Low and very low housing density
- Medium and high housing density
- Water

The city of Rugby, North Dakota, has a wildland-urban intermix according to the WUI map above. Therefore, it is assumed the city at higher risk to wildland fire in these areas as housing and vegetation intermingle. Areas of intermix in the city of Rugby include the west side of the city along 7th Ave SW and Parkland Dr. SW (Parkland Dr. Trailer Court), and a northeast section of the city bounded by the railroad tracks on the north and 2nd St SE on the south (Eastgate Trailer Court).

Figure 5.11.3 – City of Wolford, North Dakota, Wildland-Urban Interface (WUI)



The city of Wolford, North Dakota, has a wildland-urban intermix according to the WUI map above. Therefore, it is assumed the city at higher risk to wildland fire in these areas as housing and vegetation intermingle. The area of intermix in the city of Wolford is found on the northwest corner of the city along Oakland Street and Selden St.

Source: University of Wisconsin, Silvis Lab – Spatial Analysis for Conservation and Sustainability

Threat and Hazard Identification Risk Assessment (THIRA)

Table 4.6.2.4 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for wildland fire. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in the table represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.6.2.4 – Pierce County, North Dakota, Wildland Fire Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County						
City of Balta						
City of Rugby						
City of Wolford						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.6.2.5 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of wildland fire in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Wildland-Urban Interface (WUI)

The probability of wildland fire impacting people and property depends on the Wildland-Urban Interface (WUI). WUI is the zone of transition between unoccupied land and human development. Communities that are within 0.5 miles of the zone may also be included. These lands and communities adjacent to and surrounded by wildlands are at risk from wildland fires.

There are two types of WUI: intermix and interface.

- **Intermix** refers to areas where housing and vegetation intermingle.
- **Interface** refers to areas with housing near contiguous wildland vegetation.

Figures 4.6.2.2 to 4.6.2.4 show the WUI for the cities of Balta, Rugby, and Wolford. The areas colored in yellow indicate interface while the areas colored in orange indicate intermix. The areas colored in red indicate medium and high housing density.

Table 4.6.2.5 – Pierce County, North Dakota, Wildland Fire Risk Assessment

Impact	• Building Collapse • Crop Loss • Delayed Emergency Response • Evacuation (Localized) • Explosion • Increase Fire Potential • Loss of Livestock	• Loss of Power/Downed Power Lines • Mass Casualties/Fatalities • **Property damage on a significant scale if becoming urban and transforming into a large-scale urban fire/structure collapse incident** • **Loss of farm equipment or buildings**
Frequency	• Approximately 25 wildland fires occurring annually • Controlled burns becoming out of control approximately 50 percent of the time • 90 percent of wildland fires responded to by local departments are wildland from hay land	• A total of 18.0 wildland fires were reported between 2017 and 2022 impacting a total of 229.0 acres averaging three wildland fires impacting 38.2 acres annually in Pierce County.
Likelihood	More Likely • Agricultural burn-off • High winds in conjunction with dry conditions • Drought conditions and abundant vegetation • **CRP adjacent to structures/city limits** • **Pastureland adjacent to structures/city limits** • **Changing climates and weather patterns** • **Human activity – smoking and glass bottles** • **County motor-graders striking rocks producing sparks causing fires in ditches along roadways** • **Vehicular equipment dragging on paved county and state roads/highways producing sparks** • **Rural farmsteads burning trash pits** • CP Railway and BNSF Railroad infrastructure – sparks from trains igniting surrounding interface and/or intermix • Education and outreach to permanent and recreation **Wildland-Urban Intermix present in the city of Rugby, North Dakota, at two mobile home communities – Parkland Dr. Trailer Court in**	Less Likely • Pierce County Burn Restrictions • Removal of CRP • Summer and winter weather with heavy precipitation • Education and outreach to permanent and recreation populations on the dangers of wildland fires by the county, state, and federal • **The non-Wildland-Urban Interface (WUI), both intermix and interface, consists of 100.00 percent of the total land area of Pierce County, North Dakota**

	western Rugby and Eastgate Dr. Trailer Court in northeast Rugby • **Rural residential development at Antelope Lake**

Table 4.6.2.5 – Pierce County, North Dakota, Wildland Fire Risk Assessment – Continued

Vulnerability	More Vulnerable • Agricultural burn-off • High winds in conjunction with dry conditions • Drought conditions and abundant vegetation • **CRP adjacent to structures/city limits** • **Pastureland adjacent to structures/city limits** • Large fire districts – strained coverage/resources • **Lack of reliable water sources in rural areas** • **Lack of fire breaks around incorporated cities** • **Lack of permanent generators at fire halls** • **County motor-graders strike rocks producing sparks causing fires in ditches along roads** • **Pierce County the location of an NDDOT Station, state radio tower, cell phone tower/buildings, anhydrous plants, NDAWN tower, electrical substations, electrical infrastructure** • CP Railway and BNSF Railroad infrastructure – sparks from trains igniting surrounding interface and/or intermix • **Wildland-Urban Intermix present in the city of Rugby, North Dakota, at two mobile home communities – Parkland Dr. Trailer Court in western Rugby and Eastgate Dr. Trailer Court in northeast Rugby** • **Rural residential development at Antelope Lake**	Less Vulnerable • Pierce County Burn Restrictions • Removal of CRP • Heavier precipitation than other parts of the state • MOUs with neighboring fire departments – maintaining good working relationships on a personal basis – • **Incorporated jurisdictions with limited wildland-urban interface** • **Investments in equipment for local fire departments** • **The non-Wildland-Urban Interface (WUI), both intermix and interface, consists of 100.00 percent of the total land area of Pierce County, North Dakota** • **Local fire agencies have access to rural water lines in the county** • **Lack of shrinking volunteerism for fire protection** • **Fire index sign at Rugby Fire Hall** • **Presence of man-camp ordinances at the county level decreases the risk to human-induced wildland fires**
Capability	• See Chapter 7 for a list of capabilities to address wildland fire (including rural).	

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property located in the Wildland-Urban Interface (WUI) or in remote areas are vulnerable to wildland fire. The risk of the hazard depends on the building and property location, and if emergency services can reach the property in a timely manner.

An inventory of publicly-owned buildings and property is shown in Chapter 3, Profile and Inventory.

The lack of firebreaks around all incorporated cities in Pierce County, North Dakota, increases the vulnerability to publicly-owned buildings and property to wildland fire. If a wildland fire were to grow and become uncontrollable, buildings and properties would be at risk from the spread of the fire. Firebreaks can and should be implemented where the WUI poses the greatest threat to people and property. Maps of the WUI shown in this chapter illustrate where measures should be implemented to mitigate wildland fires. **The WUI Intermix, areas where housing and vegetation intermingle, consists of zero percent of the total land area in Pierce County, North Dakota.**

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, critical facilities and infrastructure are vulnerable to wildland fire. The vulnerability will vary depending on location from the wildland-urban interface. If an incident were to occur, depending on the facility or infrastructure impacted, a loss of or delay in emergency or utility services could be the result. Maps of the WUI shown in this chapter illustrate where measures should be implemented to mitigate wildland fires.

A summary of critical facilities and infrastructure is shown in Chapter 3, Profile and Inventory.

Vulnerabilities to New and Future Development

Rural homesteads on large parcels of land in remote areas are a trend in residential development in areas of North Dakota surrounding larger cities like Bismarck, Jamestown, and Minot. Pierce County should strengthen planning and zoning regulations limiting where new residential development can occur, specifically large rural lots. The vulnerability of new and future development to wildland fire also increases as the distance from fire departments and emergency services increases. Residential development in remote areas increases the opportunity for human-induced wildland fires. The presence of man-camp ordinances at the county level decreases the risk to human-induced wildland fires. **The non-Wildland-Urban Interface (WUI), both intermix and interface, consists of 100.00 percent of the total land area of Pierce County, North Dakota, as of 2020.**

Data Limitations and Other Key Documents

Pierce County fire department and district boundaries cross county lines, and therefore, provide coverage in neighboring counties. This cross-over may provide challenges to data tracking purposes.

National Association of State Foresters

- The historical data provided by the National Association of State Foresters did not indicate the county where the fire occurred.

National Fire and Aviation Management

- Information from the National Fire and Aviation Management did not provide crop or property loss, cause of the fire or the responding fire departments/districts but did include the final fire acre quantity and latitude and longitude coordinates.

National Fire Incident Management System (NFIRS)

- Information from NFIRS does not distinguish which fires were wildland in nature.

NDSU/N.D. Forest Service

- The NDSU/N.D. Forest Service reported that due to database system errors, the history of wildland fires in North Dakota was lost between 2008 and 2016.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Burn Restrictions
- City of Rugby, North Dakota, Fire Department Standard Operations Procedures (SOP)
- Fire Management Plans for federal lands
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Fire Annex
- North Dakota Forest Service, Building Sustainable Communities Through Forestry
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Statewide Assessment of Forest Resources and Forest Resource Strategy
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Comprehensive Plan (2019)
- Pierce County Evacuation Plan through Pierce County Emergency Management
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Mass Care Plan through First District Health Unit, Pierce County
- Pierce County Shelter Plan through Pierce County Emergency Management
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

4.7 Flood

Including closed basin, flash floods, groundwater saturation and seepage, high dam release, ice jams, levee/floodwall failure, overland flooding, and river flooding.

Characteristics

Flooding, as a natural hazard, has been a part of the county's conflict with nature throughout history and is defined as an overflow of water on land not normally covered by water. Floods are a natural phenomenon; however, flood hazards are often both intensified and mitigated by man-made interference with nature.

Flooding, as a natural hazard, has been a part of the county's conflict with nature throughout history and is defined as an overflow of water on land not normally covered by water. Floods are a natural phenomenon; however, flood hazards are often intensified by man-made interference with nature.

A brief description of the types of flooding are as follows and was provided by the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP):

- **Closed Basin:** Flooding in a closed basin occurs when surface water cannot flow naturally out of the basin as a river does (until a natural overflow elevation is reached), and therefore, normally dry locations can fill in with water during wet periods.

- **Flash Floods:** Flash flooding occurs when heavy rain falls in such a short time that the soil cannot absorb it and/or drainage systems (natural or human-made) cannot carry the volume of water away as quickly as it accumulates.

  A flash flood is usually caused by severe thunderstorms, heavy rains on snowpack, slow moving storms, dam, dike, or levee failures, or ice jam releases. Flash floods can occur anywhere when a large volume of water inundates an area over a short time period. Because of the localized nature of flash floods and variables in rainfall amounts and duration, clearly defined areas prone to flash flooding are difficult to identify.

- **Groundwater Seepage:** Groundwater seepage occurs when water (originating from rainwater and soaks into the ground filling available space in the soil) flows or collects beneath the ground and makes its way back to the surface.

- **High Dam Release:** High dam release flooding is caused by intentional water release from dams to prevent water from breaching a spillway or the ends of the dam. A high dam release is typically a slow release of water from the dam over time but can cause flooding in surrounding areas.

- **Ice Jams:** Flooding can also result from ice jamming or blockage along streams. Ice breaking up into pieces, called flows, move along with the flowing rivers or streams. The ice flows can jam at curves, narrow places in the channel, structures, river/stream confluences, or where there is a sharp decrease in riverbed gradient, creating an effective dam that produces water backup and

overflow. Ice jams can cause considerable increases in upstream water levels, while at the same time downstream water levels may drop.

- **Levee/Floodwall Failure:** Levees are earth embankments constructed along rivers and coastlines to protect adjacent lands from flooding. Floodwalls are concrete structures, often components of levee systems, designed for urban areas where there is insufficient room for earthen levees. Levees are usually engineered to withstand a flood with a computed risk of occurrence. When a larger flood occurs and/or levees and floodwalls and their appurtenant structures are stressed beyond their capabilities to withstand floods, levee failure can result in loss of life and injuries as well as damage to property, the environment, and the economy.

- **Overland Flooding:** Overland Flooding occurs when flood waters flow overland from an outside source or body of water onto dry land and seeps into buildings and/or infrastructure.

- **Riverine Flooding:** Riverine flooding originates from a body of water, typically a river, creek, or stream, as water levels rise onto normally dry land. Most riverine floods are slow developing events with a natural, predictable source of water or moisture, such as snowmelt, slow rain, or a controlled dam release. This type of flood can often be forecast based on the amount of moisture or water available. The timing and location of flood conditions can often be calculated to a reasonable degree. If implemented in a timely manner, protective measures can sometimes mitigate potential damage and loss.

Seasonal Pattern	More frequent during spring and summer with thawing of winter snow pact and summer rainfall. Fall flooding occurs on very rare occasions. Spring and winter flooding can occur from ice jams in culverts and local bodies of water.
Duration	Several hours for flash flooding; up to two weeks or several months depending on severity for major overland flooding.
Speed of Onset	Minutes for flash flooding. Between 12 and 24 hours warning for closed basin, riverine, and overland flooding.
Location	Pierce County, North Dakota • Spring 2017 27th Ave NE two miles west of Rugby became blocked from snow melt for two months. Resulted in three people driving cars into the water. • Spring 2017 snow melt resulted in washed out 5th Ave culvert in city of Rugby. • Annual occurrences of localized flooding of streets in incorporated cities • 37th St NE in 2013 in Hillside Township was blocked from heavy rain and high winds – road was raised. • Majority of culverts upgraded after 2009 and 2011 flooding. • **According to the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), Pierce County has no state, county, or urban bridges experiencing scouring from flooding.** • Low-lying areas near or adjacent to bodies of water, or with inadequate drainage. Private and public low-water crossings. Closed basins. **See Figures 4.7.1 to 4.7.3 flood risk maps of the cities of Balta, Rugby, and Wolford**

Location – Ctnd.	• Incorporated Jurisdictions. See Chapter 8, Jurisdictions. **City of Balta, North Dakota** • 52nd St NE and 27th Ave NE becomes blocked by overland flooding from heavy rains or spring snow melt blocked access for emergency services. • 52nd St NE blocked east of the city • 27th Ave NE south of the city traversing Balta Dam • 52nd St NE west of the city and 27th Ave NE north of the city can be come washed out due to high water level. **City of Rugby, North Dakota** • Highway 3 underpass • Wentz Canal **City of Wolford, North Dakota** • Occasional blocked roads and overland flooding in the city during heavy rain events or spring snow melt • Basement flooding annually to a varying severity

For more information regarding flooding please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

Information on the history of flooding in Pierce County was obtained from the Federal Emergency Management Agency (FEMA); National Climatic Data Center (NCDC); National Oceanic and Atmospheric Administration (NOAA); Pierce County Office of Emergency Management; U.S. Dept. of Agriculture, Risk Management Agency (RMA); and the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).

Federal Emergency Management Agency

- Since 1953, Pierce County has had 23 Presidential Disaster Declarations, of which 10 were for flooding and another nine were severe storm declarations that had flooding as a resulting impact of some kind. According to Pierce County, North Dakota, Emergency Management and the Pierce County, North Dakota, Auditor's Office, most of the presidential disaster declarations have occurred since 1994.

National Climatic Data Center/National Oceanic and Atmospheric Administration

Table 4.7.1 summarizes the history of flooding in Pierce County between January 1, 1996, and December 31, 2022. Data was not available between January 1, 1950, to December 31, 1995, as only occurrences of tornado, thunderstorm wind, and hail were recorded. Starting January 1, 1996, all event types (48) are

recorded. A detailed hazard history for Pierce County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment. The following are key points.

- Pierce County, North Dakota, experienced four occurrences of flooding resulting in approximately one incident of significance every eight to 10 years.
- Approximately $296,000.00 in property damage and no crop damage was reported. A flooding incident on April 1, 2009, resulted in $271,000.00 in damage in the city of Rugby.
- No injuries or fatalities were reported.

Table 4.7.1 – 1996 to 2022 Pierce County, North Dakota, Flood Hazard History Summary

Occurrences	Fatalities	Injuries	Property Damage	Crop Damage
4	0	0	$296,000.00	$00.00

Source(s): National Climatic Data Center (NCDC), National Oceanic and Atmospheric Administration (NOAA)

Pierce County, North Dakota, Emergency Management

Table 4.7.2 illustrates public infrastructure damage information from presidential disaster declarations from flooding in Pierce County, North Dakota between 2009 and 2022. The following are key points.

- **DR-1829.** A total of 129 damaged projects were identified from the Spring 2009 flood declaration totaling $1,637,028.95. The cost share was approximately zero percent local, 7.22 percent state, and 92.8 percent federal. The average cost per damaged project was $12,690.15.
- **DR-1981.** A total of 23 damaged projects were identified from the Spring 2011 flood declaration totaling $176,196.56. The cost share was approximately 10.5 percent local, 5.4 percent state, and 81.8 percent federal. The average cost per damaged project was $7,660.72.
- **DR-4444.** A total of four damaged projects were identified from the Spring 2019 flood declaration totaling $15,183.60. The cost share was approximately 15.0 percent local, 10.0 percent state, and 75.0 percent federal. The average cost per damaged project was $3,795.90.

Table 4.7.2 2009 to 2022 Pierce County, North Dakota, Public Infrastructure Damages from Presidentially Declared Disaster – Flooding Events

Disaster No.	Year	Projects/Sites	Local Share	State Share	Federal Share	Total Cost
4128						
4553	2020					
4475	2019	7				

Source(s): Pierce County Auditor's Office; Pierce County Commission; Pierce County Emergency Management

U.S. Dept. of Agriculture, Risk Management Agency

- Crop loss from flood is tracked by the U.S. Dept. of Agriculture, Risk Management Agency (RMA). The RMA provides data on the crop type affected, damage cause description, determined acres and indemnity amount. The damage-cause description identifies the cause of damage and the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. **Between January 1, 2001, and December 31, 2022, Pierce**

County experienced three incidents of crop loss due to flooding impacting approximately 48.00 acres of crops totaling $2,652.00 in losses.

2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

According to the 2018 N.D. Enhanced Mitigation MAOP, the following information was obtained on flooding in Pierce County, North Dakota.

- According to the National Centers for Environmental Information, as of 2018, Pierce County has had one flash flood event and three flood events for a total of $296,000.00 in property damage, and no crop damage, injuries or fatalities.
- DR-4190 from June 25 to July 2, 2014, was a public assistance flooding declaration that included Pierce County North Dakota. Approximately $2,416,454 in federal share damages were incurred.

Probability

The probability of a hazard or threat is how likely it is it will happen. Profile meeting participants and the Steering Committee indicated the probability of a flood in Pierce County as likely meaning that there is between a 10 and 100 percent probability in the next year of an incident. The probability of flood in Pierce County can be determined through data provided by the National Climatic Data Center/National Oceanic and Atmospheric Administration; Pierce County Auditor's Office and Pierce County Highway Department; the U.S. Dept. of Agriculture, Risk Management Agency; the 2018 N.D. Enhanced Mitigation MAOP, and Pierce County Emergency Management. The N.D. Dept. of Water Resources has a flood risk mapping service. Figures 4.7.1 to 4.7.3 illustrate the base level engineering for flood risk for the cities of Balta, Rugby, and Wolford.

National Climatic Data Center/National Oceanic and Atmospheric Administration

Per Table 4.7.1, the following statistics on the probability of flooding in Pierce County is as follows:

- Pierce County experienced four occurrences of flooding resulting in approximately one incident of significance every eight to 10 years.
- Approximately $296,000.00 in property damage was reported resulting in $10,962.00 damages annually.
- No injuries or fatalities were reported.

U.S. Dept. of Agriculture, Risk Management Agency

- According to information obtained from the U.S. Dept. of Agriculture, Risk Management Agency (RMA), Pierce County experiences $115.30 in losses due to flooding annually.

2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

- Figure 4.7.5 is from the 2018 N.D. Enhanced Mitigation MAOP and shows the one-percent annual chance floodplain in North Dakota based on FEMA's NFHL, which only shows areas with

DFIRM data available. The One-Percent Annual Chance (100-Year) Floodplain is not present in Pierce County.

Extent/Magnitude

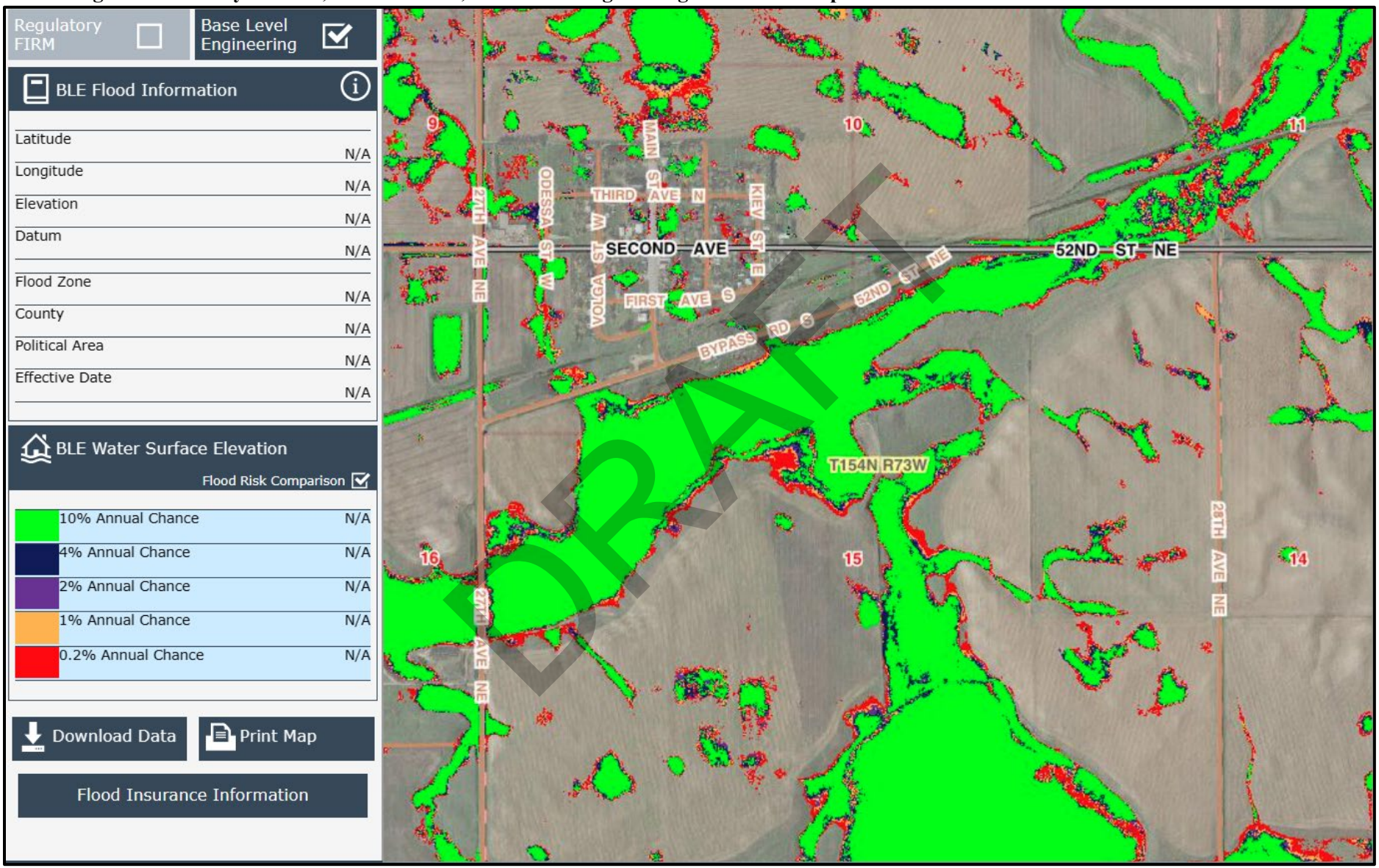
The extent/magnitude of a hazard or threat is expressed in the number of damages or losses either actualized in a community or estimated based on known assets and levels of risk. Profile meeting participants and the Steering Committee indicated the extent/magnitude of a flood in Pierce County, North Dakota, as catastrophic meaning that more than 50 percent of the jurisdiction, its people and property can be impacted. Based on the history of flooding in Tables 4.7.1 and 4.7.2 and crop loss information from the USDA-RMA, the following extent/magnitude of flooding in Pierce County, North Dakota, is determined.

- Per Table 4.7.1, approximately $271,000.00 in property damage occurred from a flood event on April 1, 2009, in the city of Rugby, North Dakota.
- Per Table 4.7.2, the largest flooding event in terms of total monetary damage was DR-1829 with $1,607,028.95, which was also the largest in terms of average cost per damaged project with $12,690.15 per project This was also the largest flooding event in terms of total damaged projects with 129 damaged projects.

U.S. Dept. of Agriculture, Risk Management Agency

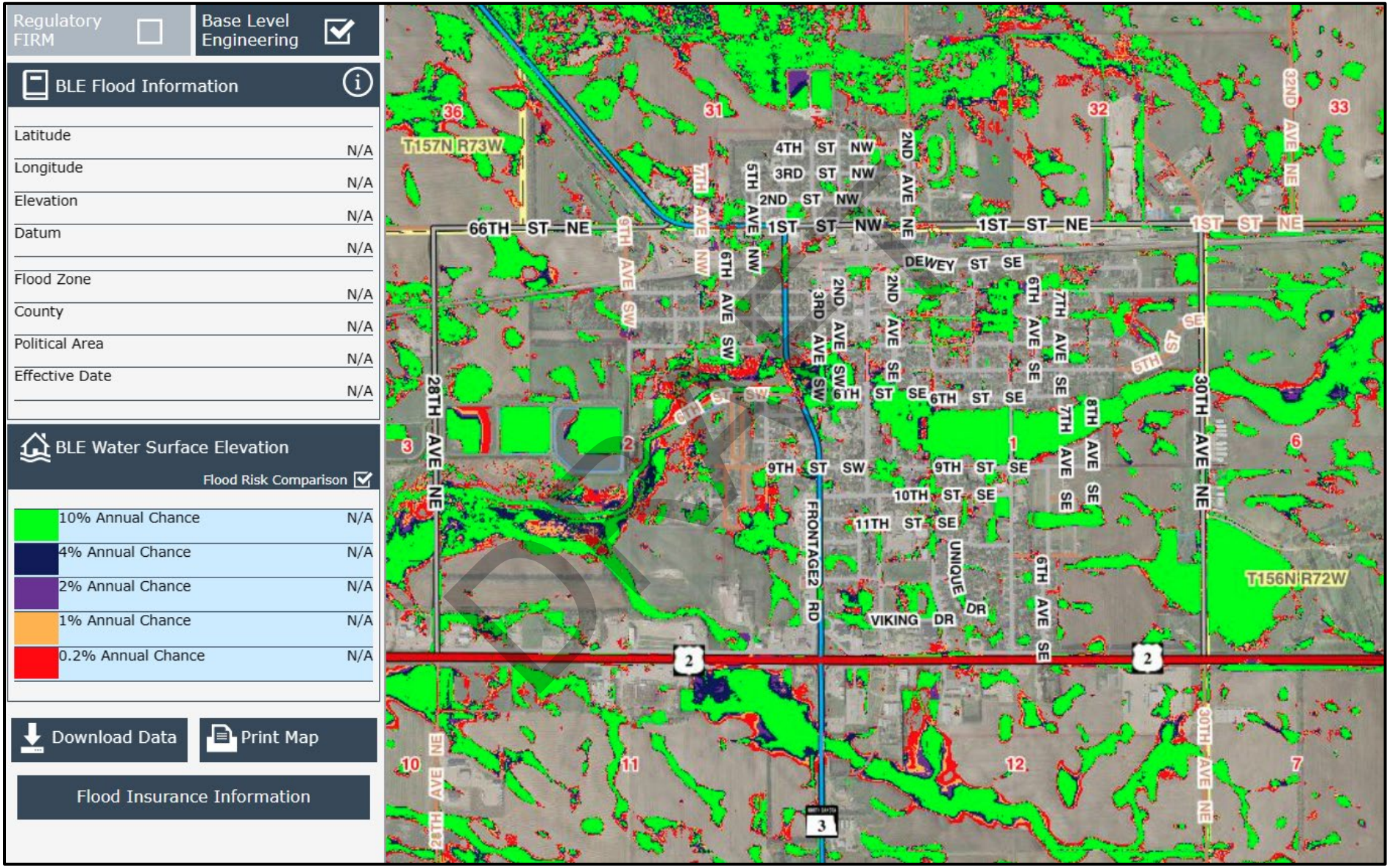
- Crop loss data from the USDA, RMA shows are large amount of crop loss due to flooding in the 1990s, but indemnity was not reported.

Figure 4.7.1 – City of Balta, North Dakota, Base Level Engineering Flood Risk Map



Source(s): N.D. Risk Assessment MapService

Figure 4.7.2 – City of Rugby, North Dakota, Base Level Engineering Flood Risk Map

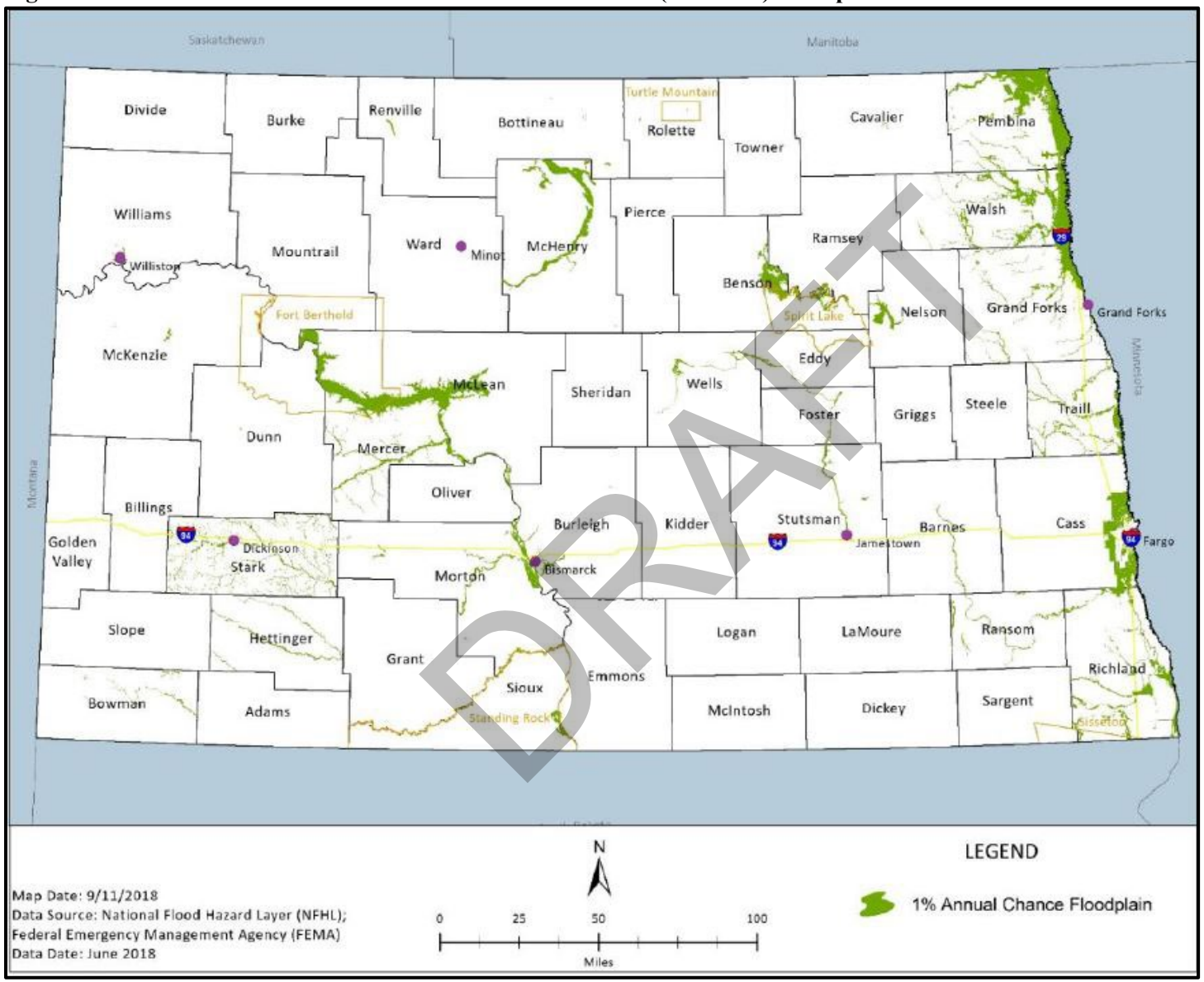


Source(s): N.D. Risk Assessment MapService

Figure 4.7.3 – City of Wolford, North Dakota, Base Level Engineering Flood Risk Map

Source(s): N.D. Risk Assessment MapService

Figure 4.7.4 – 2019 North Dakota One-Percent Annual Chance (100-Year) Floodplain



Source(s): 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

National Flood Insurance Program (NFIP)

The National Flood Insurance Program (NFIP), managed by the Federal Emergency Management Agency (FEMA), enables homeowners, business owners, and renters in participating communities to purchase federally backed flood insurance. The NFIP provides affordable insurance to property owners and encourages communities to adopt and enforce floodplain management regulations. This insurance offers an insurance alternative to disaster assistance to meet the escalating costs of repairing flood damage to buildings and their contents.

Participating communities agree to adopt and enforce floodplain management ordinances to reduce future flood damage. There are now more than 20,600 participating communities across the United States and its territories.

Federal flood insurance is available for residents and business owners in both high-risk and moderate-to-low risk areas. Insurance is required for buildings in high-risk areas that have loans from federally regulated or insured lenders. This requirement extends to disaster assistance loans from the Small Business Administration. However, it is not a requirement of the NFIP to have a mortgage or SBA loan or live in a high-risk area to obtain flood insurance. It is available community-wide, with premiums that vary according to the level of risk.

Table 4.7.3 shows the communities participating in the National Flood Insurance Program. Communities that participate in the National Flood Insurance Program (NFIP) are required to adopt flood plain regulations that meet NFIP objectives:

- New buildings must be protected from flooding damage because of a 1-percent chance flood.
- New development must not cause an increase in flood damage to other property.
- There is one Digital Flood Insurance Rate Map (DFIRM) for the city of Rugby. The DFIRM can be found on a disc located at the beginning of Chapter 5, Threat and Hazard Identification Risk Assessment.
- A map of the watersheds of Pierce County, North Dakota, is shown in Chapter 9, Maps.
- Chapter 6, Mitigation Strategy includes mitigation projects to enroll jurisdictions and encourage participation in the National Flood Insurance Program (NFIP).
- Mitigation Project PR-3 encourages enrollment and participation in the NFIP.
- Mitigation Project PR-4 encourages review of local ordinances to meet or exceed minimum federal and state requirements, comply with NFIP, and enroll in the Community Rating System.
- Chapter 6, Mitigation Strategy includes mitigation projects to enroll jurisdictions and encourage participation in the National Flood Insurance Program (NFIP). Mitigation Project PR-3 encourages enrollment and participation in the NFIP. Mitigation Project PR-4 encourages review of local ordinances to meet or exceed minimum federal and state requirements, comply with NFIP, and enroll in the Community Rating System.

Table 4.7.3 – Pierce County, North Dakota, Participation in National Flood Insurance Program

Jurisdiction Name	CID #	Initial FHBM Identified	Initial FIRM Identified	Mapped
Pierce County	380087	--	--	(NSFHA)
City of Rugby	380088	3/22/74	7/16/79	3/16/92

Source: FEMA Community Status Book Report, North Dakota

NFIP Program Policies, Claims, and Loss Payments

According to the N.D. Dept. of Water Resources as of October 13, 2013, and the 2018 N.D. Enhanced April 16, 2018, there is one NFIP policy in Pierce County, North Dakota, providing $16,000 in coverage. A total of six claims have been paid in 1978 totaling $45,786.00.

NFIP Repetitive Loss Properties

Per FEMA, a repetitive loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. The losses must be within 10 years of each other and be at least 10 days apart. A RL property may or may not be currently insured by the NFIP.

As of October 13, 2023, there are no repetitive loss properties in Pierce County, North Dakota.

NFIP Severe Repetitive Loss Properties

A Severe Repetitive Loss (SRL) property is a residential property that has had at least four NFIP claim payments over $5,000 each with two such claims occurring within any ten-year period, or residential property that has had at least two separate claim payments within any ten-year period that have cumulatively exceeded the value of the property.

As of October 13, 2023, there are no severe repetitive loss properties in Pierce County, North Dakota.

Threat and Hazard Identification Risk Assessment (THIRA)

Table 4.7.3 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for flood. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.7.3 represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.7.3 – Pierce County, North Dakota, Flood Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County						
City of Balta						
City of Rugby						
City of Wolford						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.7.4 provides information on the specific impact, frequency, likelihood, vulnerability and capability of flood in Pierce County. A list of impacts identified as commonplace for natural hazards and

man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.7.4 – Pierce County, North Dakota, Flood Risk Assessment

Impact	• Roads can become washed out and limit access for emergency services and economy activity • Loss of economy resulting from crop damage • Increased mosquitos-may transmit disease due to lots of grass and standing water • Large property loss, equipment/vehicles, personal property • Can impact lift stations and cause sewer backups contributing to infectious disease • Power outages, sometimes prolonged • Damage to critical facilities and infrastructure • Potential loss of life from fast moving water running over roads and producing washouts • Homes with basements can become flooded from ground saturation/seepage • Increased crime/fraud as emergency services are limited in access and mobility • Increase in infectious disease from overland flooding and standing water (mold and blue/green algae) • Cause of secondary hazards such as shortage or outage of critical materials or infrastructure, transportation incidents, and/or adversarial activity • Increase in traveling distances for residents commuting to work, school buses, emergency response vehicles, general economic activity, and agriculture-related activity due to blocked roads from flooding • **Potential for permanent closure of county and township roads** • Compromised/diminished/murky water quality from agricultural runoff carried by flood waters	• Between January 1, 2001, and December 31, 2022, Pierce County experienced three incidents of crop loss due to flooding impacting 46.00 acres totaling $2,652.00 in losses. • Per Table 4.7.2, the largest flooding event in terms of total monetary damage was DR-4553 with $349,215.06 and the largest in terms of average cost per damaged site was DR-4475 with $4,206.60 per site. The largest flooding event in terms of damaged sites was DR-4444 with 95 damaged sites. • **According to the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), Pierce County has no state, county, or township bridges that experience scouring from flooding.** **Blocked Roads** •

Table 4.7.4 – Pierce County, North Dakota, Flood Risk Assessment – Continued

Frequency	• Annual occurrences of localized flooding of streets in incorporated cities, and bi-annual flooding of county and township roads • Periodic flash flooding from heavy rains in the summer • Overland flooding from increased heavy rains in the summer and snow melt in the spring occurring each year to varying degrees of severity • Increasing irregularity in precipitation patterns • Agricultural land management practices to maximize production can impact the severity flooding • **Presidential Disaster Declarations in Pierce County in 2009, 2011, 2019, 2020, and 2022.** • Per Table 4.7.1, probability of flooding in Pierce County is approximately one incident of	• Spring 2017 27th Ave NE two miles west of Rugby became blocked from snow melt for two months. Resulted in three people driving cars into the water. • Spring 2017 snow melt resulted in washed out 5th Ave culvert in city of Rugby • Annual occurrences of localized flooding of streets in incorporated cities • 37th St NE in 2013 in Hillside Township was blocked from heavy rain and high winds – road was raised • Saturation of roadways annually due to inadequate drainage of snow melt hinders travel
Likelihood	More Likely • Inadequate drainage of Highway 3 underpass in city of Rugby • Low spots on highways and township roads • Inadequate vegetation control of roadway ditches and culverts • Inadequate size of culverts • Rapid change of seasons = excessive snow melt/drainage • Low spots on county and township roads • Overland flooding due to lack of storm water systems in smaller incorporated cities and rural areas • **High water table in specific locations/wet closed basins** • Prevalence of impervious surfaces and pavement increases runoff and decreases water absorbed naturally • **A large portion of eastern Pierce County has heavy clay-base soil which contributes to rapid drainage of runoff in eastern Pierce County**	Less Likely • Likelihood dependent local weather and climate patterns • Upgraded culverts installed from federal funding received during presidential disaster declarations • **A large portion of eastern Pierce County has heavy clay-base soil which contributes to rapid drainage of runoff in eastern Pierce County** • **The remainder of Pierce County has sandy soils because it is in the prairie pot-hole region** • Farm and field drain tile and dewatering systems • **Pierce County has a medium flood hazard ranking by jurisdiction in the 2018 N.D. Enhanced Mitigation MAOP** • Installed cement wall and pad for 5th Ave culvert in city of Rugby • Likelihood dependent local weather climate patterns • Majority of culverts upgraded after 2009 and 2011 flooding

	• **The remainder of Pierce County has sandy soils because it is in the prairie pot-hole region** • Farm and field drain tile and dewatering systems • Pierce County is the most glaciated county in the state

Table 4.7.4 – Pierce County, North Dakota, Flood Risk Assessment – Continued

Vulnerability	More Vulnerable • Lack of storm water system in smaller jurisdictions – • Smaller jurisdictions and rural areas with agriculture-based economies are vulnerable to crop and livestock losses from flooding impacts • Low-lying roads in rural areas of the county and townships • Multiple severe weather systems occurring close together further inundating existing flooding impacts • Limited local financial resources to accomplish projects independently during Presidential Disaster Declarations • Pierce County is "resource poor" in staffing terms • **Decommissioned railroad right-of-way infrastructure is abandoned and deteriorates to a point of restricting drainage and causing overland flooding** • **Cities of Balta and Wolford are not enrolled in the NFIP** • Highway 3 underpass in city of Rugby) • Wetlands/prairie pot holes throughout the county • Rapid change of seasons resulting in rapid snow melt and drainage • Inadequate size of culverts • **Lack of flood ordinances in incorporated cities**	Less Vulnerable • **LiDAR and constant improvements in technology is available for flood mapping. The DWR is currently updating all DFIRMS through a FEMA grant.** • Advanced warning systems such as IPAWS, cell phones, internet, and TV for flash flooding events • Some (not all) road grade raises have been completed. • Upgraded culverts installed from federal funding received during presidential disaster declarations • Pierce County and the City of Rugby enrolled in the NFIP • No areas in Pierce County protected by USACE Levee Safety Program Levees • Alternate routes were identified for townships when roads are blocked

Table 4.7.4 – Pierce County, North Dakota Flood Risk Assessment – Continued

Capability	Administrative and Technical • **FEMA Flood Maps – being updated through a federal grant managed by the N.D. Dept. of Water Resources to include enhanced aerial imagery and the base level engineering data** • Active County Commission and City Council(s) • Contracts for engineering, planning, and grant writing • GIS services are provided by county engineering contract • Pierce County with GIS capabilities through tax equalization • Pierce County Water Resource District Board • ND Dept. of Water Resources - ND Risk Assessment Mapping (NDRAM) • Administration of Public Assistance (PA) funding through FEMA from Presidential Disaster Declarations • **Pierce County, North Dakota, Road Superintendent and Emergency Mananger** Education and Outreach • Active emergency management department with education and outreach capabilities • Social media accounts – Pierce County News, Pierce County Emergency Management, Sheriff's Office • Pierce County Water Resource District Board provides regulation to land-owners for issues pertaining to water Financial • Relies on federal and state entities for assistance with major projects • Public Assistance (PA) funding through FEMA from Presidential Disaster Declarations Planning and Regulatory • City of Rugby, North Dakota, adopted NFIP, enrolled and has flood plain ordinances • Pierce County Water Resource District Board • Pierce County Planning and Zoning Committee and Administrator • Pierce County Floodplain Administrator • Pierce County adopted NFIP and has flood plain ordinances • ND Dept. of Water Resources - ND Risk Assessment Mapping (NDRAM) • ND Dept. of Water Resources also has regulations in place for surface water • USDA, Natural Resource Conservation Service (NRCS) • USDA, Farm Services Agency (FSA)

Vulnerabilities to Publicly-Owned Buildings and Property

Vulnerabilities to publicly-owned buildings and property from floods are always present whether flooding is due to flash flooding, overland, ground seepage, river channel, or closed basin, whether a direct impact to the structure or through secondary affects. The Pierce County Road Department shops are not located on high points throughout the county and therefore are vulnerable to flooding.

In the city of Rugby, publicly owned buildings and property near the Wentz Canal experience a 10 percent chance of flooding. The Heart of America Medical Center is located adjacent to the 100-year floodplain.

A summary of publicly-owned buildings and property is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Damage to critical facilities and infrastructure such as drinking/potable water and sewer systems, roadways, and electric power lines can happen when flooding occurs. Drinking/potable water and sewer systems can be shut down when power to lift stations and water treatment facilities are suspended, or the systems become overwhelmed. Roads can be washed out or blocked from overland flooding, which limits access for emergency services. The Steering Committee identified lift stations and roads located in low-lying areas as the most vulnerable to flooding.

In the city of Rugby, publicly owned buildings and property near the Wentz Canal experience a 10 percent chance of flooding. The Heart of America Medical Center is located adjacent to the 100-year floodplain. An inventory of critical facilities and infrastructure is provided in Chapter 3, Profile and Inventory.

Vulnerabilities to New and Future Development

New and future development in Pierce County is at high risk of flooding if allowed in a floodplain. With projected local populations stable in Pierce County through 2030, the vulnerability to flooding will not change if development is restricted from flood-prone areas.

Flood mapping helps determine which areas are flood-prone and not suitable for development. New and future development in Pierce County is more vulnerable to flooding as it does not have flood maps with enough detail to assist the county and cities in planning for future growth accordingly. However, with the completion of the updated FEMA flood maps through the N.D. Dept. of Water Resources, vulnerabilities to new and future development from flooding will be easier to identify.

Data Limitations

The lack of digitized records of public assistance provided to local governments from flood events makes collection and analysis of impacts from the hazard difficult to comprehend during mitigation planning processes.

National Climatic Data Center/National Oceanic and Atmospheric Administration

The hazard history provided in terms of property damage and crop damage (which are only estimates) is calculated based on what the National Weather Service received from insurance companies and individual property owners upon request. Both sources have been reluctant to share that information. Therefore, both practices were discontinued. Because of this, the National Weather Service makes a best guess using all available data at the time of the publication. The damage amounts are received from a variety of sources. Property and crop damage should be considered as a broad estimate.

In addition, the hazard history provided through the National Climatic Data Center/National Oceanic Atmospheric Administration's Storm Events Database contains data from **1950 to 2021**, as entered by NOAA's National Weather Service (NWS). Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type. The following timelines show the different time spans for each period of unique data collection and processing procedures. **Flooding was not recorded as a separate incident until 1996.**

1. **Tornado:** From 1950 through 1954, only tornado events were recorded.
2. **Tornado, Thunderstorm Wind and Hail:** From 1955 through 1992, only tornado, thunderstorm wind and hail events were keyed from the paper publications into digital data. From 1993 to 1995, only tornadoes, thunderstorm wind and hail events have been extracted from the Unformatted Text Files.
3. **All Event Types (48 from Directive 10-1605):** From 1996 to present, 48 event types are recorded as defined in NWS Directive 10-1605.

Other Key Documents

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- National Flood Insurance Program (and required flood ordinances)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Flood Annex
- North Dakota Dept. of Water Resources Risk Assessment Mapping (RAM) Service (flood mapping software)
- North Dakota League of Cities: Planning and Zoning Handbook
- North Dakota State Building Code
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Comprehensive Plan (2019)
- Pierce County Evacuation Plan through First District Health Unit (FDHU)
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Mass Care Plan through Pierce County Emergency Management
- Pierce County Shelter Plan through First District Health Unit (FDHU)
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

- Pierce County Zoning Ordinance

4.8 Geologic Hazard

Including abandoned mine lands, earthquakes, environmental minerals (erionite, uranium, arsenic), environmental minerals (radon), expansive/unstable soils, landslides, meteorite falls, and volcanic hazards.

Characteristics

A geologic hazard, and the different classifications of the hazard, are described as follows:

- **Abandoned Mine Lands (AMLs):** AMLs are hazardous mine subsidence and are caused by the collapse of abandoned underground mines.
- **Earthquake:** An Earthquake is a sudden movement of the earth caused by the abrupt release of strain that has accumulated over a long time.
- **Environmental Minerals (Erionite, Uranium, Arsenic):** These minerals, and the rocks that host them, are hazardous with localized and prolonged exposure.
- **Environmental Minerals (Radon):** Radon is a colorless, odorless, and tasteless gas that originates from the radioactive decay of uranium minerals found in soils and in igneous rock and their derivative mineral weathering products.
- **Expansive/Unstable Soils:** Expansive/unstable soils are soils that expand when water is added and shrink when they dry out.
- **Landslides:** Landslides are the movement of rock, soil, artificial fill, or a combination thereof on that moves down-slope.
- **Meteorite Falls:** Meteorite Falls are samples of early solar system materials.
- **Volcanic Hazards:** Geologic impacts from volcanic activity.

Seasonal Pattern	None. Can occur at any time throughout the year. Most prevalent after heavy precipitation events such as severe summer or winter weather.
Duration	Seconds/Hours/Days/Weeks/Months/Years
Speed of Onset	Seconds/Hours/Days/Weeks/Months/Years
Location	Depends on the extent/magnitude of each specific geologic hazard characteristic but can occur county-wide across all jurisdictions (incorporated and/or unincorporated) for Environmental Minerals (Radon) across the county. Localized landslides have been mapped in eastern Pierce County. Landslides occur on the engineered slopes of the McClusky Canal. According to the N.D. Public Service Commission (PSC), there are no records of abandoned mine lands in Pierce County, North Dakota.

For more information regarding geologic hazard please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

The history of geologic hazard is summarized on the following pages. A detailed hazard history for Pierce County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

- **Abandoned Mine Lands (AMLs).** There are no AMLs located in Pierce County, North Dakota.
- **Earthquake.** A magnitude 2.6 earthquake occurred on the border between Sheridan and Wells Counties on November 15, 2008. The location of this earthquake was south of Pierce County. Figure 4.8.1 illustrates the locations of earthquakes in North Dakota as of 2015.
- **Environmental Minerals (Erionite, Uranium, Arsenic).** There is not a history of environmental minerals (erionite, uranium, arsenic) soils events in Pierce County.
- **Environmental Minerals (Radon).** According to the N.D. Dept. of Environmental Quality, between January 1, 2007, and December 31, 2021, there were approximately 18 positive tests for radon in residential homes in Pierce County.
- **Expansive/Unstable Soils.** There is not a history of expansive/unstable soils events within Pierce County.
- **Landslides.** According to the N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP, North Dakota has only had one disaster declaration due to a geologic hazard: DR-1279 was declared for severe storms, tornadoes, snow and ice, flooding, ground saturation, and landslides/mudslides. The event occurred from March 1, 1999, to July 19, 1999, and impacted 42 counties and four reservations. Over $100 million in disaster assistance was provided. Pierce County was included in this disaster declaration. Figure 4.8.2 illustrates areas of the state of North Dakota mapped by the N.D. Geological Survey susceptible to landslides.

