

Wind River Reservation Annex

Region 5
Hazard Mitigation Plan
2023-2028

1 Mitigation Planning and Wind River Reservation Planning Team

The Wind River Indian Reservation Annex to the Region 5 Hazard Mitigation Plan was developed in accordance with the requirements of the Federal Emergency Management Agency (FEMA) codified by Section 322 of the Stafford Act. This annex is also prepared in accordance with the implementing regulations for Tribal plans in 44 CFR 201.7 as well as the Tribal Mitigation Plan Review Guide dated January 2017. This plan is a joint effort between the Eastern Shoshone Tribe and the Northern Arapaho Tribe. A joint Hazard Mitigation Planning Committee (HMPC) was formed during the 2022/2023 development of this annex to the Region 5 Hazard Mitigation Plan. The process was led by the emergency management coordinators for each Tribe with assistance from a consulting firm and supported by the HMPC. The goal of this plan is to assist the Tribes in reducing the human and economic costs of hazards.

The following table lists the Tribal agencies and stakeholders in the development of this annex. More details on the planning process followed and how the public and stakeholders were involved can be referenced in Chapter 3 of the Region 5 Hazard Mitigation Plan and Appendix C.

Table 1-1 Wind River Reservation Hazard Mitigation Planning Committee

Jurisdictions and Stakeholders	Representatives
Eastern Shoshone Tribe	Tribal Public Health Resource Coordinator
	Eastern Shoshone Housing Authority
	Eastern Shoshone Tribal Health
	Tribal Water Engineer
	Tribal Planning
Northern Arapaho Tribe	Fort Washakie School/Fire
	Tribal EMA Coordinator
	Northern Arapaho Tribal Housing
	Northern Arapaho CHR
	Northern Arapaho Utilities
	Northern Arapaho Public Relations
	Northern Arapaho Tribe Historic Preservation Office
Facilities and Maintenance	
Environmental	
Joint Tribal	Eastern Shoshone and Northern Arapaho Department of Transportation, Shoshone Tribal Roads Department
Joint Tribal	Wind River Inter-Tribal Oil and Gas Commission
Federal Agencies Stakeholders	Bureau of Indian Affairs – Wind River Agency Law Enforcement
	BIA- Wind River Police Department
	Bureau of Land Management
	Indian Health Services (HIS)
	FEMA Region VIII
State or Local Agencies Stakeholders	Wyoming State Forestry Division
	Wyoming Highway Patrol
	Wyoming Office of Homeland Security
	Fremont County - Public Health and EMA

Jurisdictions and Stakeholders	Representatives
	Hot Springs County EMA
	Eastern Shoshone and Northern Arapaho Department of Transportation
Private Industry/Stakeholders	EST Construction/Equipment

1.1 Background on Hazard Mitigation Planning in the Wind River Reservation

On July 1, 2004, both the Eastern Shoshone Business Council and the Northern Arapaho Business Council signed resolutions to officially recognize the creation of their respective Emergency Management Committees via Resolution Number 2004-8777. These committees provided input to a 2006 Multi-Hazard Mitigation Plan, with assistance from a consultant. It was the first document of its type to exist for the Wind River Reservation but was never approved by FEMA nor formally adopted by either Tribe. The 2017 HMP was considered a new plan for the Reservation and was a starting point for the development of this annex. The 2022 Region 5 Hazard Mitigation Plan is considered a plan update.

1.2 Assurances – Wind River Reservation

Tribal Requirement §201.7(c)(6): The plan must include assurances that the Indian Tribal government will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with 44 CFR 13.11(c). The Indian Tribal government will amend its plan whenever necessary to reflect changes in tribal or Federal laws and statutes as required in 44 CFR 13.11(d).

This plan is prepared to comply with the requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 (as amended by the DMA); all pertinent presidential directives associated with the U.S. Department of Homeland Security and FEMA; all aspects of 44 CFR pertaining to hazard mitigation planning and grants pertaining to the mitigation of adverse effects of disasters (natural, manmade, and other); interim final rules and final rules pertaining to hazard mitigation planning and grants, as described above; all planning criteria issued by FEMA; and all Office of Management and Budget circulars and other federal government documents, guidelines, and rules.

The Northern Arapaho and Eastern Shoshone tribes assure that they will continue to comply with all applicable Federal statutes and regulations in effect with respect to the periods for which they receive grant funding, in compliance with 44 CFR 13.11(c). The tribes will amend this plan whenever necessary to reflect changes in Tribal or Federal laws and statutes as required in 44 CFR 13.11(d).

2 Geography and Climate

Located in west central Wyoming, the Wind River Reservation is the only Indian Reservation in the State of Wyoming. Named after the scenic Wind River Canyon the Wind River Reservation is geographically the seventh largest Reservation in the nation, encompassing 3,500 square miles and 2,268,000 acres. Most of the Reservation is in Fremont County, Wyoming; however, the mostly unpopulated northeastern section is in Hot Springs County, Wyoming. The planning area includes the entirety of the Reservation in both counties. The Reservation population lives amongst the unincorporated communities of Arapaho/St Stephens, Crowheart, Ethete, and Fort Washakie and other dispersed areas.

Portions of the Reservation’s terrain are rugged and mountainous, while other areas are forested or suitable for grazing. The Reservation is in the Greater Yellowstone Ecosystem where high desert plain rises into the

Rocky Mountains. The Wind River Indian Reservation occupies two physiographic provinces: the Wyoming Basin and the Middle Rocky Mountains. The Wind River Basin and Wind River Range belong to the Wyoming Basin Physiographic Province. The Owl Creek and Washakie Ranges on the northwest border belong to the Middle Rocky Mountain Physiographic Province.

Native vegetation can be described as trees, groundcover, wetland plants, and under story plants indigenous to the region. Native vegetation is best suited to protect the soil, provide habitat for wildlife, and stabilize the ecosystems. Riparian areas on the Reservation are populated with cottonwood trees, willows, and grasses. Rangeland areas of the Reservation predominantly contain grasses, grass-like plants, sagebrush, other shrubs, and forbs. The Owl Creek and Wind River Range are forested, up to 10,300 feet.

The Wind River Range, located in the west, contains many alpine lakes and steep, deep canyons. The Reservation contains 265 lakes and reservoirs, with more than 1,200 surface acres of water. There are also more than 1,209 miles of rivers and streams on the Reservation. Rivers on the Reservation include the Big Wind River, the Little Wind River, and the Popo Agie River. The Popo Agie River drains into the Little Wind River at St. Stephens. Many reservoirs and lakes are located on the Reservation, including Anchor Lake, Bull Lake, Washakie Reservoir, Pilot Butte Reservoir, Ray Lake, Ocean Lake, and the Boysen Reservoir.

The Reservation forms the headwaters of two major river drainages: The Snake, which flows into the Columbia River and out to the Pacific Ocean; the Wind River which becomes the Big Horn River, which flows north to become the Missouri River, and then the Mississippi River.

The Wind River Indian Reservation is in a semi-arid climate, or Middle-latitude Desert. Much of the area is arid, due to being a great distance from a source of moisture. The prevailing winds are from the west. Air masses from the Pacific Ocean are depleted of most of their moisture by the time they reach Wyoming. The Gulf of Mexico can, under certain conditions, be a source of moisture for the area. Occasionally, a cyclonic disturbance from the west can “stall out” just east of the Rocky Mountain Front over the High Plains. If the cyclonic depression is large enough, moisture can be funneled up the mountains usually falling as snow; this is called an “up slope condition.”

Temperature extremes range from over 100 degrees in the summer, to as low as –40 degrees in the winter. The annual mean temperature is 43.5 degrees, with a mean of 18 degrees in January and a mean of 72 degrees in July. The sun shines about 70 percent of possible hours. Annual precipitation ranges from as little as 6 inches to as much as 20 inches. However, most areas range between 8 to 12 inches of precipitation.

The climate in most settled areas of the Reservation is one of Wyoming’s most pleasant. The summer months are mild and winter months are generally free from the windy conditions that effect most of Wyoming. The area is also low in humidity.

3 Population Trends

The 2020 U.S. Census Bureau reported a total of 26,742 people living on the Wind River Reservation. However, many are not enrolled members of either Tribe. According to the U.S. Department of the Interior, there are 3,900 Eastern Shoshone and 8,600 Northern Arapaho tribal members enrolled on the Reservation. Most members of the Eastern Shoshone Tribe live on the western section of the Wind River Indian Reservation, mostly in Fort Washakie, Crowheart-Burriss, and surrounding areas. Most members of the Northern Arapaho Tribe live in the eastern end of the Reservation, mostly in Ethete and Arapaho. Members of both Tribes live in the Mill Creek-Boulder Flat area, near Lander.

Table 3-1 Population Estimates for Communities 2022 – World Population Review

Community	Population	Location
Fort Washakie	1,628	Confluence of North and South Forks of the Little Wind River on the South-central extent of the Reservation
Crowheart	116	Wind River Valley, on the west central extent of the Reservation
Ethete	1,361	5 miles northeast of Forth Washakie near the confluence of Sage Creek and Trout Creek
Arapaho	1,604	Confluence of the Little Wind River and Popo Agie River, approximately 5 miles southwest of Riverton on the southeastern extent of the Reservation
17 Mile	<100	Along the Little Wind River, west of Arapaho, near the intersection of 17 Mile Road and Ethete Road. South central extent of the Reservation
St. Stephens	<100	4 miles south of Riverton on the Little Wind River, in the southeastern extent of the Reservation
East and West Boulder Flats	458	Between Plunkett Road and Milford along Highway 28 north of Lander
Johnstown	223	Johnstown Valley along the Wind River, approximately 15 miles northwest of Riverton
Red Rocks	<100	Confluence of Red Creek and Wind River, in the northwest corner of the Reservation along highway 26/287
Arapaho Ranch	<100	Surrounding Arapaho Ranch and cattle operation, accessed by highway 170