  The engineered slopes of the McClusky Canal have experienced slope failure.

  According to planning process participants, landslides occur at Coal Mine Lake and gravel pits across Pierce County.
- **Meteorite Falls.** There is not a history of meteorite falls in Pierce County.
- **Volcanic Hazards.** There is not a history of volcanic hazards in Pierce County.

Probability

The probability of a hazard or threat is how likely it is it will happen. The 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP) classifies each type of geologic hazard's probability below.

Common Occurrence	Abandoned Mine Lands (AMLs), Expansive/Unstable Soils, Environmental Minerals (Radon) and Landslides
Limited Occurrence	Environmental Minerals (Erionite, Uranium, Arsenic), Earthquake
Remote Occurrence	Meteorite Falls and Volcanic Hazards

Note: Due to their classification as remote occurrences, detailed information on meteorite falls and volcanic hazards is not available.

The Steering Committee identified the state's definitions for probability of geologic hazard as applicable to Pierce County. The following probability for geologic hazard in Pierce County is as follows:

- **Abandoned Mine Lands (AMLs).** According to the N.D. Public Service Commission (PSC), there are no Abandoned Mine Lands in Pierce County. The probability of this type of geologic hazard is zero.

- **Earthquake.** The likelihood of earthquake occurrence in North Dakota is low. However, small magnitude earthquakes, commonly in the range of magnitude 3, which are not felt at the surface, have occurred in the state at the rate of approximately one event per decade (N.D. Geologic Survey). The locations of these earthquakes vary but has never occurred in Pierce County. The probability of earthquake in Pierce County is low.

- **Environmental Minerals (erionite, uranium, arsenic).** This type of geologic hazard is localized to its area of geologic origination. They are not expansive or extensive and not found in Pierce County at high concentrations based on available information. Gravel mining in western North Dakota excavated deposits of these minerals to be used in surfacing of roads, parking lots and other infrastructure surfaces throughout the state. The probability of an exposure incident is unknown in Pierce County. Therefore, the probability of this geologic hazard would be low to unknown in Pierce County.

- **Environmental Minerals (radon).** All of North Dakota is in EPA Radon Zone 1. Therefore, all counties in the state are vulnerable to this hazard and all homes have a high potential to test for elevated levels of radon. According to the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), there is greater than a 90 percent chance of this type of geologic hazard occurring each year anywhere in the state.

- **Expansive/Unstable Soils.** This type of geologic hazard can be found across North Dakota and is exacerbated by drought and periods of high precipitation. Therefore, the probability of expansive/unstable soils can be tied to the severity of other natural hazards that can occur at any time throughout the year. The probability of expansive/unstable soils in Pierce County is low.

- **Landslides.** Landslide events are indicative of moisture conditions as they occur more frequent during wet years and are even more probably if the wet years were preceded by dry years. According to the N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), the probability of future occurrences of landslides is low in Pierce County as no areas of high

susceptibility are identified. **However, the engineered slopes of the McClusky Canal experience slope failure, in addition to landslides at Coal Mine Lake and gravel pits across the county. The probability of these incidents occurring in the future is high.**

- **Meteorite Falls.** This type of geologic hazard is classified as a remote occurrence and, therefore, the probability is very low.

- **Volcanic Hazards.** This type of geologic hazard is classified as a remote occurrence and, therefore, the probability is very low.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damage or losses either caused or could occur in a community. Jurisdictions with the highest number of abandoned mine lands, hydrologic corridors, locations with expansive/unstable soils or other geologically active areas are at the greatest risk to impacts from occurrences of geologic hazards.

- **Abandoned Mine Lands (AMLs).** The extent/magnitude of the collapse of an AML is specific to the location and size of the AML. Therefore, the extent/magnitude can range from no damage at the surface and small in geographic expanse to extensive damage if impacting structures or infrastructure.

- **Earthquake.** A HAZUS Analysis was completed in the N.D. 2018 Enhanced Mitigation Mission Area Operations Plan (MAOP) to estimate losses from a magnitude 5 earthquake. The total economic losses to Pierce County are estimated to be between $250,000 to $500,000 from this type of event. The extent/magnitude of earthquakes in Pierce County would be nominal and instrumental in nature and not felt by residents.

- **Environmental Minerals (erionite, uranium, arsenic).** This type of geologic hazard is localized to its area of geologic origination. They are not expansive or extensive and not found in Pierce County at high concentrations based on available information. Therefore, the extent/magnitude of this geologic hazard would be low or unknown in Pierce County.

- **Environmental Minerals (radon).** Based on information provided by the N.D. Dept. of Environmental Quality, prolonged exposure to radon can cause lung cancer. Based on a U.S. Environmental Protection Agency (EPA) assessment of risk for radon in homes, radon in indoor air is estimated to cause about 21,000 lung cancer deaths each year in the United States. Radon-induced lung cancer typically develops 5-25 years after exposure. There is no evidence that other respiratory diseases, such as asthma, are caused by radon exposure.

- **Expansive/Unstable Soils.** The extent/magnitude of expansive/unstable soils event could render a structure uninhabitable or unusable. Damage from this type of geologic event could also result in either short-term or prolonged loss of service of transportation or energy infrastructure. There is not a history of his type of geologic event in Pierce County. Therefore, the extent/magnitude of expansive/unstable soils is very low in Pierce County.

- **Landslides.** The extent/magnitude of a landslide event could render a structure uninhabitable or unusable. Damage from this type of geologic event could also result in either short-term or prolonged loss of service of transportation, communication, or energy infrastructure. **The extent/magnitude of landslide in Pierce County is limited to slope failures of the McClusky Canal, in addition to landslides at Coal Mine Lake and gravel pits across Pierce County.**

- **Meteorite Falls.** The extent/magnitude of a meteorite fall is unknown as it has never occurred in Pierce County.

- **Volcanic Hazards.** There are no volcanoes in Pierce County.

Threat and Hazard Identification Risk Assessment

Table 4.8.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for geologic hazard. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.8.2 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.8.2 – Pierce County, North Dakota, Geologic Hazard Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County						
City of Balta						
City of Rugby						
City of Wolford						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Tables 4.8.3 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of geologic hazard in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Vulnerabilities to Publicly-Owned Buildings and Property

According to the 2018 N.D. Enhanced Mitigation (MAOP), the following vulnerabilities exist to publicly-owned buildings and property from the following geologic hazards:

- **Abandoned Mine Lands (AMLs).** According to the PSC, no known publicly owned buildings or infrastructure are believed to be affected.

- **Environmental Minerals (erionite, uranium, arsenic).** This type of geologic hazard is localized to its area of geologic origination. They are not expansive or extensive and not found in Pierce County at high concentrations based on available information. Therefore, publicly-owned buildings and property in Pierce County are not vulnerable.

- **Environmental Minerals (radon).** Radon poses a risk to all publicly-owned buildings and infrastructure as all North Dakota counties are in the EPA Zone I. Radon could cause economic impacts or impacts to the functioning of government services through prolonged exposure to employees that may develop lung cancer.

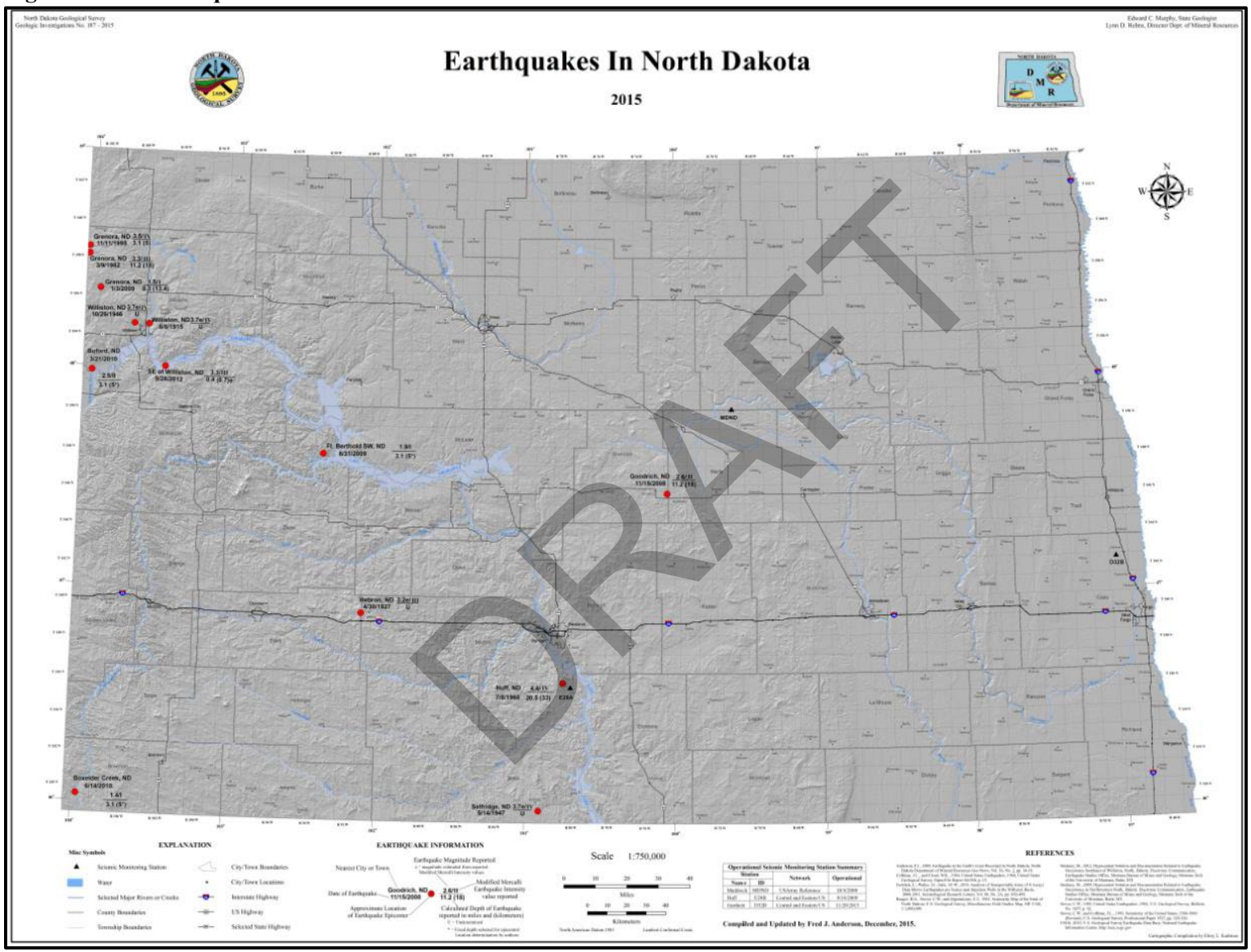
- **Expansive/Unstable Soils.** Most structures remain unaffected by known impacts from expansive/unstable soils. However, if damage were to occur, the continuity of publicly-owned buildings and property could be disrupted. There are no known publicly-owned buildings or property in Pierce County impacted by expansive/unstable soils.

- **Landslides.** Most structures remain unaffected by known impacts from landslides. However, if damage were to occur, the continuity of publicly owned buildings and property could be disrupted. There are no known publicly-owned buildings or property in Pierce County impacted by landslides.

- **Meteorite Falls.** No known vulnerability to publicly-owned buildings and property.

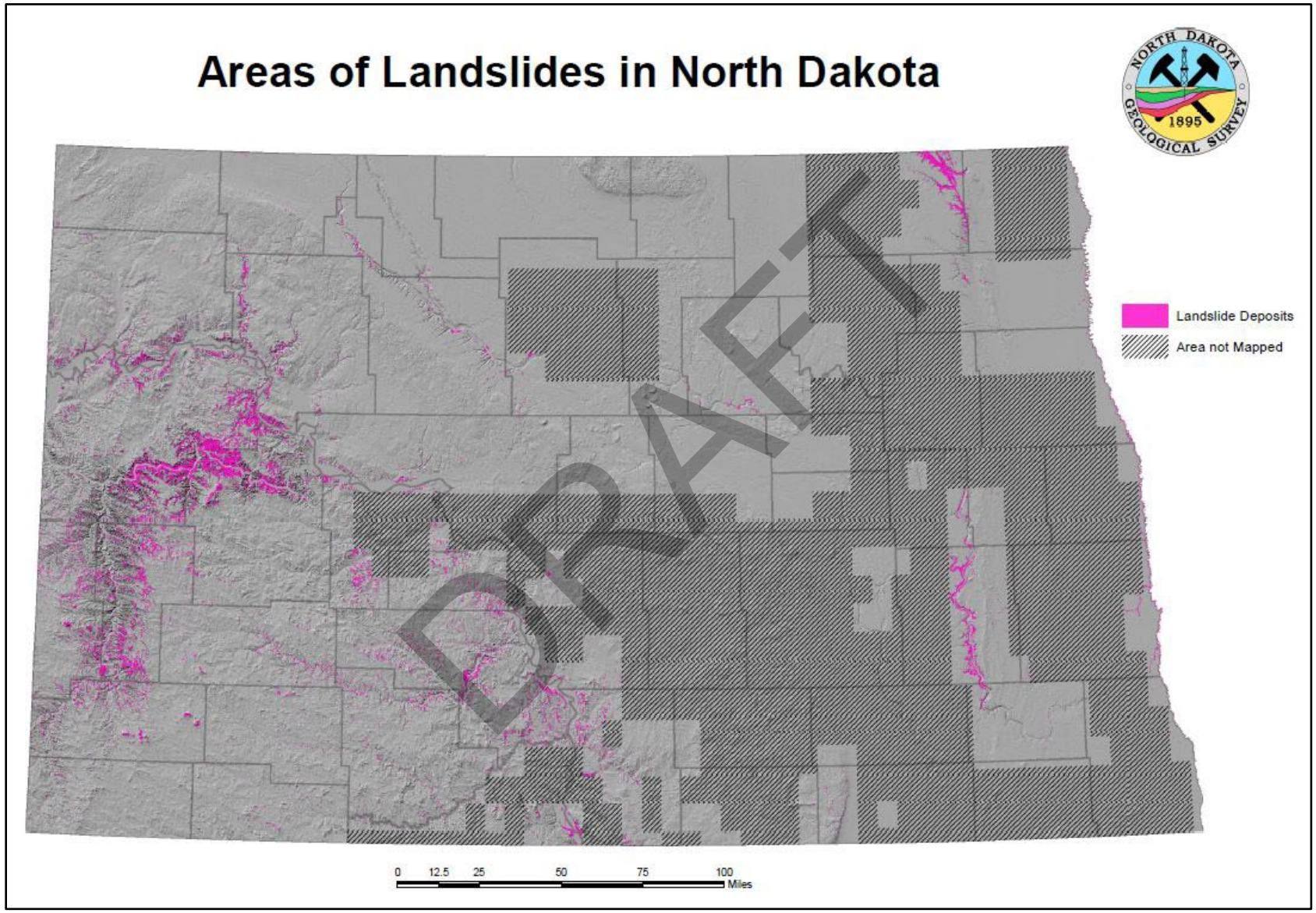
- **Volcanic Hazards.** No known vulnerability to publicly-owned buildings and property.

Figure 4.8.1 – Earthquakes in the State of North Dakota as of 2015



Source(s): 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP); N.D. Geological Survey

Figure 4.8.2 – 2021 Areas of Landslides in North Dakota



Source(s): N.D. Geological Survey

Table 4.8.3 – Pierce County, North Dakota, Geologic Hazard Risk Assessment

Impact	• Blocked Roads & Delayed Emergency Response • Business & Government Interruptions • Infrastructure Degradation • Loss of Power/Electricity Outage • Soil Degradation/Erosion	• **Short-term or prolonged loss of service of transportation, communication, or energy infrastructure.** • **Structures could become uninhabitable or unusable.**
Frequency	• DR-1279 from March 1, 1999, to July 19, 1999, and impacted 42 counties and four reservations. Over $100 million in disaster assistance was provided. Pierce County was included in this disaster declaration. • Earthquake near the City of Goodrich in 2008	• According to the N.D. Dept. of Environmental Quality, between January 1, 2007, and December 31, 2021, there were approximately 18 positive tests for radon in residential homes in Pierce County.
Likelihood	More Likely • All North Dakota counties are in EPA Radon Zone 1 • Drought and periods of heavy precipitation exacerbate expansive/unstable soils • Presence of McClusky Canal • Presence of Sheyenne River Hydrologic Corridor	Less Likely • Abandoned mine reclamation projects by the N.D. Public Service Commission • No AMLs in Pierce County
Vulnerability	More Vulnerable • All North Dakota counties are in EPA Radon Zone 1 • Drought and periods of heavy precipitation exacerbate expansive/unstable soils • Presence of McClusky Canal • Presence of Sheyenne River Hydrologic Corridor • **Southern third of Pierce County mapped for landslide susceptibility by the N.D. Geological Survey**	Less Vulnerable • Building codes and zoning • Abandoned mine reclamation projects by the N.D. Public Service Commission • No AMLs in Pierce County • **Northern two-thirds of Pierce County mapped for landslide susceptibility by the N.D. Geological Survey**
Capability	• The federal reclamation fee on coal that has been mined in the United States since the 1970s funds the N.D. Public Service Commission abandoned mine reclamation projects. The landslide mapping done by the N.D. Geological Survey identifies the location and extent/magnitude of existing landslides and provides context to direct future development.	

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, critical facilities and infrastructure could be impacted by geologic hazards. The primary threats to critical facilities and infrastructure from geologic hazards are to county, city and township road systems, and transportation, communication, and energy infrastructure. Electrical grid facilities and transportation infrastructure are the most likely to be impacted if a geologic hazard event occurred. The delivery of goods and services could be disrupted if damage occurred to transportation infrastructure. Medical care facilities and emergency response capabilities would be impacted by power outages (whether prolonged or brief) occurring from geologic hazards. A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

- **Abandoned Mine Lands (AMLs).** According to the PSC, no known publicly owned buildings or infrastructure are believed to be affected.
- **Environmental Minerals (erionite, uranium, arsenic).** Critical facilities and infrastructure are not at risk to Environmental Minerals.
- **Environmental Minerals (radon).** Radon poses a risk to all publicly-owned buildings and infrastructure as all North Dakota counties are in the EPA Zone I. Radon could cause economic impacts or impacts to the functioning of government services through prolonged exposure to employees that may develop lung cancer.
- **Expansive/Unstable Soils.** Most critical facilities remain unaffected by known impacts from expansive/unstable soils. However, if damage were to occur, the services provided by the impacted critical facility or infrastructure could be disrupted resulting in either temporary or prolonged shortages or outages. There are no known critical facilities or infrastructure in Pierce County impacted by expansive/unstable soils.
- **Landslides.** Most critical facilities remain unaffected by known impacts from landslides. However, if damage were to occur, the services provided by the impacted critical facility or infrastructure could be disrupted resulting in either temporary or prolonged shortages or outages. There are no known critical facilities or infrastructure in Pierce County impacted by landslides.
- **Meteorite Falls.** No known vulnerability to critical facilities and infrastructure.
- **Volcanic Hazards.** No known vulnerability to critical facilities and infrastructure.

Vulnerabilities to New and Future Development

New development would largely avoid physical impact from geologic hazards and are not vulnerable if located away from AMLs or area susceptible to expansive/unstable soils or landslides. However, incorporated jurisdictions lacking zoning and building codes and/or enforcement can be more vulnerable to geologic hazards as this oversight in development is lacking.

- **Abandoned Mine Lands (AMLs).** No vulnerability to new and future development in Pierce County.

- **Environmental Minerals (erionite, uranium, arsenic).** No vulnerability to new and future development in Pierce County.
- **Environmental Minerals (radon).** New and future development will be vulnerable to Radon as all counties in North Dakota are in the EPA Zone I.
- **Expansive/Unstable Soils.** New and future development should be directed to areas not prone or susceptible to expansive/unstable soils ensure vulnerabilities are reduced and/or eliminated.
- **Landslides.** New and future development should be directed to areas not prone or susceptible to landslides to ensure vulnerabilities are reduced and/or eliminated.
- **Meteorite Falls.** No known vulnerability to publicly-owned buildings and property.
- **Volcanic Hazards.** No known vulnerability to publicly-owned buildings and property.

Data Limitations and Other Key Documents

The N.D. Geological Survey's landslide mapping identifies areas that have failed, which can be suggestive of an increased likelihood of future events. However, the landslide mapping completed-to-date is not predictive.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Geologic Hazard Annex
- North Dakota Geological Survey 1:24,000 Landslide Area Map Series
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Commercial Animal Feed Operation Ordinance
- Pierce County Comprehensive Plan (2019)
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

4.9 Hazardous Material Release

Characteristics

Hazardous materials are any substance in any quantity or form that may pose an unreasonable risk to the safety, health, environment, and property of citizens. The term "hazardous material" covers a wide array of products, from innocuous ones such as hair spray in aerosol dispensers and wash preservatives such as creosote to highly toxic or poisonous material such as polychlorinated biphenyl (PCB's) and phosgene gas. The potential severity of hazards of these materials is varied but the primary reason for their designation is their risk to public safety. The Federal Motor Carrier Safety Administration has nine categories of hazardous materials that are:

- Explosives (Class 1)
- Gases (Class 2)
- Flammable and combustible liquids (Class 3)
- Flammable solids, spontaneously combustible, and dangerous when wet (Class 4)
- Oxidizing substances and organic peroxides (Class 5)
- Toxic/poisonous substances poison inhalation (Class 6)
- Radioactive materials (Class 7)
- Corrosive substances (Class 8)
- Miscellaneous hazardous materials/products, substances, or organisms (Class 9)

Hazardous material incidents can be categorized into two distinct groups – incidents of a transportation nature and those that occur at a stationery or fixed facility (Tier II).

Seasonal Pattern	None. Anhydrous Ammonia is more likely in the spring and fall.
Duration	Minutes/hours/days/weeks
Speed of Onset	No warning
Location	Along major transportation routes. Tier II and agricultural and/or industrial storage sites, and roads: U.S. Highways 2 and 52 and N.D. Highway 3; and local/township roads. No railroad infrastructure in Pierce County. No transportation of chemicals via airplane to Pierce County but are applied to fields/crops in the county via crop sprayers/small airplanes. No pipelines traversing Pierce County.

For more information regarding hazardous material release please reference **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

Information on the history of hazardous material release in Pierce County, North Dakota, was provided by the N.D. Dept. of Health and Pierce County Emergency Management. Table 4.9.1 summarizes the history of hazardous material release in Pierce County from the N.D. Dept. of Health. A detailed hazard history for Pierce County, North Dakota, can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

N.D. Dept. of Health

- Per table 4.9.1, a total of nine releases/spills were reported in Pierce County from 1975 to 2021. Of the seven reported incidents, five reported the volume and units of the contaminant released, ranging from one gallon of aminopyridine to 19,000 gallons of diesel fuel and unleaded gasoline.

Table 4.9.1 – 1975 to 2021 Pierce County, North Dakota, Hazardous Material Release History

Incident Date	Latitude	Longitude	Contaminant	Volume	Units	Contained
4/4/1975	47.4798	-100.4489	Fuel Oil	2,000	gallons	--
4/2/2005	47.4798	-100.4489	Disel Fuel and Unleaded Gasoline	19,000	gallons	--
4/28/2007	47.82568	-100.12288	Liquid Fertilizer	--	--	--
7/14/2012	47.82558	-100.08006	Diesel	--	--	--
10/18/2016	47.48579	-100.44107	Glyphosate (Roundup)	200	gallons	Yes
8/2/2022	47.40316	-100.082471	Aminopyridinge	1	gallons	
10/8/2022	47.42715	-100.5886	Class Act - 40 Cornerstone - 32 Strikelock - 15 Sharpen - 3	90	gallons	
TOTAL				**21,291**		

Source(s): N.D. Dept. of Health

Pierce County Emergency Management

- Approximately 21,291 gallons of hazardous materials were spilled between 1975 and 2021. Not all reported spills in Pierce County reported the volume of the spill.
- There are no reported incidents of a plane crash carrying hazardous materials in Pierce County.

Probability

The probability of a hazard or threat is how likely it is it will happen. Per Table 4.9.1, the probability of a hazardous material release is one incident every six and-a-half to four years based on seven occurrences from 1975 to 2021. Meeting participants also indicated the probability of a hazardous material release meaning that there is between a 10 and 100 percent probability in the next year of an occurrence. The following are key points regarding hazardous material release probability in Pierce County:

- **Airports.** Hazardous materials are not transported via plane to and from Pierce County using the McClusky Municipal Airport or private landing strips. However, crop sprayers use local airports or landing strips for commercial applications.
- **Fixed Facilities (Tier II and Extremely Hazardous Substance).**

Tier II. Tier II refers to facilities covered by the Emergency Planning and Community Right-to-Know Act (EPCRA). These facilities are required to maintain a material safety data sheet and report the chemical quantities that equal or exceed either five hundred pounds or the threshold planning quantity and submit an inventory of chemicals used to their Local Emergency Plan Update Committee (LEPC), the state emergency response commission and local fire departments each year. **According to the N.D. Dept. of Emergency Services, HAZ Connect, Pierce County has 10 Tier II facilities.**

Pipelines. According to the 2018 N.D. Enhanced Mitigation MAOP, there are no pipelines traversing Pierce County.

Figures 4.9.1 and 4.9.2 illustrate the locations of crude oil pipelines and natural gas pipelines in the state of North Dakota.

- **Rail.** Railroad infrastructure in southern Pierce County was decommissioned in 2001. No hazardous material incidents involving railroads has occurred in Pierce County. Canadian Pacific Railway (CP) operates railroad infrastructure in extreme northeast and northwest sections of Pierce County.

- **Road.** It is unknown if the reported incidents in Table 4.9.1 were the result of a transportation accident or a leak from a storage site. The N.D. Dept. of Health provided the data but did not specify the cause of each release. However, according to Pierce County Emergency Management and meeting participants, releases/spills do occur from road transportation incidents. Large quantities of hazardous materials are transported via U.S. Highway 52 and N.D. Highway 200.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount and/or number of damages or losses either actualized in a community or estimated based on known assets and levels of risk. The extent/magnitude of a hazardous material release can vary from minimal in localized incidents to catastrophic in situations of explosions or high wind. Releases when high winds are present may carry chemicals and material great distances and impact many people.

- **Airports.** Hazardous materials are not transported via plane to and from Pierce County using the McClusky Municipal Airport or private landing strips. The extent/magnitude is low for this type of hazardous material release in Pierce County.

  Crop sprayers utilizing airplanes for application, and private airplane owners, can result in local releases into the environment.

- **Fixed Facilities (Tier II and Extremely Hazardous Substance).**

  Per Table 4.9.1, the largest reported spill/release was 19,000.00 gallons of diesel fuel and unleaded gasoline on April 2, 2005. Planning for the extent/magnitude of hazardous material releases is difficult to determine as reporting history lacks the cause for the leak/spill in most cases. However, any type of release/spill in rural areas of the county could pose a challenge to smaller emergency services.

- **Pipelines.** According to the 2018 N.D. Enhanced Mitigation MAOP, there are no pipelines traversing Pierce County.

- **Rail.** Railroad infrastructure in southern Pierce County was decommissioned in 2001. No hazardous material incidents involving railroads has occurred in Pierce County. Canadian Pacific Railway (CP) operates railroad infrastructure in extreme northeast and northwest sections of Pierce County.

- **Road.** It is unknown if the reports incidents in Table 5.5.1 were the result of a transportation accident or a leak from a storage site. The N.D. Dept. of Health provided the data but did not specify the cause of the release/spill.

Profile meeting participants indicated the extent/magnitude or impact of a hazardous material release as catastrophic meaning more than 50 percent of the county, its people and property could be affected.

Threat and Hazard Identification Risk Assessment

Table 4.9.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for hazardous material release. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.9.2 represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

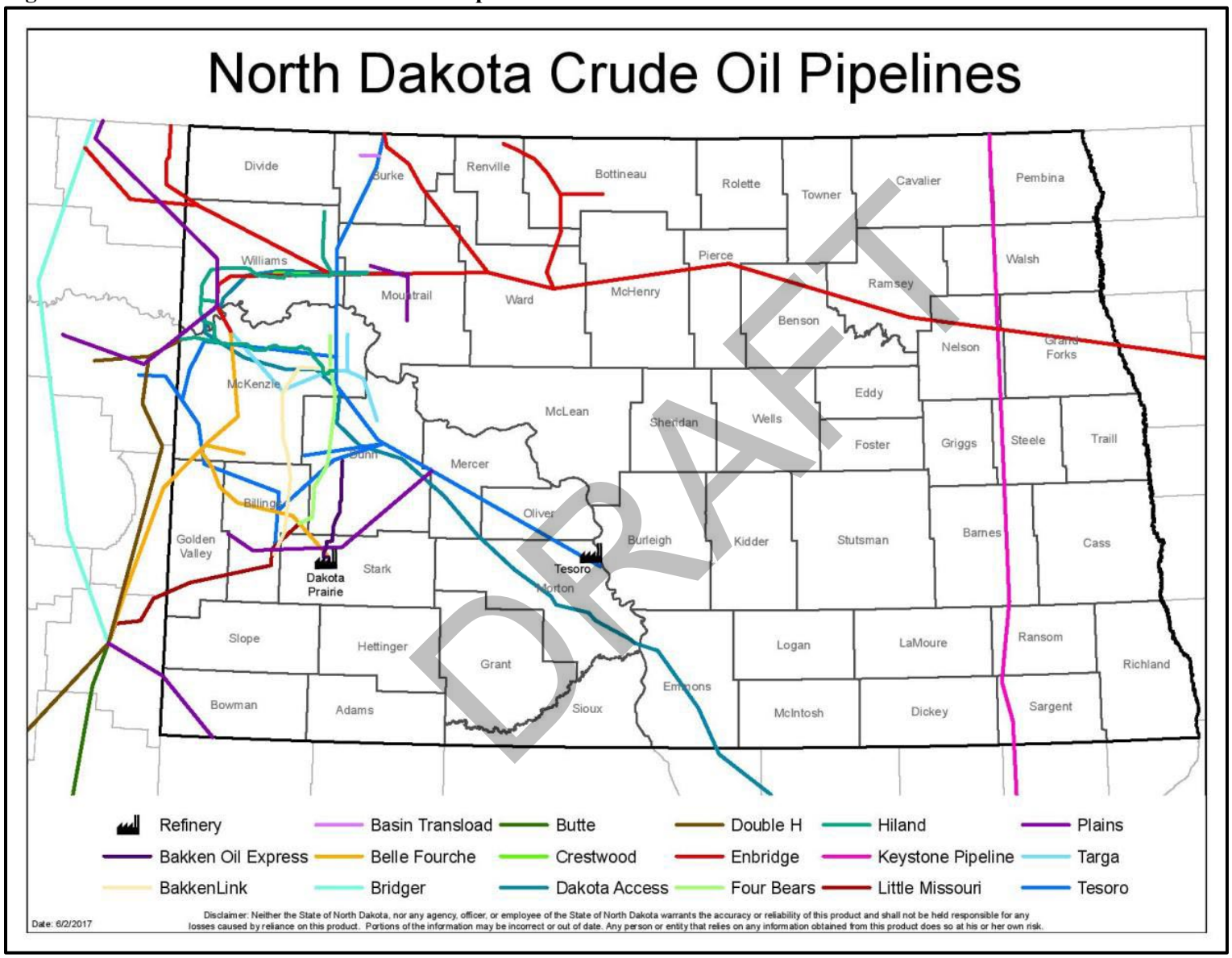
Table 4.9.2 – Pierce County, North Dakota, Hazardous Material Release Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County						
City of Balta						
City of Rugby						
City of Wolford						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

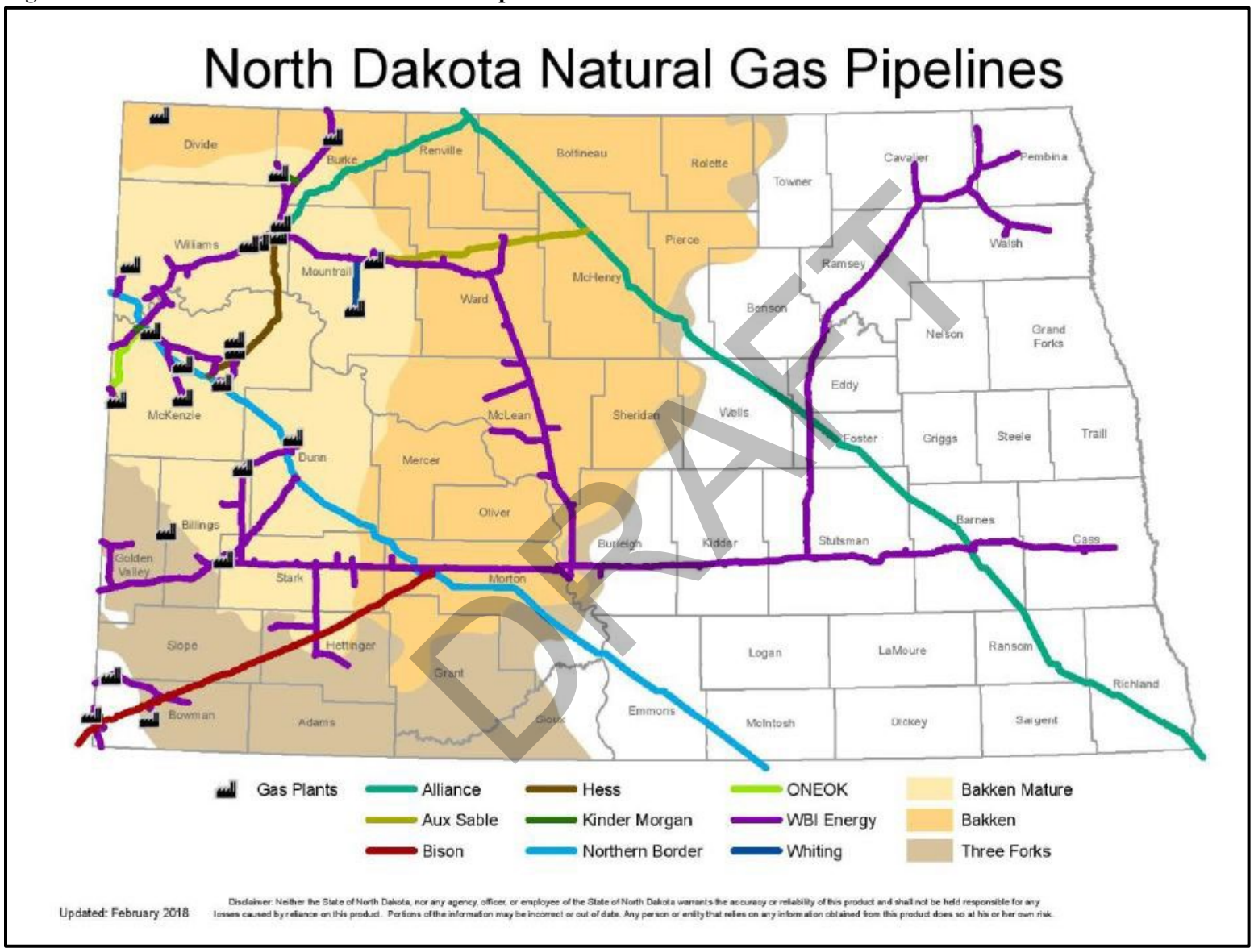
Table 4.9.3 provides information on the specific impact, frequency, likelihood, vulnerability and capability of hazardous material release in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Figure 4.9.1 – 2018 North Dakota Crude Oil Pipelines



Source(s): 2018 N.D. Enhanced Mitigation MAOP

Figure 4.9.2 – 2018 North Dakota Natural Gas Pipelines



Source(s): 2018 N.D. Enhanced Mitigation MAOP

Table 4.9.3 – Pierce County, North Dakota, Hazardous Material Release Risk Assessment

Impact	• Business Interruptions/Loss of Economy • Explosion • Environmental Degradation • Fuel Outage/Shortage • Human/Injury Death • Increased Public Safety Runs	• Loss of Critical Facilities and Infrastructure • Loss/Overcrowded Medical Facilities • **Loss of Transportation Systems/Accessibility - Blocking of roads when emergency services respond to incidents** • **Leaking fuel tanks contaminate local waterways and potable water supplies (individual wells)** • **Closure of recreation areas**
Frequency	• Seven releases/spills were reported in Pierce County from 1975 to 2021 resulting in one incident every six and-a-half to three years.	• Per Table 4.9.1, the largest reported spill/release was 19,000.00 gallons of diesel fuel and unleaded gasoline on April 2, 2005.
Likelihood	More Likely • U.S. Highway 52, and N.D. Highways 14, 53, and 200 • Agriculture economy with heavy use of chemicals • Crop sprayers and private plane operators • **Pierce County has 10 Tier II Sites** • Propane tanks are main heating source throughout county • Anhydrous plants and major chemical suppliers in the county • **Lack of passing lanes on highways in Pierce County**	Less Likely • Tier II reporting and regulations (fixed facilities only) • No railroad infrastructure Pierce County • No major commercial airport • Ordinances regulating development/placement of HAZMAT • **Fire departments have HAZMAT training** • **No pipelines traversing Pierce County**
Vulnerability	More Vulnerable • U.S. Highway 52, and N.D. Highways 14, 53, and 200 • Agriculture economy with heavy use of chemicals • Crop sprayers and private plane operators • **Pierce County has 10 Tier II Sites** • Propane tanks are main heating source throughout county • Anhydrous plants and major chemical suppliers in the county	Less Vulnerable • Tier II reporting and regulations (fixed facilities only) • No railroad infrastructure Pierce County • No major commercial passenger airport • Ordinances regulating development/placement of HAZMAT • **Fire departments have HAZMAT training** • **Winter months sees decrease in agriculture-related chemicals** • **NDDES HAZConnect** • **No pipelines traversing Pierce County**
Capability	• See Chapter 7 for a list of capabilities to address hazardous material release.	

Vulnerabilities to Publicly-Owned Buildings and Property

All publicly-owned buildings and property are at risk of hazardous material release as this type of hazard/threat can occur anywhere at any given time for a multitude of reasons. Buildings and property located near or adjacent to transportation modes, such as highways, railroads or airports are more at risk as the hazard/threat typically occurs during transportation of hazardous materials. In the city of Carson, the Pierce County Courthouse and public schools may be vulnerable to a hazardous material release from a fixed site or transportation of hazardous materials through city limits. In the cities of Martin and McClusky, critical facilities and infrastructure and the public may be vulnerable to a hazardous material release due to their proximity to U.S. Highway 52, and N.D. Highway 200, respectively.

If facilities are located near fixed hazardous material sites (Tier II), such as propane or anhydrous ammonia tanks, the risk is increased as the source for the hazard/threat will always be present. If an explosion were to occur, buildings and properties located nearby could experience moderate to severe damage and contamination, depending on the intensity and duration of the release.

A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Like publicly-owned buildings and property, the vulnerability of the hazard/threat to critical facilities and infrastructure depends on location. Critical facilities and infrastructure located near transportation arteries or hazardous material storage sites are most at risk. Depending on the facility or infrastructure, impact could range from moderate to severe. Water infrastructure could become contaminated and threaten public health. Critical facilities such as the Pierce County Courthouse or public schools could be shut down temporarily or indefinitely. If a release were to occur on a major roadway, emergency services would be limited and response times could be increased.

In addition, the fire hall for smaller incorporated jurisdictions is typically located near the highway and is vulnerable to hazardous material release.

Vulnerabilities to New and Future Development

The vulnerability of new and future development depends on the type and density being proposed and where development is allowed. Residential development should be developed in areas away from hazardous material storage sites or major transportation arteries where chemicals are transported. If new development is already in progress, a development moratorium should be implemented to stop future growth or densities should be limited to reduce the number of people at risk.

New development located near or adjacent to recreation areas in Pierce County will be vulnerable to hazardous material releases. The county should update zoning ordinances to implement setbacks from hazardous material sites or infrastructure for new development from this infrastructure.

Development in the industrial and agricultural sectors maintain demand for hazardous materials and are best situated near storage sites or transportation arteries to limit time spent in transit. Hazardous materials should be prohibited from being located in residential or commercial areas, near hospitals, schools, or community gathering spaces. If already existing, plans should be put into place for relocation at a future

time when funding permits or an appropriate alternative site becomes available. **This type of development should also be prohibited from being developed or located within 1,000 feet of a public school or facility with vulnerable populations such as daycares and/or care centers.**

Data Limitations

The difficulty in understanding a hazardous material release is the lack of complete data reported on past releases. If any of the following information – location, time of day, wind speed/direction, temperature, humidity, method of release (transportation or facility failure), the amount of release and what material(s) are involved – is not reported, the ability to understand the true impact of the hazard/threat and develop mitigation strategies is limited. With numerous sources for potential release, whether from the agriculture sector, oil and gas sector, commercial and residential entities, or a combination from another hazard/threat such as a transportation incident, understanding how releases occur and identifying ways to mitigate this hazard proves impractical. Developing an inventory of hazardous materials from agriculture operations on the location and type of hazardous material being used, and what mode is being utilized for transportation, would assist in understanding the hazard.

Other Key Documents

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, HAZMAT Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Comprehensive Plan (2019)
- Pierce County Commercial Animal Feed Operation Ordinance
- Pierce County Evacuation Plan through Pierce County Emergency Management
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Mass Care Plan through First District Health Unit, Pierce County
- Pierce County Shelter Plan through Pierce County Emergency Management
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

4.10 Infectious Disease & Pest Infestations – Pierce County, North Dakota

Including animal, human, and plant diseases.

Characteristics

Infectious disease and pest infestations are an illness caused by an infectious agent, such as bacteria, virus, fungi or parasites, and toxic microorganisms, and is transmittable from an infected animal, human, or plant to another animal, human, or plant.

Seasonal Pattern	Animal. Depends on the organism and the current season. Human. Depends on the organism and the current season. Influenza is more prevalent during winter months. Plant. They are more susceptible in the summer as they are dormant in the winter and year-round for indoor plants such as greenhouses.
Duration	Hours/Days/Weeks/Months/Years
Speed of Onset	Disease. Hours to weeks (12 hours for most diseases in humans) Pest Infestations. Hours to Days to Weeks
Location	County-wide across all jurisdictions (incorporated and unincorporated)

For more information regarding infectious disease and pest infestations, please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

Information on infectious disease and pest infestations was obtained from the 2018 Pierce County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan; U.S. Dept. of Agriculture, Farm Services Agency (FSA); N.D. Dept of Health & Human Services; U.S. Dept. of Agriculture, Risk Management Agency (RMA); Lake Region District Health Unit - Pierce County (LRDHU), Pierce County Emergency Management; and NDSU Extension/Pierce County. The history of infectious disease and pest infestations for animals, humans, and plants is summarized for Pierce County in the following section. A detailed hazard history for Pierce County can be found on a disc at the beginning of Chapter 4.

2018 Pierce County, North Dakota, Multi-Jurisdictional Multi-Hazard Mitigation Plan

- Approximately 13 elderly people at long-term care facilities passed away from secondary complications from influenza in 2006.
- Public access restrictions to long-term care facilities occurred in 2016 due to influenza.

- The city of Rugby had a norovirus in 2013.

Animal – Livestock. According to the Farm Services Agency (FSA), livestock losses can be tracked by analyzing payments made under the Livestock Indemnity Program (LIP). However, the cause of the loss is not recorded. The FSA stated that infectious disease and pest infestations likely contribute to losses under LIP. Table 4.10.1 illustrates the payable established count and the program payment signed amount for Pierce County between 2013 and 2021. Based on information from FSA, the following data was assumed to be paid to cover animal losses in Pierce County resulting from infectious disease and pest infestations. The following are key points:

- A total of 29 payable established counts were made through the LIP program between 2013 and 2021 totaling $216,693.00 in program payment signed amounts.
- The highest payable established count occurred in 2017 with 12 counts totaling $106,124.00 in program payments.

Table 4.10.1 – 2013 to 2021 Pierce County, North Dakota, Livestock Indemnity Program (LIP) History

Year	Payable Established Count	Program Payment Signed Amount
2013	4	$21,903.00
2014	3	$30,538.00
2015	2	$29,012.00
2016	2	$6,943.00
2017	12	$106,124.00
2018	--	--
2019	6	$22,173.00
2020	--	--
2021	--	--
TOTAL	**29**	**$216,693.00**

Source(s): USDA, Farm Services Agency

Animal – Rabies. According to the N.D. Dept. of Health, Pierce County experienced one case of rabies in a skunk in 2007, one case in a cat in 2008, one case in a skunk in 2009, one case in a cow in 2015, and one case in a cow in 2016.

Human. A history of infectious disease in humans is shown in Tables 4.10.2 and 4.10.3 in Pierce County, North Dakota. Table 4.10.2 shows the history of influenza by season, defined as between August 1 to July 31 of any given year from 2010 to 2022. Table 4.10.3 shows the history of infectious disease in Pierce County between 2004 and 2022.

- Between 2010 and 2022, Pierce County recorded an average of 23.6 cases of influenza annually. The 2016/2017 flu season had the highest number of reported cases at 66, followed by the 2019/2020 flu season where 46 cases were reported.

Table 4.10.2 – 2010 to 2022 Pierce County, North Dakota. Influenza History

Infectious Disease	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022
Influenza	5	2	16	15	29	2	66	34	40	46	2	26

- Aside from influenza, Pierce County recorded 356 infectious disease cases between 2004 and 2021, or an average of 19 cases yearly.

- Between 2004 and 2022, Pierce County recorded 62 cases of Chlamydia, 26 cases of Hepatitis C Chronic, 19 cases of Vancomycin, and 15 cases of West Nile Virus, representing 33.5 percent, 14.1 percent, 10.3 percent, and 8.1 percent of reported infectious diseases, respectively.

- Lake Region District Health Unit – Pierce County, indicated that the high rate of sexually transmitted infectious most likely occurs at the Heart of America Correctional and Treatment Center.

Put in COVID info here

- Pierce Couty had the highest per capita deaths due to COVID-19 in the state of North Dakota.

Plant. The U.S. Dept. of Agriculture, Risk Management Agency (RMA) tracks crop loss from infectious disease and pest infestations. The RMA provides data on the crop type affected, damage cause description, determined acres, and indemnity amount. The damage description identifies the cause of damage, determines acres, identifies the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. The indemnity amount was not available before 2001.

- Between January 1, 2001, and December 31, 2022, Pierce County experienced 148 incidents of crop loss due to infectious disease, impacting approximately 39,629.67 acres of crops totaling $1,995,798.97 in losses.

- Between January 1, 2001, and December 31, 2022, Pierce County experienced 242 incidents of crop loss due to pest infestations, impacting approximately 16,139.11 acres of crops totaling $1,452,926.55 in losses.

The NDSU Extension/Pierce County indicated that crop/plant losses occur annually and vary in severity.

Table 4.10.2 – 2004 to 2022 Pierce County, North Dakota Human Infectious Disease History

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total by Disease	Percent by Disease
Babesiosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Brucellosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Campylobacteriosis	2	0	1	0	0	1	1	0	0	3	0	1	2	0	0	3	2	0	0	14	3.9%
Carbapenem	--	0	0	0	0	0	0	0	0	0	0	0	--	--	--	--	--	--	--	0	0.0%
Chicken Pox	0	0	0	0	0	1	4	0	0	0	0	1	0	2	0	0	0	0	0	8	2.2%
Chlamydia	1	1	5	5	5	2	2	2	5	4	6	4	6	3	2	1	6	3	0	62	17.4%
Coccidioidomycosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0.3%
Cryptosporidiosis	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0.6%
E.coli, Shiga-Toxin Producing	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	2	0	1	0	5	1.4%
Ehrlichiosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Giardisis	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0	0	0	0	0	4	1.1%
Gonorrhea	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0	5	0	0	9	2.5%
Haemophilus	--	0	0	0	1	0	0	0	0	0	0	0	--	--	--	--	--	--	--	1	0.3%
HBV	--	0	0	0	0	0	0	0	0	0	0	0	--	--	--	--	--	--	--	0	0.0%
HCV	--	0	0	0	0	0	0	0	0	0	0	0	--	--	--	--	--	--	--	0	0.0%
Hepatitis A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Hepatitis B Acute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Hepatitis B Chronic	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0.6%
Hepatitis C Acute	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Hepatitis C Chronic	0	1	1	3	0	2	3	2	1	2	2	0	1	0	3	2	3	0	0	26	7.3%
Influenza		21	7	25	22	26	1	5	12	22	18	10	2	0	0	0	0	0	0	171	48.0%
Legionellosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Listeriosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Lyme Disease	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Malaria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Measles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Meningococcal Meningitidis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Mumps	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Pertussis	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0.3%
Q Fever	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Rocky Mountain Spotted Fever	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	0	3	0.8%
Rubella	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Salmonellosis	0	0	0	0	0	0	1	1	0	0	2	0	1	0	0	1	0	2	2	10	2.8%
Shigellosis	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0.6%
Syphilis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Tetanus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Trichinellosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Tuberculosis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Tularemia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
TB-Active	--	0	0	0	0	0	0	0	0	0	0	0	--	--	--	--	--	--	--	0	0.0%
TB-LTBI	--	0	0	0	0	0	0	0	0	0	0	0	--	--	--	--	--	--	--	0	0.0%
Tularemia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Typhoid Fever (Salmonella Typhi)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0%
Vancomycin	--	0	2	0	0	0	4	5	6	2	0	0	--	--	--	--	--	--	--	19	5.3%
Vibrio Cholerae	--	0	0	0	0	0	0	0	0	1	0	0	--	--	--	--	--	--	--	1	0.3%
West Nile Virus	1	0	1	5	1	0	1	0	0	2	0	0	4	0	1	0	0	0	0	15	4.2%
Total by Year	**14**	**23**	**20**	**38**	**31**	**34**	**18**	**15**	**24**	**39**	**30**	**19**	**18**	**5**	**7**	**10**	**17**	**6**	**2**	**356**	**100.0%**

Source(s): N.D. Dept. of Health

Probability

The probability of a hazard or threat is how likely it will happen. Jurisdictions with the highest animal and human populations, and crop exposure are at the most significant risk of infectious disease and pest infestations occurrences.

Animal. Based on data from the Livestock Indemnity Program (LIP) and the assumption that all losses are disease-related, the probability of losses resulting from infectious disease in animals is $36,115.50 in annual losses on average. Meeting participants indicated the probability of infectious disease and pest infestations in animals as "highly likely," meaning there is a 100 percent probability in the next year of an occurrence.

Human. Per the human infectious disease history in Pierce County, the probability of infectious disease is 100 percent. Meeting participants indicated the probability of infectious disease and pest infestations in humans as highly likely meaning there is a 100 percent chance in the next year of an occurrence.

Plant. Per the infectious disease history for plants in Pierce County, the probability of infectious disease and pest infestations in any given year is approximately 100 percent. Meeting participants indicated the likelihood of infectious disease and pest infestations in crops as "highly likely," meaning there is a 100 percent chance in the next year of an occurrence.