Table 3-2 Wind River Reservation Demographic Profile

Wind River Reservation and Off-Reservation Trust Land	
Population	
Population Estimates, 2016-2020	26,742
Population, Percent Change- Census 2010 to July 1, 2020	0.95%
Population, Census, April 1, 2010	26,490
Age and Sex	
Persons Under 5 Years, 2020	2,088
Persons Under 18 Years, 2020	7,440
Persons 65 Years and Over, 2020	4,329
Female Persons, 2020	13,131
Race and Hispanic Origin	
White Alone, 2020	17,002
Black or African American Alone,	92
American Indian and Alaska Native Alone	7,695
Asian Alone	69
Native Hawaiian and Other Pacific Islander Alone	26
Two or More Races	1,550
Hispanic or Latino	2,535
Education	

Wind River Reservation and Off-Reservation Trust Land	
High School Graduate or Higher, Persons Age 25 Years+	5,391
Bachelor's Degree or Higher, Persons Age 25 Years+	2,111

Source: 2016-2020 American Community Survey 5-Year Estimates <https://www.census.gov/tribal/>

4 Land Use and Development

Land ownership on the Reservation is divided into trust lands, allotted lands, fee lands, federal lands, deeded lands, and leased lands. Table 4-1 describes the distribution of land based on land classification, ownership, and area. Figure 1 displays location of various land types in the reservation.

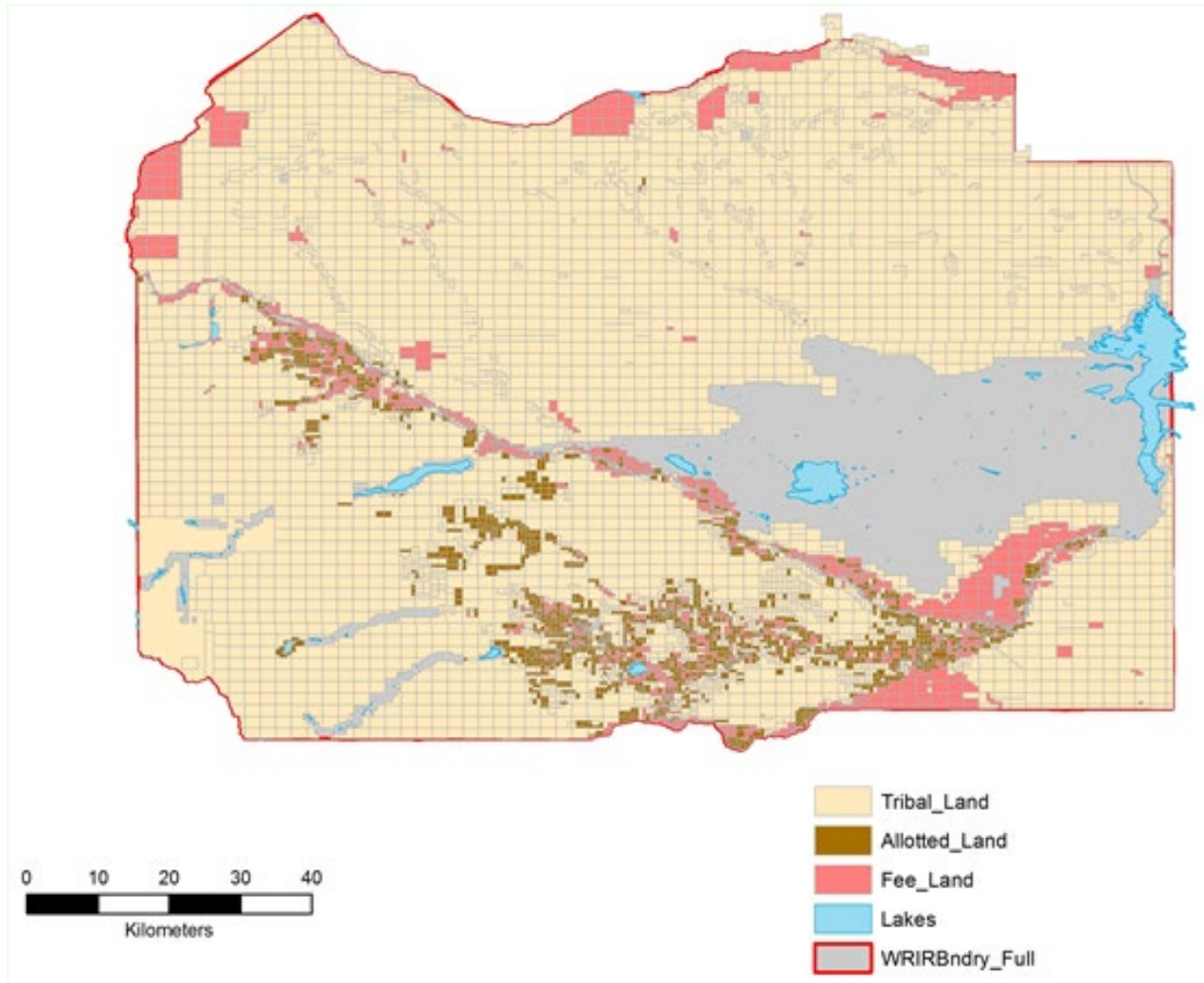
Table 4-1 Wind River Reservation Land Ownership

Type of Land	Owner	Reservation Coverage
Trust Lands	Tribes	80.3%
	Tribal Trust or Tribal Allotted Land	
Fee Lands	Non-Tribe	19.7%
	Fee Land or Privately Owned Land	

Source: BIA, Office of Realty, Ft. Washakie, WY (data (n.d))

Fremont County has information on the Fee Land. You can go to their website for more information and map.

Figure 1 Land Ownership on the Wind River Reservation



Source: BIA, Office of Realty, Ft. Washakie, WY (data (n.d)). (Pevar, 2012). [Land ownership on the Wind River Indian Reservation \(data \(n.d.\) from... | Download Scientific Diagram \(researchgate.net\)](#)

Over the next 20 years, nine new subdivisions will be built throughout the Reservation. Two new subdivisions will be built in Fort Washakie: one south of the Trout Creek subdivision; and one east of Shipton. Three new subdivisions will be built in Ethete. One will be built north of the Little Wind River, west side of the Blue-Sky Highway; one will be built south of St. Michael's Mission; and one will be built north of the Northern Arapaho Tribal complex. One planned subdivision will be built in Arapaho, which will be located adjacent to the Beaver Creek subdivision. Three new subdivisions will be built in Riverton. One will be located southwest of Airport Road subdivision; one will be located northeast of Airport Road subdivision; and one will be located northwest of Airport Road subdivision.

In addition to subdivisions, the Land Use Planning windshield survey showed that 102 new individual homes were built between 1997 and 2002. By 2020 there could be as many as 408 new individual housing units built on the Reservation.

Still more housing demands will exist, particularly where trust land is limited. The Tribes may consider transferring Tribal allotted land to trust land as well as purchasing fee land. Two future residential areas

have been identified in Boulder Flats: one area is west and adjacent to the Boulder Flats scattered housing, and one area is located south and adjacent to the Boulder Flats scattered housing. One residential area has also been targeted for development in Hudson, on the south side of U.S. Highway 789.

The Wind River Indian Reservation 20-Year Land Use Development Plan suggests that 21 new commercial areas will be developed, totaling 1,557,17 acres. Future planned commercial properties are categorized as: recreation commercial, corridor commercial, local commercial, and business parks.

There are 16 planned public areas that will be developed in the next several years, totaling 295.91 acres. Nine of the 16 planned areas are on Tribal areas. Several new secondary schools will be built in School Districts #14, #21 and #38. Additionally, two higher education facilities are planned: the expansion of Wind River Tribal College from a two-year to four-year institution.