- There were 148 incidents of crop loss due to infectious disease between January 1, 2001, and December 31, 2022, resulting in approximately seven incidents of crop losses due to infectious disease annually.
- On average, crop losses from infectious disease impacts 514.67 acres annually, resulting in an average of $25,919.47 in crop losses due to fest infestations annually.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damage or losses caused, or that could occur in a community. Jurisdictions with the highest animal and human populations and crop exposure are at the most significant risk of impacts from infectious disease occurrences.

Animal. With the lack of cause description and total number of animals lost in the data from the FSA, the extent/magnitude of animal loss from infectious disease cannot be determined.

- Figure 4.10.1 illustrates the cattle and calf inventory in North Dakota. Pierce County has 27,000 heads as of 2018.
- The highest payable established count in the Livestock Indemnity Program (LIP) occurred in 2017 with 12 counts totaling $106,124.00 in program payments.
- A total of five rabies cases were recorded in Pierce County between 2006 and 2022.
- Meeting participants indicated that with the local economy heavily dependent on agriculture, significant animal losses might have a catastrophic impact.

Human. The extent/magnitude of infectious disease for humans can range from low to high, depending on the disease involved and the specific location of occurrence. If an outbreak occurred in a remote area with a shortage of health professionals, the extent/magnitude could be catastrophic. Figure 4.10 shows the regions in North Dakota that have a lack of health professionals. Pierce County is designated as a Health Professionals Shortage Area (HPSA).

- According to Lake Region District Health Unit - Pierce County Public Health, if a pandemic from a new strain of Influenza or Avian Flu occurred in Pierce County, the impact could be catastrophic, like the COVID-19 Pandemic. The COVID-19 pandemic resulted in 32 fatalities in Pierce County between 2020 and 2022. The total economic losses from the pandemic are still unknown but are estimated to be in the hundreds of thousands to millions of dollars in Pierce County. Approximately 50.0 percent of Pierce County residents contracted the disease as of October 2022.

- Influenza is a commonplace infectious disease, and modern medical advances manage the extent/magnitude. However, the jet age has contributed to the faster spread of disease. With the re-emergence of Ebola and the onset of COVID-19, the extent/magnitude of infectious disease in humans can be catastrophic, resulting from modern-day travel.

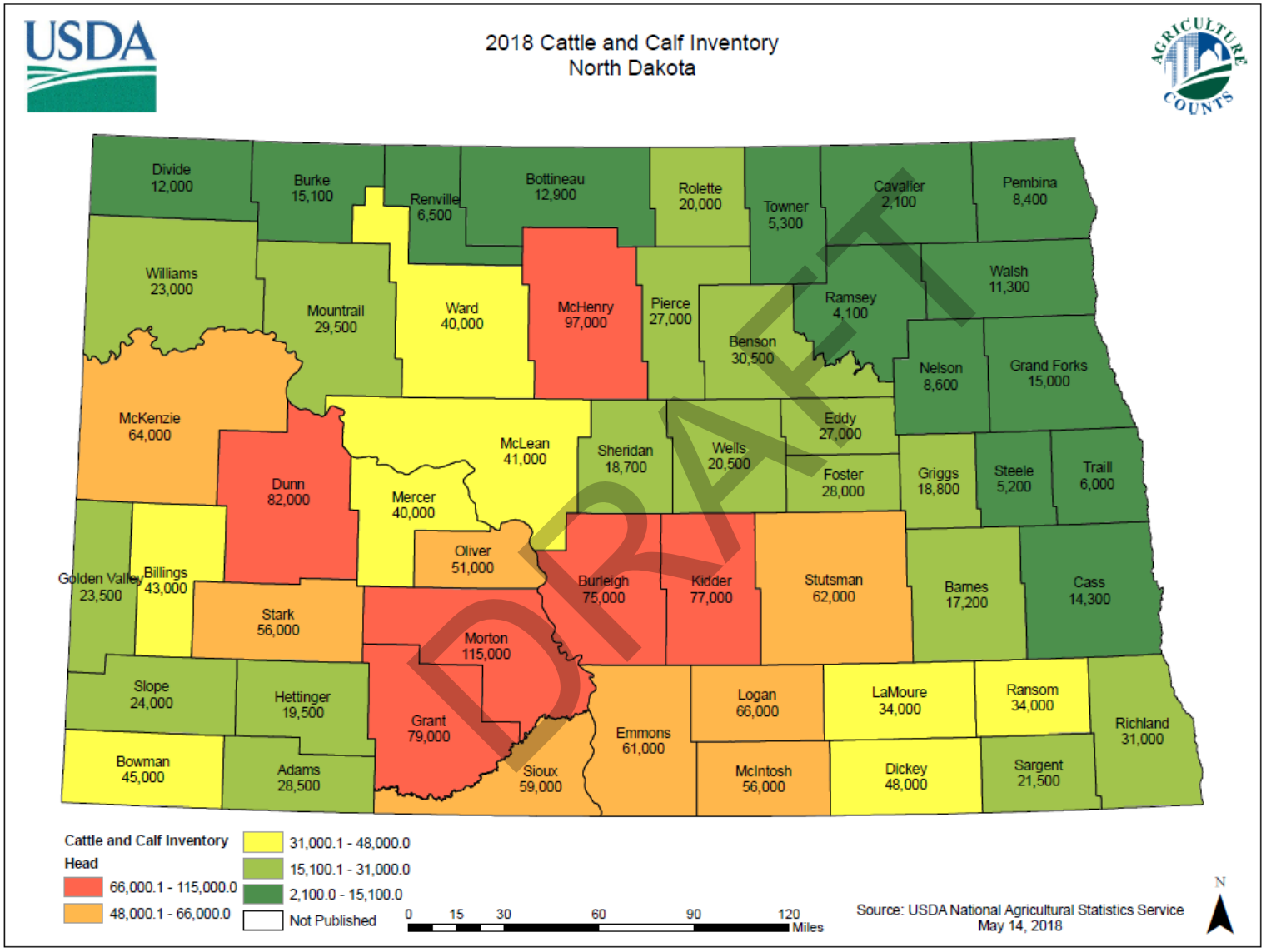
- Meeting participants indicated that human infectious diseases could have a catastrophic impact after what was experienced in Pierce County due to the COVID-19 Pandemic. The pandemic resulted in a temporary but near-total shutdown of local economic and human activity.

- Impacts to public and private education, regardless of the intensity, can be considered catastrophic as it directly impacts vulnerable populations/school-aged children. Pierce County schools experienced a noticeable learning loss in its school-aged population.

Plant. Per crop loss data from the RMA, the following statistics illustrate the extent/magnitude of infectious diseases on crops in Pierce County.

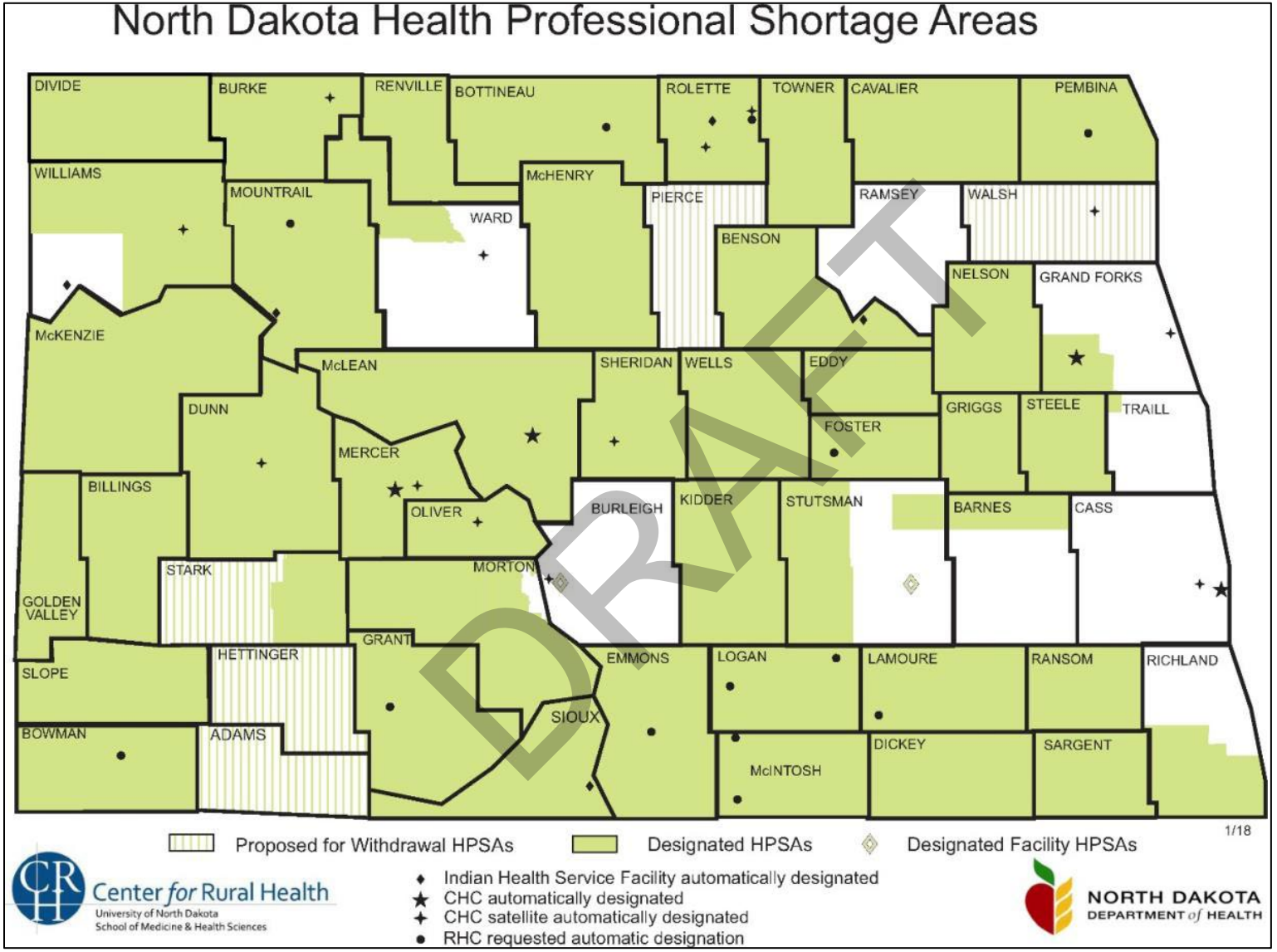
- Meeting participants indicated that with the local economy heavily dependent on agriculture, significant crop losses might have a catastrophic impact.

Figure 4.10.1 – 2018 North Dakota Cattle and Calf Inventory



Source(s): 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP); USDA National Agricultural Statistics Service, 2018

Figure 4.10.2 – North Dakota Health Professional Shortage Areas



Source(s): 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP); Center for Rural Health, University of North Dakota School of Medicine and Health Sciences, 201

Risk Assessment

Table 4.10.4 shows the risk assessment determined by individual jurisdictions and the Plan Update Committee for infectious disease. The risk assessment methodology can be found at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment. The total in Table 4.10.4 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard less the jurisdiction's capabilities to respond to the hazard.

Table 4.10.4 – Pierce County, North Dakota, Infectious Disease & Pest Infestations Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County – Human	4	4	4	3	3	**12**
Pierce County – Animal & Plant	3	3	4	3	2	**11**
City of Balta	3	3	3	4	1	**12**
City of Rugby	2	2	2	2	2	**6**
City of Wolford	2	2	2	3	1	**8**

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Tables 4.10.5, 4.10.6, and 4.10.7 provide information on the specific impact, frequency, likelihood, vulnerability, and capability of infectious disease in Pierce County in animals, humans, and plants, respectively. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.10.5 – Pierce County, North Dakota, Infectious Disease & Pest Infestations Risk Assessment - Animal

Impact	• Disease Outbreak/Mass Infections – (animals only) • Government Interruptions • Labor Shortages • Livestock Loss • Loss of Economy • Loss/Overcrowded Veterinarian Facilities • Loss of Drinking/Potable Water	• **Strain on local veterinarian resources** • **Financial cost to local producers and the public** • Lack of awareness of the public resulting from difficulties in communicating through media sources • Distress of local producers from a pandemic • Compression of the supply chain can lead to supplies and vaccination shortages • Carcass disposal
Frequency	• A traffic crash in 2009 involving pigs from Canada	• A total of five rabies cases were recorded in Pierce County between 2006 and 2022.
Likelihood	More Likely • 27,000 head of cattle & calves in 2018 in the county • Agriculture economy • Dependent on the weather for animals and crops • Transporting of animals across state lines • **N.D. Highway 2 & U.S. Highway 2 = heavy livestock traffic** • **Overuse of antibiotics leading to disease tolerance**	Less Likely • Advanced communications such as Internet and tv • Public health and employment regulations for public and private facilities, producers, etc. • **Impact is highly dependent on the type of disease and its effect on the population of livestock**
Vulnerability	More Vulnerable • 20,500 head of cattle & calves in 2018 in the county • Agriculture economy • Dependent on the weather for animals and crops • Transporting of animals across state lines • **N.D. Highway 2 & U.S. Highway 2 = heavy livestock traffic** • **Overuse of antibiotics leading to disease tolerance** • **Shortage of veterinary service**	Less Vulnerable • Advanced communications such as Internet and tv • Public health and employment regulations for public and private facilities, producers, etc. • **Veterinarian clinics in the county help address the need for services but do not meet the overall demand**
Capability	• See Chapter 7 for a list of capabilities to address infectious disease and pest infestations.	

Table 4.10.6 – Pierce County, North Dakota Infectious Disease & Pest Infestations Risk Assessment - Human

Impact	• Human Injury/Death • Loss of Economy (crop, livestock, manufacturing, etc.) • Loss/Overcrowded Medical Facilities • Loss of Potable Water • Mass Casualties/Fatalities • Public Distress/Social Discord • School Closure • Compression of the supply chain can lead to shortages of supplies and vaccinations • Disruptions in essential services and critical infrastructure operations due to lack of alternative staff	• **Financial cost to public health resources** • **Infrastructure degradation resulting from labor shortages** • **Mass casualties can overwhelm funeral homes** • **Labor shortages in medical facilities** • **Loss of capability to transfer patients to other facilities with higher levels of care** • **Psychological impacts on the public and medical community – medical staff leaving the profession** • **Loss of confidence in local government**
Frequency	• Annual occurrences of death, primarily among elderly • In 2006 approximately 13 elderly people at long-term care passed from secondary complications from influenza • Public access restrictions to long-term care in 2016 due to influenza • The city of Rugby had a norovirus in 2013.	• Between 2004 and 2022, Pierce County recorded 62 cases of Chlamydia, 26 cases of Hepatitis C Chronic, 19 cases of Vancomycin, and 15 cases of West Nile Virus, representing 33.5 percent, 14.1 percent, 10.3 percent, and 8.1 percent of reported infectious diseases, respectively. • **32 deaths resulting from COVID-19 between 2020 and 2022** • **Pierce County experiences an average of 23.6 influenza cases annually.**
Likelihood	More Likely • Growing elderly population • Public schools, daycares, skilled nursing, assisted living • Increasing number of adults avoiding COVID-19 vaccinations for themselves and their children • Small increase in avoidance of vaccinating in general • **Emergence of the COVID-19 variants** • **Heart of America Correctional and Treatment Center**	Less Likely • Advanced communications such as Internet and tv promoting wellness and preventative measures – conducted through public health and Pierce County • Public health and employment regulations for public and private facilities • Immunizations & medications • Lower institutionalized population • Wearing of face coverings (when needed) • Population density is lower than larger cities/jurisdictions resulting in less transmission

Table 4.10.5 – Pierce County, North Dakota Infectious Disease & Pest Infestations Risk Assessment – Human – CONTINUED

Likelihood	More Likely • **Breakthrough infectious cases in vaccinated individuals** • **Unvaccinated individuals are more likely to contract infectious cases compared to vaccinated individuals and are more likely to be hospitalized** • **Resistance of the public to government guidelines related to infectious disease**	
Vulnerability	More Vulnerable • Growing elderly population • Increase in mobility and air travel • Shortage of health professionals in Pierce County • Shortage of advanced medical equipment – i.e., ventilators, BiPAP, bypass, dialysis, air, and surface-sterilization at medical facilities in Pierce County • **The prevalence of social media increasing skepticism of disease prevention measures** • Public schools, daycares, skilled nursing, assisted living • **N.D. State Legislature voted in 2021 that the State Health Officer and the Governor cannot implement a mask mandate** • **Emergence of the COVID-19 variants** • **Breakthrough infectious cases in vaccinated individuals** • **Unvaccinated individuals are more likely to contract infectious cases compared to vaccinated individuals and are more likely to be hospitalized** • **Resistance of the public to government guidelines related to infectious disease**	Less Vulnerable • Advanced communications such as the Internet and tv promoting wellness and preventative measures • Public health and employment regulations for public and private facilities, producers, etc. • Immunizations & medications • The population density of the rural parts of Pierce County is sparse, and the rural setting allows for immediate social distancing • Colder climate limits social interactions • **LRDHU-Pierce County Public Health in Rugby** • Heart of America Medical Center in Rugby • **Heart of America Medical Center Clinic in Rugby** • **Heart of America Medical Center Ambulance Service in Rugby** • **LRDHU has adequate storage space and refrigeration units for a stockpile of medical supplies at their office in Devils Lake** • **Pierce County is ranked as having a low social vulnerability** • **N.D. Dept. of Health is statutorily responsible for disease outbreaks – local public health departments work under this direction by way of an MOU**

	• **Heart of America Correctional and Treatment Center** • **Inadequate storage space and refrigeration units for a stockpile of medical supplies at Pierce County Public Health in Rugby**

Table 4.10.5 – Pierce County, North Dakota Infectious & Pest Infestations Disease Risk Assessment – Human – CONTINUED

Vulnerability	More Vulnerable • **Resistance of the public to government guidelines related to infectious disease** • **Lack of local epidemiologists providing specific disease statistics and reporting for Pierce County** • **Lack of indoor drive-through mass vaccinating/testing facility** • **Lack of backup generators for local vaccination refrigeration unit at LRDHU – Pierce County in the Pierce County Courthouse** • **Lack of consistent information from state leaders** • **Infectious disease statistics are not always indicative of community spread, as not all cases of the disease are reported**	Less Vulnerable • **LRDHU - Pierce County (includes public health nurse)** • **Pierce County Emergency Management/PIO** • **Rugby Public Schools School Nurse** • **Regional and state epidemiologists working with local public health to manage disease outbreaks** • **Regional Public Information Officer (PIO)** • **Regional Environmental Health Practitioner** • **Regional Emergency Preparedness and Response Coordinator** • **Pierce County has a low Social Vulnerability Index per the CDC as of 2021** • **Backup generator at Heart of America Medical Center** • **Construction of new Heart of America Medical Center with modern air ventilation systems and state-of-the-art accommodations** • **Heart of America Correctional and Treatment Center, local clinic, Rugby High School, and public health set up and executed indoor drive-through mass vaccinating/testing**
Capability	• See Chapter 7 for a list of capabilities to address infectious disease and pest infestations.	

Table 4.10.7 – Pierce County, North Dakota Infectious Disease & Pest Infestations Risk Assessment - Plant

Impact	• Crop Loss • Disease Outbreak/Mass Infections (plants only) • Livestock Loss • Loss of Economy • Soil Erosion	• **Strain on local, state, and federal governments resources and private enterprise** • Between January 1, 2001, and December 31, 2022, Pierce County experienced 148 incidents of crop loss due to infectious disease, impacting approximately 39,629.67 acres of crops totaling $1,995,798.97 in losses.
Frequency	• Crop loss due to infectious disease occurs annually	• There were 148 incidents of crop loss due to infectious disease between January 1, 2001, and December 31, 2022, resulting in approximately seven incidents of crop losses due to infectious disease annually.
Likelihood	More Likely • Agriculture economy • Dependent on the weather for animals and crops	Less Likely • Advanced communications such as Internet and tv • Public health and employment regulations for public and private facilities, producers, etc. • Pesticide Training facilitated by NDSU Extension/Pierce County
Vulnerability	More Vulnerable • Agriculture economy • Dependent on the weather for animals and crops	Less Vulnerable • Advanced communications such as Internet and tv • Public health and employment regulations for public facilities • Pesticide Training facilitated by NDSU Extension/Pierce County • Spraying for mosquitos
Capability	• See Chapter 7 for a list of capabilities to address infectious disease and pest infestations.	

Vulnerabilities to Publicly-Owned Buildings and Property

Most structures remain unaffected by impacts from infectious diseases as only animals, humans, and plants are susceptible to the hazard. Buildings can become contaminated and uninhabitable due to secondary impacts from a pandemic – i.e., people sheltering in place and inadvertently neglecting the building or property. Also, critical facilities are not always available for vaccinations or testing due to competing community events/uses. An increase in disinfection measures, both staff time and cost to local budgets, does occur during influenza season and pandemics, such as COVID-19.

There are almost no physical vulnerabilities to publicly-owned buildings and property from infectious diseases in animals, humans, and plants.

Chapter 3, Profile and Inventory, provides a summary of publicly-owned buildings.

Vulnerabilities of Critical Facilities and Infrastructure

Since animals, humans, and plants are affected by infectious diseases, critical facilities and infrastructure are unaffected in structural terms. However, critical facilities such as public health clinics, hospitals, and veterinarian clinics can become contaminated and quickly overwhelmed if an outbreak/pandemic of infectious disease occurs in animals or humans. **The surge in infectious cases and shortages or outages of medical supplies (personal protective equipment, also known as PPE) and staff can limit or stop the functionality of medical and veterinarian facilities and services altogether.** The stress/strain infectious disease can place on the private sector (businesses or individuals) and public sector also impacts the vulnerability to critical facilities and infrastructure due to people sheltering in place, resulting in labor shortages.

Similarly, emergency services can also become stressed in rural areas where populations are dispersed over a large geographic expanse. The vulnerability and exposure to infectious disease will likely increase due to the greater frequency of emerging diseases, increased mobility (primarily jet travel), an aging population, and anti-vaccination trends.

Infrastructure for drinking/potable water and sanitary sewer could be impacted by infectious disease through contamination or quarantine of a large portion of a given population, which could delay physical maintenance and repair to infrastructure. Aged drinking/potable or wastewater systems in incorporated jurisdictions could result water line breaks, which can contribute to higher rates of infectious diseases in humans.

Due to the presence of the livestock industry in Pierce County, veterinary services can also become overwhelmed in the case of an outbreak in farm animals and livestock.

There are almost no physical vulnerabilities to critical facilities and infrastructure from infectious diseases in animals, humans, and plants.

Vulnerabilities to New and Future Development

New development would largely avoid physical impact from infectious diseases and pest infestations and not be vulnerable. While mold may make a building uninhabitable, it is not an infectious disease and pest infestations. However, new structures could be susceptible to deterioration from contamination if mechanical systems are not constructed properly. In addition, drainage in new development needs to be appropriately designed or installed; standing water could foster vector growth.

There are almost no physical vulnerabilities to new and future development from infectious disease and pest infestations in animals, humans, and plants.

Population growth or decline, attributable to new and future development, will either increase or decrease the vulnerability to infectious disease and pest infestations. Similarly, population growth in livestock could increase or reduce the vulnerability to infectious disease and pest infestations.

Data Limitations

Animal

The lack of available animal loss data from the N.D. Dept. of Agriculture results in the inability to track livestock losses from infectious diseases and pest infestations. Similarly, the Farm Services Agency (FSA) provided information on payments made through the Livestock Indemnity Program (LIP). Still, the cause of the loss and the number of animals impacted is not available. For plan development purposes, the infectious disease profile includes statistics from the LIP program.

Statistics on infectious diseases in animals are available on the N.D. Dept. of Health website but cannot be downloaded and must be manually compiled and analyzed. Statistics on rabies and all other diseases are fragmented on the website, available in separate sections.

Human

Statistics on infectious diseases in humans are available on the N.D. Dept. of Health and human Services website cannot be downloaded and must be manually compiled and analyzed. Statistics on influenza and COVID-19 are shown in separate sections on the department's website from all other infectious diseases impacting humans.

The delay in information sharing about disease trends and statistics from the N.D. Dept. of Health and Human Services to local public health units disrupts service delivery and reduces mitigation capability.

Plant

The U.S. Dept. of Agriculture-Risk Management Agency can only provide monetary crop loss information after 2001.

Other Key Documents

This plan incorporates data from the following documents, and information from this plan will be included in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Centers for Disease Control Social Vulnerability Index, Pierce County, North Dakota
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Infectious Disease & Pest Infestations Annex
- North Dakota State Disaster Recovery Plan
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Local Emergency Operations Plan (LEOP), Infectious Disease and Pest Infestations Annex
- Pierce County Continuity of Operations Plan
- Pierce County Mass Vaccination Plan through Lake Region District Health Unit, Pierce County
- Pierce County Pandemic Influenza Response Plan through Lake Region District Health Unit, Pierce County
- Pierce County Point of Dispensing Plan (POD) through Lake Region District Health Unit, Pierce County
- Pierce County Mass Care Plan through Lake Region District Health Unit, Pierce County
- Pierce County Shelter Plan through Pierce County Emergency Management's Local Emergency Operations Plan
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

4.11 Severe Summer Weather

Including downbursts, extreme heat, hail, high wind, lightning, and tornadoes.

Characteristics

Summer storms are caused by atmospheric temperature imbalances. Thunderstorms develop as warm, moist air rises. These conditions will produce updrafts and downdrafts that can reach velocities of 170 mph. Updrafts and downdrafts are the reason for gust fronts, heavy rain (flash severe summer weather), lightning, hail, and high winds. Downburst or straight-line winds can be as deadly as tornadoes. If a thunderstorm continues to intensify, a tornado may develop. A thunderstorm affects a relatively small area when compared to a winter storm. A typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Despite their small size, all thunderstorms are dangerous. Severe summer storms can result in loss of life, injuries, and damage to property and crops.

Seasonal Pattern	March to November
Duration	2 to 6 hours
Speed of Onset	12 to 24 hours warning
Location	Total geographic extent of Pierce County, North Dakota

Downbursts: Strong winds can form along the leading edge of a thunderstorm. Downburst winds occur when air is carried into a storm's updraft, cools rapidly, and comes rushing to the ground. These winds are forced horizontally when they reach the ground and can cause significant damage. These types of strong winds can also be referred to as straight-line winds.

Extreme Heat: According to information provided by FEMA, extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Heat kills by taxing the human body beyond its abilities.

Hail: Hail is frozen precipitation that forms and falls from cumulonimbus clouds. Hail occurs when strong rising currents of air within a storm, called updrafts, carry water droplets to a height where freezing occurs. The ice particles grow, finally becoming too heavy to be supported by the updraft and fall to the ground.

High wind: High wind events occur separately from tornadoes and severe thunderstorms. These winds typically develop with strong pressure gradients and gusty frontal passages. The closer and stronger the two systems are, (one high pressure, one low pressure) the stronger the pressure gradient, and therefore, the stronger the winds are.

Lightning: Lightning develops when ice particles in a cloud move around, colliding with other particles. These collisions cause a separation of electrical charges. Positively charged ice particles rise to the top of the cloud and negatively charged ones fall to the middle and lower sections of the cloud. The negative charges at the base of the cloud attract positive charges at the surface of the Earth.

Tornado: A tornado is a violently rotating column of air extending from a thunderstorm to the ground. Most tornadoes develop from supercell thunderstorms. Supercell thunderstorms have a persistent rotating updraft and can form when there is sufficient vertical wind shear in the atmosphere. A funnel cloud is a

rotating column of air extending out of a cloud base, but not yet touching the ground. Once a funnel cloud reaches the ground, it becomes a tornado. Tornadoes can create tremendous damage over a small area.

For more information regarding severe summer weather please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

Information on the history of severe summer weather in Pierce County was obtained from the National Climatic Data Center (NCDC); the National Oceanic and Atmospheric Administration (NOAA); the USDA, Risk Management Agency; and Pierce County Emergency Management. A detailed hazard history for Pierce County can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

National Climatic Data Center/National Oceanic and Atmospheric Administration

Table 4.11.1 summarizes the history of severe summer weather in Pierce County between January 1, 1950, to December 31, 2022. The following are key points.

- Pierce County experienced 204 occurrences of severe summer weather resulting in approximately three storms of significance annually.
- Approximately $4,097,000.00 in property damage and $1,050,000.00 in crop damage was reported.
- Two injuries and no fatalities were reported.

Table 4.11.1 – 1950 to 2022 Pierce County, North Dakota, Severe Summer Weather Hazard History Summary

Occurrences	Injuries	Fatalities	Property Damage	Crop Damage
204	0	0	$4,097,000.00	$1,050,000.00

Source(s): National Climatic Data Center (NCDC); National Oceanic and Atmospheric Administration (NOAA)

U.S. Dept. of Agriculture, Risk Management Agency

- Crop loss from severe summer weather is tracked by the U.S. Dept. of Agriculture, Risk Management Agency (RMA). The RMA provides data on the crop type affected, damage cause description, determined acres and indemnity amount. The damage description identifies the cause of damage, determines acres identifies the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. Cause of Loss categories included in severe summer weather include cold wet weather, excess moisture/precip/rain, hail, heat, hot wind, tornado, and wind/excess wind. **Between January 1, 2001, and December 31, 2022, Pierce County, North Dakota, experienced 1,903 incidents of crop loss due to severe**

summer weather impacting approximately 954,633.30 acres of crops totaling $102,923,459.60 in losses.

Pierce County Emergency Management.

- There have been disaster declarations and emergencies pertaining to severe summer weather in Pierce County, North Dakota.

Probability

The probability of a hazard or threat is how likely it is it will happen. Profile meeting participants and the Steering Committee indicated the probability of severe summer weather in Pierce County is highly likely, meaning that there is a 100 percent probability in the next year of an occurrence.

National Climatic Data Center/National Oceanic and Atmospheric Administration

Per Table 4.11.1, the following statistics on the probability of severe summer weather in Pierce County are as follows.

- The probability of severe summer weather is 100 percent based on 204 occurrences between January 1, 1950, and December 31, 2022, or three severe summer weather events of significance annually.

- Pierce County experiences approximately $56,123.29 in property damage and $14,383.56 in crop damage annually between January 1, 1950, and December 31, 2022.

U.S. Dept. of Agriculture, Risk Management Agency

- According to information obtained from the U.S. Dept. of Agriculture, Risk Management Agency (RMA), crop loss due to severe summer weather impacts 43,392.42 acres totaling $4,678,339.07 annually in Pierce County between January 1, 2001, and December 31, 2022.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount and/or number of damages or losses either actualized in a community or estimated based on known assets and levels of risk. The extent/magnitude of the severe summer weather ranges from large tornados directing hitting incorporated jurisdictions with dense populations, hail causing massive property and crop damage, power outages, and loss of critical facilities and infrastructure, to localized flooding and fallen tree branches. Figures 4.11.1 to 4.11.3 illustrate the history of significant hail, tornado, and wind speed occurrences recorded between 1950 and 2022 in Pierce County, North Dakota. Profile meeting participants and the Steering Committee indicated the magnitude or impact of severe summer weather as catastrophic meaning as an estimated 50 percent or more of Pierce County, North Dakota, could be affected.

2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

- According to the 2018 N.D. Enhanced Mitigation MAOP, FEMA recognizes four wind zones in the United States. Winds speeds can reach up to 160 miles per hour in Zone II and 200 miles per

hour in Zone III. No special wind regions are identified in North Dakota. Pierce County is geographically in Zone III.

National Climatic Data Center (NCDC)

- **August 21, 1973.** An F2 Tornado caused $250,00.00 in property damage in Pierce County, North Dakota.
- **June 26, 1986.** A hailstorm produced hail three inches in diameter in Pierce County, North Dakota.
- **June 19, 2005.** A Thunderstorm Wind event impacted unincorporated Silva and produced winds of 96 m.p.h. resulting in $1,750,000.00 in property damage and no crop damage. **According to meeting participants, the storm resulted in toppling over steel bins and farm structures, and damage to farm equipment.**

Threat and Hazard Identification Risk Assessment (THIRA)

Table 4.11.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for severe summer weather. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.11.2 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.11.2 – Pierce County, North Dakota, Severe Summer Weather Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County						
City of Balta						
City of Rugby						
City of Wolford						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.11.3 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of severe summer weather in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Figure 4.11.1 – 1955 to 2022 Pierce County, North Dakota, Recorded Hail Occurrences

Source(s): National Oceanic and Atmospheric Administration (NOAA), Storm Prediction Center

Pierce County

Figure 4.11.2 – 1955 to 2022 Pierce County, North Dakota, Recorded Tornado Occurrences

Source(s): National Oceanic and Atmospheric Administration (NOAA), Storm Prediction Center

Figure 4.11.3 – 1955 to 2022 Pierce County, North Dakota, Recorded Wind Speed Occurrences

Source(s): National Oceanic and Atmospheric Administration (NOAA), Storm Prediction Center

Pierce County

Pierce County

Table 4.11.3 – Pierce County, North Dakota, Severe Summer Weather Risk Assessment

Impact	**Blocked Roads/Culverts:** • Evacuation (Localized) • Human Injury/Death – heat exhaustion or from flying debris • Loss of Livestock • Loss of Crops • Loss of Power/Downed Power Lines	• Property/Vehicle Damage – repair of roofing, siding, and drainage systems for homes, windows, and paint for cars • Sewer Backup • Shelter-in-place Strain to emergency services and responders if damage is widespread • Overland flooding in incorporated jurisdictions due to improper drainage in some areas • **Unpaved streets in small jurisdictions can become damaged from rainfall and moisture** • **Direct hit from a tornado would be catastrophic** • **$4,097,030.00 in property damage, $1,050,000.00 in crop damage, and no injuries or fatalities reported between January 1, 1950, and December 31, 2022, according to NCDC.** • **Temporary economic boost due to rebuilding/repairs of homes, businesses, and other structures.**
Frequency	• Heat exhaustion occurring once a month during summer months at Heart of America Medical Center annually • Major hailstorm in August 2016 – hospital experienced $300,000 in damages, emergency services vehicles were damaged • In 1970s city of Rugby experienced a tornado outbreak Property damage from tornados/straight-line winds in summer 2017 • **July 31, 2011.** A Thunderstorm Wind event impacted the city of Martin and produced winds of 78 m.p.h. resulting in $200,000.00 in property damage and no crop damage. **According to meeting participants, the storm resulted in toppling over steel bins and farm structures, and damage to farm equipment.**	• **204 occurrences between January 1, 1950, and December 31, 2020, or three severe summer weather events of significance annually** • **July 13, 2003.** An F1 Tornado impacted unincorporated Pickardville causing $250,00.00 in property damage and one injury. • **August 24, 1983.** A hailstorm produced hail four inches in diameter. • Pierce County experiences approximately $145,566.39 in property damage and $57,291.67 in crop damage annually between January 1, 1950, and December 31, 2021.

Table 4.11.3 – Pierce County, North Dakota, Severe Summer Weather Risk Assessment – Continued

Likelihood	• Climatic patterns will result in numerous annual occurrences of the hazard	
Vulnerability	More Vulnerable • Presence of federal inmate population • Presence of long-term care center • High elderly population • Public schools seeing slight increase in enrollment • Inadequate drainage Highway 3 underpass in Rugby • Lack of permanent generators at 8 lift stations for sanitary sewer and one for storm water city of Rugby • Heart of America Medical Center patients and staff • Lack of storm shelters for Balta, Wolford, and rural areas • Aging infrastructure (roads, water systems, electrical systems, shelter in city of Rugby) • Lack of adopted building codes or enforcement • High elderly population • Lack of permanent generators at critical facilities and infrastructure • Aging infrastructure (roads, water, electrical systems) • Small communities have experienced prolonged response from emergency services due to location and blocked roads occasionally • Lack of funding to improve previously low-traffic roads as traffic volumes increase due to economic activity • Increase in permanent and temporary populations, and economic activity, will increase amount of people and community assets exposed to severe summer weather events • Presence of pipelines, rail, and truck traffic carrying hazardous materials through the county • **Lack of 24-hour storm shelters in smaller communities and rural areas of the county**	Less Vulnerable • Building codes and enforcement • Advanced warning/notification such as internet and TV • Switching of overhead power lines to underground – change to fiber-optic lines • Instant communication capabilities through cell phones • Increase in technological capabilities of tractors and farm equipment to warn farmers of severe storms • Emergency sirens are in place throughout the county • Education in schools has increased • Better predictions from the National Weather Service • Switch to no-till farming reduces blowing of soil • **Increased awareness through Pierce County Everbridge** • **Presence of social media alerting to the public** • **Advancements in public works equipment to use for responding to significant events**

	• Structural integrity of temporary housing • Staff limitations during events of significance • Lack of storm water systems in small cities and rural areas • Lightning strikes causing fires and damage to structures
Vulnerability	More Vulnerable • Removal of shelterbelts leaves little to no protection to structures from severe summer weather • Critical facilities: Pierce County Courthouse, public school, clinic, care center, all fire halls and ambulance buildings county-wide • Undersized culverts for drainage • Older bridges are not large enough to allow for adequate drainage of runoff/do not meet current standards • Pierce County is not StormReady Certified
Capability	• See Chapter 7 for a list of capabilities to address severe summer weather.

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property are susceptible to severe summer weather in many forms. Buildings are often constructed to withstand impacts from severe summer weather, but may not sustain high wind speeds, tornadoes, or large hail. Large hail can damage building roofs, break windows, injure people and/or result in fatalities. Depending on the size of the building and the role it plays in day-to-day operations, the vulnerability to severe summer weather can vary from nominal for larger structures such as the Pierce County Courthouse to severe for county shops in smaller cities, which are considerably less sturdy. The lack of stormwater management in smaller incorporated jurisdictions contributes to the vulnerability of publicly-owned buildings and property from flash flooding due to severe summer weather.

A summary of publicly- owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Critical facilities such as Pierce County Courthouse, schools, water towers, roadways, publicly-owned buildings and other specialty facilities such as nursing homes and assisted living facilities are vulnerable to severe summer weather in a similar fashion to publicly-owned buildings and property. In terms of infrastructure, overhead power lines are susceptible to wind and debris, which can disrupt electricity and cause power outages. Disruptions in water service can be caused by physical damage to water towers or lift stations, or a loss of power. Roadways can become blocked due to flash flooding and overland flooding or from windblown debris, which limits access for emergency services and disrupts economic activity. The lack of stormwater management in smaller incorporated jurisdictions contributes to the vulnerability of critical facilities and infrastructure to severe summer weather.

Vulnerabilities to New and Future Development

Building codes ensure buildings and structures are built adequately to better withstand severe summer weather. Pierce County and incorporated jurisdictions have adopted buildings codes, but none have enforcement capabilities. Similarly, incorporated jurisdictions with a high number of trailer and mobile homes, which are more susceptible to severe weather, may experience more impacts from the hazard. An inventory of the household units by type in jurisdictions in Pierce County is shown in Chapter 3, Profile and Inventory. As populations grow, more people are at risk of injury and potential death from tornadoes, large hail, and windblown debris such as tree branches. Strengthening and enforcement of buildings codes would mitigate impacts from the hazard. This mitigation project for the county can be found in Chapter 6, Mitigation Strategy.

Data Limitations

Residents often experience impacts from severe summer weather, such as broken windows on homes or damage to vehicles, they do not report. Weather data provided by NCDC, NOAA, and other agencies can be incomplete and reported damages can vary significantly from local sources. Fewer active storm spotters reduce the amount of reported weather information available to county emergency management.

National Climatic Data Center/National Oceanic and Atmospheric Administration

The hazard history provided through the National Climatic Data Center/National Oceanic Atmospheric Administration's Storm Events Database contains data as entered by NOAA's National Weather Service (NWS). Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type. The following timelines show the different time spans for each period of unique data collection and processing procedures. **All types of severe summer weather were not recorded cohesively until 1996.**

1. Tornado: From 1950 through 1954, only tornado events were recorded.

2. Tornado, Thunderstorm Wind and Hail: From 1955 through 1992, only tornado, thunderstorm wind and hail events were keyed from the paper publications into digital data. From 1993 to 1995, only tornadoes, thunderstorm wind and hail events have been extracted from the Unformatted Text Files.

3. All Event Types (48 from Directive 10-1605): From 1996 to present, 48 event types are recorded as defined in NWS Directive 10-1605.

U.S. Dept. of Agriculture, Farm Services Agency

The Livestock Indemnity Program (LIP) provides financial assistance to local producers that experience livestock losses. The program does not provide the cause of loss and, therefore, an accurate description of livestock loss from severe summer weather cannot be identified.

U.S. Dept. of Agriculture, Risk Management Agency

One of the Cause of Loss categories for crop loss data from the USDA, RMA is titled Other (snow, lightning, etc.) combines elements of severe summer weather and severe winter weather. Therefore, crop loss data for any given jurisdiction is incomplete.

Other Key Documents

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Building Codes
- North Dakota Continuity of Operations Plan
- North Dakota Dept. of Transportation Design Manual
- North Dakota Drought Mitigation Plan
- North Dakota Emergency Operations Plan, Severe Summer Weather Annex
- North Dakota League of Cities: Planning and Zoning Handbook
- North Dakota State Building Code
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

- Pierce County Comprehensive Plan (2019)
- Pierce County Evacuation Plan through Pierce County Emergency Management
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Mass Care Plan through First District Health Unit, Pierce County
- Pierce County Shelter Plan through Pierce County Emergency Management
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

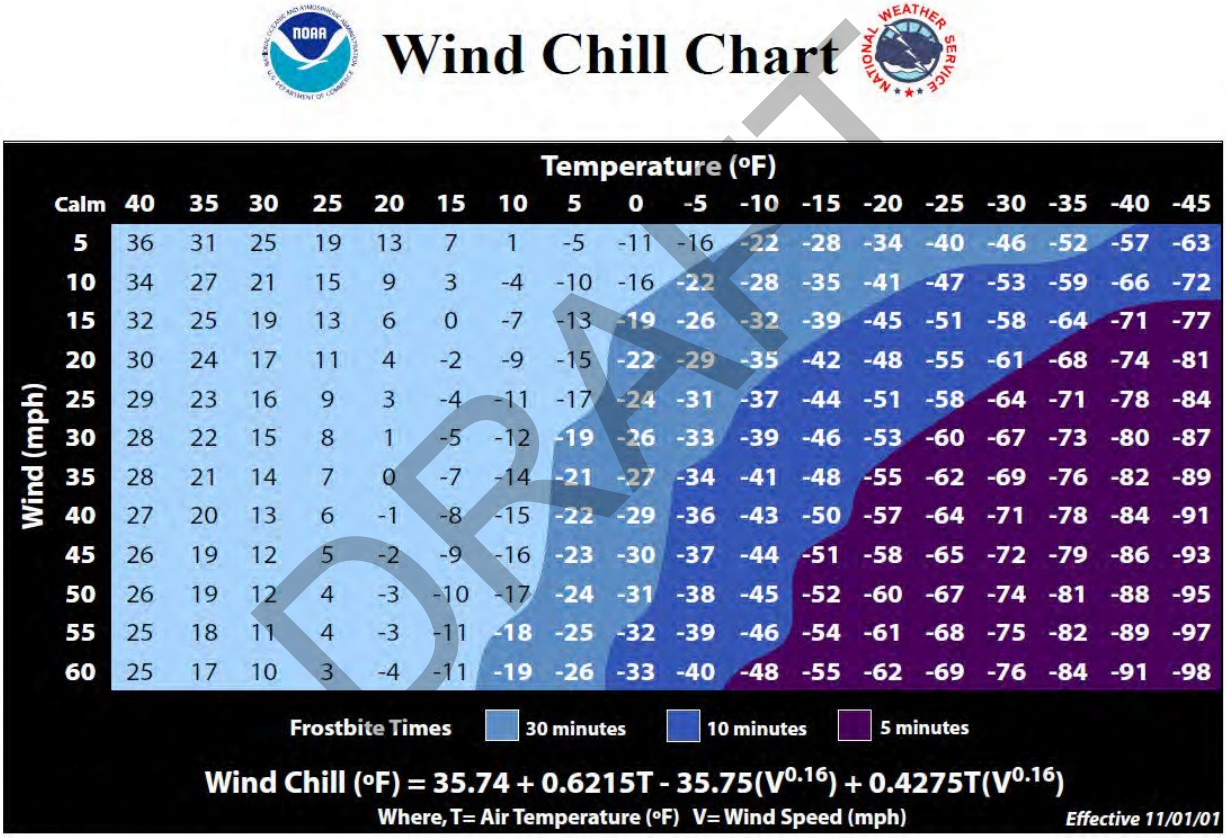
4.12 Severe Winter Weather

Including blizzards, extreme cold, heavy snow, ice storms, recycled snow, structure collapse, and secondary hazards.

Characteristics

Winter storms have the capability to completely immobilize large areas of a state or several states simultaneously. Winter storms occur in several forms, such as heavy snowstorms, blizzards, and ice storms. Each in its own way is a potential killer of hundreds of people, livestock and wildlife, whenever the storm strikes. A brief explanation of each follows Figure 4.12.1.

Figure 4.12.1 – Wind Chill Chart



Source: National Weather Service

Blizzards are the most dramatic and dangerous winter storms. A blizzard has winds of 35 mph or more with snow and blowing snow reducing visibility to less than ¼ mile for at least 3 hours. Blizzards are usually characterized by low temperatures and by strong winds bearing substantial amounts of snow. Snowfall is usually present during the preliminary stages of the blizzard. However, most of the snow in a blizzard is in the form of fine, powdery particles of snow which are whipped up from the surface in such great density that at times the visibility is only a few yards, creating a blinding condition.

Extreme Cold includes prolonged periods of cold temperatures throughout the winter months. People are forced to limit time spent outdoors in extreme frigid conditions. When cold temperatures combine with

wind, dangerous wind chills occur. Wind chill describes how cold it feels and is based on heat loss on exposed skin from wind and cold. The wind chill makes it feel much colder than the actual temperature.

Heavy Snow is probably the most significant winter weather phenomenon. Snow can be continuous, intermittent, flurries or if showery in nature, snow squalls. Snow squalls are brief and intense for short durations and are comparable to summer rain showers. Blowing and drifting snow often occur together, due to strong winds and falling or loose snow on the ground.

Ice Storms are freezing rain or drizzle that occurs when surface temperatures are below freezing. The moisture falls in liquid form freezing upon impact, resulting in ice or glaze on exposed surfaces and is called an ice storm. Sleet sometimes incorrectly referred to as an ice storm; is frozen rain drops and ice pellets, which bounce when hitting the ground. Sleet does not stick to trees but enough can cause hazardous driving conditions. Heavy accumulations of ice can bring down trees, topple utility poles/power lines and communication towers; and can disrupt communications and power for days while utility companies repair extensive damage. Small accumulations of ice can be extremely dangerous to motorists and pedestrians because bridges and overpasses freeze before other surfaces.

Recycled Snow is the ongoing blowing and drifting of already accumulated snow from one or more snow events that continues to blow and drift for days and weeks. The blowing snow is raised above the surface and blows in quantities that reduce visibility, continuously form new drifts, and fills in plowed roads up to three or four times per day. It is the most significant winter weather phenomenon in the county.

Structure collapse occurs when the forces of gravity or other external forces overcome the structural integrity of a building. A severe winter weather event, accompanied by ice and heavy snow, can lead to structure failure due to overwhelming ice and snow loads. Power lines and communications towers also topple during winter storms, disrupting supplies to residents, businesses, and agricultural producers.

Secondary hazards are often associated with severe winter weather. The most common hazards during winter weather events are transportation incidents. Roadways become hazardous quickly during snow, blowing snow, and ice events. Most incidents involve passenger vehicles; however, an incident involving a commercial vehicle transporting hazardous chemicals is always possible.

Seasonal Pattern	October to April – will occur in May in rare instances
Duration	Hours/days/up to a week in severe cases
Speed of Onset	12 to 24 hours warning
Location	Total geographic extent of Pierce County, North Dakota

For more information regarding severe winter weather please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

Information on the history of severe winter weather in Pierce County, North Dakota, was obtained from the National Climatic Data Center (NCDC); the National Oceanic and Atmospheric Administration (NOAA); the USDA, Risk Management Agency; the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), and Pierce County Emergency Management. A detailed hazard history for Pierce County, North Dakota, can be found on a disc located at the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment.

National Climatic Data Center/National Oceanic and Atmospheric Administration

Table 4.12.1 summarizes the history of severe winter weather in Pierce County between January 1, 1996, and December 31, 2022. Data was not available between January 1, 1950, to December 31, 1995, as only occurrences of tornado, thunderstorm wind and hail were recorded. Starting January 1, 1996, all event types (48) are recorded. The following are key points.

- Pierce County experienced 105 occurrences of severe winter weather resulting in approximately four storms of significance annually.
- Approximately $2,290,000.00 in property damage was reported.
- No injuries or fatalities were reported.

Table 4.12.1 – 1996 to 2022 Pierce County, North Dakota, Severe Winter Weather Hazard History Summary

Occurrences	Injuries	Fatalities	Property Damage	Crop Damage
105	0	0	2,290,000.00	$0.00

Source(s): National Climatic Data Center (NCDC), National Oceanic and Atmospheric Administration (NOAA)

U.S. Dept. of Agriculture, Risk Management Agency

- Crop loss from severe winter weather is tracked by the U.S. Dept. of Agriculture, Risk Management Agency (RMA). The RMA provides data on the crop type affected, damage cause description, determined acres and indemnity amount. The damage cause description identities the cause of damage, determines acres identifies the number of acres lost due to damage, and the indemnity amount identifies the total amount of the loss for the designated peril. Cause of Loss categories included in severe winter weather include cold winter, freeze, and frost. **Between January 1, 2001, and December 31, 2022, Pierce County, North Dakota, experienced 119 incidents of crop loss due to severe winter weather impacting approximately 69,041.19 acres of crops totaling $6,201,313.29.**

2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)

- Pierce County experienced $700,000.00 in property damage from 79 severe winter weather events between 2000 and 2018, and no injuries or fatalities.

Pierce County, North Dakota, Emergency Management

- There have been disaster declarations and emergencies pertaining to severe winter weather in Pierce County.

Probability

The probability of a hazard or threat is how likely it is it will happen. Profile meeting participants and the Steering Committee indicated the probability of severe winter weather in Pierce County is highly likely, meaning that there is a 100 percent probability in the next year the hazard will occur to some extent.

National Climatic Data Center/National Oceanic and Atmospheric Administration

Per Table 4.12.1, the following statistics on the probability of severe winter weather in Pierce County is as follows:

- The probability of severe winter weather in Pierce County is 100 percent based on 105 occurrences between January 1, 1996, to December 31, 2022, resulting in approximately four incidents of significance annually. Pierce County, North Dakota, experiences approximately $84,814.81 in property damage annually.

- No injuries or fatalities were reported between January 1, 1996, and December 31, 2022.