5 Economy

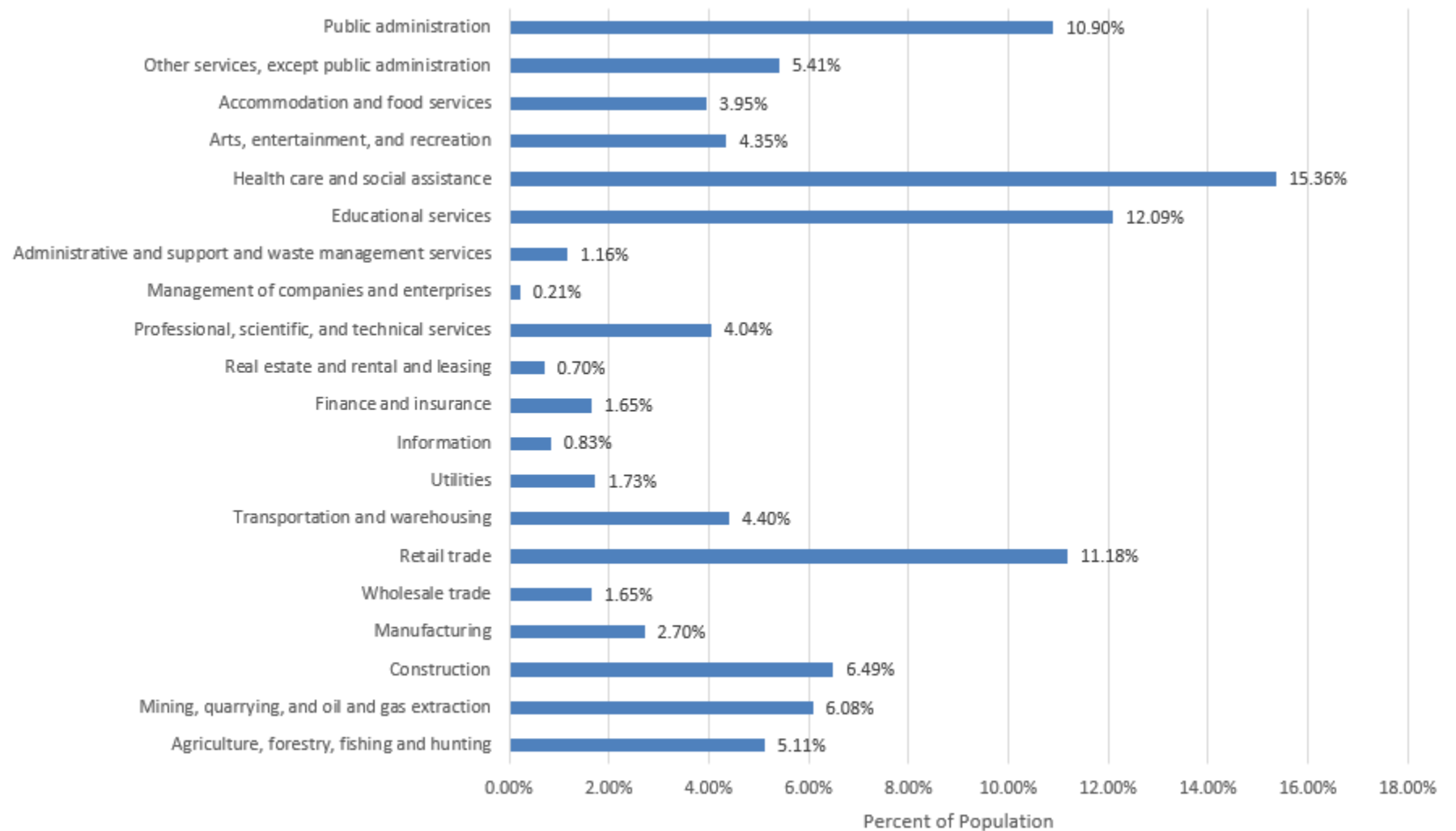
The base economy on the Reservation revolves around the recovery of oil and gas. Each Tribe receives 50 percent of the royalties derived from oil and gas production, mineral leases, timber sales and leases, and grazing leases on tribally owned lands. Historically, the Tribes have had third party developers recover the natural resources from their land, paying the Tribe a royalty for these services, but most of the proceeds from these resources went off-reservation and did not directly benefit the tribal membership. In 2019, the Tribe made the decision to begin the process of taking over these operations and fully exercising their sovereign ability to develop their own energy resources. At this time, they created the Wind River Energy Commission (WREC) for the implementation of energy strategies to meet the goals established by the Tribes and to convert all natural resources into tribal assets, for the benefit of the tribal members.

According to 2016-2020 American Community Survey estimates, median family income is \$65,305 (2020 dollars). On the Wind River Indian Reservation, the percentage of people living below the Poverty Threshold is 16.8 percent, and the unemployment rate is 5.4%.

There are three casinos located on the Wind River Reservation; Little Wind Casino, Shoshone Rose Casino & Hotel, and the Wind River Hotel & Casino. The Northern Arapaho Tribe uses gaming proceeds to pay for Tribal programs and Tribal operations.

The 2016-2020 American Community Survey reports employment by industry type on the Wind River Reservation. The distribution of employment by industry can be seen in Figure 2. On the Wind River Reservation, the greatest industry employer is health care and social assistance (15.36%) followed by educational services (12.09%) and retail trade (11.18%).

Figure 2 Employment by Industry Type on the Wind River Reservation 2016-2020



Source: American Community Survey 5-year Estimates, 2016-2020

There are two industrial factories occupying 38.34 acres: Peak Sulfur, Inc. and Huish Detergents, Inc. Both factories are located on Goes In Lodge Road, fifteen miles northeast from 17 Mile Road. Together, these companies ship high-grade sulfuric acid for etching and cleaning of microcircuits.

A total of 15 mineral lease sites exist on the Reservation, occupying 43,404 acres. There are also 108 mineral extraction sites, occupying 4,843.43 acres.

There are 17 commercial sites scattered throughout the Reservation, occupying 51 acres. Crowheart has only one commercial site. Fort Washakie has three commercial sites, including a Tribal Service Station, a café, and a series of small stores including a grocery store. One commercial site exists in Ethete and it contains three facilities. In Fort Washakie there are 13 commercial businesses on nine commercial sites. Ethete has two commercial sites and three commercial business facilities. Four commercial sites are located in Arapaho. Scattered throughout the Reservation are many home-based businesses, including two in Crowheart, ten in Fort Washakie, four in Ethete, five in Arapaho, two in Kinnear, five in Lander, and six in Riverton.

Four areas have been identified for bringing into agricultural production. The total acreage for these lands is 49,065 acres, which will increase the present agricultural production land by 81 percent. The North Crowheart Unit will be 38,773 acres; the Big Horn Flats Unit will add 2,670 acres; the Arapaho Unit will add 3,808 acres; and the Riverton East Unit will add 3,814 acres. In 1989, the U.S. Supreme Court confirmed the Big Horn Adjudication Decree where the Wind River Reservation rights are 500,00 acre feet of water per year. Current B.I.A. irrigation systems need to be finished, rehabbed, with increased maintenance & operations to provide adequate service for existing and future agricultural lands.

Twelve areas totaling 28,454 acres have been identified for future light industrial use; each is located away from Reservation communities. Several tracts will be divided to attract outside businesses, which will supplement Tribal revenue. Tribes objective is to provide land for Tribal or individual businesses interests. Planned industrial areas include one each at Riverton East and the Riverton Airport. Nine mineral extraction sites have been identified totaling 12,947.87 acres. Sites include two sand and gravel units, small gypsum and bentonite sites in the Owl Creek Mountains, two travertine mineral sites in Crowheart, and a series of coal beds from which methane can be extracted.

6 Hazard Identification and Risk Assessment

6.1 Identified Hazards

The 2017 hazards list was compared with the hazards list found in the State of Wyoming’s hazard mitigation plan (updated in 2020). The following table notes the summary of significance for each community within the Reservation based on a combination of geographic extent, potential magnitude/severity and probability as defined below. The list of hazards did not change from 2017, but a change in priority level occurred for Extreme Cold (from Low to Medium) and Landslide (from Medium to Low).

Table 6-1 Overall Hazard Significance* Summary Table

Hazard	Reservation Overall	Arapaho/St Stephens	Crowheart	Ethete	Fort Washakie
Avalanche	Low	Low	Low	Low	Low
Dam Failure	Low	Low/Medium	Low	Low/Medium	Low/Medium
Drought	High	High	High	High	High

Hazard	Reservation Overall	Arapaho/St Stephens	Crowheart	Ethete	Fort Washakie
Earthquake	Medium	Low/Medium	Medium	Medium	Medium
Expansive Soils	Low	Low	Low	Low	Low
Extreme Cold	Medium	Medium	Medium	Medium	Medium
Flood	High	High	High	High	High
Hail	High	High	High	High	High
High Winds	High	Medium	Medium	Medium	Medium
Hazardous Materials	Medium	Medium	Medium	Medium	Medium
Landslide	Low	Low	Low	Low	Low
Lightning	High	High	High	High	High
Mine Subsidence	Low	Low	Low	Low	Low
Tornado	Low	Medium/Low	Medium/Low	Medium/Low	Medium/Low
Wildfire	High	High	High	High	High
Severe Winter Weather	High	High	High	High	High

*Significance based on a combination of Geographic Extent, Potential Magnitude/Severity and Probability as defined below.

Geographic Extent

Negligible: Less than 10 percent of planning area or isolated single-point occurrences
Limited: 10 to 25 percent of the planning area or limited single-point occurrences
Significant: 25 to 75 percent of planning area or frequent single-point occurrences
Extensive: 75 to 100 percent of planning area or consistent single-point occurrences

Potential Magnitude/Severity

Negligible: Less than 10 percent of property is severely damaged, facilities and services are unavailable for less than 24 hours, injuries and illnesses are treatable with first aid or within the response capability of the jurisdiction.
Limited: 10 to 25 percent of property is severely damaged, facilities and services are unavailable between 1 and 7 days, injuries and illnesses require sophisticated medical support that does not strain the response capability of the jurisdiction, or results in very few permanent disabilities.
Critical: 25 to 50 percent of property is severely damaged, facilities and services are unavailable or severely hindered for 1 to 2 weeks, injuries and illnesses overwhelm medical support for a brief period of time, or result in many permanent disabilities and a few deaths.
Catastrophic: More than 50 percent of property is severely damaged, facilities and services are unavailable or hindered for more than 2 weeks, the medical response system is overwhelmed for an extended period of time or many deaths occur.

Probability of Future Occurrences

Unlikely: Less than 1 percent probability of occurrence in the next year, or has a recurrence interval of greater than every 100 years.
Occasional: Between a 1 and 10 percent probability of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Likely: Between 10 and 90 percent probability of occurrence in the next year, or has a recurrence interval of 1 to 10 years
Highly Likely: Between 90 and 100 percent probability of occurrence in the next year, or has a recurrence interval of less than 1 year.