U.S. Dept. of Agriculture, Risk Management Agency

- According to information obtained from the U.S. Dept. of Agriculture, Risk Management Agency (RMA), crop loss due to severe winter weather impacts 3,138.23 acres totaling $281,877.88 annually in Pierce County, North Dakota, between January 1, 2001, and December 31, 2022.

Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount and/or number of damages or losses either actualized in a community or estimated based on known assets and levels of risk. The extent/magnitude of the severe winter weather ranges from large blizzard with prolonged sub-zero temperatures causing widespread power outages and loss of critical facilities and infrastructure to localized icy road conditions with minor traffic accidents.

- Several major blizzards and severe winter weather events occurred in Pierce County resulting in prolonged power outages for several weeks.

- **January 9, 1997**. A heavy snow event resulted in $1,530,000.00 in property damage.

- Profile meeting participants and the Steering Committee indicated the magnitude or impact of severe winter weather as catastrophic meaning 50 percent or more of Pierce County and its people could be affected.

Threat and Hazard Identification Risk Assessment (THIRA)

Table 4.12.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for severe winter weather. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.12.2 represents the sum of each jurisdiction's impact,

frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.12.2 – Pierce County, North Dakota, Severe Winter Weather Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County						
City of Balta						
City of Rugby						
City of Wolford						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.12.3 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of severe winter weather in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Table 4.12.3 – Pierce County, North Dakota, Severe Winter Weather Risk Assessment

Impact	**Blocked Roads:** • Saturation of roadways annually due to inadequate/blocked drainage of snow melt • Restricted access for emergency services from snow blocking roads • Loss of Economy • Increased isolation of rural residents/small communities • Severe low temperatures may increase utility costs • Increased cost for fuel for snow removal during large snow events • Highways can become icy reducing mobility speeds • Heavy snow causing spring melting and potential flooding	• Delayed Emergency Response • Human Injury/Death • Livestock Loss • Loss of Power/Downed Power lines • Limited mobility of local employers and employees/general population • Additional calls for emergency services may strain resources • Sheltering stranded people • All county and city roads are impacted by severe winter weather, depending on wind direction and quantity of snow received and duration of the incident • Disruption in economic activity and transportation routes moving goods and people, and provided services • Increased difficulty in mobility of general population may result in missed work or school • May contribute to shortage or outage of critical materials and infrastructure due to limited mobility from blocked roads and restrict delivery of commodities and products to the marketplace • **Pierce County experiences approximately 128,888.00 in property damage annually from NCDC/NOAA.** • **Per crop loss information obtained from the U.S. Dept. of Agriculture, Risk Management Agency (RMA), crop loss due to severe winter weather totals $120,941.19 annually in Pierce County.** • **Temporary economic boost due to rebuilding/repairs of homes, businesses and other structures.**

Table 4.12.3 – Pierce County, North Dakota, Severe Winter Weather Risk Assessment – Continued

Frequency	• Multiple occurrences of blizzard, extreme cold, and heavy snow annually • Annual occurrences of power loss from ice storms • March 2017 snowstorm resulted in blocked roads all over the county and in city limits • Blizzard conditions, heavy snow, extreme wind chill occur each year • March 2017 snow storm resulted in blocked roads all over the county • Power outage in 1981 resulted in prolonged outages of up to 5 days in areas of the county • 9th Ave SW blocked annually • Road providing access to law enforcement center blocked from snow drifts	• Occurrences of blocked roads from heavy snow occurs frequently • **According to the National Climatic Data Center, (NCDC), 105 occurrences between January 1, 1996, and December 31, 2022, resulting in a probability of 100 percent.** • According to information obtained from the U.S. Dept. of Agriculture, Risk Management Agency (RMA), crop loss due to severe winter weather impacts 3,138.23 acres totaling $281,877.88 annually in Pierce County, North Dakota, between January 1, 2001, and December 31, 2022.
Likelihood	• Climatic patterns will result in numerous annual occurrences of the hazard	
Vulnerability	More Vulnerable • High elderly population • Lack of permanent generators at critical facilities and infrastructure • Aging infrastructure (roads, water, electrical systems) • Short staffing of local employers and employees/general population • Townships do not have equipment to clear roads and rely on farmers, the county, and private contractors • Low-lying roads shut down from snow accumulation • Longer response times from emergency services • Stranded motorists - primarily U.S. Highway 2 • **County lacks time required to adequately respond to above average snow precipitation and accumulation** • Increased removal of shelterbelts allows more ground blizzard conditions • **Some township roads lack signage for navigation for emergency services and first responders in rural areas**	Less Vulnerable • Building Codes • Advanced warning and notification such as internet and TV • Switching of overhead telecommunication lines to underground – change to fiber-optic lines • Independent work ethic of local populations • County has adequate equipment for clearing roads during typical winter storm events • Better weather alerts and education of residents through internet, TV and cable • **Increased awareness through Pierce County IPAWS** • **Presence of social media alerting to the public** • **County highway department and NDDOT will assist ambulances to calls in rural areas during incidents of severe winter weather** • **Pierce County Highway Department is on-call during blizzard warnings**

	• **Improper placement of existing shelter belts adjacent to roadways contributes to blockage** • **Lack of storm water systems in some communities may contribute to overland flooding during thaw** • Critical facilities: Pierce County Courthouse, Pierce County Shops, all fire ambulance halls county-wide • Lack of storm shelters for Balta, Wolford and rural areas • Aging infrastructure (roads, water systems, electrical systems, shelter in city of Rugby) • Lack of adopted building codes or enforcement • Lack of permanent generators at 8 lift stations for sanitary sewer and one for storm water city of Rugby • Heart of America Medical Center patients and staff • Lack of traffic gates on U.S. Highway 2 and N.D. Highway	• **Appropriately positioned living snow fences**

Vulnerabilities to Publicly-Owned Buildings and Property

Most publicly-owned buildings and property remain unaffected by impacts from severe winter weather. Damage occurs from heavy snow, frozen pipes, power outages or potential damage to structural foundations from freezing and thawing of soil. Roof collapses are the biggest single-event on property resulting from heavy snow loads that can result in the loss of life. Heavy snow can also block sewer vents on single-family homes which can cause fatalities.

A summary of publicly-owned buildings is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

The greatest issues for critical facilities and infrastructure resulting from severe winter weather impacts are inaccessibility due to blocked roads, and utility and power outages. The Pierce County Courthouse, schools, lift stations and numerous critical facilities and infrastructure in Pierce County, North Dakota, should upgrade existing generators or install new generators to maintain power, if not done so already. See Chapter 6, Mitigation Strategy for a list of generators needed throughout the county.

Power. Critical facilities with backup generators are better equipped to handle impacts from severe winter weather if loss of power does occur. Suspended power lines are highly susceptible to high winds and subsequent fallen tree branches, other debris or accumulation of ice on power lines, leading to power outages. Restoration of power can take several days or up to several weeks in rare instances. All jurisdictions in the county have experienced power outages during severe winter weather to varying degrees of severity.

Road. The greatest issue for critical facilities and infrastructure is maintenance of the road system during severe winter weather. Emergency services can have trouble responding during power outages and are limited in responding to emergencies when roads are blocked from snow drifts. During blizzards or snowstorms, cars and trucks can become stranded if roads are blocked with heavy snow and ice. When U.S. Highway 2 is closed, it results in a high frequency of stranded motorists, most of whom are from out of state. Response times for emergency services can also be prolonged and prevent access to communities. Prolonged closures of roads can threaten propane, fuel and food supplies, and delivery of medical supplies.

Sanitary Sewer. Sanitary sewer systems can fail causing sewer backup resulting in property damage if prolonged power loss occurs and lift stations fail.

Water. Disruptions in drinking/potable water service can be caused by physical damage to water towers, the well house, or a loss of power. Delivery of water to jurisdictions can be interrupted by water main breakage resulting from freeze and thaw cycles.

Vulnerabilities to New and Future Development

New and future development could be seriously impacted by severe winter weather in jurisdictions that lack building codes and/or enforcement. Homes and businesses lacking the capability of supporting heavy snow loads could experience roof collapse. Jurisdictions without building codes and/or enforcement should have improved construction methods to better withstand severe winter weather.

Street design also plays an important role in vulnerability to severe winter weather. New and future development developed in a "suburban style" manner containing curvilinear roads and cul-de-sacs are more susceptible to severe winter weather impacts. Snow removal on these roadways has proven difficult and raises the potential for blocked roads and limits access for emergency services. Maintaining a high level of connectivity, which is defined as how often streets or roadways intersect, can increase the ease of snow removal and lessen the impact of blocked roads and maintain access for emergency services.

Increases in population further complicate matters when dealing with severe winter weather. An example of this would be higher numbers of people susceptible to vehicle accidents on icy or blocked roads, health hazards due to wind chill and extreme cold, etc. Conversely, increases in populations in existing jurisdictions may lessen the risk of impacts from severe winter weather as it leads to less isolated populations and increases the number of people reachable by emergency services during an emergency.

Data Limitations

Residents often experience impacts from severe winter weather, such as minor structural damage, increased utilities, loss of livestock, frozen water lines, but do not report.

National Climatic Data Center/National Oceanic and Atmospheric Administration

The hazard history provided in terms of property damage and crop damage (which are only estimates) is calculated based on what the National Weather Service received from insurance companies and individual property owners upon request. Both sources have been reluctant to share that information. Therefore, both practices were discontinued. Because of this, the National Weather Service makes a best guess using all available data at the time of the publication. The damage amounts are received from a variety of sources. Property and crop damage should be considered as a broad estimate.

The hazard history provided through the National Climatic Data Center/National Oceanic Atmospheric Administration's Storm Events Database contains data as entered by NOAA's National Weather Service (NWS). Due to changes in the data collection and processing procedures over time, there are unique periods of record available depending on the event type. The following timelines show the different time spans for each period of unique data collection and processing procedures. **Severe winter weather was not recorded as a separate incident until 1996.**

1. Tornado: From 1950 through 1954, only tornado events were recorded.

2. Tornado, Thunderstorm Wind and Hail: From 1955 through 1992, only tornado, thunderstorm wind and hail events were keyed from the paper publications into digital data. From 1993 to 1995, only tornadoes, thunderstorm wind and hail events have been extracted from the Unformatted Text Files.

3. All Event Types (48 from Directive 10-1605): From 1996 to present, 48 event types are recorded as defined in NWS Directive 10-1605.

U.S. Dept. of Agriculture, Farm Services Agency

The Livestock Indemnity Program (LIP) provides financial assistance to local producers that experience livestock losses. The program does not provide the cause of loss and, therefore, an accurate description of livestock loss from severe winter weather cannot be identified.

U.S. Dept. of Agriculture, Risk Management Agency

One of the Cause of Loss categories for crop loss data from the U.S.D.A., RMA is titled Other (snow, lightning, etc.) combines elements of severe summer weather and severe winter weather. Therefore, crop loss data for any given jurisdiction is incomplete.

Other Key Documents

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- Building Codes
- North Dakota Continuity of Operations Plan
- North Dakota Dept. of Transportation Design Manual
- North Dakota Emergency Operations Plan, Severe Winter Weather Annex
- North Dakota League of Cities: Planning and Zoning Handbook
- North Dakota State Building Code
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Comprehensive Plan (2019)
- Pierce County Evacuation Plan through Pierce County Emergency Management
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Mass Care Plan through First District Health Unit, Pierce County
- Pierce County Shelter Plan through Pierce County Emergency Management
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)

4.13 Space Weather

Conditions in space that affects Earth and its digital/technological and infrastructure systems.

Characteristics

Space Weather is a consequence of activity on the sun, the Earth's magnetic field and atmosphere, and the Earth's location in the solar system. These storms originate from the sun and occur in space near Earth or its atmosphere. Disruptions are primarily categorized into three types of events: geomagnetic storms, solar flares, and solar radiation storms. The storms can affect critical facilities and infrastructure such as blackouts, and disruptions in high-frequency radios and satellite navigation.

Geomagnetic Storm is a major disturbance of Earth's magnetosphere that occurs when there is a very efficient exchange of energy from the solar wind into the space environment surrounding Earth.

Solar Flares are large eruptions of electromagnetic radiation from the sun lasting from minutes to hours. The sudden outburst of electromagnetic energy travels at the speed of light, therefore, any effect upon the sunlit side of Earth's exposed outer atmosphere occurs at the same time the event is observed.

Solar Radiation Storms occur when a large-scale magnetic eruption, often causing a coronal mass ejection (CME) and associated solar flare, accelerates charged particles in the solar atmosphere to very high velocities.

Seasonal Pattern	None.
Duration	Minutes. Secondary impacts could last hours, days, weeks, months or even years.
Speed of Onset	Immediate identification from NOAA Space Weather Prediction Center; 8 minutes to reach the Earth.
Location	Total geographic extent of Pierce County.

For more information regarding space weather please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The plan can be accessed by following the link:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

According to the 2018 N.D. Enhanced Mission Area Operations Plan (MAOP), there are no recorded catastrophic space weather events impacting North Dakota. However, the following events from other locations across North America and the World provide insight.

- The nearest recorded event affected Montreal, Quebec, Canada on March 13, 1989, when a geomagnetic storm took out the electric power for nine hours impacting six million people.
- The largest geomagnetic storm in modern recorded history is named the Carrington Event. The solar super storm occurred on September 1st and 2nd, 1859, and impacted telegraph systems across Europe and North America. Auroras were recorded as far south as the Caribbean in the northern hemisphere.

There have been no declared disasters or emergencies pertaining to space weather in Pierce County.

Probability

The probability of space weather is 100 percent as the hazard is a natural phenomenon uncontrollable by humans and will occur at some point in the future. The 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP) documented six occurrences impacting Earth.

Profile meeting participants indicated the probability of space weather as possible, meaning that there is between a one and 10 percent chance of an occurrence in the next year.

Extent/Magnitude

The extent/magnitude of space weather can range from minimal to catastrophic. The National Oceanic and Atmospheric Administration Space Weather Prediction Center has created scales to communicate impacts on people and technologies from the hazard to the public. The scales have numbered levels of one to five, like other measurement scales for natural hazards like tornadoes and hurricanes. The scales rate the severity of possible effects of space weather. The extent/magnitude of a space weather event can range from extreme (radio blackout on the entire sunlit side of the earth or outages in maritime and aviation systems) to minor (slight degradation of radio communication or navigation signals).

Profile meeting participants indicated the magnitude or impact of space weather as catastrophic meaning 50 percent or more of Pierce County and its people could be affected.

Risk Assessment

Table 4.13.1 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for space weather. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment. The total in Table 4.13.1 represents the sum of each jurisdiction's impact, frequency, likelihood, and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.13.1 – Pierce County, North Dakota, Space Weather Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County	4	1	4	4	2	**11**
City of Balta	4	1	4	4	2	**11**
City of Rugby	4	1	4	4	2	**11**
City of Wolford	4	1	4	4	2	**11**

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.13.2 provides information on the specific impact, frequency, likelihood, vulnerability, and capability of space weather in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats is shown in Chapter 4.

Table 4.13.2 – Pierce County, North Dakota, Space Weather Risk Assessment

Impact	• Business Interruptions • Delayed Emergency Response • Explosion • Financial Hardship (Private and Public) • Government Interruptions • HAZMAT Release • Human Injury/Death • Increased Fire Potential • Increased Public Safety Runs • Infrastructure Degradation • Labor Shortages • Loss of Communications • Loss of Economy • Loss/Overcrowded Medical Facilities • Loss/Overcrowded Veterinarian Facilities • Loss of Potable Water	• Loss of Power/Electricity Outage • Loss of Transportation Accessibility • Mass Casualties/Fatalities • Property Damage (Structure, Equipment & Vehicle) • Public Distress/Social Discord • School Closure • Sewer Backup • Sheltering of Displaced Populations • Utility Outage/Shortage • **Loss of digital infrastructure at Pierce County Courthouse, City of Rugby, Pierce County Law Enforcement Center/Rugby Police Station, Heart of America Medical Center, public schools, emergency services, federal buildings, financial institutions**
Frequency	• Never a recorded occurrence in Pierce County or North Dakota	• The nearest recorded event affected Montreal, Quebec, Canada on March 13, 1989, when a geomagnetic storm took out their commercial electric power for nine hours. The storm impacted six million people.
Likelihood	• Dependent on solar activity and the 11-year solar cycle	• Likely to occur once every 500 years per the 2018 N.D. Enhanced Mitigation MAOP
Vulnerability	More Vulnerable • Advanced warning and notification such as internet and TV – over-reliance on these systems to support society • Increasing dependency of digital/technological systems in agriculture, private and public sectors • Fuel-powered backup generators for critical facilities and infrastructure – the availability of fuel sources may be impacted and/or not available to replenish systems • **Lack of backup generator at Pierce County Courthouse and Heart of America Medical Center**	Less Vulnerable • Advanced warning and notification such as internet & TV • Local food production/households with gardens • **Fuel-powered backup generators at Pierce County Law Enforcement Center/Rugby Police Station/Heart of America Correctional and Treatment Center (HACTC) for the communications tower and the Pierce County Courthouse for the Nurse's vaccination refrigeration unit.**
Capability	• See Chapter 7 for a list of capabilities to address space weather.	

Vulnerabilities to Publicly-Owned Buildings and Property

The physical integrity of publicly-owned buildings and property would not be impacted directly from space weather, but secondary impacts such as loss of electric power or digital/technological systems could affect operations. Secondary impacts resulting from loss of power include loss of heat during severe winter weather, which could result in frozen and burst water pipes causing widespread interior damage, sewer backups, and subsequent flooding, or loss of digital assets from damaged servers and other telecommunications infrastructure. Conversely, loss of power from a space weather event could compromise cooling systems during severe summer weather, which could result in server rooms overheating and shutting down either temporarily or permanently. The interdependency of electricity with the operation of publicly-owned buildings and property can lead to more complex issues and prolonged outages. **The Pierce County Courthouse, Pierce County Law Enforcement Center/Rugby Police Station/Heart of America Correctional and Treatment Center (HACTC), Heart of America Medical Center, Ely Elementary School, and Rugby High School are critical facilities and infrastructure most vulnerable to space weather.**

A summary of publicly-owned buildings and property in Pierce County is provided in Chapter 3, Profile and Inventory.

Vulnerabilities of Critical Facilities and Infrastructure

Critical facilities and infrastructure are vulnerable to space weather in a similar fashion to publicly-owned buildings and property. The Pierce County Courthouse, **Pierce County Law Enforcement Center/Rugby Police Station/Heart of America Correctional and Treatment Center (HACTC), and Heart of America Medical Center** have a specific vulnerability to space weather as prolonged power outages and data/technological systems could compromise security and endanger the overall functionality of the city of Rugby and greater Pierce County. Communication and utility infrastructure would also be disrupted from loss of power from space weather compromising the capabilities of emergency services and public and private sectors. The interdependency of electricity with the operation of critical facilities and infrastructure can lead to more complex issues and prolonged outages. **The Pierce County Courthouse, Pierce County Law Enforcement Center/Rugby Police Station/Heart of America Correctional and Treatment Center (HACTC), Heart of America Medical Center, Ely Elementary School, and Rugby High School are critical facilities and infrastructure most vulnerable to space weather.**

An inventory of critical facilities and infrastructure is provided in Chapter 3, Profile and Inventory.

Vulnerabilities to New and Future Development

As populations grow, more people are at risk of impacts from space weather such as those described in vulnerabilities to publicly-owned buildings and property, and critical facilities and infrastructure. A breakdown of population trends and projections by jurisdiction in Pierce County is shown in Chapter 3, Profile and Inventory, and Chapter 8, Jurisdictions.

Installation of faraday cages/shields at specific locations and/or equipment such as digital/technological systems for buildings (both public and private) and sewer backup valves at critical facilities and infrastructure should be considered for new and future development, but also for existing publicly-owned

buildings and property, and critical facilities and infrastructure. Investment in power grid system redundancies can also mitigate the impacts of space weather.

Data Limitations and Other Key Documents

Power and digital/technological system outages, whether brief or prolonged, occur on a regular basis across North Dakota and Pierce County. Since these events are not considered normal for critical facilities and infrastructure and are caused by other hazards such as severe summer or winter weather, identification of the role space weather is limited. An analysis of each critical facility and infrastructure would be needed to identify specific vulnerabilities from space weather.

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation MAOP
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Space Weather Annex
- North Dakota State Disaster Recovery Plan
- North Dakota State Preparedness Report (SPR)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)

4.14 Transportation Incident

Including aircraft, bicycle, boat, bus, motorcycle, pedestrian, railway, truck, automobile vehicle, and recreational vehicle (ATV, side-by-side, etc.) incidents.

Characteristics

A transportation incident is any small or large-scale aircraft, bicycle, boat, bus, motorcycle, pedestrian, railway, truck, automobile vehicle, and recreational vehicle (ATV, side-by-side, etc.) involving mass casualties. Mass casualties can be defined as an incident resulting in many deaths and/or injuries that reach a magnitude that overtaxes the response abilities of local resources. In most disasters, death and injury represent one of the hazard impacts. In transportation incidents, mass casualties and/or resulting evacuations or hazardous material releases are often the primary impact and focus of the event.

Transportation incidents occur with little or no warning. They involve many people and require special types of equipment and emergency medical personnel. Such incidents not only affect people with significant numbers of deaths/injuries, but also cause traffic problems, property damage, or even a hazardous material release and/or explosion. The probability is increased during winter storms, periods of poor visibility from snow, smoke, or dust; festivities with more opportunities for drinking and driving; and times of increased traffic volume. The agricultural and energy economy of the region also increases the opportunity for the release of hazardous materials in a transportation incident.

Seasonal Pattern	None. Prevalent with the agriculture sector and general vehicular traffic. Incidents in rural areas of the county are more prevalent during severe winter weather/winter conditions.
Duration	Minutes/hours/days/weeks – depending on extent of the incident
Speed of Onset	Little to no warning
Location	Total geographic extent of the Pierce County with a focus on U.S. Highways 2 and 52, and N.D. Highways 3, 17, 19, and 60; county and township roads; the Rugby Airport, and boating/recreational traffic on Sand Lake, Antelope Lake, Buffalo Lake, and at Balta Dam. CP Railway and BNSF Railroad. No commercial passenger air service. Amtrak provides passenger rail service.

For more information regarding transportation incident please reference the **2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP).** The state plan can be accessed by following the electronic hyperlink or link to the N.D. Dept. of Emergency Services website:

2018 North Dakota Enhanced Mitigation Mission Area Operations Plan

https://www.des.nd.gov/planning

History

Per the profile meeting participants, traffic incidents with minor damage or injuries occur annually in Pierce County (primarily in and around the city of Rugby). Incidents involving cars and farm equipment occur annually. History on transportation incidents in Pierce County was provided by the Pierce County Sheriff's Office, Rugby Police Dept., Pierce County Emergency Management, and the N.D. Dept. of Transportation.

Pierce County Sheriff's Office/City of Rugby Police Dept./Pierce County Emergency Management

- No aircraft incidents have occurred since 2008.
- In 2017, a mentally unstable individual parked their car on the BNSF Railroad tracks and committed fatal self-harm. This incident resulted in disruption to the railroad.
- In December of 2022, a mentally unstable individual parked their car on the BNSF Railroad tracks and committed fatal self-harm. This incident resulted in disruption to the railroad.

N.D. Dept. of Transportation

Table 4.14.1 shows crash data provided by the N.D. Dept. of Transportation and is for crashes occurring on state highways in Pierce County between 2005 and 2021. The following are key points from Table 4.14.1.

- Between 2005 and 2021, Pierce County experienced 1,160 total crashes of which 952 were property damage only crashes, 186 were injury crashes resulting in 236 injuries, and 22 were fatal crashes resulting in 22 fatalities.
- Approximately 82.1 percent of crashes were property-damage only.
- The last fatal crash in Pierce County occurred in 2020.
- According to the Pierce County Sheriff's Office, incidents involving vehicles with wildlife are no longer required to be reported as of 2014 and has resulted in a significant decrease in overall reported incidents in Pierce County.

Probability

- The probability of a hazard or threat is how likely it is it will happen. Per the N.D. Dept. of Transportation, Pierce County experiences an average of 56.0 property-damage-only crashes, 10.9 injury crashes resulting in 14.8 injuries, and 1.3 fatal crashes or 1.4 fatalities annually between 2005 and 2021.
- The profile meeting participants indicated the probability of a vehicular transportation incident for Pierce County is highly likely, meaning that there is a 100 percent probability in the next year of an incident. Transportation incidents involving aircraft, agricultural-related equipment, and pedestrian/other modes of transportation are occasional at best.

Table 4.14.1 – 2005 to 2021 Pierce County, North Dakota, Crash Summary

Year	Property Damage Only (PDO)	Injury Crashes	Total Injuries	Fatal Crashes	Total Fatalities	Total Crashes
2005	107	14	--	2	--	**123**
2006	95	10	14	0	0	**105**
2007	78	11	12	2	2	**91**
2008	89	22	32	1	1	**112**
2009	106	7	13	3	3	**116**
2010	98	10	11	2	2	**110**
2011	90	14	16	0	0	**104**
2012	70	11	13	3	5	**84**
2013	35	7	9	1	1	**43**
2014	26	10	20	1	1	**37**
2015	26	13	22	3	3	**42**
2016	18	10	16	2	2	**30**
2017	48	12	15	1	1	**61**
2018	20	10	12	0	0	**30**
2019	18	6	9	0	0	**24**
2020	16	8	10	1	1	**25**
2021	12	11	12	0	0	**23**
TOTAL	**952**	**186**	**236**	**22**	**22**	**1,160**

Source(s): N.D. Dept. of Transportation

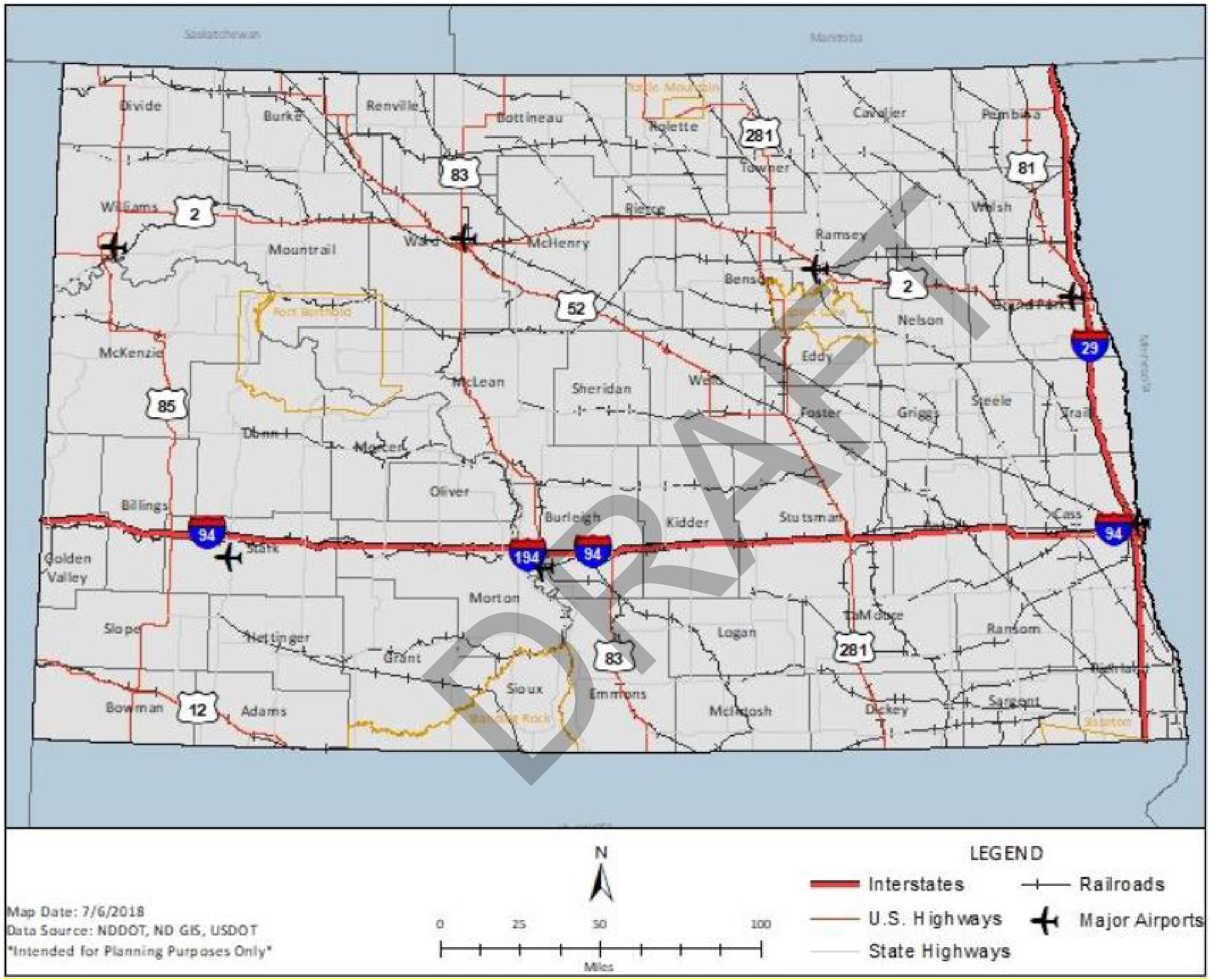
Extent/Magnitude

The extent/magnitude of a hazard or threat is expressed in the amount of damage or losses either caused or could occur in a community. Meeting participants at the profile meeting indicated the extent/magnitude of a transportation incident for Pierce County would be critical, meaning an incident would result in noticeable damage to people, buildings, and property. According to the 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP), Pierce County has a moderate vulnerability to transportation incidents based on analysis of its transportation infrastructure; the county does not have a commercial passenger airport, interstate, but has U.S. Highways, passenger railroad service, and CP Railway and BNSF Railroad.

According to 2016 N.D. Dept. of Transportation Crash Summary, approximately 10 percent of fatal crashes in the state occurred in urban locations and 90 percent of the fatal crashes occurred on rural roads.

Figure 4.14.1 illustrates the transportation system in North Dakota.

Figure 4.14.1 – North Dakota Transportation System



Source(s): N.D. Dept. of Transportation

Risk Assessment

Table 4.14.2 shows the risk assessment as determined by individual jurisdictions, the Steering Committee, and meeting participants at the profile meeting for transportation incident. The risk assessment methodology can be found in the beginning of Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA). The total in Table 4.14.2 represents the sum of each jurisdiction's impact, frequency, likelihood and vulnerability to a hazard/threat less the jurisdiction's capabilities to respond to the hazard/threat.

Table 4.14.2 – Pierce County, North Dakota, Transportation Incident Risk Assessment Scored Chart Summary

Jurisdiction	Impact	Frequency	Likelihood	Vulnerability	Capabilities	Total
Pierce County	3	2	4	4	3	**10**
City of Balta	3	2	3	3	1	**10**
City of Rugby	3	2	4	4	2	**11**
City of Wolford	4	2	2	2	1	**9**

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 4.14.3 provides information on the specific impact, frequency, likelihood, vulnerability and capability of transportation incident in Pierce County. A list of impacts identified as commonplace for natural hazards and man-made threats regardless of the jurisdiction is shown in Chapter 4, Threat and Hazard Identification Risk Assessment (THIRA).

Vulnerabilities to Publicly-Owned Buildings and Property

Publicly-owned buildings and property should not be affected by transportation incidents except in an instance where an airplane or vehicle crash impacts a building or property. However, any truck incident involving hazardous materials or aircraft incidents occurring in proximity of a publicly-owned building or property could result in property damage, mass casualties/fatalities, or large-scale evacuations. Should an incident of this nature occur, damage could exceed hundreds of thousands or millions of dollars, depending on the structure impacted. Buildings supporting key functions to daily county and incorporated jurisdiction operations most vulnerable include but are not limited to Pierce County Courthouse, Heart of America Medical Center, Heart of America Correctional and Treatment Center (which serves as the Pierce County Law Enforcement Center, Rugby Police Station, N.D. Highway Patrol satellite office, and N.D. Bureau of Criminal Investigation (BCI) field office, and public service answering point (PSAP) for Pierce County), public schools, and buildings supporting emergency services such as ambulance halls and fire stations. A transportation incident can result in power outages if occurring near and impacting power infrastructure. Power losses could result in the prolonged loss of service of publicly-owned buildings and property.

There are vulnerabilities to publicly-owned buildings and property from transportation incidents involving trains as Amtrak, CP Railway, and BNSF Railroad operate in Pierce County.

A summary of publicly owned buildings and property in Pierce County is provided in Chapter 3, Profile and Inventory.

Table 4.14.3 – Pierce County, North Dakota, Transportation Incident Risk Assessment

Impact	• **Blocked roads from severe weather and at-grade railroad crossing with roads and highways** • Explosion • HAZMAT Release • Human Injury/Death / Mass Casualties/Fatalities • Increased Fire Potential • Increased Public Safety Runs • Loss of Transportation/Accessibility	• Pierce County experienced 1,160 total crashes of which 952 were property damage only crashes, 186 were injury crashes resulting in 236 injuries, and 22 were fatal crashes resulting in 22 fatalities. • **Decrease in regional economic activity if impacting a major transportation artery for an extended period such as U.S. Highway 2/52 or N.D. Highway 3, which connects to interstate 94.**
Frequency	• Annual occurrences of car crashes, truck-related incidents, etc. • Incident of significance with cars and trucks occurs every 3 to 5 years • Three fatalities in 2013 on county line between Pierce and Towner Counties • April/May of 2017 an intentional train-vehicle accident occurred on Main Street in city of Rugby resulting in a fatality	• Two or three annual calls from incidents on N.D. Highway 3 in south-central portion of county where highway curves around water features • Per the N.D. Dept. of Transportation, Pierce County experiences an average of 56.0 property-damage-only crashes, 10.9 injury crashes resulting in 14.8 injuries, and 1.3 fatal crashes or 1.4 fatalities annually between 2005 and 2021.
Likelihood	<u>More Likely</u> • Presence of Amtrak passenger rail service • Presence of U.S. Highway 2/52 and N.D. Highways 3, 17, 19, and 60 • Presence of railroad through county and cities • Intoxicated drivers/mentally unstable individual	<u>Less Likely</u> • New traffic control lights installed at intersection of U.S. Highway 2 and N.D. Highway 3 in 2018 • Signs and rumble strips installed on truck route/28th Ave and 66th Street around city of Rugby in early 2010s • U.S. Highway 2 resurfaced west of Rugby summer 2017 • N.D. Highway 3 was resurfaced summer 2022 • U.S. Highway 2 resurfaced east of Rugby summer 2023 • **Lack of commercial passenger air service**
Vulnerability	<u>More Vulnerable</u> • Presence of Amtrak passenger rail service • Presence of U.S. Highway 2/52 and N.D. Highways 3, 17, 19, and 60 • Presence of railroad through county and cities • Intoxicated drivers/mentally unstable individual	<u>Less Vulnerable</u> • New traffic control lights installed at intersection of U.S. Highway 2 and N.D. Highway 3 • Signs and rumble strips installed on truck route/28th Ave and 66th Street around city of Rugby • U.S. Highway 2 was resurfaced summer 2017

	• Rural/less traveled roads experience high incidents resulting in fatalities • "Balta Curve" on N.D. Highway 3 in south-central Pierce County	Anticipated widening/expansion of N.D. Highway 3 resulted in safer curves/turns • **Lack of commercial passenger air service**
Capability	• See Chapter 7 for a list of capabilities to address transportation incident.	

Vulnerabilities of Critical Facilities and Infrastructure

Critical facilities such as the Pierce County Courthouse, Heart of America Medical Center, Heart of America Correctional and Treatment Center (which serves as the Pierce County Law Enforcement Center, Rugby Police Station, N.D. Highway Patrol satellite office, and N.D. Bureau of Criminal Investigation (BCI) field office), the ambulance and fire halls, and infrastructure such as water/wastewater treatment facilities and power grid infrastructure should not be affected by transportation incidents, except in rare occurrences if an incident physically impacts these facilities and/or infrastructure, or personnel employed therein are impacted by an incident.

Medical. A transportation incident involving significant injuries or fatalities can result in overcrowding and/or a shortage of medical supplies at the Heart of America Medical Center and Heart of America Ambulance Service.

Power. A transportation incident can result in power outages if occurring near and impacting power infrastructure. Power losses could result in the loss of critical facilities such as the Pierce County Courthouse or infrastructure such as lift stations or water treatment plants. According to meeting participants, there are electrical substations located throughout the county.

Railroad. The Burlington Northern Santa Fe (BNSF) railroad traverses Pierce County and bisects the city of Rugby. The Pierce County Courthouse is vulnerable to transportation incidents involving a train.

Road. Roads would be affected as this is where transportation incidents are likely to occur. Vulnerabilities could include a closure of a major transportation artery such as U.S. Highway 2/52 and N.D. Highways 3, 17, 19, and 60 due to an incident, which can block access for emergency services, disrupt economic activity, and add strain onto other arteries in the overall transportation system.

Vulnerabilities to New and Future Development

New and future development could result in increased traffic related to commercial, industrial or residential development. The location of new and future development will determine the probability of future transportation incidents and should be conducive to nearby transportation infrastructure – i.e., industrial development near major highways or commercial development near existing commercial corridors or transportation infrastructure with high visibility. Locations of new and future residential development conducive to transportation infrastructure is dependent on the local zoning code and proposed density of each respective development.

Data Limitations and Other Key Documents

This plan incorporates data from the following documents and information from this plan will be incorporated in the update of the following documents.

- 2018 N.D. Enhanced Mitigation Mission Area Operations Plan (MAOP)
- 2018 N.D. Highway Safety Plan
- 2020 N.D. Dept. of Transportation Urban High Crash Locations Report
- North Dakota Continuity of Operations Plan
- North Dakota Emergency Operations Plan, Transportation Incident Annex

- North Dakota State Disaster Recovery Plan
- North Dakota Statewide Transportation Improvement Plan (STIP)
- North Dakota Threat and Hazard Identification and Risk Assessment (THIRA)
- Pierce County Comprehensive Plan (2019)
- Pierce County Zoning Ordinance (2023)
- Pierce County Local Emergency Operations Plan (LEOP)
- Pierce County Threat and Hazard Identification and Risk Assessment (THIRA)
- Rugby Comprehensive Plan
- TransAction III, North Dakota's Statewide Strategic Transportation Plan

6. Pierce County, North Dakota, Mitigation Strategy

Mitigation Purpose, Goals, and Projects

The Pierce County, North Dakota Multi-Jurisdictional Multi-Hazard Mitigation Plan includes a mitigation strategy consisting of six goals and specific mitigation projects for each incorporated jurisdiction based on the risk assessment developed at Plan Update Committee and jurisdictional meetings.

All natural hazards and man-made threats were considered, and mitigation projects were formulated based on the potential or previous effects of hazards, the high probability of hazard or threat occurrences, the vulnerability of jurisdictions to hazards, and hazards each project can mitigate. The problem statement for Pierce County, North Dakota, which assisted in formulating specific mitigation actions to reduce the impacts of hazards, is shown before the mitigation actions.

The following are the seven goals that were reviewed, updated, and approved:

Goal 1: Strengthen and expand administrative and technical capabilities.

Goal 2: Strengthen and expand education and outreach capabilities.

Goal 3: Strengthen and expand financial capabilities.

Goal 4: Strengthen and expand planning and regulatory capabilities.

Goal 5: Reduce and/or eliminate the impacts of, and vulnerabilities to, natural hazards and man-made threats.

Goal 6: Improve the resiliency of critical facilities and infrastructure.

Goal 7: Provide places of refuge and early warnings for the public and vulnerable populations to take protective action during hazardous incidents.

A total of 25 projects were identified. Of the 25 identified projects, two projects are specific to the cities of Balta and Rugby each, and one project is specific to the city of Wolford. The remaining projects address the county and all incorporated jurisdictions and unincorporated jurisdictions.

Mitigation Project Development

The Plan Update Committee identified the following characteristics of each mitigation project and is included each project profile:

- Description/benefit
- Hazard(s) addressed
- Affected jurisdiction
- Project status
- Priority
- Responsible agency
- Partners
- Timeframe for completion
- Cost
- Funding sources

Scoring and Prioritization

The Steering Committee also scored and ranked projects based on a FEMA process – STAPLEE – that allows a community to understand the support for a project; the potential costs in dollars, time and expertise; environmental impact; and the benefit of the project. The specific words in the acronym STAPLEE are social, technical, administrative, political, legal, economic, and environmental.

Each project was scored using a one to five (1 to 5) scoring.

- A score of one (1) indicated a project is ineffective, not feasible and/or too costly
- A score of five (5) indicated the project was highly effective, feasible and/or a higher benefit compared to cost.
- A score of three (3) was neutral.

Each mitigation project included in the plan is valuable as it addresses needs specific to Pierce County and its jurisdictions. Due to a variety of constraints, not all projects can be implemented simultaneously and must be prioritized with the most critical projects being emphasized for implementation in the near term. However, the prioritization of each project can change over time to respond to changes in a community and to take advantage of resources that become available.

The Steering Committee prioritized each mitigation project on a high, medium and low designation based on scoring of the documentation, past experiences and professional judgment, and what projects are technically feasible to accomplish is based on the capabilities of all jurisdictions.

Table 6.1 summarizes the projects by priority by jurisdiction.

Table 6.1 – Prioritization of Mitigation Projects by Jurisdiction

	Project Number by Prioritization		
Jurisdiction	Low	Medium	High
Pierce County			
City of Balta			
City of Rugby			
City of Wolford			

Projects with affected jurisdictions identified as ‘Pierce County and Incorporated Jurisdictions’ are shown in the table under Pierce County as these projects are assumed to be a county effort. Mitigation projects with jurisdictions specifically identified are represented under both the county and the respective jurisdiction(s) in the table.

Acronyms and Definitions

The acronyms and definitions used in the responsible agency and partners section of each mitigation projects profile are described in Table 6.2.

Table 6.2 – Acronyms and Definitions of Responsible Agencies and Partners for Mitigation Projects

Acronym/Definition	Entity
BOR	Bureau of Reclamation
CDBG	Community Development Block Pierce
City Councils	Cities of Balta, Rugby, Wolford
County Commission	Pierce County Commission
Emergency Management	Pierce County Emergency Management
Emergency Services	Ambulance, fire, law enforcement, special units
EPA	Environmental Protection Agency
Extension	NDSU/Pierce County Extension Service
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FSA	USDA - Farm Service Agency
Historical Society	State Historical Society of North Dakota
HUD	Housing and Urban Development
Media	Pierce County Tribune, Pierce County Facebook page, Pierce County website, Bismarck Tribune, Minot Daily News, radio stations
Medical Service Providers	Heart of America Medical Center, local medical clinics
NCDC	National Climatic Data Center
NDAC	N.D. Association of Counties
NDDES	N.D. Dept. of Emergency Services
NDDC	N.D. Dept. of Commerce
NDDH	N.D. Dept. of Health
NDDOT	N.D. Dept. of Transportation
NDLC	N.D. League of Cities
NDTOA	N.D. Townships Officers Association
NOAA	National Oceanic and Atmospheric Administration
NRCS	U.S.D.A. Natural Resources Conservation Service
NWS	National Weather Service
Planning & Zoning	Planning and Zoning Board, County Commission, City Councils
Public Health	Custer Health, N.D. Dept. of Health, Southwestern District Health Unit
Public Utilities	Cable: Dish Network, Midcontinent, N.D. Telephone Company, Satellite/DirecTV Electricity: North Central Electric Cooperative, Northern Plains Electric Cooperative, Ottertail Power Company, Verendrye Electric Cooperative Internet: Midcontinent, N.D. Telephone Company Natural Gas: N/A Phone: AT&T, Verizon, Smart Talk/Trac Phones, Midcontinent, N.D. Telephone Company Waste: Rugby Sanitation, Waste Management Water: All Seasons Water Users District, Central Plains Water District, individual wells, municipal wells
Public Works	Pierce County Road Department/Public Works, City of Rugby Public Works

Table 6.2 – Acronyms and Definitions of Responsible Agencies and Partners for Mitigation Projects – Continued

Acronym/Definition	Entity
Red Cross	American Red Cross
Regional Council	Souris Basin Planning Council
RD	U.S. Dept. of Agriculture – Rural Development
Social Services	Pierce County Social Services
SWC	N.D. State Water Commission
U.S.A.C.E.	United States Army Corps. of Engineers

Problem Statements

Problem statements provide a concise description of the vulnerabilities of the jurisdiction to threats and hazards that should be addressed through mitigation actions. The specific mitigation actions to reduce the impacts of hazards are identified for each jurisdiction and are found after the problem statement. The problem statements and jurisdiction-specific mitigation projects can be found in Chapter 8, Jurisdictions.

Pierce County, North Dakota

Pierce County, North Dakota, can be impacted by civil disturbance; criminal, terrorist, or nation/state attack; cyberattack; drought; fire (urban and wildland); flood (overland); geologic hazards; hazardous material release; infectious disease and pest infestations; severe summer weather; severe winter weather; space weather, and transportation incident. Flooding is an issue due to improper drainage and insufficient infrastructure such as the Rugby underpass and several county roads. The city of Balta is not enrolled in the National Flood Insurance Program. Severe summer weather and severe winter weather are frequent and impose property damage. Incorporated communities lack shelters with structural integrity to withstand natural hazards. Economic loss to the agriculture and livestock industry occurs on a frequency basis from natural hazards. The county has existing mitigation capabilities that need to be expanded and upgraded. The county relies on outside sources for funding and to accomplish large-scale mitigation projects.

Improvement and expansion of existing mitigation capabilities; upgrading of existing and installation of new sirens, equipment, and communications; installation of generators at critical facilities and infrastructure; enforcement of building codes; construction of storm shelters, improve drainage and upgrading of critical facilities and infrastructure are a priority for the county.

Pierce County Project AT-1: Expand administrative and technical mitigation capabilities.

Description/Benefit	Expand administrative and technical mitigation capabilities to improve county readiness and preparedness. Administration • Update mutual aid agreements on a continuous basis. Special attention should be paid to public schools for sheltering purposes. Staff • Continue Floodplain Administrator and Planning and Zoning Administrator Education, Technical • Install solar-powered electronic fire index signs – See Pierce County Project AT-4 • Install permanent generators – See Pierce County Project AT-7 • Install and/or expand directional signage for emergency services and for truck/hazmat routes wherever missing or needed – ordinances may be necessary. **Some incorporated cities need truck route signage expansion and/or upgrade. South-facing signs become sun-bleached and need replacement often.** • Achieve StormReady Certification - https://www.weather.gov/stormready/become - 10/19/23 • Install faraday cages/shields at digital/technological infrastructure systems at critical facilities and infrastructure
Hazard/Threat Addressed	All
Affected Jurisdictions	Pierce County and incorporated jurisdictions
Project Status	New/Ongoing and Continue
Priority	High
Responsible Agency	City Councils, County Commission, Emergency Services
Partners	Emergency Management, Extension Service, Medical Service Providers, Planning & Zoning
Completion Timeframe	1 to 3 years. Any education is always ongoing. | Cost: Project-specific
Funding Source	See Table AT-1.1

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	4	4	32

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Capital Improvement Fund Pierce County LEOP & Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Solicit project scope of work. Pursue grant funding or use local funds.

Table AT-1.1 – Pierce County, North Dakota, Mitigation Project AT-1 Funding Sources

Project Item	Funding Source
Mutual Aid Agreements	Emergency Management Budget
Floodplain/Planning & Zoning Education	County Auditor's Budget
Solar-powered fire index sign	U.S. Forest Service Fire Index Sign Grant (50/50 Split)
Permanent and Portable Generators	FEMA's BRIC or HMGP grant programs. Department of Homeland Security's Homeland Security Grant Program.
StormReady Certification	Emergency Management Staff Time
Directional Signage/Truck Route	9-1-1 Budget
Faraday Cages/Shields	State and Local Cybersecurity Grant

Pierce County Project AT-2: Adopt and Enforce Building Codes.

Description/Benefit	Improve administrative and technical, and planning and regulatory capabilities through establishment of a building code enforcement contract from an outside source, establishment of a county position or education of existing county departments, to enforcement of building codes. Building codes can be enforced to increase structural integrity of new structures or renovation of existing. Building codes can be strengthened to increase the structural integrity to withstand high wind events during severe summer weather and snow loads during severe winter weather. Building codes can also be strengthened to encourage radon-resistant building techniques.		
Hazard/Threat Addressed	All Hazards and Threats		
Affected Jurisdiction(s)	Pierce County and Incorporated Jurisdictions		
Project Status	New/Ongoing and Continue		
Priority	Medium/High		
Responsible Agency	City Councils, County Commission, Planning & Zoning		
Partners	N.D. Planning and Zoning Authority, Public Health		
Completion Timeframe	Ongoing	Cost	Project-specific
Funding Source	Permitting and local fees, public partnerships. City and County Budgets/General Funds.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
3	2	2	2	3	2	5	20

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Planning and Zoning Ordinances Pierce County LEOP & Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Adoption of building codes by city councils and county commission. Incorporated cities and Pierce County all budget a portion to pay for ongoing research and development.

Pierce County Project AT-3: Upgrade and/or Expand Emergency Alerting/Communications and/or Outdoor Early Warning System(s).

Description/Benefit	Coverage of current outdoor early warning system/sirens does not provide coverage to an adequate geographic expanse of the county. Upgrade existing manually-activated sirens to dispatch-activated sirens. There are no existing outdoor early warning sirens for the county outside incorporated cities. Purchase NOAA weather radios for rural communities and unincorporated jurisdictions. • **Upgrade:** City of Rugby (2), City of Wolford • **New:** City of Balta • **NOAA Weather Radios:** Townships; Barton, Orrin, and Selz (unincorporated) • **County-Wide Reverse 9-1-1/Early Warning System**: County joined the state Everbridge three years ago.		
Hazard/Threat Addressed	Flood, Hazardous Material Release, Severe Summer Weather, Wildland Fire (All)		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	Ongoing and Continue		
Priority	Medium/High		
Responsible Agency	Emergency Management, Emergency Services		
Partners	County Commission, City Councils, FEMA, NDDES, NWS		
Completion Timeframe	2 to 3 years. Always ongoing and sirens need upgrading and radios need replacing.	Cost	Siren: Up to $20,000 per siren Reverse 9-1-1: $500 annually
Funding Source	9-1-1 funding. State Homeland Security Grant Program. FEMA BRIC and HMGP.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	4	4	33

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Capital Improvement Plan Pierce County LEOP & Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Develop specifications. Received EHP approval. Pursue grant funding or budget independently. Approval by county commission/City Council(s).

Pierce County Project AT-4: Install Digital Signage at Strategic Locations.