Overall Significance

Low: Two or more of the criteria fall in the lower classifications or the event has a minimal impact on the planning area. This rating is also sometimes used for hazards with a minimal or unknown record of occurrences/impacts or for hazards with minimal mitigation potential.
Medium: The criteria fall mostly in the middle ranges of classifications and the event’s impacts on the planning area are noticeable but not devastating. This rating is also sometimes utilized for hazards with a high impact rating but an extremely low occurrence rating.
High: The criteria consistently fall along the high ranges of the classification and the event exerts significant and frequent impacts on the planning area. This rating is also sometimes utilized for hazards with a high psychological impact or for hazards that the jurisdiction identifies as particularly relevant.

The 2006 draft plan also ranks the various communities in terms of risk to individual hazards and identifies which areas are considered the highest risk. The results of that analysis are displayed in Table 6-2.

Table 6-2 Risk by Hazard and Community

Hazard	Risk Rank
Highest flood risk	<ol style="list-style-type: none"> 1. Arapaho, including St. Stephens area 2. Fort Washakie 3. Ethete 4. Crowheart
Highest risk for dam failure	<ol style="list-style-type: none"> 1. Arapaho, including St. Stephens area 2. Ethete Fort Washakie 3. Crowheart
Highest earthquake risk	<ol style="list-style-type: none"> 1. Most of the more heavily populated areas have a higher risk of earthquake, including Fort Washakie, Ethete, Crowheart, 17 Mile, and Boulder Flats. 2. The communities of Arapaho, St. Stephens, and Johnstown have a slightly lower threat. 3. Arapaho Ranch and other settlement in the northeaster tier of the Wind River Reservation have even less risk.
Highest wildfire risk	<ol style="list-style-type: none"> 1. Fort Washakie, Ethete, 17 Mile, Arapaho, and Boulder Flats all are likely to have a catastrophic wildfire. 2. Crowheart, St. Stephens, Johnstown, Red Rocks, and Arapaho Ranch all have a possible chance to have a catastrophic wildfire.
Highest overall hazard risk	<ol style="list-style-type: none"> 1. Fort Washakie 2. Arapaho, including St. Stephens 3. Ethete 4. Crowheart

Source: Wind River Indian Reservation Hazard Mitigation Plan, 2006

6.2 Building Inventory and Assets

In addition to people, there are structures, critical facilities and infrastructure, and other important assets on the Wind River Reservation that are potentially exposed to hazards identified in this plan. Table 6-3 summarizes the property inventory for the Reservation, based on improvement value (i.e., structures) and includes the building count and value grouped by parcel type. This represents an assessment of the overall property exposed within the Reservation.

Assets inventoried to determine vulnerability include people, structures, critical facilities, and natural, historic, or cultural resources. For the regional planning process, locally available GIS databases were utilized. Parcel and assessor data was obtained through the Fremont County website which include an on-line map and data for download. This information provided the basis for building exposure and property types. The focus of the analysis was on "improved" or developed parcels. These parcels were identified based on an improvement value greater than zero. Abstract Codes were used to identify occupancy type as shown in the following table, which includes summations of total improved value for the various property types.

As presented in Table 6-3, total building exposure within the Wind River Reservation is over \$765 million with \$468 million in improved value and \$296 million of content value (estimated) at-risk.

Table 6-3 Wind River Reservation Building Inventory and Value by Property Type

Property Type	Parcel Count	Building Count	Improved Value	Est. Content Value	Total Exposure
Agricultural	670	945	\$96,676,413	\$96,676,413	\$193,352,827
Commercial	138	279	\$25,327,201	\$25,327,201	\$50,654,402
Exempt	92	2,465	\$1,420,824	\$1,420,824	\$2,841,648
Industrial	5	6	\$950,165	\$1,425,247	\$2,375,412
Residential	2,789	3,194	\$343,947,605	\$171,973,803	\$515,921,408
Total	3,694	6,889	\$468,322,209	\$296,823,488	\$765,145,697

Source: Fremont County Assessor

Of the \$765 million of exposure, residential buildings represent the largest amount of value (over \$515 million), agricultural lands represent close to \$193 million of exposure, followed by commercial (\$51 million), exempt (\$2.8million), and industrial (\$2.2 million).

Table 6-4 and Table 6-5 provide more specific information regarding the property inventory for each Tribe and includes the building value and contents value.