Description/Benefit	Improve public awareness and education of current weather and road conditions, communication of North Dakota Fire Danger Index. The fire danger index from the state provides an indication of rural fire potential for grasslands, and its ability to spread. The signs can also be used for community messaging/alerts and speed zones. The following locations have been suggested by Pierce County and mitigation committee members: **Pierce County/City of Rugby:** Intersection of U.S. Highway 2 and N.D. Highway 3 **City of Balta:** Intersection of N.D. Highway 3 and 52nd St NE **City of Wolford:** N.D. Highway 17 and 3rd Ave NW		
Hazard/Threat Addressed	Hazardous Material Release, Severe Summer Weather, Severe Winter Weather, Urban Fire/Structure Collapse, Wildland Fire, Transportation Incident		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	Ongoing and Continue		
Priority	Medium		
Responsible Agency	Fire Departments		
Partners	City Councils, County Commission, NDDOT, Public Works, USFS, NDFS, Emergency Management		
Completion Timeframe	2 to 3 years	Cost	Dependent on project specifications
Funding Source	U.S. Forest Service Fire Index Sign Grant – check if digital is acceptable		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	1	4	30

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Capital Improvement Plan Pierce County LEOP & Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Research scope by fire departments. Present findings at LEPC to make a recommendation to the county commission.

Pierce County Project AT-5: Upgrade Existing or Purchase New Equipment and Infrastructure.

Description/Benefit	Purchase and/or install upgraded equipment for ambulance, fire and law enforcement. Improve administrative and technical capabilities of emergency services to mitigation the impact of hazards. A focus of emergency services should be to upgrade equipment to be GIS/GPS capable. **Heart of America Medical Center Ambulance:** P-25 compliant mobile radios, mobile data terminal, CAD System **Rugby Fire Department/Rugby Rural Fire**: New grass rig, new SCBAs, new pumper truck, CAD System **Rugby Police Department:** Fourth Unit, ballistic shields, CAD System, Drone with flir **Pierce County Sheriff's Office:** New squad cars, riot gear, ballistic shields, CAD System, Drone with flir **Pierce County Emergency Management:** Emergency Operations Center communication/phone line improvement **Wolford Rural Fire Protection District:** Grass firefighting unit and pickup, CAD System **City of Balta:** AED at Our Lady of Mount Carmel Catholic Church **City of Rugby:** Snowblower **City of Wolford:** AED at Wolford Lutheran Church		
Hazard/Threat Addressed	All hazards and threats		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	Each individual entity listed above.		
Partners	City Councils, County Commission		
Completion Timeframe	Ongoing	Cost	Project-specific
Funding Source	Local general funds (county, cities, emergency services). CDBG, FEMA, HUD, Public Utilities, RD, USFS, AFG.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)							
Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	3	5	33

Integration of Mitigation Plan Requirements into Local Planning Mechanisms		
Planning Mechanisms Utilized	Plan Element	Process for Integration

Pierce County LEOP & Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Review each respective entity. Budget or apply for grant funding. Approval by board, or county commission, and/or city councils.

Pierce County Project AT-7: Install permanent generators, upgrade existing permanent or portable generators, at critical facilities and infrastructure.

Description/Benefit	Upgrade existing generators or install new generators to establish permanent source of backup power to maintain continued operation of the following critical facilities and infrastructure: Upgrade • Pierce County Courthouse – needed for whole building. Public Health has one for their needs. • Local repeater tower • Heart of America Correctional and Treatment Center Install New • Pierce County: Memorial Hall, county shops in Balta, Selz (unincorporated), Wolford need portable, Father's Farm (private), • City of Rugby: Ely Elementary School, Rugby High School, Rugby Fire Hall, Heart of America Medical Center, Little Flower School • City of Balta: City generator, Our Lady of Mount Carmel Catholic Church • City of Wolford: Wolford Rural Fire Protection District Fire Hall (portable), Wolford Lutheran Church Completed: • City of Rugby: Water treatment plant, lift stations, Armory, municipal water well • All funded through city revenue
Hazard/Threat Addressed	Severe Summer Weather, Severe Winter Weather (All)
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions
Project Status	Ongoing and Continue
Priority	High
Responsible Agency	Emergency Services, County Commission, City Councils, Emergency Management, Public Schools
Partners	Medical Services Providers, Public Utilities, Public Works
Completion Timeframe	Ongoing. Generators have useful life of 19 years. Cost: Project-specific
Funding Source	Public Utilities. FEMA's BRIC or HMGP. State Homeland Security Grant Program.

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	3	3	31

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element Utilized	Process for Integration

Pierce County LEOP & Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Review by emergency services, cities, or county. Budget or apply for grant funding and approve for execution.

Pierce County Project AT-8: Establish Written Storm Water System/Drainage Ditch Maintenance System to Reduce and/or Eliminate Occurrences of Overland Flooding.

Description/Benefit	Create drainage ditch/storm water maintenance system to control flow of runoff to eliminate blocked roads, maintain access for city/county residents and emergency services, and maintain continuous operation of public infrastructure. Establishment of a system will assist in reimbursement from state and federal sources for expenses incurred during emergency events. **The county road department, city of Rugby public works, and organized townships already have a schedule for maintaining storm water systems/drainage ditches but needs to be converted to a written document for continuity purposes.** • **Horseshoe Lake (Section 16, 20th Ave NE)** • **Antelope Lake**		
Hazard/Threat Addressed	Drought, Flood (Overland), Infectious Disease, Severe Summer Weather, Severe Winter Weather, Wildland Fire		
Affected Jurisdiction(s)	Pierce County, City of Rugby, Organized Townships		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	City Councils, County Commission, Public Works		
Partners	Emergency Services, NDHHS, Public Health, DWR		
Completion Timeframe	1 year	Cost	Staff-time
Funding Source	Highway Department Budget/Public Works		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element Utilized	Process for Integration
Capital Improvement Plans Rugby Storm Water Maintenance Plan Pierce County LEOP & Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Development of system by county and city public works, and organized townships. Approval and adoption by city council, county commission, township and water resource district board. Include as annex in local emergency operations plan.

Pierce County Project AT-9: Install Homeland Security Measures at Critical Facilities and Infrastructure.

Description/Benefit	The Pierce County Courthouse, Heart of America Correctional and Treatment Center, Heart of America Medical Center, emergency services buildings, public schools are critical facilities, and utility and transportation infrastructure are vulnerable to adversarial threats. Installation of (but not limited to) access control measures, alarm systems, cybersecurity enhancements, door alarms, door locks, enhanced lighting, security fencing, motion-detecting systems, security camera surveillance systems, and threat-proof building materials are needed to mitigate adversarial threats. • **Access Control Systems (Bollards):** Heart of America Correctional and Treatment Center, utility infrastructure • **Alarm Systems:** Rugby Public Schools needs an integrated multi-building system between Rugby High School and preschool, Heart of America Medical Center, City of Rugby sanitary sewer lift stations • **Cybersecurity Enhancements: Pierce County Courthouse,** Heart of America Correctional and Treatment Center, Heart of America Medical Center**, City of Rugby, Rugby Public Schools,** Little Flower School**, public utilities** • **Door Access Control Systems:** Heart of America Medical Center, Rugby High School, Little Flower School • **Security Camera Surveillance Systems (existing and/or upgrade):** Armory, Heart of America Correctional and Treatment Center, Heart of America Medical Center, Rugby Water Treatment Plant, Pierce County Courthouse, Prairie Village Museum, fire halls • **Security Fencing:** Utility infrastructure, public and private schools, sanitary sewer lagoon, Rugby Water Tower and storage tank, Heart of America Correctional and Treatment Center, All Seasons Rural Water District Water Tower • **Security Lighting:** Pierce County Courthouse, public and private schools • **Threat-Proof Doors and Windows:** Public and private schools, Pierce County Courthouse, Heart of America Correctional and Treatment Center, Prairie Village Museum		
Hazard/Threat Addressed	Civil Disturbance; Criminal, Terrorist, or Nation/State Attack, Fire (Urban), Transportation Incident (All)		
Affected Jurisdiction(s)	Pierce County and Incorporated Jurisdictions		
Project Status	New		
Priority	Very High		
Responsible Agency	County Commission, City Council(s), Emergency Management, Emergency Services, Public Works, Medical Service Providers, Public Utilities		
Partners	Dept. Homeland Security, NDDES, private contractors		
Completion Timeframe	Ongoing	Cost	Project-specific
Funding Source	State Homeland Security Grant Program.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	4	3	31

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element Utilized	Process for Integration
Pierce County LEOP & Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Develop scope of work and procure bids/quotes. Apply for grant funding. Select contractor. Receive EHP approval. Execute.

Pierce County Project AT-10: Support the N.D. Dept. of Water Resources Risk Mapping, Analysis, and Planning (RISK MAP).

Description/Benefit	The N.D. Dept. of Water Resources received funding from the Federal Emergency Management Agency (FEMA) to produce new and/or update flood maps for Pierce County and incorporated jurisdictions. Workshops began Fall 2017. Lack of participation will result in no opportunity to map unmapped areas or share risk knowledge and update existing maps.		
Hazard/Threat Addressed	Drought, Flood (Overland), Infectious Disease, Severe Summer Weather, Severe Winter Weather		
Affected Jurisdiction(s)	Pierce County and Incorporated Jurisdictions		
Project Status	New		
Priority	Very High		
Responsible Agency	DWR		
Partners	County Commission, City Council(s), Emergency Management, Emergency Services		
Completion Timeframe	End of 2025	Cost	Staff-time
Funding Source	**The N.D. Dept. of Water Resources received a federal grant resulting in no local cost share.**		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element Utilized	Process for Integration
Pierce County LEOP Pierce County Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Follow direction from the N.D. Dept. of Water Resources.

Pierce County Project EO-1: Conduct Education and Outreach to Improve Household Disaster Resiliency, Readiness, and Preparedness.

Description/Benefit	Continued education and outreach to keep households and vulnerable populations ready in case of a disaster using websites, social media, local media, utility inserts, mailings, etc. Develop new websites or communication outlets where necessary. Special attention paid to maintaining and further developing severe weather awareness campaign, 'Are You Prepared' information, shelter-in-place pamphlets, fire prevention, school safety, storm spotters' program, Tier II, among others. Additional attention should be given to flooding, hazardous materials, severe weather, fire, truck routes, and safe routes to school. Outreach and attention should be given to mass notification systems. **Existing websites:** Pierce County, City of Rugby, Heart of America Medical Center, All Seasons Water Users District, Rugby Public Schools, Little Flower School, Village Arts Council, Rugby JDA, Lake Region District Health **Existing social media:** Pierce County Emergency Management Facebook, Pierce County Sheriff's Office Facebook, City of Rugby Facebook and App, Rugby High School Facebook, Ely Elementary Facebook, NDSU Extension/Pierce County Facebook, Heart of America Medical Center Facebook, Rugby Fire Department Facebook, Chamber of Commerce Facebook, Lake Region District Health Facebook and Instagram **Develop new:** Pursue additional social media platforms, where appropriate **The following page includes a list of example education and outreach content available for dissemination.**		
Hazard/Threat Addressed	All Hazard/Threats		
Affected Jurisdiction(s)	Pierce County and Incorporated Jurisdictions		
Project Status	Ongoing and Continue/New		
Priority	Very High		
Responsible Agency	County Commission, City Council(s), Emergency Management, Emergency Services, Public Health, Public Schools		
Partners	Extension, Media, Medical Services Providers, Public Utilities		
Completion Timeframe	Forever ongoing. **See following page.**	Cost	$1,000 to 3,000 annually
Funding Source	Local general funds.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County LEOP Pierce County Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	LEPC selects appropriate content at its first meeting each year. Identify schedule during the Integrated Preparedness Plan Workshop.

Pierce County Project EO-1: List of Education and Outreach Resources for Natural Hazards

- **Dam Failure –** There are dam structures in The Planning Area and therefore the risk to dam failure is constant. The N.D. Dept. of Water Resources has developed Dam Safety Standards: https://www.swc.nd.gov/pdfs/home_page/draft_nd_dam_safety_standards_policy_reg_05_2023.pdf

  The water board for each county in The Planning Area should review the safety standards and its first meeting of every year before flood season is expected to begin.

- **Drought –** Droughts occur in The Planning Area as variations in precipitation is an expected climatic pattern. The Federal Emergency Management Agency has information on drought available at: https://www.ready.gov/drought.

  The NDSU Extension office in each county should disseminate Drought information every spring prior to the summer season.

- **Fire (Wildland) –** The frequency and intensity of wildland fires has increased in The Planning Area. The Federal Emergency Management Agency has information on wildland fires available at: https://www.ready.gov/wildfires

  The fire chiefs of each fire district in The Planning Area should conduct an education and outreach presentation in conjunction with information discussed at the LEPC at its first fire department meeting of each year before fire season begins.

- **Flood –** Presidential Disaster Declarations from flooding have occurred in The Planning Area in 2009, 2010, 2011, 2013, 2019, 2020, 2022, and 2023. The Federal Emergency Management Agency has information on Flooding available at: https://www.ready.gov/floods

  Each water resource district board and emergency management office in The Planning Area should review flood ordinances annually to identify any changes needed for implemented at the county and city level. The water resource district board should also publish an annual article in the local newspaper or social media on the importance and effectiveness of the National Flood Insurance Program (NFIP).

- **Geologic Hazards –** All of North Dakota is in EPA Radon Zone 1. Therefore, all counties in the state are vulnerable to this hazard, and all homes have a high potential to test for elevated radon levels. A radon fact sheet is available through the N.D. Dept. of Emergency Services: https://deq.nd.gov/wm/radon/

  Each emergency management office in The Planning Area should publish an annual article in the local newspaper or social media about the risk to radon and can include information from the FactSheet provided by the N.D. Dept. of Emergency Services.

- **Severe Summer Weather –** Severe Summer Weather is a climatic pattern expected annually in The Planning Area. Extreme heat is most impactful on older Americans. The Federal Emergency Management Agency has information on extreme heat available at: https://www.ready.gov/heat

  Each emergency management office in The Planning Area should publish an annual article in the local newspaper or social media about the risk to extreme heat in the spring prior to the start of summer.

- **Severe Winter Weather –** Severe Winter Weather is a climatic pattern expected annually in The Planning Area. Extreme cold/wind chill is most impactful on older Americans and individuals with limited income/means. According to Headwaters Economics' Neighborhoods at Risk Economic Profile System, the largest change in the share of single mother families in poverty occurred in Pierce County, ND, between 2010 and 2021, which went from 1.3% to 4.6%. The Federal Emergency Management Agency has information on Severe Winter Weather available at: https://www.ready.gov/floods

  Each emergency management office in The Planning Area should publish an annual article in the local newspaper or social media about the dangers of extreme cold/wind chill each fall prior to the start of winter.

- **Space Weather –** The Planning Area cannot control the Sun but can conduct education and outreach regarding Space Weather. The National Oceaninc and Atmospheric Administration operates a Space Weather Prediction Center and have information available at: https://www.swpc.noaa.gov/

  Each emergency management office in The Planning Area should contact the Space Weather Prediction Center and request information that can be used for education and outreach to the public regarding Space Weather.

Pierce County Project EO-2: Increase Awareness of Methods for Prevention of Infectious Disease & Pest Infestations.

Description/Benefit	Make the public aware of the risk of infectious diseases and methods for prevention in animals, people, and plants to reduce and/or eliminate economic impacts. Methods should focus on young and elderly populations (vulnerable and all populations), handwashing, influenza preparedness, and strategies used in agriculture-based economies such as pesticides, fungicides, herbicides and insecticides.		
Hazard/Threat Addressed	Infectious Disease and Pest Infestations (All)		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	New/Ongoing and Continue		
Priority	High		
Responsible Agency	Emergency Management, Emergency Services, Extension, Public Health, Weed Board, public information officers		
Partners	Extension, Dept. of Natural Resources, FSA, NDDA/State Veterinarian, NDDH, Medical Services Providers, RD, Stockmen's Association, USDA		
Completion Timeframe	Ongoing	Cost	Project-specific
Funding Source	LRDHU – Pierce County Public Health education and outreach line items in their annual budget.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	4	5	34

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Public Health (all plans) Pierce County LEOP Pierce County Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Development by Public Health/respective agency. Approval by county commission, city council(s) and emergency management. Distribute.

Pierce County Project EO-3: Increase Awareness of Drought Tolerant Practices and Soil Conservation Methods in Farming and Ranching, and Incorporated Jurisdictions.

Description/Benefit	Make the public aware of crop programs, drought tolerant practices and soil conversation methods in farming and ranching. Educating the public on rationing/restrictions on livestock feed and water usage. Prevent loss of crops and livestock during drought. Information for municipalities should focus on water conservation practices. **A public awareness campaign for water conservation can increase awareness of drought.** **NDSU Extension/Pierce County should collaborate with Pierce county Emergency Management's education and outreach strategy.**		
Hazard/Threat Addressed	Drought, Fire (Wildland), Severe Summer Weather, Severe Winter Weather		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	Ongoing and continue		
Priority	Medium		
Responsible Agency	Extension, NRCS		
Partners	Emergency Management, FSA, Media, NRCS, USDA		
Completion Timeframe	Ongoing	Cost	TBD
Funding Source	NDSU Extension/Pierce County. Natural Resources Conservation Service (NRCS).		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Bovine Emergency Response Plan (BERP) Drought Management Plan (State of North Dakota) Pierce County LEOP Pierce County Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Development by NDSU Extension and NRCS. Approval by county commission, city council(s) and emergency management. Distribute.

Pierce County Project EO-4: Conduct Continuous Preventative Education to Increase Awareness of Cyberattack Threats.

Description/Benefit	Make the public aware of risk of cyberattacks such as Advanced Persistent Threats, Distributed Denial of Service, Doxing, Media Threats, Password Phishing Attacks, Socially Engineered Malware, and Unpatched Software. **Specific attention should be paid to the framework developed and included in the K20W Initiative. Specific information should be developed for incorporated cities to protect utility infrastructure (i.e., SCADA Systems, etc.)** **Specific education opportunities should be made available to staff at the Pierce County Courthouse, Heart of America Medical Center, Rugby High School, Ely Elementary School, Heart of America Correctional and Treatment Center/Rugby Police Station, city halls, Litte Flower School, All Seasons Water Users District**		
Hazard/Threat Addressed	Cyberattack		
Affected Jurisdiction(s)	Pierce County and Incorporated Jurisdictions		
Project Status	New		
Priority	Very High		
Responsible Agency	Pierce County and City of Rugby in partnership with NRG and NDIT. ND Public Instruction for public schools. **All Seasons Water Users District**		
Partners	County Commission, City Council(s), Emergency Management, Emergency Services		
Completion Timeframe	Ongoing	Cost	Project-specific
Funding Source	State Cybersecurity Grant Program. City and County general funds.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	4	5	34

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County LEOP Pierce County Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Development by Pierce County Office of Emergency Management, NDIT, NRG, and public schools. Approval by county commission, city council(s), emergency management, school board. Distribute.

Pierce County Project EO-5: Assist in the Annual Update of Heart of America Medical Center's Strategic Plan.

Description/Benefit	The strategic plan for Heart of America Medical Center is required to be updated on an annual basis. Pierce County should assist in this update, where possible.		
Hazard/Threat Addressed	Infectious Disease (All)		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	New		
Priority	High		
Responsible Agency	Heart of America Medical Center		
Partners	Emergency Management, Emergency Services, LRDHU (Pierce County Public Health), Medical Services Providers		
Completion Timeframe	Ongoing	Cost	Staff time and printing
Funding Source	Heart of America Medical Center. Local general funds.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
LRDHU/Public Health (all plans) Pierce County LEOP Pierce County Shelter and Mass Care Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Development by Heart of America Medical Center. Approval by board and facility emergency management. Distribute.

Pierce County Project EO-6: Conduct Education and Outreach on Fire Safety and Prevention, Burn Restrictions, State Fire Indexes, and Regional/State Burning Regulations and Restrictions.

Description/Benefit	Make the public aware of methods to remain safe from risk of urban fire and wildland fire and potential prevention methods. Keep areas around buildings and structures clear of grass, overgrown vegetation and debris. Specific attention should be paid to property owners in city limits with substantial vegetation to reduce fuels for wildland fires. **Evaluate and/or create defensible space around structures to include removing debris accumulation with special attention given to Tier II locations. Promote Firewise Safety practices during the location fire departments' annual Fire Safety Prevention Week in October and should be reviewed annually by the LEPC.** Educate the public on burn restrictions and state fire indexes. Reduce the risk of fire hazard from outdoor burning by residents and provide means of communication. **Explore surface water access options for fire suppression.** **https://ndresponse.gov/burn-ban-restrictions-fire-danger-maps**		
Hazard/Threat Addressed	Drought, Fire (Wildland), Hazard Material Release, Severe Summer Weather, Severe Winter Weather		
Affected Jurisdiction(s)	Pierce County and Incorporated Jurisdictions		
Project Status	Ongoing and Continue/New (new to the mitigation plan, but has always been executed by fire departments)		
Priority	High		
Responsible Agency	Rugby Fire Dept., Wolford Fire Dept, Emergency Management		
Partners	County Commission, Extension, State Fire Marshal's Office, NDDES		
Completion Timeframe	Ongoing	Cost	$0 for a local PSA; $1,000 to $3,000/week for substantial outreach
Funding Source	Fire Department's Fire Prevention Week line item. Emergency Management Budget.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County LEOP Pierce County Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Development by Emergency Management and Emergency Services. Approval by county commission (burn restrictions). Distribute.

Pierce County F-1: Expand and improve existing or implement new financial mitigation capabilities.

Description/Benefit	Expand financial mitigation capabilities to generate funds for completion of mitigation projects. • Create and implement impact fees for new development. • Restructure and improve building permit fees to be a percentage of project cost. • Establish Capital Improvement Fund/Plan, where possible. • Restructure and increase utility fees (water, sewer) based on projected future infrastructure maintenance costs and necessary capital improvements. The city of Rugby is implementing this at the time of this plan update. • Research additional revenue generators such as an electricity utility fee, wheel tax, etc. • Expand role of local economic development to generate more revenue through grant funding, loans funds, community endowment, etc. • Create revenue stream and allocate resources to invest in equipment and emergency services capabilities. • **Pursue new grant opportunities, where possible.**		
Hazard/Threat Addressed	All		
Affected Jurisdiction(s)	Pierce County, City of Balta, City of Rugby, City of Wolford		
Project Status	New/Ongoing and Continue		
Priority	Very High		
Responsible Agency	City Councils, County Commission		
Partners	Emergency Management, Emergency Services, FEMA, NDACo, NDLC, Planning & Zoning, Public Utilities		
Completion Timeframe	Ongoing	Cost	Staff-time
Funding Source	City and County Budgets and related staff time.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
3	4	5	2	5	5	5	29

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Planning Commission	Capability Assessment, Hazard History, Risk Assessment	Research effectiveness. Approval and adoption by county commission and city councils.

Pierce County Project PR-1: Assure Pierce County, North Dakota, has FEMA-Approved Mitigation Plan.

Description/Benefit	Continuous assessment of vulnerabilities to the county and incorporated jurisdiction, and update of hazards and impacts, monitoring of mitigation project implementation and progress. **Update plan on a continuing basis between plan update grant applications. See Chapter 10 and Appendix 8 of this plan.**		
Hazard/Threat Addressed	All		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	Ongoing and Continue		
Priority	Very High		
Responsible Agency	County Commission, Emergency Management		
Partners	County Highway Dept., Emergency Services, Extension Service, Planning & Zoning, Public Health, SWC, Water District		
Completion Timeframe	Recurring every 4 to 5 years	Cost	$25,000 to $35,000 (update of plan)
Funding Source	FEMA's HMGP or BRIC Grant program. Budget for project cost in Emergency Management Budget.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Hazard Mitigation Plan (all other existing mechanisms)	All elements	Adoption by county commission and city councils. Approval NDDES and FEMA.

Pierce County PR-2: Update/expand existing and/or create new planning and regulatory capabilities to address existing and new development.

Description/Benefit	Build the planning and regulatory capability of Pierce County and incorporated jurisdictions by updating existing and/or expand and create new plans, policies, and ordinances. To ensure new and existing structures adhere to building standards to withstand impacts from hazards. Energy development (oil and gas) in the western portion of the state may lead to economic and population growth. **Specific research should be conducted to address abandoned/blighted properties, comprehensive planning, crew camps, drought management, land use plans, flood ordinances and management, storm water management, and zoning.** A list of plans, policies, codes and ordinances needing to be updated or created for Pierce County are found in Chapter 7, Capability Assessment. A list of plans, policies, codes and ordinances needing to be updated or created for incorporated jurisdictions are found in the jurisdictions respective profile in Chapter 8, Jurisdictions.		
Hazard/Threat Addressed	All		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	City Councils, County Commission, Planning & Zoning		
Partners	Emergency Management, Emergency Services, NDACo, NDDES, NDLC, Public Works, RD		
Completion Timeframe	Ongoing	Cost	$0 to $10,000 and/or Staff-time
Funding Source	Local general funds. Incorporated jurisdiction budgets. Grants, where applicable.		

Values: 1 is low (negative impact and/or too costly) – Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
4	5	5	3	5	4	5	31

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
All	Capability Assessment, Hazard History, Risk Assessment	Approval and adoption by county commission and city councils

Pierce County/City of Balta PR-3: Enroll the city of Balta in National Flood Insurance Program (NFIP).

Description/Benefit	Ensure economic resiliency. Residents with property at risk would be insured. Ensure continuous review and updating or implementation of flood ordinances and flood control measures.		
Hazard/Threat Addressed	Flood (overland and riverine), Severe Summer Weather, Severe Winter Weather		
Affected Jurisdiction(s)	City of Balta/Balta Township		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	Balta City Council		
Partners	Emergency Management, County Commission, Planning & Zoning, DWR, Water Resource Board		
Completion Timeframe	2 years	Cost	Free (local administrative costs will apply)
Funding Source	Balta General Fund.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	4	5	33

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element Utilized	Process for Integration
Flood Ordinances Pierce County LEOP, Flood Annex Pierce County Mitigation Plan Pierce County THIRA National Flood Insurance Program (NFIP)	Capability Assessment, Hazard History, Risk Assessment, Flood Statistics	Apply to NFIP through DWR. Approval and adoption by Balta City Council.

Pierce County PR-4: Encourage Jurisdictions to Review Local Flood Ordinances to Meet or Exceed Minimum Federal and State Requirements, Comply with the NFIP (Once Enrolled), and Enroll in the Community Rating System.

Description/Benefit	To ensure Pierce County and incorporated jurisdictions meet or exceed the NFIP to prepare for enrollment in the NFIP.		
Hazard/Threat Addressed	Flood (overland and riverine), Severe Summer Weather, Severe Winter Weather		
Affected Jurisdiction(s)	Pierce County and City of Rugby. City of Balta (once enrolled).		
Project Status	Ongoing and continue		
Priority	High		
Responsible Agency	County Commission, City Councils, Emergency Management, Planning & Zoning		
Partners	Emergency Services, NDACo, NDDES, NDLC, DWR		
Completion Timeframe	Ongoing	Cost	$0 to $1,000 / staff time
Funding Source	City of Rugby General Fund. Emergency Management Budget. N.D. Dept. of Water Resources. FEMA. Balta General Fund (once enrolled)		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	4	5	5	33

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element Utilized	Process for Integration
Flood Ordinances Pierce County LEOP, Flood Annex Pierce County Mitigation Plan Pierce County THIRA National Flood Insurance Program (NFIP)	Capability Assessment, Hazard History, Risk Assessment	Approval and adoption by county commission and city councils

Pierce County PR-5: Create Post-Disaster Debris Management Plan and Update on an Annual Basis.

Description/Benefit	Provide temporary staging site for disposal of waste from structures to improve resiliency and recovery efforts, and maintain quality of life. **Establishment of a management plan increases disaster reimbursement from FEMA by five percent.**		
Hazard/Threat Addressed	All		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	County Commission, City Council(s), Emergency Management, Planning & Zoning, Public Works		
Partners	NDACo, NDDES, NDLC, Public Health, Public Utilities, Water Resource District		
Completion Timeframe	1 year. Annual review.	Cost	Up to $2,000.00 for administrative costs
Funding Source	Emergency Management and Highway/Road Department Budgets.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	5	5	35

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County LEOP (Appendix) Pierce County Mitigation Plan Pierce County THIRA Planning Commission	Capability Assessment, Hazard History, Risk Assessment	Organize planning committee and create plan. Approval and adoption by county commission and city council(s). Update annually.

Pierce County Project I-1: Assure Continued Monitoring and Maintenance of the Balta Dam and all Dams in Pierce County.

Description/Benefit	To protect human life and property from dam failures. Eliminate possibility of a repeat failure of Balta Dam. The Pierce County Water Resource District Board owns the dam. **See Chapter 5.2, Dam Failure for a list of dams in Pierce County.**		
Hazard/Threat Addressed	Dam Failure (Flood, Severe Summer Weather, Severe Winter Weather)		
Affected Jurisdictions	City of Balta and greater Pierce County		
Project Status	Ongoing and continue		
Priority	High		
Responsible Agency	Pierce County Water Resource District Board		
Partners	City of Balta, DWR, Emergency Management, Public Works		
Completion Timeframe	Ongoing	Cost	To be determined
Funding Source	Pierce County Water Resource District Board		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	4	5	34

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element Utilized	Process for Integration
Pierce County LEOP Pierce County Hazard Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment, dam failure statistics	Work with state agencies to incorporate monitoring and maintenance schedules into local planning mechanisms.

Pierce County Project I-2: Retrofit and/or upgrade bridges and culverts, and raise road grades, to withstand natural hazards and prevent blockage to maintain access for emergency services.

Description/Benefit	Increase resiliency of bridges, culverts and roads to maintain transportation to assure economic vitality and access for emergency services. **A detailed description of each bridge, culvert and road is shown on the following page.**		
Hazard/Threat Addressed	Drought, Flood (overland and riverine), Hazardous Material Release, Severe Summer Weather, Severe Winter Weather, Wildland Fire, Windstorm (All)		
Affected Jurisdiction(s)	Pierce County and incorporated jurisdictions		
Project Status	New/Ongoing and continue		
Priority	High		
Responsible Agency	County Commission, County Road Dept., FAS, Water Resource Board		
Partners	Emergency Management, Emergency Services, Planning & Zoning, NDDOT		
Completion Timeframe	Ongoing	Cost	Project-specific
Funding Source	FHWA, FRA and NDDOT. FEMA Hazard Mitigation, Section 406. Local Highway/Road Budget.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	3	3	3	28

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Capital Improvement Plan Comprehensive Plan Pierce County LEOP and Mitigation Plan Pierce County THIRA N.D. Dept. of Transportation State Transportation Improvement Plan (STIP)	Capability Assessment, Hazard History, Risk Assessment	Approval and adoption by county commission and city councils

Pierce County Project I-2: Retrofit and/or upgrade bridges and culverts, and raise road grades, to withstand natural hazards and prevent blockage to maintain access for emergency services.

Blocked Roads

- N.D. Highway 17 and 4th Ave/3rd Ave in the city of Wolford
- 68th St. NE

Bridges

- Hurricane Lake Township: 67th St. NE and 53rd Ave NE (NE corner of section 35 / NW ¼ of Section 36)
  - Bridge shifted 27 inches laterally – rock installed to prevent further shifting
  - No loaded trucks allowed to traverse the bridge
- 53rd Ave NE, Section 35 – bridge subject to high water and is a travel hazard

Culverts

- Assess and upgrade as needed based on impacts from disasters.

Road Grade Raises

- 52nd St NE from N.D. Highway 3 to the city of Balta

Underpass

- Rugby Underpass: Retrofit to reduce/eliminate occurrences of overland flooding
  - Slated for reconstruction by the N.D. Dept. of Transportation between 2019 and 2021 – this did not happen.
  - Study feasibility of second overpass or underpass in the city of Rugby or Pierce County.

Completed

- Tofte Township: 68th Street and 38th Ave NE, Section 28/29
  - Road has been permanently closed
- Hillside Township: Old Highway 3 reopened in 2020.
- U.S. Highway 2 approximately one-mile east of the city of Rugby near the Rugby Country Club

Pierce County Project I-3: Construct New Storm Shelters/Community Safe Rooms or Retrofit Existing Structures to Reduce and/or Eliminate the Risk to Vulnerable Populations and the Public.

Description/Benefit	Provide safe area of refuge for permanent residents and temporary populations a seasonal/recreational population from severe weather. Reduce/eliminate loss of life from hazards and man-made threats. Upgrade existing shelters to be fully ADA compliant and pet-friendly. Construct new storm shelters/community safe room in jurisdictions currently lacking a storm shelter/safe room. More information on community shelters can be found through the following link: https://www.fema.gov/media-library/assets/documents/5090 **Upgrade:** City of Rugby – Armory and Memorial Hall, Courthouse **New:** City of Balta (specifically Balta Dam and the surrounding recreation area/campsite), City of Wolford, Antelope Lake Recreation Area/Campsite (private), Haven Campsite (private)		
Hazard/Threat Addressed	All		
Affected Jurisdiction(s)	Pierce County and the cities of Balta, Rugby and Wolford.		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	Emergency Management, Emergency Services, City Councils, County Commission		
Partners	NDDES, Red Cross, Social Services, local landowners		
Completion Timeframe	3 to 5 years for new shelters. Ongoing for all existing.	Cost	$75,000.00 to $150,000.00
Funding Source	FEMA's Building Resilient Infrastructure and Communities (BRIC) Grant Program or Hazard Mitigation Grant Program (HMGP).		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	4	2	3	29

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County LEOP Pierce County Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Develop/identify the scope. Approval by county commission and city councils. Pursue grant funding or budget locally. Install.

Table 6.3 shows each mitigation project and the hazard or hazards it addresses. While some projects are specific to one or two hazards, others address all the hazards. Strategies aimed at reducing the effects of hazards on new and existing buildings and infrastructure are marked with an asterisk (*) next to the project number on the far-left column in Table 6.3.

Table 6.3 – Mitigation Project Number and Hazard Addressed

Mitigation Project Number by Mitigation Capability Category	Communicable Disease	Dam Failure	Drought	Flood	Hazardous Material Release	Homeland Security Incident	Severe Summer Weather	Severe Winter Weather	Transportation Accident	Urban Fire/Structure Collapse	Wildland Fire	Windstorm
Administrative & Technical												
AT-1*	X	X	X	X	X	X	X	X	X	X	X	X
AT-2*	X	X	X	X	X	X	X	X	X	X	X	X
AT-3*	X	X	X	X	X	X	X	X	X	X	X	X
AT-4*					X		X	X		X	X	X
AT-5	X	X	X	X	X	X	X	X	X	X	X	X
AT-6	X	X	X	X	X	X	X	X	X	X	X	X
AT-7*	X	X	X	X	X	X	X	X	X	X	X	X
AT-8*	X		X	X			X	X			X	X
Education & Outreach												
EO-1*	X	X	X	X	X	X	X	X	X	X	X	X
EO-2	X	X	X	X	X	X	X	X	X	X	X	X
EO-3			X				X	X			X	
EO-4*	X	X	X	X	X	X	X	X	X	X	X	X
Financial												
F-1*	X	X	X	X	X	X	X	X	X	X	X	X
Planning & Regulatory												
PR-1*	X	X	X	X	X	X	X	X	X	X	X	X
PR-2*	X	X	X	X	X	X	X	X	X	X	X	X
PR-3*				X			X	X				
PR-4*				X			X	X				
PR-5*	X	X	X	X	X	X	X	X	X	X	X	X
Infrastructure												
I-1*		X		X			X	X				
I-2*	X	X	X	X	X	X	X	X	X	X	X	X
I-3*	X	X	X	X	X	X	X	X	X	X	X	X
I-4			X					X				X

7. Mitigation Capability

Capability for mitigation is divided into four categories: Administrative and Technical, Education and Outreach, Financial, and Planning and Regulatory. Chapter 7.1 provides an assessment of the mitigation capabilities of Pierce County, North Dakota, and incorporated jurisdictions.

- Table 7.1.1 highlights **administrative and technical** capabilities.
- Table 7.1.2 highlights **education and outreach** capabilities.
- Table 7.1.3 highlights **financial** capabilities.
- Table 7.1.4 highlights **planning and regulatory** capabilities.
- Table 7.1.5 shows the **utilization of planning mechanisms** in Pierce County, North Dakota, by natural hazard/man-made threat and mitigation project.

Sources for mitigation funding are shown in Chapter 7.2, Mitigation Funding Sources.

Current planning mechanisms, and the process for integration of the mitigation plan into planning mechanisms, are discussed after Table 7.1.4 and before Table 7.1.5. The process to integrate the mitigation plan into existing planning mechanisms for each jurisdiction is shown in the respective jurisdiction profile in Chapter 8, Jurisdictions following the mitigation capability assessment. Information in the tables is outlined as follows:

1. Boxes checked with an "X" indicate the jurisdiction possesses the capability; while boxes left blank indicate the jurisdiction is lacking the capability.
2. An asterisk (*) indicates a capability that can be obtained through the county, contracted services, or an outside entity.
3. A ^ denotes a mitigation capability in progress.

Narratives following each table detail the capabilities of Pierce County, North Dakota, and incorporated jurisdictions are found in Chapter 7.1, Mitigation Capability Assessment. Information on the capabilities of each jurisdiction was gathered at committee meetings, and jurisdictional workshops, and interviews during the planning process. **Bolded narratives identify mitigation projects.**

Each identified resource in the four mitigation capability categories can be used to implement mitigation strategies and access funding for projects. A definition of each mitigation capability category is provided.

- **Administrative and Technical:** Identification of administrative and technical capabilities, which includes staff and their skills and tools for mitigation planning to implement specific mitigation actions.

- **Education and Outreach:** Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.

- **Financial:** Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.

- **Planning and Regulatory:** Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

7.1 County/City Jurisdiction Mitigation Capability Assessment

Table 7.1 shows the administrative and technical capabilities of Pierce County, North Dakota, and incorporated jurisdictions. A box marked with an "X" indicates the jurisdiction has or has access to the administrative or technical capability for mitigation. An asterisk (*) denotes an administrative and technical capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

Administration

1. Pierce County has an active county commission. The cities of Balta, Rugby, and Wolford have active city councils.
2. Pierce County has an active local emergency planning committee (LEPC). The cities of Balta, Rugby, and Wolford are represented by the Pierce County LEPC.
3. Pierce County has an active mitigation planning committee through the LEPC. The cities of Balta, Rugby, and Wolford are represented on the mitigation planning committee through the LEPC.
4. Pierce County and the cities of Balta, Rugby, and Wolford have joint powers agreements (mutual aid) with emergency services in the county, incorporated jurisdictions, and neighboring counties.

   The city of Balta has mutual aid agreements with the Pierce County Sheriff's Office and the Rugby Rural Fire Protection District for law enforcement and fire suppression services.

   The Rugby Fire Department and Rugby Rural Fire Protection District have mutual aid agreements with fire departments in the cities of Willow City, Towner, Harvey, Wolford, Esmond, Knox, Leeds and Rolette. **The city of Rugby Police Department has a verbal mutual aid agreement with the Pierce County Sheriff's Office. The city of Rugby Public Works Department has a verbal mutual aid agreement with the cities of Willow City, Towner, Wolford, Esmond, Knox, Leeds, and Rolette.**

   The city of Wolford has mutual aid agreements with the Pierce County Sheriff's Office for law enforcement services, and with the Rugby Rural Fire Protection District, Mylo Fire Department and Rolette Fire Department for fire suppression services.

   The mutual aid agreements between emergency services (ambulance, fire, and law enforcement) should be reviewed/updated on an annual basis.
5. Pierce County has staff capable of mitigation activities. **County staff includes the auditor's office, economic development director, emergency management, extension office, public health, recorder's office, sheriff's office, and tax equalization. The auditor, city council members, and emergency services and/or response personnel for the city of Rugby are capable of mitigation activities.** The cities of Balta and Wolford do not have staff capable of mitigation activities.
6. Pierce County does not have a park board. The city of Rugby has a park board separate from the city council. The cities of Balta and Wolford do not have park boards.

7. The Pierce County Commission serves as the planning commission. The city of Rugby has a planning commission separate from the city council. The Balta and Wolford city council serve as the planning commissions.
8. Pierce County has a zoning administrator. The chairman of the Rugby Planning Commission serves as the zoning administrator. The cities of Balta and Wolford do not have zoning administrators.
9. Pierce County has a planning and zoning board. The city of Rugby has a planning and zoning board through the planning commission. The cities of Balta and Wolford do not have planning and zoning boards.
10. Pierce County Public Health provides public health serves to Pierce County and the cities of Balta, Rugby, and Wolford. Lake Region District Health Unit based in Devils Lake also provides public health services to Pierce County.
11. Pierce County has a water resource board. The cities of Balta, Rugby, and Wolford have a water resource board through Pierce County.
12. Pierce County has a weed board. The cities of Balta, Rugby, and Wolford have a weed board through Pierce County.

Staff

1. Pierce County has a part-time 9-1-1 coordinator. The cities of Balta, Rugby, and Wolford receive 9-1-1 coordination through Pierce County.
2. Pierce County does not have a building inspector or official. Electrical and plumbing inspection is available through the state. The cities of Balta, Rugby, and Wolford have not adopted international building codes and do not have building inspection services.
3. Pierce County and the cities of Balta, Rugby, and Wolford receive engineering services on a contract basis. Pierce County has a specific contract with Wold Engineering. The cities of Balta, Rugbym, and Wolford contract engineering on an as-needed basis.
4. Community planner/planning services are available through the Souris Basin Planning Council or other contracted services.
5. Pierce County has a part-time emergency manager. The cities of Balta, Rugby, and Wolford receive emergency management services through the county.
6. Pierce County and the cities of Balta, Rugby, and Wolford receive ambulance, fire, and law enforcement from the following entities:
    - Ambulance: Heart of America Medical Center (HAMC)
    - Fire: Mylo Fire Department, Rolette Fire Department, Rugby Fire Department, Rugby Fire Protection District, Wolford Fire Department, Wolford Fire Protection District
    - Law Enforcement: Pierce County Sheriff's Office, Rugby Police Department
7. **The Pierce County Emergency Manager/Planning and Zoning Administrator is the floodplain administrator for Pierce County and the cities of Balta and Wolford. The Rugby City Auditor is the floodplain administrator for the city of Rugby.**
8. Pierce County can obtain GIS services through its engineering contract with Wold Engineering or other contracted services. The cities of Balta, Rugby, and Wolford can obtain GIS services on an as-needed basis through contracted engineering services or the state.

9. Pierce County has staff with grant writing and administration capability. The city of Rugby has staff with grant writing and administration capability. The cities of Balta and Wolford do not have staff with grant writing and administration capability.
10. Residents of Pierce County have administrative and technical support for public health through Pierce County Public Health, which provides public health services to Pierce County and the cities of Balta, Rugby, and Wolford.
11. The Pierce County Road Department serves as the public works department for Pierce County. The cities of Balta, Rugby, and Wolford have their own public works departments. However, the cities of Balta and Wolford contract with the county for snow removal.
12. Pierce County has a full-time Sheriff. The Pierce County Sheriff's Office provides law enforcement services through mutual aid to the cities of Balta and Wolford. The city of Rugby has its own police department, which can also receive services through mutual aid from the Pierce County Sheriff's Office.

Technical

1. **Emergency services in Pierce County and the cities of Rugby and Wolford are starting to install GIS/GPS capabilities through the Computer Aided Dispatch (CAD) system administered through state radio. Emergency services personnel use app-based services on their mobile devices.**
2. **Pierce County does not have any dispatch-activated outdoor emergency sirens outside of incorporated city jurisdictions.** The city of Rugby has six dispatch-activated outdoor emergency sirens that also have manual activation. According to Rugby Public Works, only two of the six outdoor early warning sirens have reliable service. The other four need to be upgraded.

   The cities of Balta and Wolford do not have dispatch-activated outdoor emergency sirens.
3. **Pierce County does not have any manually-activated emergency sirens outside of incorporated city jurisdictions. The cities of Balta, Rugby, and Wolford do not have manually-activated outdoor emergency sirens.**
4. **Pierce County does not have or maintain fire breaks. The cities of Balta, Rugby, and Wolford do not maintain fire breaks.**
5. Pierce County and the cities of Balta and Wolford do not have fire index signs. The city of Rugby has a fire index sign at the fire hall.
6. Pierce County does not have a county-wide fire department and therefore does not have a fire ISO rating. The Rugby Volunteer Fire Department has an ISO rating of five. The fire ISO rating for the Rugby Rural Fire Protection District is 5Y. The fire ISO rating for the Wolford Rural Fire Protection District is 8B. The city of Balta does not have a fire department and therefore not have a fire ISO rating.
7. Pierce County and the cities of Balta, Rugby, and Wolford do not have Firewise Certification.
8. **Pierce County has permanent generators at the Pierce County Law Enforcement Center/Rugby Police Station/Heart of America Correctional and Treatment Center (HACTC) for the communications tower and the Pierce County Courthouse for the Nurse's vaccination refrigeration unit. Both generators need to be upgraded to provide power to the entire facility. <u>The Pierce County Courthouse needs a permanent generator for backup power to maintain continuous operation.</u>**

The cities of Balta and Wolford do not have permanent generators.

The city of Rugby has a permanent generator at the water treatment plant through a partnership with the Garrison Diversion and State Water Commission (now N.D. Dept. of Water Resources) through a federal grant. The city has a permanent generator at the armory, main lift station, and well house. The city needs permanent generators at the fire hall, city hall, Rugby Public Schools, and new hospital.

9. Pierce County has a portable generator at the county shop in the city of Rugby.

   The mayor and the Balta City Council have four portable generators that can be used in the city during loss of power.

   The city of Rugby has a portable generator primarily used for lift stations. **The city of Rugby needs two additional portable generators.**

   The Wolford Rural Fire Protection District has a portable generator on a truck.
10. **Pierce County and the cities of Balta, Rugby, and Wolford have HAZUS Analysis.**
11. The Pierce County Road Department conducts infrastructure maintenance on an as-needed basis. The cities of Balta and Wolford conduct infrastructure maintenance as-needed. The city of Rugby Public Works Department conducts annual infrastructure maintenance on fire hydrants and the sanitary sewer system. All other maintenance is conducted on an as-needed basis.
12. Pierce County and the cities of Balta, Rugby, and Wolford have navigation/street signs for emergency services (ambulance, fire, law enforcement). **All signs need to be monitored routinely for replacement due to impacts from severe weather, sun bleaching, etc. Pierce County has emergency route signage and HAZMAT signage, and upgrades where necessary.**
13. N.D. State Radio, city council, and emergency services (ambulance, fire, law enforcement) report hazard data to county emergency management.
14. **Pierce County and the cities of Balta, Rugby, and Wolford do not have StormReady Certification.**
15. **Pierce County and the cities of Balta, Rugby, and Wolford do not have CodeRED or an automated alerting system.**

Table 7.1 – Pierce County, North Dakota, Administrative and Technical Capabilities

	Administrative and Technical Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
Administration					
1	County/City Council or Commission	X	X	X	X
2	Local Emergency Planning Committee (LEPC)	X	*	*	*
3	Mitigation Planning Committee	X	*	*	*
4	Mutual Aid Agreements	X	X	X	X
5	Other Staff for Administration/Mitigation Activities	X	*	X	*
6	Park Board	X		X	
7	Planning Commission	X	X	X	X
8	Planning and Zoning Administrator	X	*	X	*
9	Planning and Zoning Board	X	*	X	*
10	Public Health Board	X*	*	*	*
11	Water Resource Board	X	*	*	*
12	Weed Board	X	*	*	*
Staff					
1	911 Coordinator/Director and User Board	X	*	*	*
2	Chief Building Official/Inspector/Board	*	*	*	*
3	Engineering Services	*	*	*	*
4	Community Planner/Planning Services	*	*	*	*
5	Emergency Management/Local Coordinators	X	*	*	*
6	Emergency Services (ambulance, fire, law enforcement)	X	*	X	X*
7	Floodplain Administrator	X	*	X	*
8	GIS Coordinator/Mapping	*	*	*	*
9	Grant Writing & Administration Staff	X	*	X	*
10	Public Health	X	*	*	*
11	Public Works and/or Highway/Road Department	X	X*	X	X*
12	Sheriff	X	*	*	*
Technical					
1	Emergency Services GIS/GPS capable	*		XX	*
2	Emergency Siren (dispatch-activated)			6	
3	Emergency Siren (manually-activated)			(6)	X
4	Fire Break				
5	Fire Index Sign	*		X	
6	Fire ISO Rating			5/5Y	8B
7	Firewise Certification				
8	Generator (permanent)	4		4*	
9	Generator (portable)	1	4	1	1
10	HAZUS Analysis	X	X	X	X
11	Infrastructure Maintenance Programs	X	*	X	*
12	Navigation Signs for Emergency Services	X	X	X	X
13	Reporting of Data to Emergency Manager	X	X	X	X

14	StormReady Certification				
15	Warning Systems/Services	X		X	

*Denotes administrative and technical capability that can be obtained through the county, contracted services, or an outside entity.

Table 7.2 shows the education and outreach capabilities of Pierce County, North Dakota, and incorporated jurisdictions. A box marked with an "X" indicates the jurisdiction has or has access to the education and outreach capability for mitigation. An asterisk (*) denotes an education and outreach capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

Table 7.2 – Pierce County, North Dakota, Education and Outreach Capabilities

	Education and Outreach Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
1	County/City Events	X	X	X	X
2	County Emergency Management	X	*	*	*
3	Entities Providing Public Education	X	X*	X*	X*
4	Non-Profit Organizations/Citizen Groups	X	X	X	X
5	Other				
6	Private Entities	X	X	X	X
7	Public-Private Partnerships	X	*	X	X
8	School Programs	X		X	
9	Social Media/Digital Education and Outreach	X	*	X	*
10	Website with Hazard/Threat Education and Outreach	X	*	X	*

*Denotes education and outreach mitigation capability available to the jurisdiction through the county, contracted services, or an outside entity.

1. Events in Pierce County where education and outreach can be conducted include Little Flower Church Annual Corn Feed at Ellery Park in Rugby (formerly at Balta Dam), Music in the Park, Pierce County Fair, Farm Expo, Hawk Museum Days (neighboring Rolette County).

   Events in the city of Balta where education and outreach can be conducted includes the Pierce County Fair, Fire Prevention Week, the annual demolition derby/street dance (combined effort between Balta Bar & Grill and the city of Rugby) and the annual Balta Wildlife Club Feed in Rugby. The annual corn feed has been moved to the city of Rugby.

   Events in the city of Rugby where education and outreach can be conducted include Music in the Park, Pierce County Fair, Little Flower Church Annual Corn Feed at Ellery Park, Fourth of July Celebration, Chamber of Commerce annual events, Village Fair Days, Rhubarb Festival, Prairie Village Museum Events, and events hosted by Heart of America Medical Center and the Rugby Public School.

   Events in the city of Wolford where education and outreach can be conducted include the Pierce County Fair, Fire Prevention Week and Ag Day's for public school students.

2. Pierce County has part-time emergency management that conducts education and outreach with county officials, volunteer emergency response and the public, and training and exercises with volunteer emergency responses. The county also participates in the statewide annual tornado drill, severe winter weather awareness week and severe summer weather awareness weeks.
3. Entities providing public education include, but are not limited to, Pierce County Commission, Pierce County Emergency Management, Pierce County Sheriff's Office, Northern Prairie Human Service Zone, Pierce County Public Health/Nurse, NDSU/Pierce County Extension, USDA Farm Services Agency (FSA), emergency services (ambulance, fire, law enforcement), and city councils.
4. Pierce County and the city of Rugby non-profit organizations/citizen's groups providing public education and outreach include, but are not limited to emergency services (ambulance, fire, law enforcement), church groups, American Legion, Lion's Club, Barton Sportsman's Club, Pierce County Food Pantry, Rugby Jaycee's, Rugby Gymnastics Club, youth sports, and 4-H.

   The city of Balta non-profit organizations/citizen's groups providing public education and outreach include the Our Lady of Mount Carmel Catholic Church and the Balta Wildlife Club.

   The city of Wolford Non-profit organizations/citizen's groups providing public education and outreach include but are not limited to: Wolford Rural Fire Protection District and Wolford Wildlife Club.
5. Pierce County and the cities of Balta, Rugby, and Wolford did not identify any 'Other' education and outreach capabilities in addition to those listed in categories 3 and 4.
6. Local power companies and electric cooperatives provide electrical training to local fire departments and elevators conduct chemical training to employees. Rugby Wind provides training to local fire departments. Enbridge Pipeline provides training to the Wolford Rural Fire Protection District. There are no private entities providing education and outreach to the city of Balta. The credit union, banks, and N.D. Telephone Company host swim days at the local pool.
7. The Pierce County Local Emergency Planning Committee (LEPC) is a public-private partnership providing education and outreach to Pierce County and the cities of Balta, Rugby, and Wolford.
8. Public schools conduct an annual storm awareness program. Fire departments conduct fire prevention and awareness week annually. Pierce County Sheriff's Office also provides education and outreach to public schools.
9. **Pierce County, Pierce County Emergency Management, Heart of America Medical Center, Heart of America Library, NDSU Extension/Pierce County, Rugby Public Schools, Rugby Recreation, Rugby Swimming Pool, Rugby Chamber of Commerce, Rugby Job Development Authority, Little Flower Catholic School, and the city of Rugby maintain Facebook pages/social media presence for education and outreach. The cities of Balta and Wolford do not maintain a social media presence.**
10. **Pierce County, the city of Rugby, Rugby Public Schools, Little Flower Catholic School, Heart of America Medical Center (HAMC), Heart of America Library, Rugby Job Development Authority maintain websites with hazard/threat education and outreach media. The cities of Balta and Wolford do not have websites. State and federal websites**

such as ndresponse.com and the National Weather Service are websites with hazard education. NDSU Extension/Pierce County has a website hosted through North Dakota State University.

Table 7.3 shows the financial capabilities of Pierce County, North Dakota, and incorporated jurisdictions. A box marked with an "X" indicates the jurisdiction has or has access to the financial capability for mitigation. An asterisk (*) denotes a financial capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

1. Pierce County has the authority to levy taxes for specific purposes, such as sales tax or special assessments, to raise revenue if warranted. A vote is required to pass any new taxes. The cities of Balta, Rugby, and Wolford are home rule charter cities and also have the authority to levy taxes for specific purposes to raise revenue, if warranted. A vote is required to pass any new taxes.
2. Pierce County and the city of Rugby issue building permits. The cost of each permit is project-specific. The cities of Balta and Wolford do not issue building permits.
3. Pierce County has a capital improvements fund/line items in local budgets. The city of Rugby has a capital improvements fund/plan specific to the water plant. The city also has a sales tax used to fund infrastructure improvements for roads, buildings, etc. These funds are included in separate line items in the city financials. The cities of Balta and Wolford do not have a capital improvement fund/plan.
4. The county does not qualify for funding through the Community Development Block Grant (CDBG) as it meets the low-to-moderate income requirement. However, the CDBG program allows for administration of a survey to determine low-to-moderate income in order qualify.

   The city of Balta qualifies and has applied for funding through the Community Development Block Grant (CDBG) with assistance from the Souris Basin Planning Council.

   The city of Rugby qualifies for funding in certain sections of the Community Development Block Grant (CDBG) as it does not meet the low-to-moderate income requirement. The city has utilized this program in the past for residential housing development and related infrastructure projects. **The city received CDBG funds to update its comprehensive/land use plan in 2021.**

   The city of Wolford qualifies and has applied for funding through the Community Development Block Grant (CDBG) with assistance from the Souris Basin Planning Council.

5. Pierce County and the cities of Balta, Rugby, and Wolford do not have an electric utility fee. Electric power providers charge a utility fee to customers for maintenance of infrastructure. Otter Tail Power Company collects a franchise fee that is distributed back to the city of Rugby to maintain streetlights.
6. Pierce County and the cities of Balta, Rugby, and Wolford qualify for grant funding through FEMA because Pierce County has an approved multi-hazard mitigation plan.
7. Pierce County and the cities of Balta, Rugby, and Wolford do not issue general obligation bonds and/or special tax bonds to raise revenue, but can do so, if warranted.

8. **Pierce County and the cities of Balta, Rugby, and Wolford qualify for grant funding through the Dept. of Homeland Security's State Homeland Security Grant Program, USDA Rural Development, and Pierce County Job Development Authority. Public schools in the county qualify for federal title grants.**
9. **Pierce County and the cities of Balta, Rugby, and Wolford do not have impact fees for new development. However, in the city of Rugby, if any development has noticeable impact to existing infrastructure, the city requires those costs to be include in the overall development on a case-by-case basis.**
10. **Pierce County and the cities of Balta, Rugby, and Wolford do not have any "Other" financial mitigation capabilities such as a road district, street maintenance, or wheel tax.**
11. No private entities or activities providing funding for mitigation were identified in Pierce County and the cities of Balta, Rugby, and Wolford.
12. Property taxes are the primary source of revenue for Pierce County and the cities of Balta, Rugby, and Wolford.
13. Pierce County does not have sanitary sewer utility fees outside incorporated cities. **Most county residents utilize septic systems. Regulation of these systems is conducted in conjunction with Lake Region District Health Unit in Devils Lake and local public health through an on-site sewer treatment system permit. The cities of Balta, Rugby, Wolford administer sanitary sewer utility fees to maintain existing systems and current operations.**
14. Pierce County and the cities of Balta, Rugby, and Wolford have access to state funding programs.
15. Pierce County and the cities of Balta and Wolford do not have a storm water utility fee. The city of Rugby has a storm water utility fee.
16. Water utility fees are assessed in Pierce County and the cities of Balta and Wolford to customers through the rural water districts. The city of Rugby assesses a monthly water utility fee on the utility bill for city residents.

Table 7.3 – Pierce County, North Dakota, Financial Capabilities

	Financial Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Authority to Levy Taxes for Specific Purposes (sales tax or special assessments)	X	X	X	X
2	Building Permits	X		X	
3	Capital Improvements Fund/Plan	X		X	
4	Comm. Dev. Block Grant (CDBG)		*		*
5	Electric Utility Fee	*	*	X*	*
6	FEMA Grant Programs	X	X	X	X
7	General Obligation Bond/Special Tax Bond	X	X	X	X
8	Grant Programs (Other)	X*	*	*	*
9	Impact Fees for New Development				
10	Other				
11	Private Entities or Activities			*	

12	Property Tax	X	X	X	X
13	Sanitary Sewer Utility Fee		X	X	X
14	State Funding Programs	X	X	X	X
15	Storm Water Utility Fee			X	
16	Water Utility Fee	*	*	X	*

* Denotes financial mitigation capability available to the jurisdiction through the county, contracted services, or an outside entity.

In addition to the financial capabilities of Pierce County, the following local, regional, state and federal entities can be used to obtain funding for mitigation.

- Ambulance Districts;
- Electric Cooperatives;
- Extension Service;
- Federal Emergency Management Agency (FEMA);
- Fire Districts;
- N.D. Dept. of Public Health;
- N.D. Dept. of Emergency Services;
- Park Districts;
- School Districts;
- Townships, and
- Utility providers.

Table 7.4 shows the planning and regulatory capabilities of the Pierce County and incorporated jurisdictions. Boxes marked with an "X" indicate the jurisdiction has the planning and regulatory capability. An asterisk (*) indicates a capability that can be obtained through the county, contracted services, or an outside entity.

Table 7.4 – Pierce County, North Dakota, Planning and Regulatory Capabilities

	Planning and Regulatory Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Abandoned Building/Nuisance Ordinance			X	
2	Building Codes				
3	Building Permits	X		X	
4	Burn Restrictions (Bans)	X	*	*	*
5	Capital Improvement Fund/Plan				
6	Chief Building Official/Inspector/Board	*	*	*	*
7	Commercial Animal Feed Operation (CAFO) Ordinance	X			
8	Community Wildfire Protection Plan				X
9	Comprehensive Plan	X		X	
10	Continuity of Operations Plan	X	*	*	*
11	Crew Camp Ordinance	X			
12	Drought Management Plan				
13	Easements	X		X	
14	Economic Development Plan	*	*	X	*
15	Emergency Action Plan (Dams)				
16	Emergency Operations Plan (State)	*	*	*	*
17	Evacuation and Shelter Plan	X*	*	*	*

18	FEMA Flood Map	X		X	
19	Flood Insurance Study	X		X	
20	Flood Operations/Management Plan	^	^	^	^
21	Flood Ordinance	X		X	
22	Flood Risk Management Feasibility Study	X		X	
23	Grain Bin Ordinance			X	
24	Hazard Mitigation Plan	X	*	*	*
25	Hazardous Material Flow Study	*	*	*	*
26	Impact Fees				
27	Land Use Plan	X		X	
28	Local Emergency Operations Plan	X	*	*	*
29	National Flood Insurance Program (NFIP)	X		X	
30	Noise Control Ordinance			X	
31	Pandemic Influenza Response Plan	*	*	*	*
32	Planning Commission	X	X	X	X
33	Point of Dispensing (POD) Plan	*	*	*	*
34	Rural Development Guide				
35	Shelter and Mass Care Plan	*	*	*	*
36	Site Plan Review Requirements			X	
37	Storm Water Management Plan			X	
38	Strategic Plan	X*	*	X*	*
39	Subdivision Ordinance			X	
40	Transportation Plan	*	*	X*	*
41	Water Conservation Plan				
42	Zoning	X		X	

*Denotes planning and regulatory mitigation capability available through the county, contracted services, or an outside entity.

^ Denotes planning and regulatory mitigation capability in progress.

1. **Pierce County and the cities of Balta and Wolford do not have an abandoned building/nuisance ordinance. The city of Rugby has an abandoned building/nuisance ordinance.**
2. Pierce County does not have a building inspector or official. Electrical and plumbing inspection is available through the state. The cities of Balta, Rugby, and Wolford have no adopted international building codes and do not have building inspection services.
3. Pierce County and the city of Rugby issue building permits. The cost of each permit is project-specific. The cities of Balta and Wolford do not issue building permits.
4. Pierce County Emergency Management issues burn restrictions when necessary. The Pierce County Commission manages burn bans and is the decision-maker for lifting bans. The pierce county burn restrictions do not apply to the cities of Balta, Rugby, and Wolford.
5. Pierce County has a capital improvements fund/line items in local budgets. The city of Rugby has a capital improvements fund/plan specific to the water plant. The city also has a sales tax used to fund infrastructure improvements for roads, buildings, etc. These funds are included in separate line items in the city financials. The cities of Balta and Wolford do not have a capital improvement fund/plan.
6. Pierce County does not have a building inspector or official. Electrical and plumbing inspection is available through the state. The cities of Balta, Rugby, and Wolford have no adopted international building codes and do not have building inspection services.

7. Pierce County has a commercial animal feed operation ordinance. The cities of Balta, Rugby, and Wolford do not have commercial animal feed operation ordinances.
8. Pierce County and the cities of Balta and Rugby do not have a community wildfire protection plan. **The city of Wolford has a community wildfire protection plan through the Wolford Rural Fire Protection District.**
9. **Pierce County updated its comprehensive plan in 2019. The city of Rugby has a comprehensive/land use plan that was updated in 2021. The cities of Balta and Wolford do not have comprehensive plans.**
10. The Pierce County Sheriff's Office in conjunction with Pierce County Emergency Management has a continuity of operations plan. **The cities of Balta, Rugby, and Wolford do not have a written continuity of operations plan. However, the county continuity of operations plan will applies to the cities of Balta, Rugby, and Wolford during emergency events.**
11. Pierce County has a crew camp ordinance. The cities of Balta, Rugby, and Wolford do not have crew camp ordinances.
12. **Pierce County and the cities of Balta, Rugby, and Wolford do not have a drought management plan.**
13. Pierce County and the city of Rugby have easements. The cities of Balta and Wolford have easements.
14. Pierce County and the cities of Balta, Rugby, and Wolford have an economic development plan through the Rugby Job Development Authority. The city of Rugby also has an economic development plan through the Rugby Economic Development Corporation.
15. The Balta Dam has an emergency action plan managed by the Pierce County Water Resource District Board.
16. Pierce County and the cities of Balta, Rugby, and Wolford are included in the state of North Dakota's emergency operations plan.
17. Pierce County Emergency Management maintains an evacuation and shelter plan for Pierce County and the cities of Balta, Rugby, and Wolford.
18. **Pierce County has FEMA Flood maps and is enrolled in the National Flood Insurance Program (NFIP).** The city of Rugby is enrolled and participates in the National Flood Insurance Program (NFIP). The cities of Balta and Wolford do not have FEMA Flood Maps.
19. Pierce County and the city of Rugby have a flood insurance study. The cities of Balta and Wolford do not have a flood insurance study.
20. **Pierce County does not have a flood operations/management plan that includes the cities of Balta, Rugby, and Wolford.**
21. **Pierce County and the city of Rugby have flood ordinances. The cities of Balta and Wolford do not have flood ordinances.**
22. Pierce County and the city of Rugby have a flood risk management feasibility study. The cities of Balta and Wolford do not have a flood risk management feasibility study.
23. Pierce County and the cities of Balta and Wolford do not have grain bin ordinances. The city of Rugby has a grain bin ordinance.
24. Pierce County has a multi-jurisdictional multi-hazard mitigation plan. The cities of Balta, Rugby, and Wolford are included in this plan.
25. Pierce County and the cities of Balta, Rugby, and Wolford have a hazardous materials flow study through the N.D. Dept. of Emergency Services.

26. **Pierce County and the cities of Balta, Rugby, and Wolford do not have impact fees for new development.**
27. **Pierce County has a land use plan in its updated comprehensive plan. The city of Rugby has a land use plan in its updated comprehensive plan as of 2021. The cities of Balta and Wolford do not have land use plans.**
28. Pierce County and the cities of Balta, Rugby, Wolford has a local emergency operations plan maintained by Pierce County Emergency Management.
29. Pierce County and the city of Rugby are enrolled and participated in the National Flood Insurance Program (NFIP). The cities of Balta and Wolford are not enrolled and do not participate in the National Flood Insurance Program (NFIP)
30. Pierce County and the cities of Balta and Wolford do not have a noise control ordinance. The city of Rugby has a noise control ordinance.
31. Lake Region District Health Unit maintains a pandemic influenza response plan for Pierce County and the cities of Balta, Rugby, and Wolford.
32. The Pierce County Commission and appointed individuals serve as the planning and zoning commission for the county. Bring previous text
33. Lake Region District Health Unit maintains a point of dispensing (POD) plan for Pierce County and the cities of Balta, Rugby, and Wolford.
34. Pierce County and the cities of Balta, Rugby, and Wolford do not have a rural development guide.
35. Pierce County Emergency Management maintains a shelter and mass care plan for Pierce County and the cities of Balta, Rugby, and Wolford.
36. Pierce County and the cities of Balta and Wolford do not have site plan review requirements. The city of Rugby has site plan review requirements.
37. **Pierce County and the cities of Balta and Wolford do not have a storm water management plan. The city of Rugby has a storm water management plan in its updated comprehensive/land use plan.**
38. Pierce County and the cities of Balta, Rugby, and Wolford have an economic development plan through the Rugby Job Development Authority. The city of Rugby also has an economic development plan through the Rugby Economic Development Corporation.
39. **Pierce County and the cities of Balta and Wolford do not have a subdivision ordinance. The city of Rugby has subdivision ordinances.**
40. Pierce County and the cities of Balta, Rugby, and Wolford are included in the transportation plan for the state of North Dakota. The city of Rugby also has a transportation plan in its updated comprehensive/land use plan.
41. Pierce County does not have a water conservation plan.
42. **Pierce County and the city of Rugby have zoning ordinances. The cities of Balta and Wolford do not have zoning ordinances.**

Supplemental Planning and Regulatory Capabilities

Strategic plans for jurisdictions aside from incorporated cities such as townships can be used for mitigation purposes. In addition to strategic plans, townships that have zoning in place, including a zoning commission and a zoning administrator, can use zoning for mitigation purposes. **All townships in Pierce County have relinquished zoning and ordinances to the county.**

Integration of Mitigation Plan into Planning Mechanisms

To integrate the requirements of the mitigation plan into jurisdiction-specific planning mechanisms, such as comprehensive or capital improvement plans, incorporated cities will need to identify their current planning mechanisms, which elements of the mitigation plan to incorporate, and the method for doing so. The tables shown above in this chapter identify the current planning mechanisms for each county and incorporated city in the Pierce County. Detailed narratives regarding these planning mechanisms are discussed for the counties in this chapter, but are shown in Chapter 8, Jurisdictions for incorporated cities.

The jurisdiction profiles in Chapter 8 will also supplement existing jurisdiction-specific plans for most all incorporated cities. However, all incorporated cities have some type of planning mechanism, such as building codes, ordinances and/or zoning. Those cities without plans (excluding planning mechanisms) will participate in county-wide planning initiatives such as the Pierce County Emergency Operations Plan by providing risk assessment data, or consider mitigation plan goals and mitigation strategies when updating zoning or implementing subdivision ordinances.

Current planning mechanisms, the mitigation plan elements incorporated and the method for incorporation are discussed after each mitigation project in Chapter 6, Mitigation Strategy and Chapter 8, Jurisdictions.

Table 7.5 illustrates planning mechanisms utilized to mitigate natural hazards and/or man-made threats in Pierce County, and corresponding mitigation projects.

Table 7.5 – Utilization of Planning Mechanisms in Pierce County, North Dakota

Planning Mechanism	Communicable Disease	Dam Failure	Drought	Flood	Hazardous Material Release	Homeland Security Incident	Severe Summer Weather	Severe Winter Weather	Transportation Accident	Urban Fire/ Structure Collapse	Wildland Fire	Windstorm	Projects Addressed
Abandoned Bldg./Nuisance Ord.	X	X	X	X	X	X	X	X	X	X	X	X	PR-2
Building Codes	X		X	X	X	X	X	X		X	X	X	AT-1, PR-2
Building Permits	X	X	X	X	X	X	X	X		X	X	X	F-1, PR-2
Burn Bans			X		X	X	X		X		X	X	PR-2
Capital Improvement Plan/Fund	X	X	X	X	X	X	X	X	X	X	X	X	AT-1, AT-3, AT-4, AT-6, AT-7, AT-8, I-2, I-3, I-4
Chief Building Official/Inspector/Board	X	X	X	X	X	X	X	X		X	X	X	AT-1
Commercial Animal Feed Operation (CAFO) Ordinance	X		X	X	X		X	X		X			PR-2
Community Wildfire Protection Plan			X				X				X	X	PR-2
Comprehensive Plan	X	X	X	X	X	X	X	X	X	X	X	X	AT-2, AT-3, PR-2, I-2, I-3
Continuity of Operations Plan	X	X	X	X	X	X	X	X	X	X	X	X	AT-1
Crew Camp Ordinance	X		X	X	X	X	X	X	X	X	X	X	PR-2
Drought Management Plan			X		X	X	X			X	X	X	EO-3, PR-2
Easements	X	X	X	X	X	X	X	X	X	X	X	X	F-1, PR-2
Economic Development Plan	X	X	X	X	X	X	X	X	X	X	X	X	AT-1, PR-2, I-2, I-3 I-4
Emergency Operations Plan	X	X	X	X	X	X	X	X	X	X	X	X	AT-1, AT-3, AT-4, AT-5, AT-7, PR-2, I-2, I3
Evacuation and Shelter Plan	X	X	X	X	X	X	X	X	X	X	X	X	PR-2, I-3
FEMA Flood Map				X			X	X					PR-3, PR-4
Flood Insurance Study				X			X	X					PR-3, PR-4

Table 7.5 – Utilization of Planning Mechanisms in Pierce County, North Dakota – continued

Planning Mechanism	Communicable Disease	Dam Failure	Drought	Flood	Hazardous Material Release	Homeland Security Incident	Severe Summer Weather	Severe Winter Weather	Transportation Accident	Urban Fire/ Structure Collapse	Wildland Fire	Windstorm	Projects Addressed
Flood Operations/Management Plan		X		X			X	X					PR-2, PR-3, PR-4, PR-5
Flood Ordinance				X			X	X					PR-2, PR-3, PR-4, PR-5
Flood Risk Mgmt. Feasibility Study		X		X			X	X					PR-2, PR-3, PR-4, PR-5
Grain Bin Ordinance	X	X	X	X	X	X	X	X	X	X	X	X	PR-2
Hazard Mitigation Plan	X	X	X	X	X	X	X	X	X	X	X	X	PR-1, PR-2, (all projects)
Hazardous Material Flow Study				X	X	X	X	X	X		X		PR-2
Impact Fees	X	X	X	X	X	X	X	X	X	X	X	X	F-1, PR-2
Land Use Plan	X	X	X	X	X	X	X	X	X	X	X	X	AT-4, AT-8, PR-2, PR-5, I-2, I-3, I-4
Local Emergency Operations Plan	X	X	X	X	X	X	X	X	X	X	X	X	AT-1, AT-3, AT-4, AT-7, PR-2, I-2, I3
National Flood Insurance Program				X			X	X					PR-2, PR-3, PR-4
Noise Control Ordinance					X		X	X	X	X		X	PR-2
Pandemic Influenza Response Plan	X							X					EO-2, PR-2
Planning Commission	X	X	X	X	X	X	X	X	X	X	X	X	AT-1, PR-2, (all hazards)
Point of Dispensing (POD) Plan	X		X	X			X	X	X	X			EO-2, PR-2
Shelter and Mass Care Plan	X	X	X	X	X	X	X	X	X	X	X	X	EO-2, PR-2
Site Plan Review Requirements	X	X	X	X	X	X	X	X	X	X	X	X	F-1, PR-2 (all hazards)
Storm Water Management Plan				X			X	X					PR-2
Strategic Plan	X	X	X	X	X	X	X	X	X	X	X	X	AT-1, AT-3, AT-4, AT-6, AT-7, AT-8, I-2, I-3, I-4
Subdivision Ordinance	X			X	X		X	X	X	X	X	X	PR-2
Transportation Plan				X	X	X	X	X	X	X		X	PR-2, I-2
Water Conservation Plan			X			X	X	X		X	X		EO-3, PR-2
Zoning	X	X	X	X	X	X	X	X	X	X	X	X	PR-2

Mitigation Funding Sources

Table 7.6 lists state and federal sources for mitigation. These sources can fund and administer mitigation projects in addition to the local capabilities of the county and city jurisdictions.

Table 7.6 – State and Federal Mitigation Funding Sources

Funding Source	Managing Agencies
AmeriCorps	Corporation for National & Community Service
Community Development Block Grant (CDBG)	US Housing and Urban Development North Dakota Department of Commerce
Economic Development Administration (EDA) Grants and Investments	US Economic Development Administration
Emergency Watershed Protection	US Natural Resources Conservation Service
Environmental Quality Incentives Program	US Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMA)	North Dakota State Water Commission and FEMA
Hazard Mitigation Grant Program (HMGP)	North Dakota Department of Emergency Services and FEMA
Hazardous Fuels Mitigation Program	North Dakota Department of Transportation
Homeland Security Grants	North Dakota Department of Emergency Services, US Department of Justice, US Department of Homeland Security
Individual Assistance (IA)	FEMA, North Dakota Department of Emergency Services
Map Modernization Program	North Dakota State Water Commission and FEMA
National Fire Plan (NFP)	North Dakota Forest Service and US Forest Service
NRCS Conservation Programs	U.S.D.A. Natural Resources Conservation Service
Pre-Disaster Mitigation (PDM) Grants	North Dakota Department of Emergency Services and FEMA
Public Assistance (PA)	North Dakota Department of Emergency Services and FEMA
Repetitive Flood Claims (RFC) Grant	North Dakota State Water Commission and FEMA
Rural Fire Assistance (RFA) Grant	National Interagency Fire Center
SBA Pre-Disaster Mitigation Loan Program	U.S. Small Business Administration (SBA)
Severe Repetitive Loss (SRL) Grant	North Dakota State Water Commission and FEMA
Small Flood Control Projects	US Army Corps of Engineers (USACE)
Streambank & Shoreline Protection	US Army Corps of Engineers (USACE)
Wetland Program Development Grants (WPDGs)	US Environmental Protection Agency

7.2 Mitigation Funding Sources

Funding sources from mitigation can come from a variety of resources. The following funding sources for the Federal Emergency Management Agency (FEMA) and other outlets are outlined below. These sources can fund and administer mitigation projects in addition to the local capabilities of the county and city jurisdictions. In addition to the financial capabilities of Pierce County, North Dakota, the following local, regional, state, and federal entities can be used to obtain funding for mitigation.

- Ambulance Districts;
- Electric Cooperatives;
- Extension Service;
- Federal Emergency Management Agency (FEMA);
- Fire Districts;
- N.D. Dept. of Public Health;
- N.D. Dept. of Emergency Services;
- Park Districts;
- School Districts;
- Townships, and
- Utility providers.

FEMA Funding Sources

Building Resilient Infrastructure and Communities (BRIC) Grant Program. The BRIC program, Formerly Pre-Disaster Mitigation (PDM) Grant Program), is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funds will cover 75 percent of a project's cost up to $3 million. As with the HMGP and FMA, a FEMA-approved local Hazard Mitigation Plan is required to be approved for funding under the BRIC program.

BRIC supports states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. BRIC funds are distributed from FEMA to the state. For more information, visit https://www.fema.gov/grants/mitigation/building-resilient-infrastructure-communities

Hazard Mitigation Grant Program (HMGP). The HMGP is a post-disaster mitigation program. It is made available to states by FEMA after each Federal disaster declaration. The HMGP can provide up to 75 percent funding for hazard mitigation measures. The HMGP can be used to fund cost-effective projects that will protect public or private property in an area covered by a federal disaster declaration or that will reduce the likely damage from future disasters. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood-proofing, or elevation upgrades to reduce future damage, minor structural improvements, and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved Multi-Jurisdictional Multi-Hazard Mitigation Plan (this plan).

Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf.

Flood Mitigation Assistance (FMA) Program. The FMA combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program. FMA 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). The FMA is funded annually; no federal disaster declaration is required. Only NFIP insured homes and businesses are eligible for mitigation in this program. Funding for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is 75 percent. At least 25 percent of the total eligible costs must be provided by a non-federal source. Of this 25 percent, no more than half can be provided as in-kind contributions from third parties. At minimum, a FEMA-approved local flood mitigation plan is required before a project can be approved. FMA funds are distributed from FEMA to the state.

Readiness, Response and Recovery Directorate, Fire Management Assistance Grant Program. This 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 grants are made in the form of cost sharing with the federal share being 75 percent of total eligible costs. Grant approvals are made within 1 to 72 hours from time of request.

Fire Prevention and Safety Grants. The Fire Prevention and Safety Grants (FP&S) are part of the Assistance to Firefighters Grants and are administered by FEMA. FP&S Grants support projects that enhance the safety of the public and firefighters from fire and 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, Native American 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. Interested applicants are advised to check the website periodically for announcements of grant availability. More information: https://www.fema.gov/welcome-assistance-firefighters-grant-program

Other Mitigation Funding Sources

Grant funding is available from a variety of federal and state agencies for training, equipment, and hazard mitigation activities. Several of these programs are described below.

Building Blocks for Sustainable Communities. The EPA Office of Sustainable Communities sometimes offers grants to support activities that improve the quality of development and protect human health and the environment. When these grants are offered, they will always be announced on www.grants.gov

Community Development Block Grants (CDBG). The U.S. Dept. of Commerce administers the Community Development Block Grants (CDBG) program which are intended to provide low and moderate-income households with viable communities, including decent housing, as suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, road 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 the times of "urgent need" (e.g., post disaster) as defined by the CDBG National Objectives, 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. For more information, visit https://www.hud.gov/program_offices/comm_planning/CDBG

General Services Administration, Sale of Federal Surplus Persona Property. This program sells property no longer needed by the federal government. The program provides individuals, businesses, and organizations the opportunity to enter competitive bids for the purchase of a wide variety of personal property and equipment. Normally, there are no restrictions on property purchase. For more information, visit http://www.gsa.gov/portal/category/21045

Hazardous Materials Emergency Preparedness Grant (HMEP). The HMEP Grant funds are passed through to local emergency management offices and HAZMAT teams having functional and active LEPC groups. For more information, visit http://www.phmsa.dot.gov/hazmat/grants

National Oceanic and Atmospheric Administration (NOAA) Office of Education Grants. 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 education institutions and organizations in the United States. For more information, visit http://www.noaa.gov/office-education.grants

Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP). The Environmental Quality Incentives, 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 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. EQIP is another funding mechanism for landowner fuel reduction projects. For more information, visit https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip/

Program 15.228: Wildland Urban Interface Community and Rural Fire Assistance. This program is designed to implement the National Fire Plan and assist communities at risk from catastrophic wildland fires. The program provides grants, technical assistance, and training for community programs that develop local capability, including: 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.

Secure Rural Schools and Community Self-Determination Act - Title III- County Funds. The Self-Determination Act has recently been reauthorized and now includes specific language regarding the Firewise Communities program. Counties seeking funding under Title III must use the funds to perform work under the Firewise Communities program. Counties applying for Title III funds to implement Firewise activities can assist in all aspects of a community's recognition process, including conducting or assisting with community assessments, helping the community create an action plan, assisting with an

annual Firewise Day, assisting with local wildfire mitigation projects, and communicating with the state liaison and the national program to ensure a smooth application process. Counties that previously used Title III funds for other wildfire preparation activities such as the Fire Safe Councils or similar would be able to carry out many of the same activities as they had before. However, with the new language, counties would be required to show that funds used for these activities were carried out under the Firewise Communities program. More information: https://tinyurl.com/67dthhg

Community Planning Assistance for Wildfire. 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. More information: http://planningforwildfire.org/what-we-do/

Urban and Community Forestry (UCF) Program. 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. More information: http://www.fs.fed.us/managing-land/urban-forests/ucf

Western Wildland Urban Interface Grants. 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. Information: https://www.westernforesters.org/wui-grants

U.S. Fish & Wildlife Service, Rural Fire Assistance Grants. 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 an 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. More information: http://www.fws.gov/fire/living_with_fire/rural_fire_assistance.shtml

Fire Management Assistance Program. This program is authorized under Section 420 of the Stafford Act. It allows for the mitigation, management, and control of fires burning on publicly or privately-owned forest or grasslands that threaten destruction that would constitute a major disaster. More information: http://www.fema.gov/fire-management-assistance-grant-program

U.S. Department of Agriculture, Community Facilities Loans and Grants. Provides grants (and loans) to cities, counties, states, and other public entities to improve community facilities for essential services to rural residents. Projects can include fire and rescue services; funds have been provided to purchase fire-fighting equipment for rural areas. No match is required. More information: http://www.usda.gov/wps/portal/usda/usdahome?navid=GRANTS_LOANS

U.S. Department of Homeland Security. Enhances the ability of states, local and tribal jurisdictions, and 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. These grants include but are not limited to areas of Critical Infrastructure Protection Equipment and Training for First Responders, and Homeland Security Grants. More information: http://www.dhs.gov/

8. Jurisdictions

This chapter serves as a mini "Plan Within the Plan" and includes the following information for each incorporated city jurisdiction in Pierce County, North Dakota:

1. **Profile and Inventory**
    - Location
    - Population & Vulnerable Population
    - Housing Units and Household Size
    - Businesses
    - New and Future Development
2. **Risk Assessment**
    - Score Summary
    - Hazard Scoring Notes
3. **Mitigation Strategy**
    - Problem Statement
    - Mitigation Projects
4. **Mitigation Capabilities**
    - Capability Definitions
5. **Integration into Planning Mechanisms**
6. **Plan Maintenance**

This information provides the basis for the risk assessment shown in each jurisdiction profile. Comparative statistics of each jurisdiction in Pierce County, North Dakota, are shown in Chapter 4, Profile and Inventory.

The incorporated cities in Pierce County, North Dakota, are shown alphabetically in the following chapter.

- 8.1: City of Balta, North Dakota
- 8.2: City of Rugby, North Dakota
- 8.3: City of Wolford, North Dakota

8.1 City of Balta, North Dakota

The following profile includes information specific to the city of Balta, North Dakota, for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.1.4, section 8.1.5 and in Chapter 6, Mitigation Strategy.

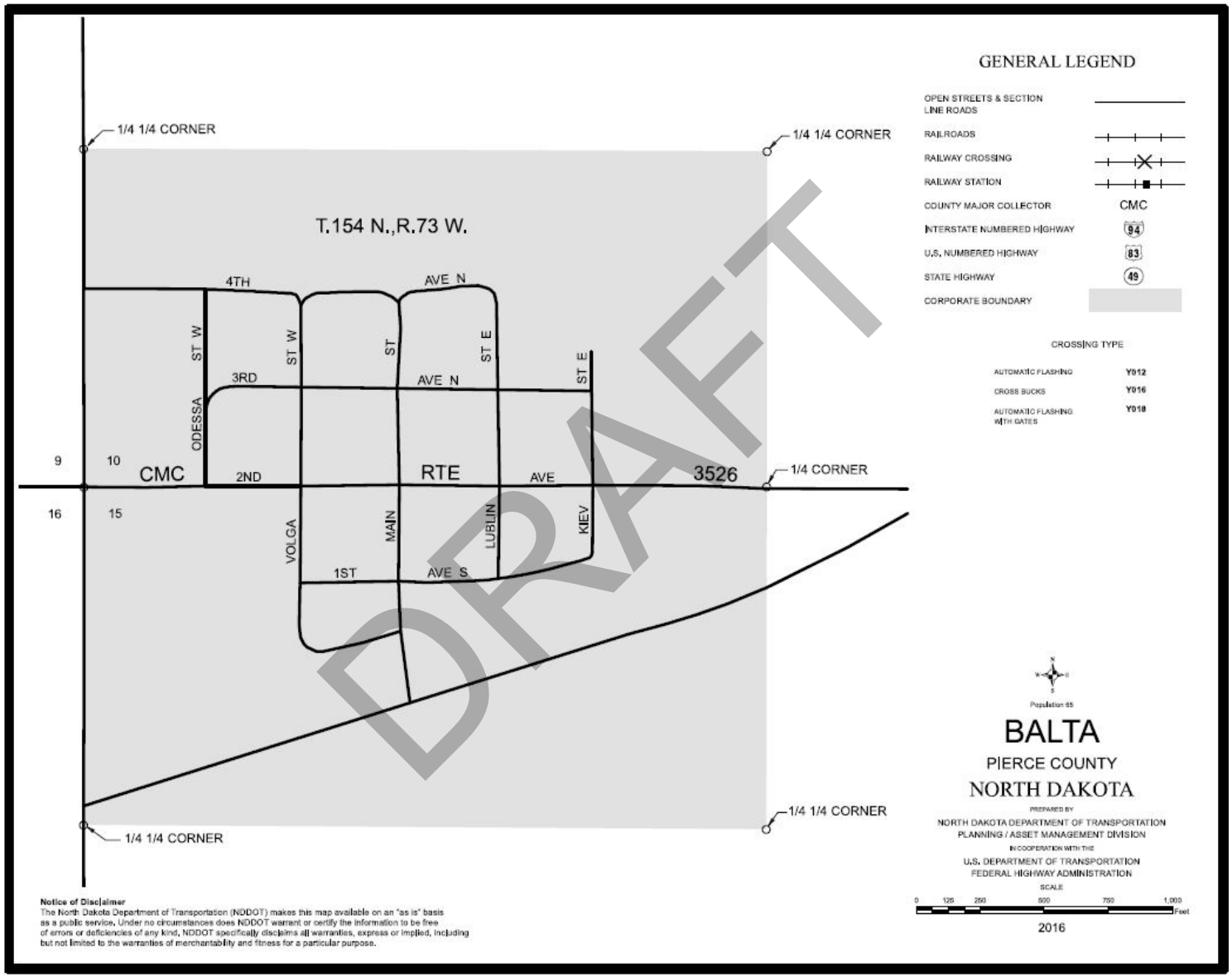
Plan Maintenance

Plan maintenance is shown in section 8.1.6.

Critical Facilities and Infrastructure

Figure 8.1.1 is a map of the city of Balta, North Dakota, provided by the N.D. Dept of Transportation.

Figure 8.1.1 – City of Balta, North Dakota, Base Map



Source: N.D. Dept. of Transportation

8.1.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, critical facilities and infrastructure, new and future development, services, jurisdictional buildings, emergency response services and utilities are shown for the city of Balta. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can also be found in Chapter 3, Profile and Inventory.

Location

The city of Balta, North Dakota, is two miles west of N.D. Highway 3 in central Pierce County approximately 15 miles south of the city of Rugby, the county seat.

Population

Table 8.1.1 shows population trends for the city of Balta, North Dakota, from 1920 to 2020 per the 2020 U.S. Decennial Census, with an estimate for 2021. According to the 2020 U.S. Decennial Census, the city of Balta, North Dakota, contains 66 people, an increase of one person people (1.5 percent) from 65 people in 2010.

Table 8.1.1 – 1920 to 2020 City of Balta, North Dakota, Population Trends and Projections

1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020	*2021 est.*
--	--	263	196	165	133	139	79	73	65	66	*61*

Source(s): U.S. Decennial Census; American Community Survey, 5-Year Estimates

Vulnerable Populations

Age. Per the 2017 to 2021 American Community Survey 5-Year Estimate, the population of the city of Balta, North Dakota, consists of 16 individuals under the aged of 20 and 16 individuals aged 65 and older, representing 21.9 and 21.9 percent of the city's population, respectively.

Daycare. There are no privately-owned daycares in the city of Balta, North Dakota.

Poverty. Per the 2017 to 2021 American Community Survey 5-Year Estimate, there are six individuals in the city of Balta, North Dakota that lives below the poverty line, representing 8.2 percent of the city's population.

Public Schools. There is not a public school in the city. The Balta Public School closed in 1991. The building now serves as a place of business for a service shop.

Senior Housing Developments/Care Centers. There are no age-restricted, senior housing developments, or care centers in the city of Balta, North Dakota. A four-plex provided age-restricted housing but was converted into a single-family home in 2000.

The Balta City Council indicated that the city has a noticeable transient population. Approximately six single-family homes are owned by residents who live in other states but travel seasonally to the city for hunting and fishing.

The annual corn feed/demolition derby/street dance event held at the recreational grounds at the Balta Dam located approximately one-mile south of the city is estimated to attract up to 800 people during the first weekend of August. The corn feed in 2023 was held in the city of Rugby at Ellery Park. The demolition derby and street dance were held at the Balta Dam.

Housing Units and Household Size

The 2017 to 2021 American Community Survey 5-Year Estimate shows there is a total of 61 housing units in the city of Balta, North Dakota, consisting of 42 single-family homes, 10 multifamily homes, and nine mobile homes.

The 2017 to 2021 American Community Survey 5-Year Estimate there are 37 households in the city of Balta, North Dakota, resulting in an average household size of 1.97 people.

Businesses

Businesses located in the city of Balta include: Balta Bar & Grill, Jundt M&M Repair and Our Lady of Mt. Carmel Catholic Church.

New and Future Development

Development between 2013 and 2018 in the city of Balta includes the following: construction of a four-car garage on a single-family home, a three-car garage on a single-family home, an addition onto a single-family home in December 2017, construction of a two single-wide and one double-wide manufactured home, construction of storage sheds and removal of several abandoned buildings.

Development between 2018 and 2023 in the city of Balta includes removal of the former jail house in 2021 and an abandoned/blighted single-family home in July 2023.

Future development in the city of Balta includes demolition of two single-family homes and construction of a Quonset on the former jailhouse site.

8.1.2 Risk Assessment and Hazard Scoring Notes

Table 8.1.6 summarizes the risk assessment scoring of the city of Balta, North Dakota. The risk assessment and hazard scoring notes for each hazard specific to the city are shown after Table 8.1.6. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Pierce County are found in Chapter 5, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.1.6 – City of Balta, North Dakota, Jurisdiction Risk Assessment Scoring Summary

Risk Assessment			**Jurisdiction:**	**City of Balta, North Dakota**		
Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Civil Disturbance						
Criminal, Terrorist or Nation-State Attack						
Cyberattack						
Dam Failure						
Drought						
Fire – Urban/Structure Collapse						
Fire – Wildland (including Rural)						
Flood						
Geologic Hazards						
Hazardous Material Release						
Infectious Disease						
Severe Summer Weather						
Severe Winter Weather						
Space Weather						
Transportation Incident						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.1.7 – City of Balta, North Dakota, Jurisdiction Risk Assessment

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Communicable Disease	• Crop Loss • Livestock Injury/Death • Human Injury/Death • Could be catastrophic if an event occurred simultaneously with a severe winter weather event where roads are blocked and access to the city is limited	• Annual occurrences of influenza and other disease • Annual occurrences of livestock and crop loss	<u>More likely</u> • High elderly population • Agriculture economy • Presence of local bat population	<u>More vulnerable</u> • High elderly population • Agriculture economy • Presence of abandoned buildings • No hospital or clinic • Presence of local bat population	See Chapter 7
			<u>Less likely</u> • Spraying for mosquitos • District Health and County Emergency Management conducting education and outreach	<u>Less vulnerable</u> • Mass media/internet • District Health and County Emergency Management conducting education and outreach	
Dam Failure	• Destruction of 27th Ave NE and access to the recreational area at Balta Dam • Loss of economy	• Failure of Balta Dam in 2012	<u>More likely</u> • Balta Dam is an aging structure	<u>More vulnerable</u> • Loss of 27th Ave NE and access to recreational area at Balta Dam – economic activity	See Chapter 7
			<u>Less likely</u> • Continued monitoring and maintenance of dam by Balta Mayor and Balta Wildlife Club	<u>Less vulnerable</u> • Continued monitoring and maintenance of dam by Balta Mayor and Balta Wildlife Club	

Table 8.1.7 – City of Balta, North Dakota, Jurisdiction Risk Assessment – Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Drought	• Crop Loss • Increased Fire Potential • Loss of Economy	• Annual periods of dry conditions • 20-year cycle • Drought of 1988 and 1989	More likely • Overdue for drought based on wet/dry cycle • Result of climatic patterns • Changing climate	More vulnerable • High elderly population • Agriculture economy • Changing climate	See Chapter 7
			Less likely • Modern agricultural practices and no-till farming will decrease severity and help limit impact	Less vulnerable • Modern agricultural practices and no-till farming will decrease severity and help limit impact	
Flood	• 52nd St NE and 27th Ave NE becomes blocked by overland flooding from heavy rains or spring snow melt blocked access for emergency services • 52nd St NE blocked east of the city • 27th Ave NE south of the city traversing Balta Dam • 52nd St NE west of the city and 27th Ave NE north of the city can be come washed out due to high water level	• 52nd St NE east of the city becomes blocked once every other year from heavy rain events or spring snow melt due to an undersized culvert	More likely • Every time it rains or snow melts • Changing climate • City located in a closed basin • 52nd St NE east of the city has low elevation and undersized culvert	More vulnerable • Every time it rains or snow melts • Changing climate • City located in a closed basin • 52nd St NE east of the city has low elevation and undersized culvert	See Chapter 7
			Less likely • Adequate drainage of city streets due to the city located at the high side of the closed basin	Less vulnerable • Adequate drainage of city streets due to the city located at the high side of the closed basin	

Table 8.1.7 – City of Balta, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Hazardous Material Release	• Explosion • Increased Fire Potential Increased Public Safety Runs	• Underground gasoline storage leaked into private water wells in 1992 – tanks have since been removed • No other recorded incidents in recent history	More likely • Increase in agriculture and chemical truck traffic • Crop spraying done by airplane • Transporting of anhydrous and propane by commercial traffic through city limits	More vulnerable • Increase in agriculture and chemical truck traffic • Transporting of anhydrous and propane by commercial traffic through city limits • Lack of emergency siren	See Chapter 7
			Less likely • No major interstate highway • Lack of railroad • No airport	Less vulnerable • City has truck route • Access to state and regional HAZMAT teams and resources	
Homeland Security Incident	• Mass Casualties • Widespread panic	• A man shot and killed his wife at his home in the city of Balta on New Year's Eve 1984. • An intoxicated individual was shooting at the bell outside the former Post Office at the city's centennial celebration in 2012.	More likely • Sparse population and remoteness • Annual Corn Feed/Demolition Derby/Street Dance Event	More vulnerable • High elderly population • Agriculture economy • No hospital or emergency services • Sparse population and remoteness • Annual Corn Feed/Demolition Derby/Street Dance Event	See Chapter 7
			Less likely • Sparse population • No large regional or international attractions	Less vulnerable • No commercial passenger air service • Sparse population • No large regional or international attractions	

Table 8.1.7 – City of Balta, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Severe Summer Weather	• Blocked roads from fallen tree branches and wind-blown debris • Toppled trees • Damage to structures at Balta Dam • Roof damage/destruction on single-family homes • Loss of economy • Damage to basements from heavy rains and subsequent flooding • Blocking of 52nd St NE from overland flooding resulting from heavy rains limiting access to the city for emergency services	• Multiple storms annually • Reports of damage to homes and vehicles annually	• Climatic patterns of the area will result in several storms per year • Changing climate	More vulnerable • High elderly population • Agriculture economy • Flat terrain and open topography • Overhead power lines • Older buildings and structures • 52nd St NE has a low spot prone to overland flooding • No emergency siren Less vulnerable • Advanced weather forecasting/warning	See Chapter 7
Severe Winter Weather	• Blocked roads from drifting snow • Toppled trees from ice storms and high winds • Roof damage/destruction on single-family homes • Clogging of roof vents • Loss of economy • Damage to basements from heavy snow and subsequent flooding from spring melt • Blocking of 52nd St NE from drifting snow limiting access to the city for emergency services	• Multiple storms annually • Reports of damage to homes and vehicles annually	• Climatic patterns of the area will result in several storms per year • Changing climate	More vulnerable • High elderly population • No hospital or clinic • Flat terrain/topography • Overhead power lines • Older buildings and structures • 52nd St NE has a low spot prone to blockage blocked from drifting snow Less vulnerable • Advanced weather forecasting/warning	See Chapter 7

Table 8.1.7 – City of Balta, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Transportation Accident	• Explosion • Hazardous Material Release • Human Injury/Death	• No major or reportable accidents in recent history	More likely • Lack of speed limits or speed zone on 52nd St NE through the city • Blocking of 52nd St NE and 27th Ave NE from flooding, and severe summer and winter weather • School buses transporting kids to and from the city	More vulnerable • High elderly population • Lack of speed limits or speed zone on 52nd St NE through the city • Blocking of 52nd St NE and 27th Ave NE from flooding, and severe summer and winter weather • School buses transporting kids	See Chapter 7
			Less likely • Truck route • Sparse population • Local roads under capacity	Less vulnerable • Truck route • Sparse population • Local roads under capacity	
Urban Fire/Structure Collapse	• Human Injury/Death • Increased Public Safety Runs • Loss of Economy	• Two grain elevators burned down in the 1960s • Single-family fire resulting in one fatality in 1960s	More likely • Presence of older commercial and residential buildings with outdated electrical • Older downtown structures sharing common walls and single-family homes spaced close together	More vulnerable • Presence of buildings with outdated electrical • Older downtown structures close together • Lack of a fire department	See Chapter 7
			Less likely • Increased education and awareness • Smoke detectors	Less vulnerable • Spacing of houses and structures (new) • Increased education and awareness	

Table 8.1.7 – City of Balta, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Wildland Fire	• Loss of Economy • Loss of Crop • Loss of Livestock • Loss of Wildlife Habitat • Loss of Farm Equipment and Structures	• Frequency follows the dry/wet cycle of climatic patterns • Approximately 10 percent of controlled burns become uncontrollable	More likely • Dry conditions (when present) • Farm/ranch operations • Changing climate	More vulnerable • Lack of fire break around the city • Homes/structures adjacent to sloughs and • Abandoned railroad ditches • Lack of fire department • Lack of emergency siren	See Chapter 7
			Less likely • Burn Bans • Less CRP • Farmers have supply of water for fire suppression on site	Less vulnerable • City conducts mowing • Depends on wind speed • City bounded by water on the south and east sides	
Windstorm	• Blocked roads from fallen tree branches and wind-blown debris • Toppled trees • Damage to structures at Balta Dam • Roof damage/destruction on single-family homes • Loss of economy • Blocking of 52nd St NE from wind-blown debris limiting access to the city for emergency services	• Multiple storms annually • Reports of damage to homes and vehicles annually	• Climatic patterns of the area will result in several storms per year • Changing climate	More vulnerable • Healthy urban canopy • Flat terrain and open topography • Overhead power lines • High elderly population • City lacks public works	See Chapter 7
				Less vulnerable • City conducts mowing • City residents trim trees and clean excess vegetation independently	

8.1.3 Mitigation Strategy

The Pierce County, N.D., Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of seven goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Balta, North Dakota. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Balta, North Dakota, can be impacted by civil disturbance; criminal, terrorist, or nation/state attack; cyberattack; drought; fire (urban and wildland); flood (overland); geologic hazards; hazardous material release; infectious disease and pest infestations; severe summer weather; severe winter weather; space weather, and transportation incident. The city experiences overland flooding from heavy rains or spring snow melt causing damage to property, roads, and critical facilities and infrastructure. Blocked roads from flooding, severe summer weather, and severe winter weather limit access for emergency services. Economic loss to the agriculture, hunting and livestock industry occurs on a frequent basis from natural hazards. The city lacks backup generators for critical facilities and infrastructure and does not have an outdoor emergency siren. The city is the host of a large annual festival at Balta Dam during the summer but does not have an official storm shelter. The city lacks funding for mitigation projects. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Improved drainage, installation of permanent backup power sources, installation of a dispatch-activated and/or manually/activated outdoor emergency siren, construction of an official storm shelter, expansion of planning and regulatory capabilities, and education and outreach are a priority for the city.

City of Balta Project 1: Conduct Engineering Study to Identify Necessary Scope of Work to Reduce and/or Eliminate Overland Flooding on 52nd St. NE.

Description/Benefit	52nd St. NE connects the city of Balta with N.D. Highway 3. The road becomes blocked due to overland flooding, primarily during the spring snow melt. When blocked emergency services cannot access the city and must take a prolonged detour.		
Hazard/Threat Addressed	Flood, Infectious Disease & Pest Infestations, Severe Summer Weather, Severe Winter Weather		
Affected Jurisdiction(s)	City of Balta and greater Pierce County		
Project Status	Ongoing and Continue		
Priority	Medium		
Responsible Agency	County Commission		
Partners	Balta City Council, Emergency Management, NDG&F		
Completion Timeframe	3 to 5 years	Cost	Specific to the identified scope of work.
Funding Source	County Budget. Flex Funding through NDDOT.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	3	3	1	3	25

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County LEOP Pierce County Hazard Mitigation Plan	Capability Assessment, Hazard History, Risk Assessment	Solicit proposals. Conduct study. Select preferred alternative by city council. Apply for grant funding or fund independently.

Pierce County/City of Balta PR-3: Enroll the city of Balta in National Flood Insurance Program (NFIP).

Description/Benefit	Ensure economic resiliency. Residents with property at risk would be insured. Ensure continuous review and updating or implementation of flood ordinances and flood control measures.		
Hazard/Threat Addressed	Flood (overland and riverine), Severe Summer Weather, Severe Winter Weather		
Affected Jurisdiction(s)	City of Balta/Balta Township		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	Balta City Council		
Partners	Emergency Management, County Commission, Planning & Zoning, DWR, Water Resource Board		
Completion Timeframe	2 years	Cost	Free (local administrative costs will apply)
Funding Source	Balta General Fund.		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	4	5	4	5	33

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element Utilized	Process for Integration
Flood Ordinances Pierce County LEOP, Flood Annex Pierce County Mitigation Plan Pierce County THIRA National Flood Insurance Program (NFIP)	Capability Assessment, Hazard History, Risk Assessment, Flood Statistics	Apply to NFIP through DWR. Approval and adoption by Balta City Council.

Pierce County Project I-3: Construct New Storm Shelters/Community Safe Rooms or Retrofit Existing Structures to Reduce and/or Eliminate the Risk to Vulnerable Populations and the Public.

Description/Benefit	Provide safe area of refuge for permanent residents and temporary populations a seasonal/recreational population from severe weather. Reduce/eliminate loss of life from hazards and man-made threats. Upgrade existing shelters to be fully ADA compliant and pet-friendly. Construct new storm shelters/community safe room in jurisdictions currently lacking a storm shelter/safe room. More information on community shelters can be found through the following link: https://www.fema.gov/media-library/assets/documents/5090 **Upgrade:** City of Rugby – Armory and Memorial Hall, Courthouse **New:** City of Balta (specifically Balta Dam and the surrounding recreation area/campsite), City of Wolford, Antelope Lake Recreation Area/Campsite (private), Haven Campsite (private)		
Hazard/Threat Addressed	All		
Affected Jurisdiction(s)	Pierce County and the cities of Balta, Rugby and Wolford.		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	Emergency Management, Emergency Services, City Councils, County Commission		
Partners	NDDES, Red Cross, Social Services, local landowners		
Completion Timeframe	3 to 5 years for new shelters. Ongoing for all existing.	Cost	$75,000.00 to $150,000.00
Funding Source	FEMA's Building Resilient Infrastructure and Communities (BRIC) Grant Program or Hazard Mitigation Grant Program (HMGP).		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	4	2	3	29

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County LEOP Pierce County Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Develop/identify the scope. Approval by county commission and city councils. Pursue grant funding or budget locally. Install.

8.1.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: Administrative and Technical, Education and Outreach, Financial, and Planning and Regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Balta, North Dakota, with all other jurisdictions in Pierce County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

- Administrative and Technical: Identification of administrative and technical capabilities, which include: staff, their skills and tools for mitigation planning to implement specific mitigation actions.
- Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of natural hazards and man-made threats.

City of Balta, North Dakota, Mitigation Capabilities Summary

The following mitigation capabilities were identified as commonplace among all natural hazards and man-made threats upon completion of the risk assessment for the city of Balta, North Dakota. More detailed information about the mitigation capabilities of the city of Balta in relation to Pierce County and all other incorporated jurisdictions can be found in Chapter 7, Mitigation Capability Assessment.

2018 N.D. Enhanced Mitigation MAOP	Pierce Co. Sherriff's Office
Advanced communications: Internet & TV	MOUs
First District Health Unit	NDDES Fire Index Monitoring
Pierce County Courthouse	NDDOT Statewide Highway/Transportation Plan
Pierce Co. LEOP	NDSU/Pierce Co. Extension
Pierce Co. Emergency Mgmt.	Balta City Council
Rugby Fire Dept./Prot. Dist.	Emergency siren(s)/early warning/alerting systems
N.D. Dept. of Emergency Services (NNDES)	Admin. staff for grant writing/mgmt. purposes

8.1.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.1.6 Plan Maintenance

An important aspect of any usable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

8.2 City of Rugby, North Dakota

The following profile includes information specific to the city of Rugby, North Dakota, for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.2.4, section 8.2.5 and in Chapter 6, Mitigation Strategy.

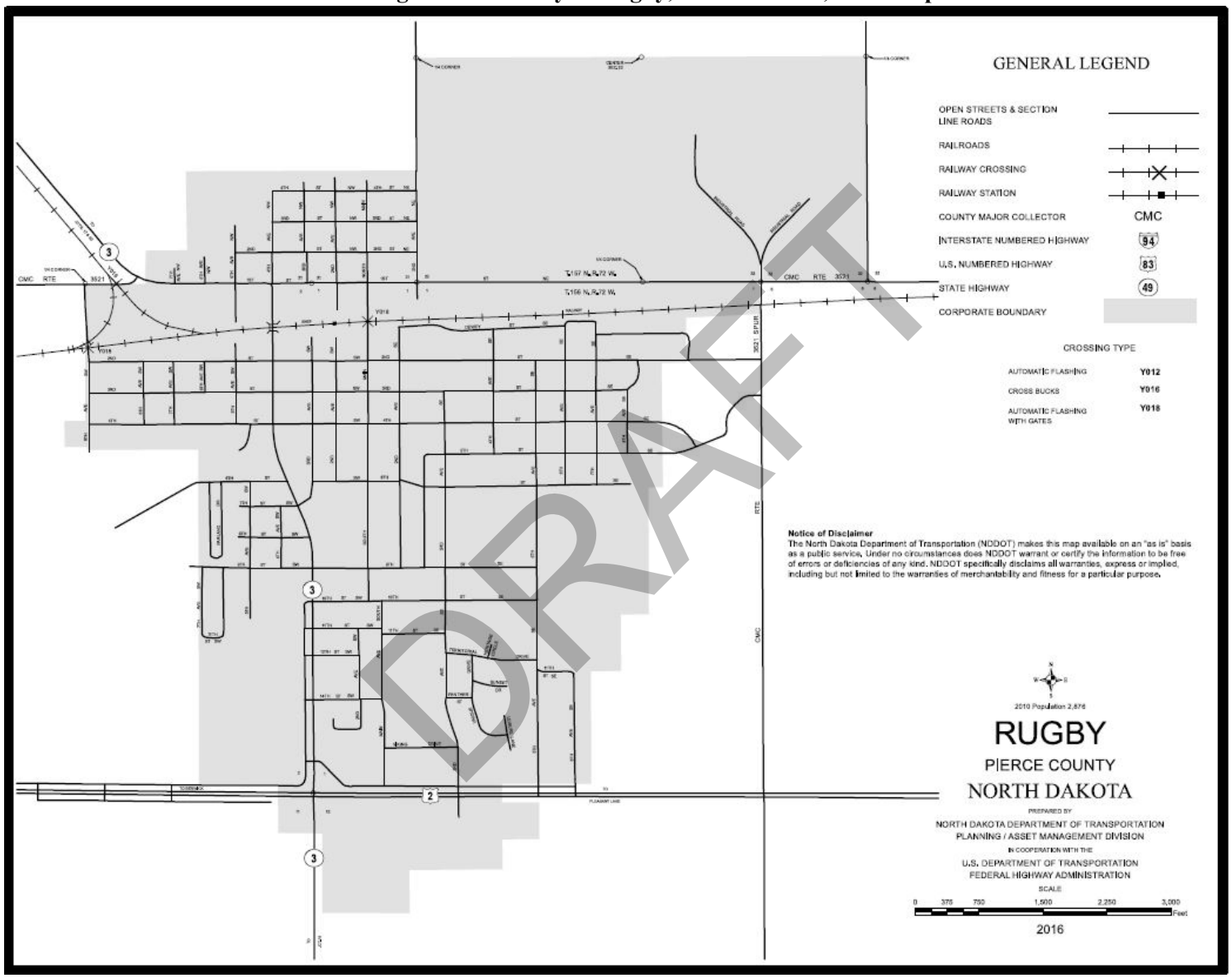
Plan Maintenance

Plan maintenance is shown in section 8.2.6.

Critical Facilities and Infrastructure

Figure 8.2.1 is a map of the city of Rugby, North Dakota, provided by the N.D. Dept of Transportation.

Figure 8.2.1 – City of Rugby, North Dakota, Base Map



Source: N.D. Dept. of Transportation

8.2.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, critical facilities and infrastructure, new and future development, services, jurisdictional buildings, emergency response services and utilities are shown for the city of Rugby, North Dakota. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can be found in Chapter 3, Profile and Inventory.

Location

The city of Rugby, North Dakota, is in north-central North Dakota at the intersection of N.D. Highway 3 and U.S. Highway 2 approximately 60 miles east of the city of Minot. The city of Rugby, North Dakota, is located at the geographical center of North America.

Population

Table 8.2.1 shows population trends for the city of Rugby, North Dakota, from 1920 to 2020 per the 2020 U.S. Decennial Census, with an estimate for 2021. According to the 2020 U.S. Decennial Census, the city of Rugby, North Dakota, contains 2,509 people, a decrease of one person people (12.8 percent) from 65 people in 2010.

Table 8.2.1 – 1920 to 2020 City of Rugby, North Dakota, Population Trends and Projections

1920	1930	1940	1950	1960	1970	1980	1990	2000	2010	2020	*2021 est.*
1,424	1,512	2,215	2,907	2,972	2,889	3,335	2,909	2,939	2,876	2,509	*2,481*

Source(s): U.S. Decennial Census; American Community Survey, 5-Year Estimates

The city of Rugby, North Dakota, contains approximately 70 percent of the population of Pierce County, North Dakota.

Vulnerable Populations

Age. Per the 2017 to 2021 American Community Survey 5-Year Estimate, the population of the city of Rugby, North Dakota, consists of 513 individuals under the aged of 20 and 607 individuals aged 65 and older, representing 20.1 and 23.8 percent of the city's population, respectively.

Daycare. Kids Next Door and Growing Place are daycares in the city of Rugby, North Dakota.

Poverty. Per the 2017 to 2021 American Community Survey 5-Year Estimate, there are 328 individuals in the city of Rugby, North Dakota, that lives below the poverty line, representing 13.7 percent of the city's population.

Public Schools. The city is the location of Ely Elementary School serving approximately 400 students in grades K to 8 and the Rugby High School serving approximately 170 students in grades 9 to 12. The city also has a private catholic elementary school called Little Flower. Preschool education is provided by Head Start, Little Flower Catholic School, and Rugby Public Schools.

Senior Housing Developments/Care Centers. Haaland Estates is a basic care and assisted living facility in Rugby North Dakota. The Heart of America Medical Center provides skilled nursing beds in the city of Rugby, North Dakota.

Housing Units and Household Size

The 2017 to 2021 American Community Survey 5-Year Estimate shows there is a total of 1,403 housing units in the city of Rugby, North Dakota, consisting of 1,125 single-family homes, 234 multifamily homes, and 44 mobile homes.

The 2017 to 2021 American Community Survey 5-Year Estimate there are 1,144 households in the city of Rugby, North Dakota, resulting in an average household size of 2.10 people.

Businesses

Information on businesses and economic development in the city of Rugby can be obtained by contacting the Rugby Jobs Development Authority.

New and Future Development

The following development has occurred since the 2011 mitigation plan. Construction of the First International Bank at the intersection of U.S. Highway 2 and N.D. Highway 3, an addition onto the Rugby High School, Farm Credit Services and Gooseneck Implement constructed new facilities along U.S. Highway 2 in southeastern Rugby, Rugby Farmer's Union Elevator expanded its elevator in the city of Rugby and added storage units, Ideal Seeds constructed a new building in the Rugby Extraterritorial Area, construction of the Cobblestone Motel, new car wash by Cenex, Family Dollar, La Bella Vita Salon, the city averages construction of four new single-family homes annually.

New development in the city of Rugby over the last five years includes:

- Chalmers Addition consisting of 52 lots designated for development of single-family or multifamily homes. As of August 2023, there are 36 lots remaining;
- Annexation of approximately 140+ acres for commercial and industrial development in the southeastern portion of the city;
- The Rugby Economic Development Corporation has approximately four lots for commercial and/or industrial development in the Rugby Industrial Park,;
- The Rugby Farmer's Union Elevator purchased the north cenex building;
- An addition constructed onto Ely Elementary School;
- The city received a USDA grant and loan of six million for the city's 2 1/2 Avenue Project. The project area extended from N.D. Highway 3 to between 3rd Ave SE and 5th Ave SE. The project consisted of new water lines, sewer lines, and storm water infrastructure and was completed in 2022;
- The city renovated the Armory to accommodate the city council chambers in 2023;
- The city installed a new roof at the water plant in 2020;
- A new roof was installed at the Armory and a family ADA-compliant restroom was installed in 2023.

- The following businesses opened: P.S. Garage Doors, Rugby Auto Connection, Cornerstone Bank, Backstrom Physical Therapy, Stretch Point Therapy, Align Chiropractic, Home of Economy, Little Sparrows Boutique, Bliss Nail Salon, Hangover's Bottle Shop, Backroads Bar, Classic Knots Salon, Main Street Boutique, Baldy's Pizza, Dollar General, This and That, Shawn's Closet of Possibilities, Jeneral Store, North Central Builders;
- High Plains of Devils Lake bought-out Northern Equipment;
- Cenex opened a Napa Auto Parts store;
- D&S Motors was bought-out by Drive Chevy, and
- Shopko, the Brown Lantern, and Joy Dental closed.

The following future development is planned or proposed in the city of Rugby includes:

- The Rugby underpass is slated for complete reconstruction by the N.D. Dept. of Transportation. A mill and overlay district was implemented.
- The Heart of America Medical Center is constructing a new medical center campus on the east side of the city along U.S. Highway 2.
- The Rugby Municipal Airport is constructing a new terminal and snow equipment building. As of August 2023, the contracts for construction has been awarded.
- A splash pad is being planned for the Jaycee Park in 2024.
- New south windows will be installed and the kitchen will be renovated at the Armory in 2024.
- The city is installing new clarifiers/filters at the water plant in fall 2023/early 2024.

8.2.2 Risk Assessment and Hazard Scoring Notes

Table 8.2.1 summarizes the risk assessment scoring of the city of Rugby, North Dakota. The risk assessment and hazard scoring notes for each hazard specific to the city are shown in Table 8.2.2. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Pierce County are found in Chapter 5, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.2.1 – City of Rugby. North Dakota, Jurisdiction Risk Assessment Scoring Summary

Risk Assessment			**Jurisdiction:**	**City of Rugby, North Dakota**		
Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Civil Disturbance						
Criminal, Terrorist or Nation-State Attack						
Cyberattack						
Dam Failure						
Drought						
Fire – Urban/Structure Collapse						
Fire – Wildland (including Rural)						
Flood						
Geologic Hazards						
Hazardous Material Release						
Infectious Disease						
Severe Summer Weather						
Severe Winter Weather						
Space Weather						
Transportation Incident						

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Communicable Disease	• Human Injury/Death • Financial cost to public health resources • Crop Loss • Livestock Loss • Loss of Economy • Strain on local medical resources • Loss of medical staff due to sickness • Loss of Potable Water • School Closure	• Annual occurrences of death among the elderly • In 2006 approximately 13 elderly people at long-term care passed from secondary complications from influenza • Public access restrictions to long-term care in 2016 due to influenza • City of Rugby had a norovirus in 2013	<u>More Likely</u> • Growing elderly population • Agriculture economy • Presence of local bat population <u>Less Likely</u> • Advanced communications such as internet/tv • Public health and employment regulations for public facilities • City sprays for mosquitos	<u>More Vulnerable</u> • Small population of children without immunization • Agriculture economy • Presence of abandoned buildings <u>Less Vulnerable</u> • Immunizations • Heart of America Medical Center • Education and outreach conducted by Lake Region District Health and Pierce County Emergency Management • Public health and employment regulations for public facilities	See Chapter 7
Dam Failure	NA	NA	NA	NA	NA

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Drought	• Crop Loss • Increased Fire Potential • Livestock/Injury Death • Loss of Economy • Loss of Potable Water • Loss of Wildlife	• Major drought in 1988/1989 • Every year there varying of dry conditions • Summer of 2017 saw extreme drought conditions • Dependent on weather patterns	• Dry/wet cycle every 10 years • Climatic patterns will result in an eventual drought of significance • Changing climate	More Vulnerable • Loss of wildlife and hunting activity • Ag economy • Elderly population • Flat terrain and open topography Less Vulnerable • Burn bans • Fire Index monitoring • Advanced communications such as internet/TV	See Chapter 7
Flood	• Blocked Roads • Delayed Emergency Response • Flooding (Street & Structure) • Human Injury/Death • Loss of Potable Water • Loss of Power • Property Damage • Sewer Backup • Saturation of roadways annually due to inadequate drainage of snow melt hinders travel	• Spring 2017 27th Ave NE two miles west of Rugby became blocked from snow melt for two months. Resulted in three people driving cars into the water. • Spring 2017 snow melt resulted in washed out 5th Ave culvert in city of Rugby • Annual occurrences of localized flooding of streets	More Likely • Inadequate drainage of Highway 3 underpass • **Wentz Canal** • Inadequate culverts Less Likely • Installed cement wall and pad for 5th Ave culvert • Likelihood dependent on local climate	More Vulnerable • Highway 3 underpass • Inadequate vegetation control on roadway ditches • **Wentz Canal** • Inadequate culverts • **Lack of flood ordinances** Less Vulnerable • Alternate routes were identified for townships when roads are blocked	See Chapter 7

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Hazardous Material Release	• Evacuation (localized) • HAZMAT Release • Human/Injury Death • Leaking fueled tanks contaminate local waterways and potable water supplies (individual wells) • Minor blocking of roads when emergency services response to incidents • **Potential for contamination of drinking water supplies due to lack of perimeter security at wells sites (both municipal and individual), rural water district and city of Rugby Water Treatment Plant as a secondary impact from a homeland security incident**	• No recorded incidents occurring in city limits	More Likely • Presence of railroad and pipelines through city limits • Presence of U.S. Highway 2 and N.D. Highway 3 • Agriculture economy • Cenex has bulk anhydrous plant half-mile west of city • Farm chemical storage warehouse one-mile southwest of the city of Rugby Less Likely • County and cities did not experience heavy energy development • Tier II reporting and regulations in place for specific sites • HAZMAT route around the city	More Vulnerable • Presence of railroad and pipelines traverse city limits • Presence of U.S. Highway 2 and N.D. Highway 3 • Ag economy • Cenex bulk plant half-mile west of city • Farm chemical storage warehouse one-mile southwest of the city Less Vulnerable • Tier II reporting and regulations in place for specific sites • City ordinances regulating development and placement of hazardous materials • HAZMAT route around the city	See Chapter 7

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Homeland Security Incident	• Blocked Roads • Delayed Emergency Response • HAZMAT Release • Human Injury/Death • Increased Public Safety Runs • Loss of Potable Water • Mass Casualties • Loss/Overcrowded medical facilities • **Contamination of drinking water supplies due to lack of perimeter security at wells sites (both municipal and individual), rural water district and city of Rugby Water Treatment Plant**	• A bomb threat at Ely Elementary School in 1994 • High frequency of vehicle theft in 2017 • High-level of drug trafficking • Prisoner escaped from detention center in 2014	<u>More Likely</u> • Presence of pipelines, railroad and transportation of hazardous materials • Presence of Heart of America Medical Center • Inadequate mental health care and facilities in the state • Presence of high drug use and trafficking of drugs • Presence of detention center with federal inmate population • County is equidistant between Minot and Grand Forks Air Force Bases <u>Less Likely</u> • Sparse population • County/city is rural and not geographically located near a major population	<u>More Vulnerable</u> • Presence of pipelines, railroad and transportation of hazardous materials • Presence of Heart of America Medical Center • Inadequate mental health care and facilities in the state • Presence of high drug use and trafficking of drugs • Presence of detention center with federal inmate population • City equidistant between Minot and Grand Forks Air Force Bases <u>Less Vulnerable</u> • Sparse population • County/city not located near a major population • City law enforcement with adequate equipment and training	See Chapter 7

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Severe Summer Weather	• Blocked Roads (Rugby underpass) • Evacuation (Localized) • Human Injury/Death – heat exhaustion • Loss of Power/Downed Power Lines • Property Damage – repair of roofing, siding and drainage systems for homes • Sewer Backup • Shelter-in-place • Vehicle damage • Loss of Livestock • Loss of Crops	• Heat exhaustion occurring once a month during summer months at Heart of America Medical Center annually • Major hail storm in August 2016 – hospital experienced $300,000 in damages, emergency services vehicles were damages • In 1970s city of Rugby experienced a tornado outbreak • Property damage from tornados/straight-line winds in summer 2017	Climatic patterns will result in numerous annual occurrences of the hazard	<u>More Vulnerable</u> • Presence of long-term care center • High elderly population • Slight increase in public school enrollment • Inadequate drainage Highway 3 underpass • Lack of permanent generators at 8 lift stations for sanitary sewer and one for storm water • Heart of America Medical Center patients and staff • Aging infrastructure (roads, water systems, electrical systems, shelter in city of Rugby) • Lack of adopted building codes or enforcement <u>Less Vulnerable</u> • Advanced weather forecasting/warning	See Chapter 7

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Severe Winter Weather	• Blocked Roads • Delayed Emergency Response • Human Injury/Death • Livestock Loss • Loss of Power/Downed Power lines • Staffing issues at medical center due to restrictions on road system	• Power outage in 1981 resulted in prolonged outages of up to 5 days in areas of the county • 9th Ave SW blocked annually • Road providing access to law enforcement center blocked from snow drifts	Climatic patterns will result in numerous annual occurrences of the hazard	<u>More Vulnerable</u> • Aging infrastructure (roads, water systems, electrical systems, shelter in city of Rugby) • Lack of adopted building codes or enforcement • Lack of permanent generators at 8 lift stations for sanitary sewer and one for storm water city of Rugby • Heart of America Medical Center patients and staff • Lack of traffic gates on U.S. Hwy 2 and N.D. Hwy 3 <u>Less Vulnerable</u> • No winter maintenance signs installed/closed certain roads during the winter	See Chapter 7

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Transportation Accident	• Human Injury/Death • Increased Fire Potential • Loss/Overcrowded Medical Facilities • Loss of Transportation/Accessibility • Mass Casualties	• Annual occurrences of accidents involving cars and farm equipment • Three fatalities in 2013 on county line between Pierce and Towner Counties • April/May of 2017 an intentional train-vehicle accident occurred on Main Street in city of Rugby resulting in a fatality	<u>More Likely</u> • Presence of Amtrak • U.S. Hwy 2 and N.D. Hwy 3 • Railroad through city • Intoxicated drivers <u>Less Likely</u> • New traffic control lights installed at intersection of U.S. U.S. Hwy 2 and N.D. Hwy 3 • Signs and rumble strips installed on truck route/28th Ave and 66th Street around city • U.S. Highway 2 was resurfaced summer 2017	<u>More Vulnerable</u> • Rural/less traveled roads experience high accidents resulting in fatalities • Rugby underpass <u>Less Vulnerable</u> • New traffic control lights installed at intersection of U.S. U.S. Hwy 2 and N.D. Hwy 3 • Signs and rumble strips installed on truck route/28th Ave and 66th Street around city • U.S. Highway 2 was resurfaced summer 2017 • Anticipated widening/expansion of N.D. Hwy 3 resulted in safer curves/turns	See Chapter 7

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Urban Fire/Structure Collapse	• Building Collapse • Delayed Emergency Response • Evacuation (Localized) • Explosion • Increase Fire Potential • Loss of Power/Downed Power Lines • Mass Casualties • Property Damage on a significant scale if impacting downtown structures	• Annual occurrences of structures/vehicles being impacted • Loss of five businesses in city of Rugby since the 1970s due to structure fires	More Likely • Close spacing of downtown structures • Age of downtown structures • Use of electric heaters • Outdated electric wiring in older homes and structures • Unkept heating systems Less Likely • Better building standards and maintenance of structures • Smoke detectors in public buildings and private homes/businesses • Well-equipped fire department with trained volunteers	More Vulnerable • Close spacing of downtown structures • Age of downtown structures • Electric heaters • Outdated electric wiring in older homes and structures • Unkept heating systems • Old apartment building located at 3rd St SE and 2nd Ave in city of Rugby • Lack of adopted built codes and enforcement Less Vulnerable • Better building standards • Smoke detectors • Well-equipped fire department with trained volunteers • City tightening ordinances and enforcing nuisance ordinances	See Chapter 7

Table 8.2.2 – City of Rugby, North Dakota, Jurisdiction Risk Assessment

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Wildland Fire	• Building Collapse • Crop Loss • Delayed Emergency Response • Human Injury/Death • Property Damage • Loss of Farm Equipment • Volunteer emergency responder burnout due to working long hours to contain significant fires/prolonged incidents/multiple incidents	• Approximately 25 wildland fires occurring annually • Annual occurrences of out-of-control burning	More Likely • Agricultural burn-off • High winds annually • Dry conditions – when present • Presence of CRP Less Likely • Removal of CRP • Summer and winter weather	More Vulnerable • Large fire district – strained coverage • Lack of fire breaks around city limits • 7th Ave SW and Parkland DR SW Less Vulnerable • Removal of CRP • Heavier precipitation than other parts of the state • MOAs with neighboring fire departments	See Chapter 7
Windstorm	• Blocked Roads (Rugby underpass) • Evacuation (Localized) • Human Injury/Death – heat exhaustion • Loss of Power/Downed Power Lines • Property Damage – repair of roofing, siding and drainage systems for homes • Sewer Backup • Shelter-in-place • Vehicle damage • Loss of Livestock • Loss of Crops	• Property damage from tornados/straight-line winds in summer 2017	Climatic patterns will result in numerous annual occurrences of the hazard	More Vulnerable • Healthy tree canopy in city of Rugby due to Tree City USA Designation • Lack of adopted buildings codes and enforcement Less Vulnerable • Advanced forecasting and communication (internet and TV)	See Chapter 7

8.2.3 Mitigation Strategy

The Pierce County, N.D., Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of seven goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Rugby, North Dakota. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Rugby, North Dakota, can be impacted by civil disturbance; criminal, terrorist, or nation/state attack; cyberattack; drought; fire (urban and wildland); flood (overland); geologic hazards; hazardous material release; infectious disease and pest infestations; severe summer weather; severe winter weather; space weather, and transportation incident. The city experiences overland flooding causing damage to property, and critical facilities and infrastructure due an inadequate storm water drainage system. Economic loss to the agriculture and livestock industry from natural hazards in the county impacts the city's economy. The city lacks backup generators for critical facilities and infrastructure, does not have adequate storm shelter capacity, and has an outdated early warning system. Local emergency services need upgraded equipment. The city lacks funding for mitigation projects. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Improved drainage (Country Road), retrofitting/upgrading of existing infrastructure (Rugby underpass, sanitary sewer lagoons), installation of permanent backup power sources, upgrade emergency sirens and alerting notifications, upgrade and expand of storm shelters, expansion of planning and regulatory capabilities, and education and outreach are a priority for the city.

City of Rugby Project 1: Dredge the Wentz Canal/Mouse River Drainage Basin.

Description/Benefit	The Wentz Canal has experienced accumulation of sediment on the west side of the city. The sediment has disrupted the flow of water increasing the impact of overland flooding. Removal of excess sediment will improve the flow of water decreasing the risk of flooding and the subsequent impacts on buildings and infrastructure. **The canal – one mile in the city and another mile west of city limits – is left to for cleaning and dredging as of November 2023. Approximately 13 miles have been completed as of November 2023.**		
Hazard/Threat Addressed	Flooding, Infectious Disease and Pest Infestations, Severe Summer Weather, Severe Winter Weather		
Affected Jurisdictions	City of Rugby and Pierce County		
Project Status	Ongoing and Continue		
Priority	High		
Responsible Agency	Pierce County Water Resource District Board		
Partners	Rugby City Council, Public Works, Emergency Management, County Commission, DWR		
Completion Timeframe	Spring 2024	Cost	$20,000 per mile
Funding Source	Pierce County Water Resource District Board		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	3	2	30

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County Water Resource District Board Capital Improvement Plan	Capability Assessment, Hazard History, Risk Assessment, Rugby Jurisdictional Meeting.	

City of Rugby Project 2: Conduct Engineering Study for Underpass – needs updating

Description/Benefit	Call NDDOT or the railroad to get the information. NDDOT went out for bid but received none because of the size and length of the bore. City of Rugby is now diverting water away from the underpass to use the existing bore/drainage area. Either a lift station.		
Hazard/Threat Addressed	Flooding, Infectious Disease and Pest Infestations, Severe Summer Weather, Severe Winter Weather, Transportation Incident,		
Affected Jurisdictions	City of Rugby (Pierce County), State of North Dakota		
Project Status	Ongoing and Continue		
Priority	Very High		
Responsible Agency	Rugby City Council, NDDOT		
Partners	Emergency Management, Public Works, DWR, BNSF Railroad		
Completion Timeframe	2 to 3 years	Cost	$8 to $10 million (80 federal/20 local cost share)
Funding Source	NDDOT and City of Rugby		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	1	3	29

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Capital Improvement Plan Rugby Comprehensive Plan City of Rugby NFIP Map Put in NDDOT plan	Capability Assessment, Hazard History, Risk Assessment, Rugby Jurisdictional Meeting.	Approval by county commission and city council

City of Rugby Project 3: Conduct Engineering Study to Develop Scope of Work (SOW) to Retrofit the City of Rugby Sanitary Sewer Lagoons to Equalize Demand.

Description/Benefit	The sanitary sewer lagoons for the city of Rugby are overbuilt. The system was designed for 4,000 people. Due to a smaller city population and decreased water usage in modern fixtures/appliances, the lagoons are oversized. The city needs to conduct engineering to identify a scope of work/options to retrofit the system to current demand.		
Hazard/Threat Addressed	Drought, Flooding (overland), Infectious Disease & Pest Infestations, Severe Summer Weather, Severe Winter Weather		
Affected Jurisdictions	City of Rugby and greater Pierce County		
Project Status	New		
Priority	Very High		
Responsible Agency	Rugby City Council		
Partners	Public Works, Emergency Management, Public Health, DWR, NDDEQ		
Completion Timeframe	3 years	Cost	TBD
Funding Source	FEMA's Building Resilient Infrastructure and Communities (BRIC) or Hazard Mitigation Grant Program (HMGP).		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	5	5	1	1	27

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Capital Improvement Plan Comprehensive Plan Pierce County LEOP and Mitigation Plan Pierce County THIRA	Capability Assessment, Hazard History, Risk Assessment	Conduct engineering study or identify scope of work. Approval by city council. Pursue funding options. Execute.

8.2.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: administrative and technical, education and outreach, financial, and planning and regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Rugby, North Dakota, with all other jurisdictions in Pierce County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

- Administrative and Technical: Identification of administrative and technical capabilities, which include: staff, their skills and tools for mitigation planning to implement specific mitigation actions.
- Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.
- Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.
- Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of natural hazards and man-made threats.

City of Rugby, North Dakota, Mitigation Capabilities Summary

The following mitigation capabilities were identified as commonplace among all natural hazards and man-made threats upon completion of the risk assessment for the city of Rugby, North Dakota. More detailed information about the mitigation capabilities of the city of Rugby in relation to Pierce County and all other incorporated jurisdictions can be found in Chapter 7, Mitigation Capability Assessment.

2018 N.D. Enhanced Mitigation MAOP	Pierce Co. Sherriff's Office
Advanced communications: Internet & TV	MOUs
First District Health Unit	NDDES Fire Index Monitoring
Pierce County Courthouse	NDDOT Statewide Highway/Transportation Plan
Pierce Co. LEOP	NDSU/Pierce Co. Extension
Pierce Co. Emergency Mgmt.	Rugby City Council
Rugby Fire Dept./Prot. Dist.	Emergency siren(s)/early warning/alerting systems
N.D. Dept. of Emergency Services (NNDES)	Admin. staff for grant writing/mgmt. purposes
Rugby Police Department	Rugby Comprehensive Plan
Rugby Auditor's Office	Rugby Zoning
Rugby Public Works	Rugby City App

8.2.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.2.6 Plan Maintenance

An important aspect of any usable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

8.3 City of Wolford

The following profile includes information specific to the city of Wolford for mitigation planning purposes. The information included is as follows:

- Profile and Inventory;
- Risk Assessment;
- Hazard Scoring Notes;
- Mitigation Projects, and
- Capabilities for Mitigation.

Integration into Planning Mechanisms

The process for integration of the mitigation plan into existing planning mechanisms is discussed at the bottom of each mitigation project in section 8.3.4, section 8.3.5 and in Chapter 6, Mitigation Strategy.

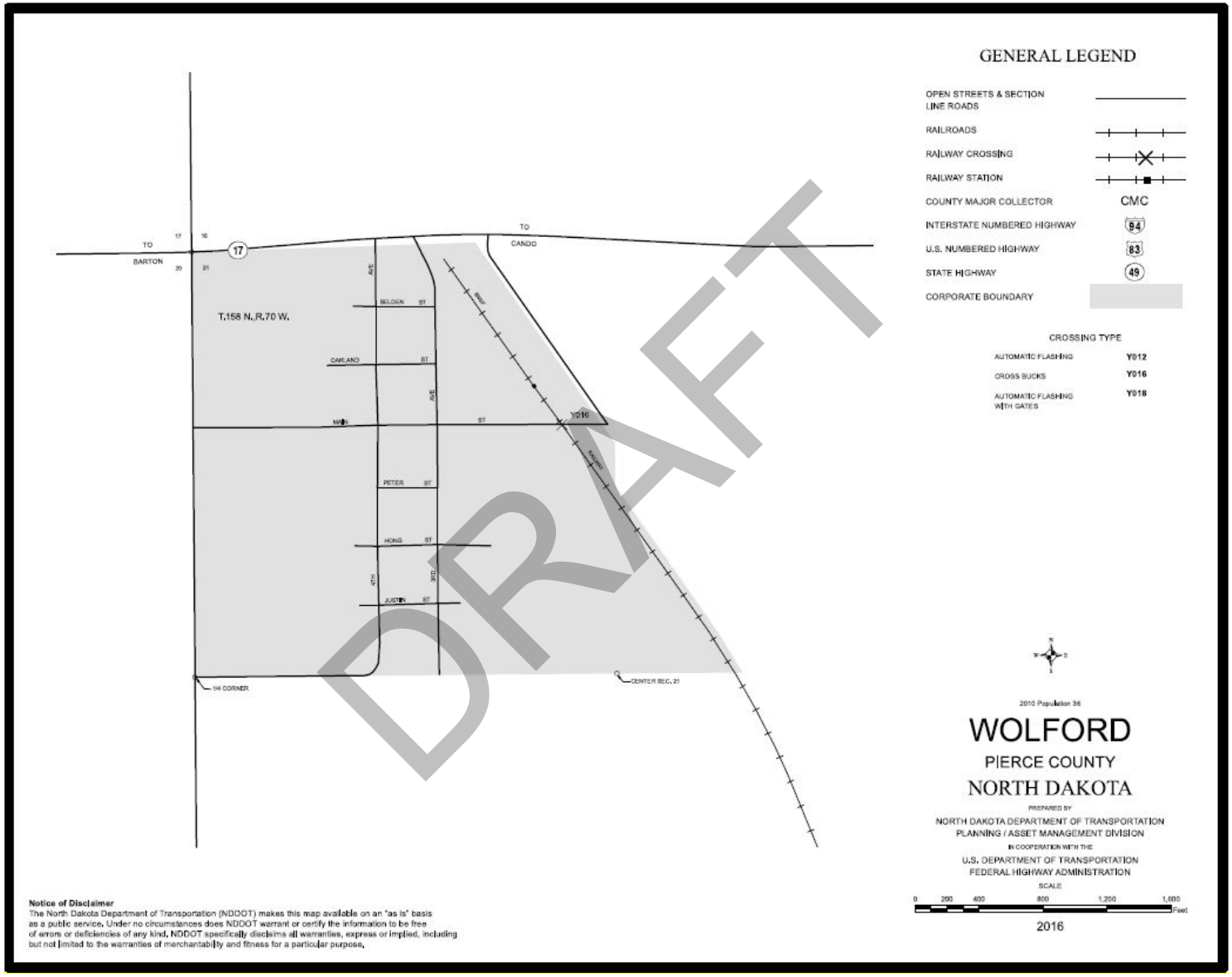
Plan Maintenance

Plan maintenance is shown in section 8.3.6.

Critical Facilities and Infrastructure

Figure 8.3.1 is a map of the city of Wolford.

Figure 8.3.1 – City of Wolford, North Dakota, Base Map



Source: N.D. Dept. of Transportation

8.3.1 Profile and Inventory

The location, total population, vulnerable populations, housing units and household size, businesses, critical facilities and infrastructure, new and future development, services, jurisdictional buildings, emergency response services and utilities are shown for the city of Wolford. Detailed narratives follow each section heading to profile the city.

Detailed information on public buildings, services provided, emergency response services and utilities can be found can be found in Chapter 4, Profile and Inventory.

Location

The city of Wolford is located on N.D. Highway 17 approximately 23 miles northeast of the city of Rugby, the county seat.

Population

Per the 2010 U.S. Decennial Census the city of Wolford contains 36 people. The 2011 to 2015 American Community Survey 5-Year Estimate recorded a population of 26 people, a decrease of 10 people, or 27.8 percent from 2010.

Vulnerable Populations

Per the 2010 U.S. Decennial Census, the population of the city of Wolford consists of nine individuals under the age of 20, and seven individuals age 65 and older, representing 25.0 percent and 19.4 percent of the population, respectively.

Wolford Public School is a school serving grades K through 12 located in the city of Wolford.

There are no age-restricted and senior housing developments located in the city.

Housing Units and Household Size

The 2011 to 2015 American Community Survey 5-Year Estimate shows there is a total of 22 housing units in the city consisting of 21 single-family homes, no multifamily homes and one mobile home.

Per the 2010 U.S. Decennial Census, there are 17 households in the city of Wolford resulting in an average household size of 2.12 people.

Businesses

Businesses located in the city of Wolford include: U.S. Post Office, Corrigidor Bar & Grill, T&K Yoder Builders and Envision Agronomy Center.

New and Future Development

Development over the last five years in the city of Wolford includes an addition to the Corrigidor Bar & Grill and additions to several single-family homes. As of November, 2017, no future development is pending or proposed in the city of Wolford.

Buildings and Infrastructure Overview

Information on publicly-owned and privately-owned buildings and property, critical facilities and infrastructure, and public services in the city of Wolford is provided in the following section. This information is important to understand the value of buildings and property at risk, and resources available for each jurisdiction to use when mitigating natural hazards and man-made threats.

Jurisdiction Buildings and Services Provided

Tables 4.7 to 4.11 profile the services, housing units, jurisdictional buildings, emergency response services, and utilities of Pierce County and incorporated jurisdictions. An "X" indicates if the jurisdiction offers the utility or service (either through contract or employees) or possesses the building or resource. Narratives detailing information for incorporated jurisdictions can be found in Chapter 8, Jurisdictions.

Structures

Housing units show where populations are located. Table 4.7 shows the number of single-family, multifamily and mobile home structures in Pierce County and incorporated jurisdictions. The following are key points:

- Pierce County is highly urbanized with a majority of all types of housing units concentrated in the city of Rugby. The city of Rugby contains 66.4 percent of all single-family homes, 58.3 percent of all mobile homes/boat/RV/van, and 98.0 percent of all multifamily homes/units in Pierce County.

Table 4.7 – 2011 to 2015 Housing Units in Pierce County

Housing Units	County – outside cities	City of Balta	City of Rugby	City of Wolford	TOTAL
Single-Family Homes	527	47	1,175	21	1,770
Mobile Homes/Boat/RV/Van	66	3	98	1	168
Multifamily Homes/Units	4	3	337	0	344
TOTAL	**597**	**53**	**1,610**	**22**	**2,282**

Source: 2011-2015 American Community Survey 5-Year Estimates

- The housing stock in the city of Balta consists of 53 total housing units, of which 47 are single-family homes (88.7 percent), three mobile homes (5.7 percent) and three multifamily homes/units (5.7 percent).

- The housing stock in the city of Wolford consists of 22 total housing units, of which 95 percent are single-family homes (21) with one mobile home and no multifamily homes.

Table 4.8 shows the services provided in the county and city jurisdictions.

Table 4.8 – Services Provided in Pierce County Jurisdictions

	Services	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Garbage Collection: Rugby Sanitation	X		X	
2	Garbage Collection: Waste Management		X	X	X
3	Inert Landfill	X		X	
4	Lagoon cells		1	4	
5	Landfill	*	*	*	*
6	Lift Station(s)		1	8	
7	Newspaper: Minot Daily News	X	X	X	X
8	Newspaper: Pierce County Tribune	X	X	X	X
9	Sanitary Sewer System		X	X	
10	Septic Systems	X		X	X
11	Storm Water System		X	X	
12	Water: All Seasons Water Users District	X	X	X	X
13	Water: Central Plains Water District	X			
14	Water: Individual Well	X	X	X	X
15	Water: Municipal Well			X	

*Denotes services available to jurisdictions through another jurisdiction or private companies located in neighboring jurisdictions.

1. Rugby Sanitation does not provide collection services to the city of Wolford.
2. Waste Management provides garbage collection services to the city of Wolford.
3. The city of Wolford does not have an inert landfill. The city of Rugby maintains an inert landfill which is open to all Pierce County residents for a fee.
4. The city of Wolford does not have a sanitary-sewer system and therefore does not have lagoon cells.
5. The city of Wolford does not have a landfill.
6. The city of Wolford does not have any lift stations because the city does not have a sanitary sewer system.
7. Minot Daily News is delivered to the city of Wolford by mail.
8. The Pierce County Tribune is the official newspaper for the city of Wolford.
9. The city of Wolford does not have a sanitary sewer system.
10. All residents of the city of Wolford utilize septic systems.
11. The city of Wolford does not have a storm water system.
12. All Seasons Rural Water District provides drinking/potable water to the city of Wolford.
13. Central Plains Water District does not provide drinking/potable water to the city of Wolford.
14. There are residents in the city of Wolford who do not have rural water service and obtain drinking/potable water by individual wells.
15. The city of Wolford does not have a municipal drinking/potable water system.

Table 4.9 shows the emergency response services and facilities in each jurisdiction. Due to the small size of some jurisdictions, services are provided by outside entities or jurisdictions.

Table 4.9 – Pierce County Jurisdictional Emergency Response Services and Facilities

	Emergency Response Services/Facilities	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Ambulance Service: Heart of America Medical Center	X	X	X	X
2	Ambulance Service: Harvey Ambulance	X			
3	Ambulance Hall			X	
4	Crash Rescue Unit				
5	Fire Department	*	*	X	X
6	Fire Hall			X	X
7	First Responders	X		X	X
8	Hazardous Materials Response Unit: Devils Lake	*	*	*	*
9	Hospital: Heart of America Medical Center	*	*	X	*
10	Law Enforcement: Pierce County Sheriff's Office	X	*	X	*
11	Law Enforcement: Rugby Police Department	*	*	X	*
12	Law Enforcement Building: Pierce County Law Enforcement Center	X	*	X	*
13	Quick Response Unit	*	*	X	X
14	Specialty Units (Bomb Squad, Dive Rescue, Search & Rescue, etc.):	*	*	*	*
15	State Specialty Units: Bureau of Criminal Investigation, N.D. Highway Patrol	X	*	X	*

*Denotes emergency response services available to jurisdictions through another jurisdictions or private companies located in neighboring jurisdictions.

1. Heart of America Medical Center (HAMC) provides ambulance services to the city of Wolford.
2. The Harvey Ambulance does not provide ambulance services to the city of Wolford.
3. The city of Wolford does not have an ambulance hall.
4. The city of Wolford does not have a crash rescue unit.
5. The Wolford Rural Fire Protection District provides fire protection to the city and surrounding rural areas.
6. The Wolford Rural Fire Protection District had a fire hall located on 3rd Avenue in the city.
7. The Wolford Rural Fire District Protection has three first responders on staff.
8. The hazardous materials response unit in the city of Devils Lake is called when response to hazardous material incidents is necessary.
9. Heart of America Medical Center (HAMC) is a regional hospital located in the city of Rugby serves the city of Wolford and the surrounding area.
10. Pierce County Sheriff's office provides law enforcement services to the city of Wolford through mutual aid.
11. The Rugby Police Department serves the city Wolford through mutual aid agreements with the Pierce County Sheriff's Office and is located in the Pierce County Law Enforcement Center.

12. The city of Wolford does not have a law enforcement building. The Pierce county Courthouse is the law enforcement center for the county and all incorporated jurisdictions.
13. The Wolford Rural Fire Protection District has a quick response unit with three personnel and two being trained as of fall 2017.
14. All specialty units for response purposes such as bomb squad or search and rescue are available from emergency services located in the cities of Devils Lake and Minot.
15. The N.D. Bureau of Criminal Investigation and the N.D. Highway Patrol have offices in the Pierce County Law Enforcement Center located in the city of Rugby.

Table 4.10 shows the publicly-owned buildings in each jurisdiction by type. A majority of publicly owned buildings in Pierce County are in the city of Rugby. Building marked with an asterisk (*) are considered publicly-owned by the county and located in a specific city, or the building is a shared resource with another community.

1. The city of Wolford does not have an airport.
2. The city of Wolford does not have an American Red Cross Shelter.
3. The city of Wolford does not have an armory or American Legion.
4. The city of Wolford does not have an auditorium.
5. The Wolford Rural Fire Protection District Fire Hall serves as the city hall for the city of Wolford.
6. The Wolford Rural Fire Protection District Fire Hall serves as the city shop for the city of Wolford.
7. The Wolford Rural Fire Protection District Fire Hall serves as the community center for the city of Wolford.
8. The city of Wolford has a Pierce County shop.
9. The Pierce County Courthouse is in the city of Rugby.
10. The Pierce County Fairgrounds is in the city of Rugby.
11. Federal buildings in the city of Wolford include the U.S. Post Office.
12. The Wolford Rural Fire Protection District has a fire hall.
13. The city of Wolford does not have a golf course.
14. The Pierce County Public Health Department is in the Pierce County Courthouse in the city of Rugby.
15. The Pierce County Road Department is in the Pierce County Courthouse in the city of Rugby. It does not maintain a building in the city of Wolford.
16. The city of Wolford does not have a law enforcement building. The Pierce County Law Enforcement Center is the law enforcement center for the county and all incorporated jurisdictions.
17. The Wolford Public School has a library in the Wolford Public School.
18. The city of Wolford has a public park with playground equipment and a basketball court.
19. The city of Wolford is home to the Wolford Public School serving grades K through 12.
20. The city of Wolford does not have a public works department.
21. All Seasons Water Users District does not have a building in the city of Wolford.
22. The Pierce County Sheriff's Office does not have a building in the city of Wolford. The Pierce County Sheriff's Office is in the Pierce County Courthouse in the city of Rugby.
23. The city of Wolford does not have a state shop.

24. The Wolford Lutheran Church serves as the storm shelter for the city of Wolford.
25. The city of Wolford does not have a community swimming pool.
26. The U.S.D.A. does not have a building in the city of Wolford.
27. The city of Wolford has a U.S. Post Office.
28. The city of Wolford does not have a university or secondary education.
29. The Pierce County Water Resource Board does not have a building in the city of Wolford.

Table 4.10 – Pierce County Publicly-Owned Jurisdictional Buildings

	Jurisdictional Buildings	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Airport/landing strip	*		*	
2	American Red Cross Shelter	*		*	X
3	Armory or American Legion			X	
4	Auditorium	*		*	
5	City Hall		X	X	X
6	City Shop			X	X
7	Community Center			X	X
8	County Shop	*	*	*	*
9	Courthouse	*		*	
10	Fairgrounds	*		*	
11	Federal Buildings			*	X
12	Fire Hall			X	X
13	Golf Course	*		*	
14	Health Department	*		*	
15	Highway Department	*		*	
16	Law Enforcement Center	*		*	
17	Library	*		*	X
18	Park	X	X	X	X
19	Public School			X	X
20	Public Works	X		X	
21	Rural Water District	*		*	
22	Sheriff's Office	*		*	
23	State Shop			X	
24	Storm Shelter	*	X	*	X
25	Swimming Pool			X	
26	U.S.D.A. Farm Services Agency	*		*	
27	U.S. Post Office			X	X
28	University				
29	Water Resource Board	*		*	

X* denotes that the publicly-owned building is both listed under county and the city of Rugby, the county seat, or another jurisdiction.

Table 4.11 shows the utility providers for jurisdictions in Pierce County. Some providers for utilities, such as fuel oil and propane are unknown as residents choose providers on an individual basis.

Table 4.11 – Utility Providers Serving Pierce County and Incorporated Cities

	Utility Providers	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Cable: Dish Network	X	X	X	X
2	Cable: Midcontinent			X	
3	Cable: N.D. Telephone Company	X		X	
4	Cable: Satellite/DirecTV	X	X	X	X
5	Electricity: North Central Electric Cooperative – northern county	X			
6	Electricity: Northern Plains Electric Cooperative – central	X			X
7	Electricity: Ottertail Power Company		X	X	X
8	Electricity: Verendrye Electric Cooperative	X			
9	Fuel Oil	X	X	X	X
10	Internet: Midcontinent	X	X	X	X
11	Internet: N.D. Telephone Company	X	X	X	X
12	Internet: Satellite/DirecTV/Dish Network	X	X	X	X
13	Natural Gas				
14	Phone (cellular): AT&T, Verizon, Smart Talk/Trac Phones		X	X	X
15	Phone (landline): Midcontinent	X	X	X	
16	Phone (landline): N.D. Telephone Company		X	X	X
17	Propane	X	X	X	X
18	Water: All Seasons Rural Water District	X		X	X
19	Water: Central Plains Water District	X			
20	Water: Individual Well	X	X	X	X
21	Water: Municipal Well	X		7	

1. Dish Network provides cable to the city of Wolford.
2. Midcontinent provides cable to the city of Wolford.
3. N.D. Telephone Company provides cable to the city of Wolford.
4. Cable is also provided via Satellite/DirecTV/Dish Network to the city of Wolford.
5. North Central Electric Cooperative does not provide electricity to the city of Wolford.
6. Northern Plains Electric Cooperative does not provide electricity to the city of Wolford.
7. Otter Tail Power Company provides electricity service to the city of Wolford.
8. Verendrye Electric Cooperative does not provide electricity to the city of Wolford.
9. Fuel oil is provided by individual entities to the city of Wolford.
10. Midcontinent provides internet services to the city of Wolford.
11. N.D. Telephone Company provides internet services to the city of Wolford.
12. Internet service is also provided via Satellite/DirecTV/Dish Network to the city of Wolford.
13. Natural gas service is not available in the city of Wolford.

14. Cellular phone service is provided by AT&T, Verizon and Smart Talk/Trac Phones to the city of Wolford.
15. Midcontinent provides landline phone service to the city of Wolford.
16. N.D. Telephone Company provides landline phone service to the city of Wolford.
17. Propane is provided by individual entities to residents of the city of Wolford.
18. All Seasons Rural Water District provides drinking/potable water to the city of Wolford.
19. Central Plains Water District does not provide drinking/potable water to the city of Wolford.
20. There are residents in the city of Wolford who do not have rural water service and obtain drinking/potable water by individual wells.
21. The city of Wolford does not have a municipal drinking/potable water system.

8.3.1 Risk Assessment and Hazard Scoring Notes

Table 8.3.1 summarizes the risk assessment scoring of the city of Wolford. The risk assessment and hazard scoring notes for each hazard specific to the city are shown after Table 8.3.1. Risk assessment notes for impact, frequency, likelihood and vulnerability ubiquitous for jurisdictions in Pierce County are found in Chapter 5, Threat and Hazard Identification Assessment in each respective hazard profile.

Table 8.3.1 – City of Wolford Jurisdiction Risk Assessment Scoring Summary

Risk Assessment			**Jurisdiction:**	**City of Wolford**		
Hazard	Impact	Frequency	Likelihood	Vulnerability	Capabilities	**Total**
Communicable Disease	2	2	2	3	1	**8**
Dam Failure	NA	NA	NA	NA	NA	**NA**
Drought	4	3	3	3	1	**12**
Flood	2	3	3	2	1	**9**
Hazardous Material Release	4	1	2	3	1	**9**
Homeland Security Incident	4	1	2	2	1	**8**
Severe Summer Weather	3	4	4	2	1	**12**
Severe Winter Weather	3	4	4	2	1	**12**
Transportation Accident	4	2	2	2	1	**9**
Urban Fire/Structure Collapse	3	2	2	2	1	**8**
Wildland Fire	2	4	4	2	1	**11**
Windstorm	3	4	4	2	1	**12**

(Formula: Impact + Frequency + Likelihood + Vulnerability – Capabilities = Total)

Table 8.3.2 – City of Wolford, North Daktoa, Jurisdiction Risk Assessment

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Communicable Disease	• Crop Loss • Children missing school • Loss of economy/income	• Annual occurrences of influenza and other disease • Crop and livestock loss due to disease annual	More likely • High elderly population • Agriculture economy • Public School • City does not spray for mosquitos	More vulnerable • High elderly population • Agriculture economy • Presence of abandoned buildings • No hospital or clinic • City does not spray for mosquitos	See Chapter 7
			Less likely • District Health and county emergency conduct education and outreach	Less vulnerable • Mass media/internet • District Health and county emergency conduct education and outreach	
Dam Failure	NA	NA	NA	NA	NA
Drought	• Crop Loss • Children missing school • Loss of economy/income • Closing of businesses and farms	• Annual periods of dry conditions • 10-year cycle • Drought of 1988 and 1989 • Summer of 2017 was abnormally dry with low precipitation	More likely • Overdue for drought based on wet/dry cycle • Result of climatic patterns • Changing climate	More vulnerable • High elderly population • Agriculture economy • Changing climate	See Chapter 7
			Less likely • Modern agricultural practices and no-till farming will decrease severity and help limit impact • Irrigation practices used	Less vulnerable • Modern agricultural practices and no-till farming will decrease severity and help limit impact • Irrigation practices used	

Table 8.3.2 – City of Wolford, North Dakota, Jurisdiction Risk Assessment – Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Flood	• Blocked roads from heavy rain and snow melt limiting access for emergency services • Basement flooding due to high water tables	• Occasional blocked roads and overland flooding in the city during heavy rain events or spring snow melt • Basement flooding annually to a varying severity	More likely • Lack of storm water drainage system • Changing climate • High water table	More vulnerable • Elderly Population • Public School • Changing climate	See Chapter 7
			Less likely • Adequate naturally occurring drainage for runoff	Less vulnerable • Drainage ditch was constructed parallel to the railroad tracks in the 1930s essentially eliminated drainage and flood issues • Drainage ditch was cleaned out in 2015	
Hazardous Material Release	• Explosion • Fire • Blocked roads	• No recorded incidents occurring in city limits	More likely • Increase in agricultural and chemical truck traffic • Anhydrous plant outside city limits but immediately adjacent on the east	More vulnerable • Increase in agricultural and chemical truck traffic • Anhydrous plant outside city limits but immediately adjacent on the east	See Chapter 7
			Less likely • Railroad tracks are not abandoned, but not used • Lack of major interstate highway	Less vulnerable • Railroad tracks are not abandoned, but not used • Lack of major interstate highway • Access to state and regional HAZMAT teams and resources	

Table 8.3.2 – City of Wolford, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Homeland Security Incident	• Mass casualties • Loss of property, and critical facilities and infrastructure • Widespread panic	• No incidents other than minor vandalism occurring annually	More likely • Wolford Public School • Lack of local law enforcement	More vulnerable • High elderly population • Agriculture economy • No hospital • Wolford Public School	See Chapter 7
			Less likely • Sparse population • No large regional or international attractions • Non-utilized railroad	Less vulnerable • No commercial passenger air service • Non-utilized railroad • No major interstate	
Severe Summer Weather	• Damages to houses and cars • Blocked roads from wind-blown debris • Loss of power	• Multiple storms annually based on climatic patterns	• Climatic patterns of the area will result in several storms per year • Changing climate	More vulnerable • Agriculture economy • Flat terrain and open topography • Overhead power lines • Older buildings and structures • Wolford Public School • Manually-activated siren	See Chapter 7
				Less vulnerable • Advanced weather forecasting/warning • Manually-activated siren • Trained Weather-Spotters living in city limits	

Table 8.3.2 – City of Wolford, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Severe Winter Weather	• Blocked roads from snow drifts limited access for emergency services • Loss of power • School cancellations • Stranded motorists needing assistance	• Multiple storms annually due to climatic patterns	• Climatic patterns of the area will result in several storms per year • Changing climate	More vulnerable • No hospital or clinic • High elderly population • Limited emergency response capability • Wolford Public School • No building code enforcement • Overhead power lines Less vulnerable • Advanced weather forecasting/warning • Trained Weather-Spotters living in city limits	See Chapter 7
Transportation Accident	• Mass casualties • Explosion if involving a truck hauling chemicals	• Horse-drawn wagon with six people was hit by a pick-up truck resulting in one fatality and several serious injuries	More likely • Presence of N.D. Highway 17 Less likely • Less likely • Sparse traffic levels on N.D. Highway 17 • Railroad not abandoned, but not used	More vulnerable • Highway 17 • Agricultural truck traffic hauling chemicals and fertilizer Less vulnerable • Improved highway design • Speed limit signs/more directional signage	See Chapter 7

Table 8.3.2 – City of Wolford, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Urban Fire/Structure Collapse	• Loss of buildings/tax base • Mass casualties/loss of life • Loss of power • Smoke damage to buildings	• Single-family destroyed by fire in 2007	More likely • Presence of older commercial and residential buildings with outdated electrical	More vulnerable • Presence of buildings with outdated electrical • Lack of updated fire equipment • Lack of volunteers • Lack of building code enforcement	See Chapter 7
			Less likely • Education by Wolford Rural Fire Protection District • Smoke detectors at critical facilities/homes	Less vulnerable • Spacing of houses and structures (new) • Lack of generator at fire hall	
Wildland Fire	• Loss of crops and livestock • Loss of farm buildings and structures • Loss of economy • Loss of natural resources • Loss of wildlife habitat	• Approximately 10 wildland fires occurring annually with an estimated 60 percent resulting from nature	More likely • Dry conditions (when present) • Farm/ranch operations • Changing climate	More vulnerable • Lack of fire break around the city • Homes/structures adjacent to sloughs • Railroad ditches with intense vegetation • Lack of updated fire equipment/ volunteers • City does not conduct mowing	See Chapter 7
			Less likely • Burn Bans • Less CRP • Farmers have supply of water for fire suppression on site	Less vulnerable • Emergency siren • Depends on wind speed	

Table 8.3.2 – City of Wolford, North Dakota, Jurisdiction Risk Assessment - Continued

Hazard/Threat	Impact	Frequency	Likelihood	Vulnerability	Capability
Windstorm	• Damages to houses and cars from blowing debris • Blocked roads from wind-blown debris • Loss of power	• Multiple occurrences annually	• Climatic patterns of the area will result in several storms per year	<u>More vulnerable</u> • Healthy urban canopy • Flat terrain and open topography • Overhead power lines • High elderly population • Wolford Public School • City lacks public works <u>Less vulnerable</u> • City residents independently clear excess vegetation, tree branches and debris, etc.	See Chapter 7

8.3.3 Mitigation Strategy

The Pierce County Multi-Jurisdictional Multi-Hazard Plan Update includes a mitigation strategy consisting of six goals in Chapter 6. The following problem statement and mitigation projects address the mitigation needs of the city of Wolford. It should be noted that some mitigation projects that pertain to all jurisdictions are included to encourage county-wide collaboration.

Problem Statement

The city of Wolford can be impacted by communicable disease, drought, flood (overland and riverine), hazardous material release, severe summer weather, severe winter weather, urban fire/structure collapse, wildland fire, and windstorm. Blocked roads from severe summer weather and severe winter weather limit access for emergency services. Economic loss to the agriculture, hunting and livestock industry occurs on a frequent basis from natural hazards. The city lacks backup generators for critical facilities and infrastructure, has a manually-activated siren and does not have an official storm shelter. Local emergency services need upgraded equipment. The city lacks funding for mitigation projects. With little to no capabilities to accomplish major projects independently, the city is dependent on outside sources for mitigation.

Installation of permanent backup power sources, upgrading of emergency siren, construction of an official storm shelter, upgrading of fire protection equipment, expansion of planning and regulatory capabilities, and education and outreach are a priority for the city.

City of Wolford Project 1: Install Upgraded Culvert at the Intersection of Railroad Ave and Main St.

Description/Benefit	The city of Wolford experiences overland flooding near the fertilizer plant and at the east end of Main St. The water comes close to the fertilizer plant buildings. The culvert traversing underneath Main St. is collapsed causing the street to become blocked due to overland flooding.		
Hazard/Threat Addressed	Flood, Infectious Disease & Pest Infestations, Severe Summer Weather, Severe Winter Weather		
Affected Jurisdiction(s)	City of Wolford and greater Pierce County		
Project Status	New		
Priority	High		
Responsible Agency	County Commission		
Partners	Wolford City Council, Pierce County Water Resource District Board		
Completion Timeframe	Less than one year	Cost	$4,000.00
Funding Source	Wolford Township		

Values: 1 is low (negative impact and/or too costly) -- Value of 5 is high (positive impact/higher benefit compared to cost)

Social	Technical	Administrative	Political	Legal	Economic	Environmental	TOTAL
5	5	5	3	5	5	3	31

Integration of Mitigation Plan Requirements into Local Planning Mechanisms

Planning Mechanisms Utilized	Plan Element	Process for Integration
Pierce County LEOP Pierce County Hazard Mitigation Plan	Capability Assessment, Hazard History, Risk Assessment	Pierce County Commission will complete the project Spring 2024.

8.3.4 Mitigation Capability Assessment

Capability for mitigation is divided into four categories: Administrative and Technical, Education and Outreach, Financial, and Planning and Regulatory. Each identified resource in the four categories can be used to implement mitigation strategies and access funding for projects. **Tables comparing the mitigation capabilities of the city of Wolford with all other jurisdictions in Pierce County can be found below and in Chapter 7, County Mitigation Capability Assessment.**

Administrative and Technical: Identification of administrative and technical capabilities, which include: staff, their skills and tools for mitigation planning to implement specific mitigation actions.

Education and Outreach: Identification of education and outreach programs, and methods already in place to implement mitigation activities and communicate hazard-related information.

Financial: Identification of access to or eligibility to use funding resources for hazard mitigation for jurisdictions.

Planning and Regulatory: Jurisdictional plans, policies, codes, and ordinances adopted and in place that prevent and reduce the impacts of hazards.

Narratives describing the mitigation capabilities of the city of Wolford are found on the following pages.

Table 7.1 shows the administrative and technical capabilities of the Pierce County and incorporated jurisdictions. A box marked with an "X" indicates the jurisdiction has or has access to the administrative or technical capability for mitigation. An asterisk (*) denotes an administrative and technical capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

Table 7.1 – Administrative and Technical Capabilities

	Administrative and Technical Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
Administration					
1	County/City Council or Commission	X	X	X	X
2	Local Emergency Planning Committee (LEPC)	X	*	*	*
3	Mitigation Planning Committee	X	*	*	*
4	Mutual Aid Agreements	X	X	X	X
5	Other Staff for Administration	X	*	X	*
6	Planning Commission	X	X	X	X
7	Planning and Zoning Administrator	X	*	X	*
8	Planning and Zoning Board	X	*	X	*
9	Water Resource Board	X	*	*	*
10	Weed Board	X	*	*	*

Table 7.1 – Administrative and Technical Capabilities - Continued

	Administrative and Technical Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
Staff					
1	911 Coordinator/Director and User Board	X	*	*	*
2	Chief Building Official/Inspector/Board	*	*	*	*
3	Civil Engineer	*	*	*	*
4	Community Planner/Planning Services	*	*	*	*
5	Emergency Management	X	*	*	*
6	Emergency Services (ambulance, police, fire)	X	*	X	X*
7	Floodplain Administrator				
8	GIS Coordinator	*	*	*	*
9	Grant Writing & Administration Staff	X	*	X	*
10	Public Health	X	*	*	*
11	Public Works and/or Highway Department	X	*	X	*
12	Sheriff	X	*	*	*
Technical					
1	Emergency Services GIS/GPS capable			X	
2	Emergency Siren (dispatch-activated)			6	
3	Emergency Siren (manually-activated)				X
4	Fire Break				
5	Fire Index Sign				
6	Fire ISO Rating			6	8B
7	Firewise Certification				
8	Generator (permanent)	2		1	
9	Generator (portable)	1	X	1	X
10	HAZUS Analysis				
11	Infrastructure Maintenance Programs	X	*	X	*
12	Navigation Signs for Emergency Services	X	X	X	X
13	Reporting of Data to Emergency Manager	X	X	X	X
14	StormReady Certification				
15	Warning Systems/Services			X	

Administration

1. The city of Wolford has an active county council.
2. The city of Wolford has an active local emergency planning committee (LEPC) through Pierce County.
3. The city of Wolford has an active mitigation planning committee through Pierce County.
4. The city of Wolford has mutual aid agreements with the Pierce County Sheriff's Office for law enforcement services, and with the Rugby Rural Fire Protection District, Mylo Fire Department and Rollette Fire Department for fire suppression services.
5. The city of Wolford does not have staff capable of mitigation activities. Staff for mitigation activities is available through Pierce County.

6. The Wolford City Council serves as the planning commission.
7. The city of Wolford has zoning administration through Pierce County.
8. The city of Wolford has a planning and zoning board through Pierce County.
9. The city of Wolford has a water resource board through Pierce County.
10. The city of Wolford has a weed board through Pierce County.

Staff

1. The city of Wolford has a part-time 9-1-1 coordinator through Pierce County.
2. The city of Wolford has not adopted international building codes does not have a building inspector. Electrical and plumbing inspection is available through the state.
3. The city of Wolford receives engineering services through Pierce County, which has a contract for engineering services with Wold Engineering.
4. Community planner/planning services are available through the North Central Planning Council or other contracted services.
5. The city of Wolford has part-time emergency management through Pierce County.
6. The city of Wolford has its own fire department. The city receives ambulance and law enforcement services through mutual aid agreements with the city of Rugby, Pierce County and Heart of America Medical Center.
7. **The city of Wolford does not have a floodplain administrator.**
8. The city of Wolford can receive GIS services through Pierce County, which are obtained through its engineering contract with Wold Engineering.
9. Pierce County provides grant writing and administration to the city of Wolford as the city does not have staff with this capability.
10. The Pierce County Public Health Department provides public health services to the city of Wolford.
11. The city of Wolford does not have a highway or public works department. These services are provided by Pierce County.
12. The city of Wolford receives law enforcement services through Pierce County Sheriff's Office.

Technical

1. **The Wolford Rural Fire Protection District is not GIS/GPS capable.**
2. The city of Wolford does not have a dispatch-activated emergency siren.
3. **The city of Wolford has a manually-activated emergency siren.**
4. **The city of Wolford does not have a firebreak.**
5. **The city of Wolford does not have a fire index sign.**
6. The fire ISO rating for the Wolford Rural Fire Protection District is 8B.
7. The city of Wolford does not have Firewise Certification.
8. **The city of Wolford does not have a permanent generator.**
9. The Wolford Rural Fire Protection District has a portable generator on a truck.
10. The city of Wolford does not have HAZUS Analysis.
11. The Pierce County Road Department conducts infrastructure maintenance on an as-needed basis for the city of Wolford.
12. The city of Wolford has street signs for navigation for emergency services.
13. The mayor of Wolford reports hazards data to the Pierce County Emergency Manager.

14. The city of Wolford does not have StormReady Certification.
15. The city of Wolford has a manually-activated siren, but no automated emergency alert system.

Table 7.2 shows the education and outreach capabilities of the Pierce County and incorporated jurisdictions. A box marked with an "X" indicates the jurisdiction has or has access to the education and outreach capability for mitigation. An asterisk (*) denotes an education and outreach capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

Table 7.2 – Education and Outreach Capabilities

	Education and Outreach Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
1	County/City Events	X	X	X	X
2	County Emergency Management	X	*	*	*
3	Entities Providing Public Education	X	X*	X	X*
4	Non-Profit Organizations/Citizen Groups	X	X	X	X
5	Other				
6	Private Entities	X	X	X	X
7	Public-Private Partnerships	X	*	*	*
8	School Programs	X	*	X	X
9	Social Media	X	*	X	*
10	Website with Hazard Education	X	*	X	*

*Denotes education and outreach mitigation capability available to the jurisdiction through the county, contracted services, or an outside entity.

1. Events in the city of Wolford where education and outreach can be conducted includes the Pierce County Fair, Fire Prevention Week and Ag Day's for public school students.
2. **Pierce County Emergency Management conducts continuous education and outreach, and maintains a department website and a social media presence.**
3. Entities providing public education include, but are not limited to, Wolford City Council, Pierce County Emergency Management, Pierce County Sheriff's Office, Pierce County Social Services, Pierce County Nurse, NDSU/Pierce County Extension.
4. Non-profit organizations/citizen's groups providing public education and outreach include, but are not limited to: Wolford Rural Fire Protection District and Wolford Wildlife Club.
5. The city of Wolford did not identify any 'Other' education and outreach capabilities in addition to those listed in categories 3 and 4.
6. Enbridge Pipeline provides training to the Wolford Rural Fire Protection District.
7. The Pierce County Local Emergency Planning Committee (LEPC) is a public-private partnership providing education and outreach.
8. The Wolford Public School conducts an annual storm awareness programs. The Wolford Rural Fire Protection District conducts fire prevention and awareness week annually. Pierce County Sheriff's Office also provides education and outreach to public schools.

9. **The city of Wolford does not maintain a social media presence. Pierce County Emergency management maintains a social media presence for emergency education and outreach.**
10. **The city of Wolford does not have a website. Pierce County and the city of Rugby maintain websites with hazard education and outreach media.**

Table 7.3 shows the financial capabilities of the Pierce County and incorporated jurisdictions. A box marked with an "X" indicates the jurisdiction has or has access to the financial capability for mitigation. An asterisk (*) denotes a financial capability that can be obtained through the county for incorporated jurisdictions, or contracted services or an outside entity for the county.

Table 7.3 – Financial Capabilities

	Financial Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Authority to Levy Taxes for Specific Purposes (sales tax or special assessments)	X	X	X	X
2	Building Permits	X		X	
3	Capital Improvements Fund			X	
4	Comm. Dev. Block Grant (CDBG)		*	X	*
5	Electric Utility Fee	*	*	*	*
6	General Obligation Bond/Special Tax Bond	X	X	X	X
7	Impact Fees for New Development				
8	Other				
9	Private Entities or Activities			*	
10	Sanitary Sewer Utility Fee		X	X	
11	State Funding Programs	X	X	X	X
12	Storm Water Utility Fee			X	
13	Water Utility Fee	*	*	X	*

* Denotes financial mitigation capability available to the jurisdiction through the county, contracted services, or an outside entity.

1. The city of Wolford has the authority to levy taxes for specific purposes, such as sales tax or special assessments, to raise revenue if warranted. A vote is required to pass any new taxes.
2. The city of Wolford does not issue building permits.
3. The city of Wolford does not have a capital improvements fund.
4. The city of Wolford qualifies and has applied for funding through the Community Development Block Grant (CDBG) with assistance from the Souris Basin Planning Council.
5. The city of Wolford does not have an electric utility fee. Electric power providers charge a utility fee to customers for maintenance of infrastructure.
6. The city of Wolford does not issue general obligation bonds and/or special tax bonds to raise revenue, but can do so, if warranted.
7. The city of Wolford does not have impact fee for new development.

8. The city of Wolford does not have any "Other" financial mitigation capabilities such as a road district, street maintenance or wheel tax.
9. No private entities or activities were identified.
10. The city of Wolford does not have sanitary sewer system and therefore does not have utility fees.
11. The city of Wolford has access to state funding programs.
12. The city of Wolford does not have a storm water utility fee.
13. Water utility fees are assessed to city residents by All Seasons Rural Water District.

Table 7.4 shows the planning and regulatory capabilities of the Pierce County and incorporated jurisdictions. Boxes marked with an "X" indicate the jurisdiction has the planning and regulatory capability. An asterisk (*) indicates a capability that can be obtained through the county, contracted services, or an outside entity.

Table 7.4 – Planning and Regulatory Capabilities

	Planning and Regulatory Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
1	Abandoned Building/Nuisance Ordinance			X	
2	Building Codes				
3	Building Permits	X		X	
4	Burn Bans	X	*	*	*
5	Capital Improvement Plan				
6	Chief Building Official/Inspector/Board	*	*	*	*
7	Commercial Animal Feed Operation (CAFO) Ordinance	X			
8	Community Wildfire Protection Plan				X
9	Comprehensive Plan	X		X	
10	Continuity of Operations Plan	X	*	*	*
11	Crew Camp Ordinance	X			
12	Drought Management Plan				
13	Easements	X		X	
14	Economic Development Plan	*	*	X	*
15	Emergency Operations Plan	X	*	*	*
16	Evacuation and Shelter Plan	X*	*	*	*
17	FEMA Flood Map	X		X	
18	Flood Insurance Study	X		X	
19	Flood Operations/Management Plan				
20	Flood Ordinance	X		X	
21	Flood Risk Management Feasibility Study	X	*	*	*
22	Grain Bin Ordinance			X	
23	Hazard Mitigation Plan	X	*	*	*
24	Hazardous Material Flow Study				

*Denotes planning and regulatory mitigation capability available through the county, contracted services, or an outside entity.

^ Denotes planning and regulatory mitigation capability in progress.

Table 7.4 – Planning and Regulatory Capabilities - Continued

	Planning and Regulatory Mitigation Capability	Pierce County	City of Balta	City of Rugby	City of Wolford
25	Impact Fees				
26	Land Use Plan				
27	Local Emergency Operations Plan	X	*	*	*
28	National Flood Insurance Program (NFIP)	X		X	
29	Noise Control Ordinance			X	
30	Pandemic Influenza Response Plan	*	*	*	*
31	Planning Commission	X	X	X	X
32	Point of Dispensing (POD) Plan	*	*	*	*
33	Shelter and Mass Care Plan	*	*	*	*
34	Site Plan Review Requirements			X	
35	Storm Water Management Plan				
36	Strategic Plan	X	*	X	*
37	Subdivision Ordinance			X	
38	Transportation Plan	*	*	*	*
39	Water Conservation Plan				
40	Zoning	X		X	

*Denotes planning and regulatory mitigation capability available through the county, contracted services, or an outside entity.

^ Denotes planning and regulatory mitigation capability in progress.

1. **The city of Wolford does not have an abandoned building/nuisance ordinance.**
2. **The city of Wolford has not adopted state building codes and lacks enforcement.**
3. **The city of Wolford does not have building permits.**
4. Pierce County Emergency Management issues burn bans when necessary. The Pierce County Commission manages burn bans and is the decision-maker for lifting bans.
5. **The city of Wolford does not have a capital improvement plan.**
6. **The city of Wolford does not have a chief building official/inspector/board. Electrical and plumbing inspection is available through the state.**
7. The city of Wolford does not have a commercial animal feed operation ordinance.
8. **The city of Wolford has a community wildfire protection plan through the Wolford Rural Fire Protection District.**
9. **The city of Wolford does not have a comprehensive plan.**
10. The city of Wolford does not have a formal continuity of operations plan. However, the Pierce County Sheriff's Office, which provide mutual aid to the city of Wolford, has protocols to maintain operations during emergencies.
11. **The city of Wolford does not have a crew camp ordinance.**
12. **The city of Wolford does not have a drought management plan.**
13. The city of Wolford does not have easements.
14. The city of Wolford has an economic development plan through the Rugby Job Development Authority.

15. The city of Wolford has an emergency operations plan through Pierce County Emergency Management.
16. Lake Region District Health Unit and Pierce County Public Health maintain an evacuation and shelter plan for Pierce County and incorporated jurisdictions.
17. **The city of Wolford does not have FEMA flood maps as it is not enrolled in the National Flood Insurance Program.**
18. The city of Wolford does not have a flood insurance study.
19. **The city of Wolford does not have a flood operations/management plan.**
20. The city of Wolford does not have flood ordinances.
21. The city of Wolford is included in the flood risk management feasibility study for Pierce County.
22. The city of Wolford does not have a grain bin ordinance.
23. **The city of Wolford is included in the Pierce County Multi-Jurisdictional Multi-Hazard Mitigation Plan, which is updated every five years.**
24. The city of Wolford does not have a hazardous materials flow study.
25. **The city of Wolford does not have impact fees for new development.**
26. **The city of Wolford does not have a land use plan.**
27. The city of Wolford is included in the local emergency operations plan for Pierce County.
28. The city of Wolford is not enrolled and participated in the National Flood Insurance Program (NFIP).
29. The city of Wolford does not have a noise control ordinance.
30. Lake Region District Health Unit maintains a pandemic influenza response plan for Pierce County and incorporated jurisdictions.
31. The Wolford City Council serves as the planning and zoning commission for the city.
32. Lake Region District Health Unit maintains a point of dispensing (POD) plan for Pierce County and incorporated jurisdictions.
33. Lake Region District Health Unit maintains a shelter and mass care plan for Pierce County and incorporated jurisdictions.
34. The city of Wolford does not have site plan review requirements.
35. The city of Wolford does not have a storm water management plan.
36. The city of Wolford is included in the strategic plan for the Rugby Jobs Development Authority.
37. The city of Wolford does not have a subdivision ordinance.
38. The city of Wolford is included in the transportation plan for Pierce County, which is also included in the transportation plan for the state of North Dakota.
39. The city of Wolford does not have a water conservation plan.
40. **The city of Wolford does not have zoning ordinances.**

8.3.5 Integration of Mitigation Plan into Planning Mechanisms

Integration of the plan into current planning mechanisms is critical in mitigation to communicate the needs of each jurisdiction to achieve an all-inclusive mitigation strategy. The process for integration of the mitigation plan is included after each mitigation project, which shows the planning mechanism utilized, the plan element used for integration and the process for integration.

8.3.6 Plan Maintenance

An important aspect of any useable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the situation assessment, research, coordinating, disaster response or other activity is occurring. Plan maintenance ensures the plan will remain useful in the county for many years. A mitigation action progress report form to conduct plan maintenance is in Chapter 10 of this plan.

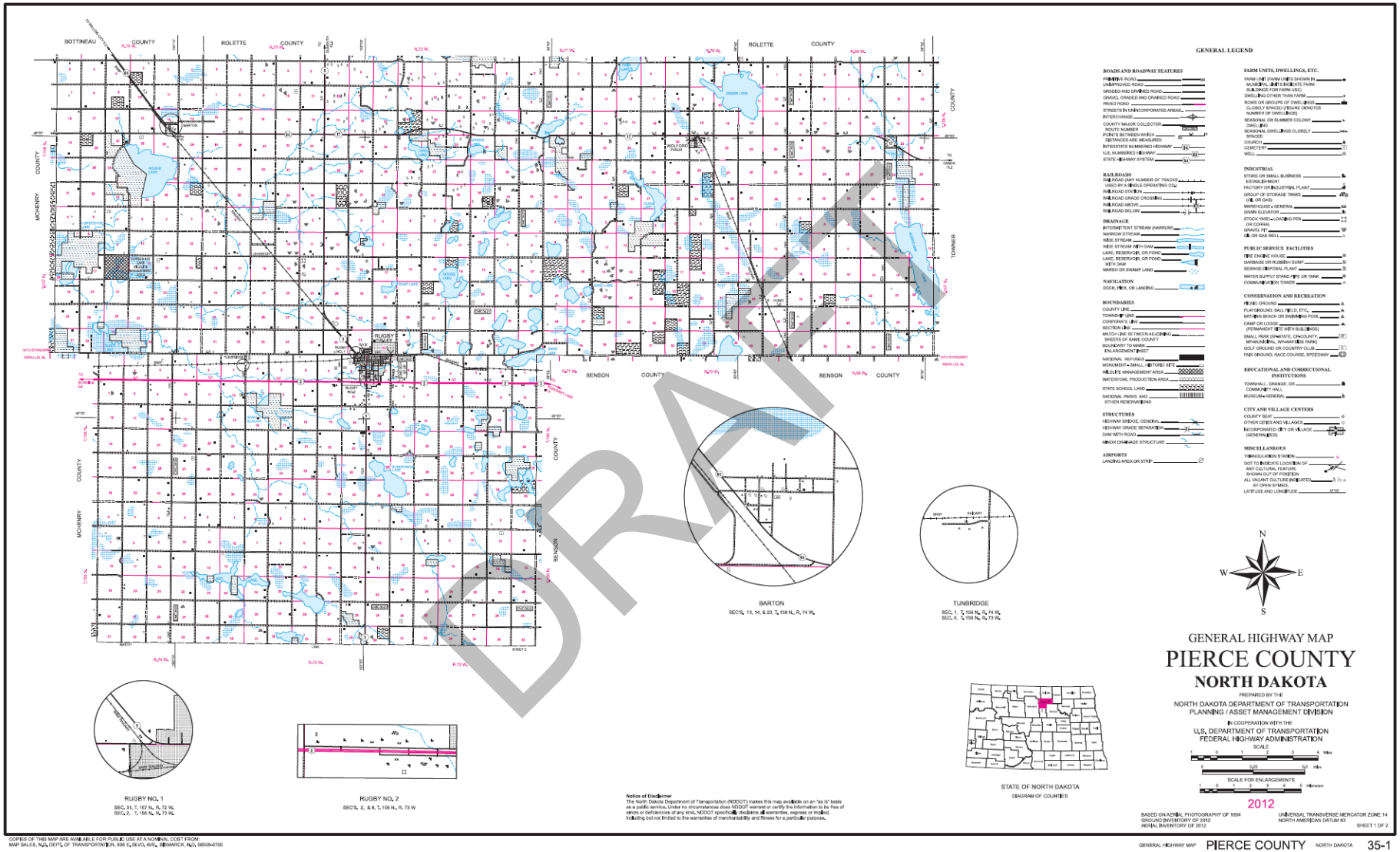
9. Maps

Maps are visual illustrations that assist in mitigation by providing details of the inventory of the counties, where critical facilities and infrastructure are located, geographic coverage of emergency services, and each incorporated jurisdiction. Maps are drawings, depictions, and illustrations and are commonly referred to as figures in planning documents.

Maps of Pierce County, North Dakota, and incorporated jurisdictions are as follows:

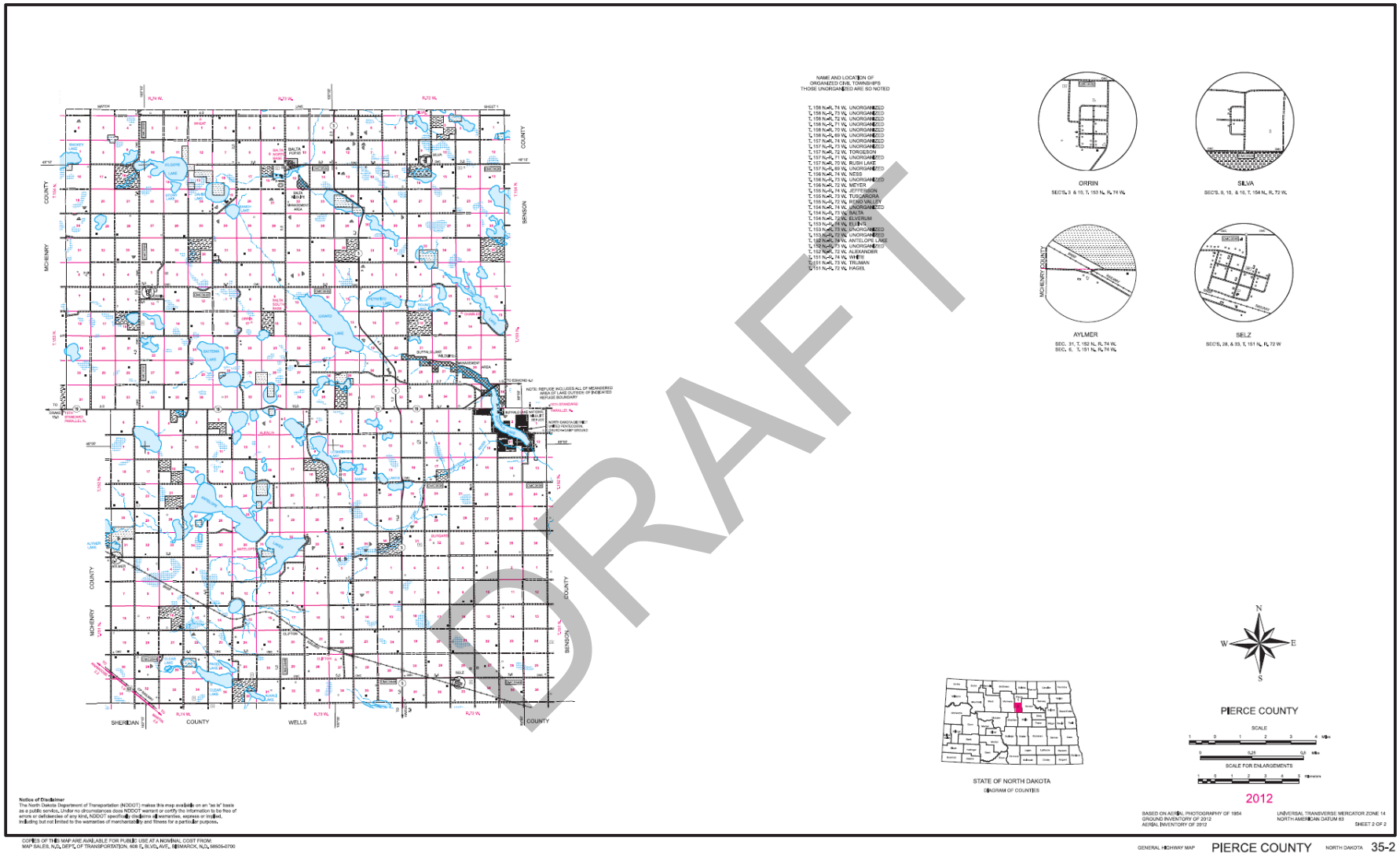
- 9.1 – General Highway Map – Pierce County North
- 9.2 – General Highway Map – Pierce County South
- 9.3 – 2007 Functional Classification Map – Pierce County North
- 9.4 – 2007 Functional Classification Map – Pierce County South
- 9.5 – Pierce County, North Dakota, Watershed Map
- 9.6 – Rugby Municipal Airport, Rugby, North Dakota

Figure 9.1 – General Highway Map – Pierce County North



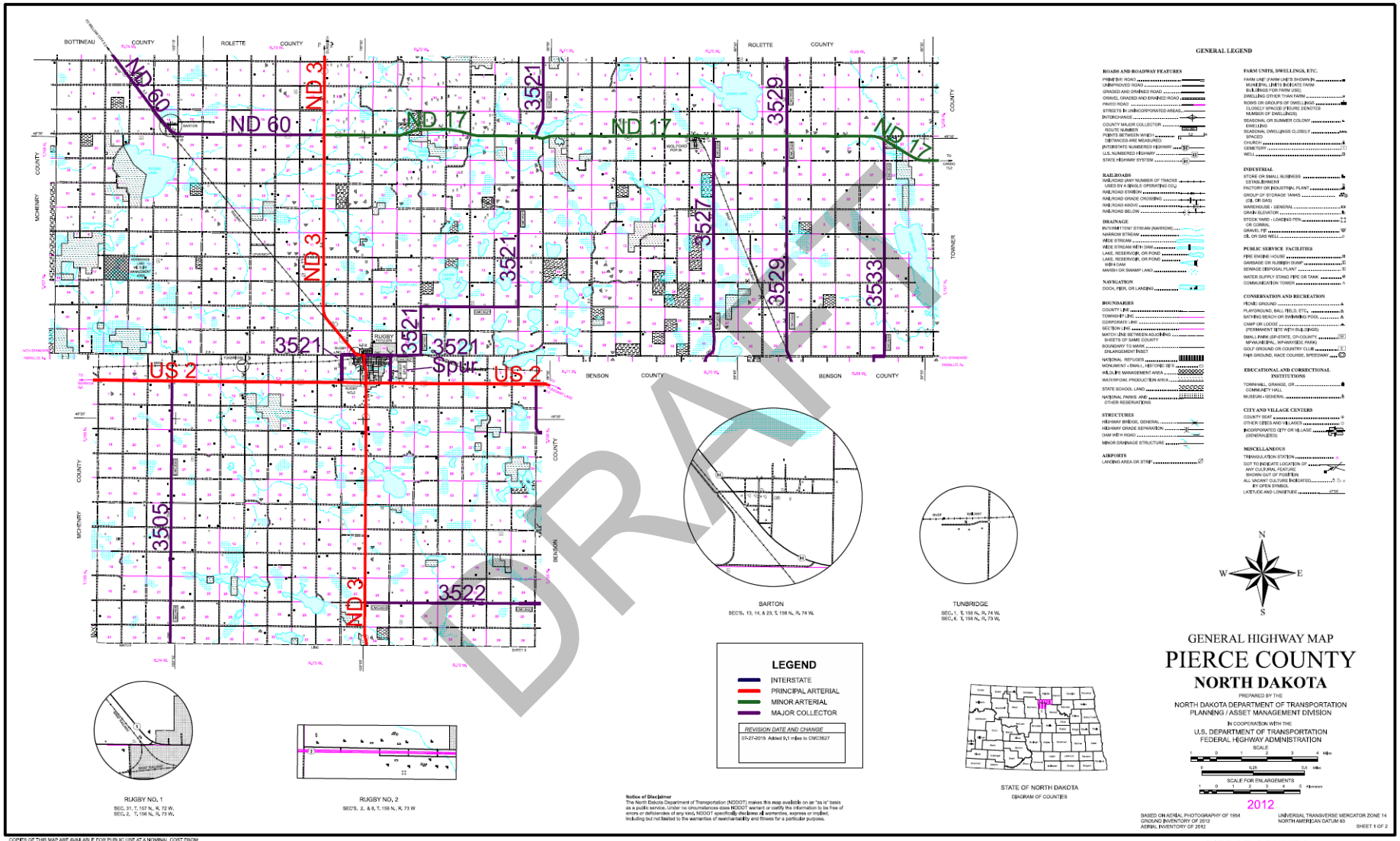
Source: N.D. Dept. of Transportation

Figure 9.2 – General Highway Map – Pierce County South



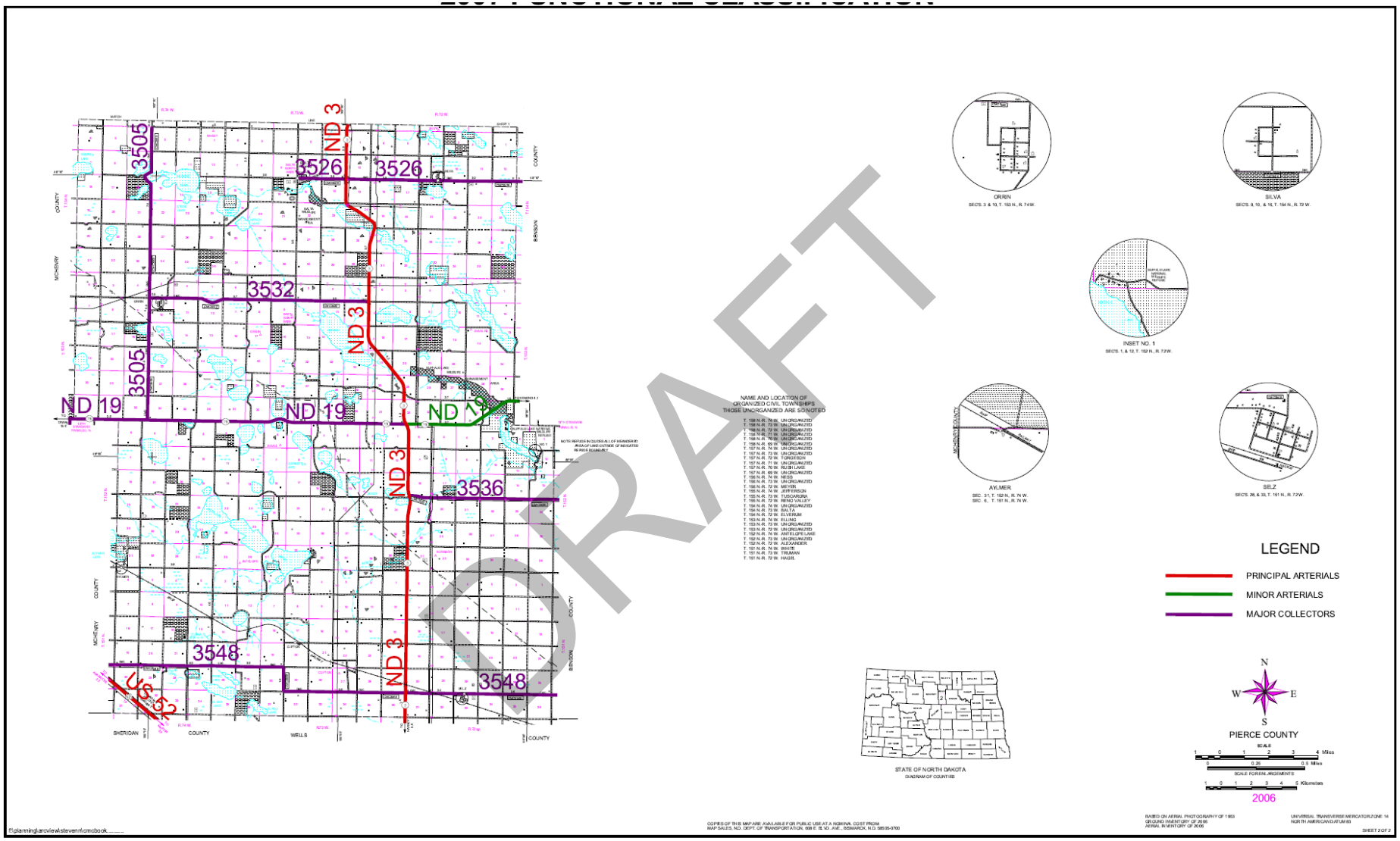
Source: N.D. Dept. of Transportation

Figure 9.3 – 2007 Functional Classification Map – Pierce County North



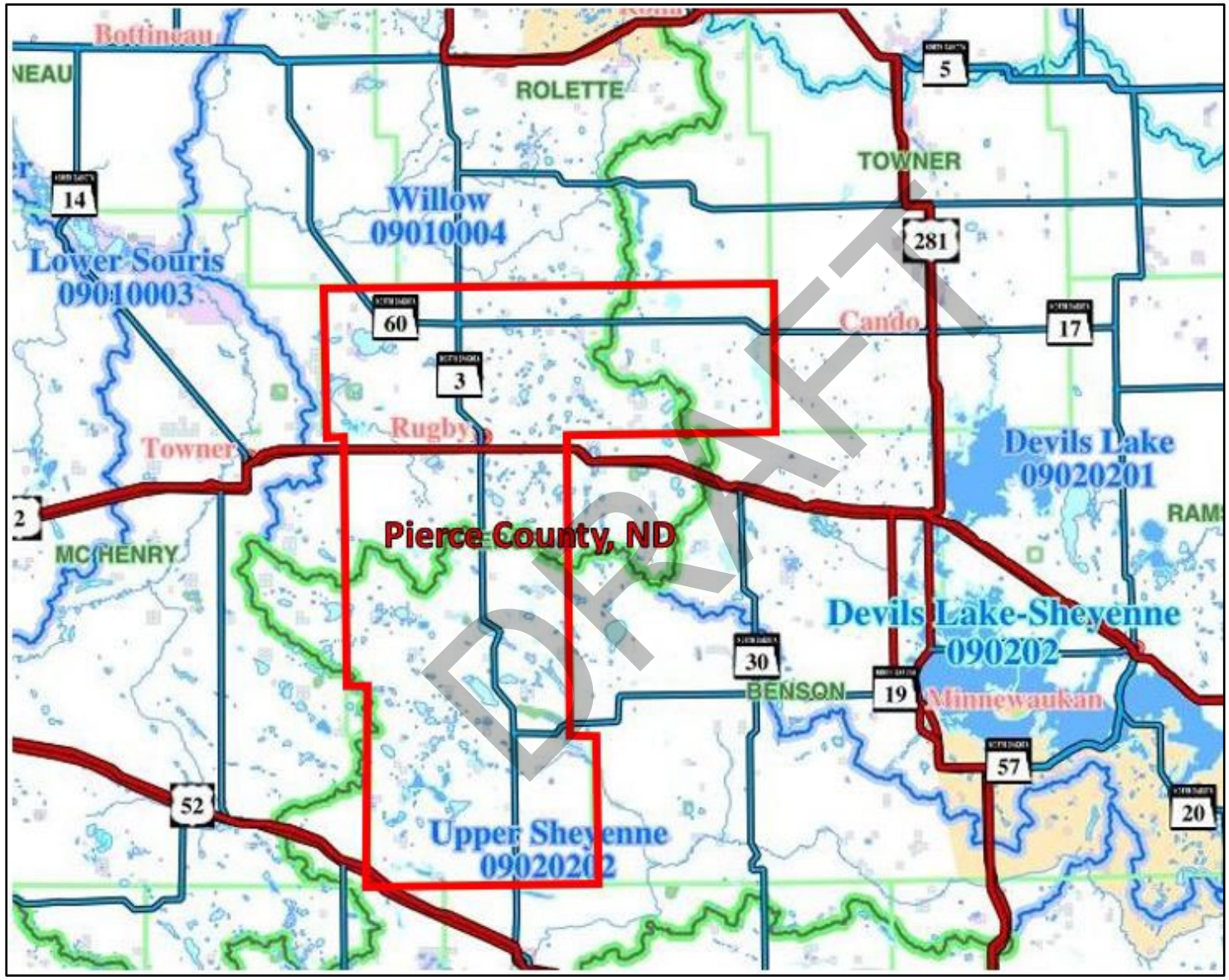
Source: N.D. Dept. of Transportation

Figure 9.4 – 2007 Functional Classification Map – Pierce County South



Source: N.D. Dept. of Transportation

Figure 9.5 – Pierce County, North Dakota, Watersheds



Source(s): N.D. State Water Commission, U.S. Geological Survey

Figure 9.6 – Rugby Municipal Airport, Rugby, North Dakota

Source: Google Earth

10. Plan Maintenance

Mitigation planning for Pierce County, North Dakota is continuous. An important aspect of any usable plan is the maintenance and upkeep of the document. At any given time, planning, risk analysis, updating the risk assessment, research, coordinating, disaster response or other activity occurs. Thus, ensuring the plan will remain useful is critical.

Plan Monitoring

Pierce County, North Dakota's emergency manager and the LEPC are responsible for monitoring, evaluating, and updating the plan. All disaster and emergency incidents will be evaluated for general and specific hazard history and mitigation strategy recommendations to be added to the plan.

The plan will be updated and submitted to the N.D. Dept. of Emergency Services and FEMA within five years to assure the county maintains a FEMA-approved multi-jurisdictional multi-hazard mitigation plan.

Plan Evaluation

At its February meeting each year, each county commission, city council/commission and emergency response entity will review actions taken on mitigation projects and losses due to hazards in the past year.

- **A Mitigation Action Progress Report Form for reporting of annual mitigation actions taken and losses due to hazards is included in this chapter for Pierce County.**
- **The annual reports are due back to the emergency manager by March 15.**

The comments about the plan, project implementation, and information will be shared through each jurisdiction's minutes, and these minutes will be sent to county emergency management. The emergency manager will share this information with the Pierce County Commission. Emergency services and the public health department will be encouraged to inform emergency management of incidents constantly and consistently as they occur so that the data can be immediately considered to better understand the risks in the county and enable accurate updating of hazard information to include in hazard mitigation efforts.

Public Involvement

The public will be informed of the opportunity to comment on plan updates through the advertising of the jurisdiction meetings. The plan will be available to the public at the Pierce County Courthouse and Rugby City Hall. During plan updates, the plan will also be on the emergency management website for Pierce County. The public is encouraged to share input on the plan.

10.1 Pierce County, North Dakota, Mitigation Action Progress Report Form

The Mitigation Action Progress Report Form is part of the annual review of hazard impacts, mitigation projects and reporting of data to the emergency manager. Please complete to maintain the mitigation plan for Pierce County. Include date and location of incident(s), and photographs or other documentation. **Additional information can be included and attached to this form on a separate page.**

Return to: Pierce County Emergency Manager
240 2nd St SE, Suite 9
Rugby, ND 58368
(701) 776-5868 Ext. 2003
pierceem@nd.gov

Due: March 15

List injuries or property losses due to hazards in past year:

List new vulnerable areas that need to be addressed:

Identify what actions on jurisdiction's mitigation projects were taken in past year:

If no action, why:

First & Last Name	
Title & Jurisdiction Represented	
Date (MM/DD/YYYY)	
Contact Info (Email & Phone)	