Table 6-4 Eastern Shoshone Tribal Properties

Facility	Bldg. Value	Content/Equipment Value
Crowheart Community Center	\$724,000	\$71,485
Learning Center	\$71,500	
Fire Station	\$51,500	\$3,800
Senior Citizen Center	\$384,000	
Rocky Mountain Hall	\$459,000	\$123,390
Joint Tribal Complex (Contents)		\$153,600
Food Distribution Warehouse	\$201,000	\$72,800
Construction Buildings	\$63,500	\$24,995
Property & Supply Buildings	\$245,000	\$18,800
Tribal Service Station	\$206,000	\$50,565
Headstart Office and School	\$355,000	\$6,600
Cultural Center	\$12,000	\$17,600
Shoshone Farms	\$33,000	\$215,100
New Tribal Administration	\$1,087,000	\$184,900
Social Services Building	\$422,000	\$103,100
Social Services Building (WIC)	\$94,500	
Tribal Health Buildings changed	\$76,000	\$106,700
Roads Office Buildings	\$77,000	\$1,638,600
Utility Buildings	\$57,500	\$1,069,000
Plunge Hot Springs	\$243,000	\$1,100
Water Treatment Buildings	\$109,000	\$4,900
Billie Wright Ranch	\$39,500	
Drisco Place Ranch	\$55,000	\$2,200
North Wind Ranch Buildings	\$188,500	\$1,760
Brooks Ranch	\$5,200	
Early Childhood (Contents)		\$634,038
Dialysis Center (Contents)		\$139,200

Eastern Shoshone Tribal Health Buildings	Need appraisal	Need appraisal
Total	\$5,394,000	\$4,647,418

Table 6-5 Northern Arapaho Tribal Properties

Facility	Location	Insured Value	Bus. Prop
Tribal Complex	Ethete	\$1,300,000	\$275,000
Vehicle Garage	Ethete	\$165,000	
Blue Sky Hall	Ethete	\$770,000	\$22,000
Maintenance Shop	Ethete	\$27,500	\$16,000
Ethete Grocery Store	Ethete	\$275,000	\$110,000
Gas Pumps/Tanks	Ethete	\$71,500	
Radio Station	Ethete	\$385,000	\$264,000
Laundry	Ethete	\$110,000	\$44,000
Farm Office	Ethete	\$110,000	\$11,000
Office	Arapaho	\$60,000	\$5,000
Maintenance Shops	Arapaho	\$39,000	
Social Services Office	Arapaho	\$600,000	\$110,000
Great Plains Hall	Arapaho	\$495,000	\$25,000
Offices at GP Hall	Arapaho	\$200,000	\$10,000
Offices	Arapaho	\$500,000	\$86,000
Black Coal Sr. Cit. Cntr	Arapaho	\$500,000	\$45,000
Food Warehouse	Riverton	\$460,000	
Bingo Parlor/ Con. Store	Riverton	\$330,000	\$3,144,000
Garage	Ethete	\$8,000	
New Sr. Citizens Center	Ethete	\$330,000	\$55,000
Water Filtration Plant	Ethete	\$385,000	\$220,000
Eagles Wings Office	Ft. Washakie		\$10,000
Human Services Bldg	Ethete	\$880,000	\$85,000
Radio Station Bldg/Radio Tower	Ethete	\$59,400	
Texas Radio Tower	Thermopolis	\$27,500	
Veterans Building	Ethete	\$40,000	\$15,000
CHR Building	Ethete	\$74,000	\$75,000
CHR Building	Ethete	\$74,000	\$12,000
Ranch Office	Arapaho	\$27,000	
Eye Glass Program	Arapaho		\$11,000
New Commodities Bldg	Ethete	\$250,000	\$50,000
Pow Wow	Ethete	\$10,000	
Pow Wow	Arapaho	\$10,000	
Eagles Wings Office	Ethete		\$10,000
Wind River Children's & Family Program	Ethete	\$100,000	\$10,000
Wind River Children's & Family Program	Arapaho		\$10,000

Facility	Location	Insured Value	Bus. Prop
Wind River Family Healthcare	?	?	?
WIC Modular	Arapaho	\$74,000	\$55,000
Totals		\$8,754,900	\$4,785,000

6.2.1 Critical Facilities, Infrastructure, and Other Important Community Assets

A critical facility may be defined as one that is essential in providing utility or direction either during the response to an emergency or during the recovery operation. FEMA’s Hazus-MH loss estimation software uses the following three categories of critical assets. Essential facilities are those that if damaged would have devastating impacts on disaster response and/or recovery. High potential loss facilities are those that would have a high loss or impact on the community. Transportation and lifeline facilities are a third category of critical assets. Examples of each are provided below.

Essential Facilities	High Potential Loss Facilities	Transportation and Lifelines
<ul style="list-style-type: none"> Hospitals and Other Medical Facilities Police Stations Fire Station Emergency Operations Centers 	<ul style="list-style-type: none"> Power Plants Dams and Levees Military Installations Hazardous Material Sites Schools Shelters Day Care Centers Nursing Homes Main Government Buildings 	<ul style="list-style-type: none"> Highways, Bridges, Tunnels Railroads and Facilities Airports Water Treatment Facilities Natural Gas and Oil Facilities and Pipelines Communications Facilities

Table 6-6 summarizes critical facility counts for the Reservation. Critical facilities were based on Homeland Security Infrastructure Program (HSIP) Freedom GIS databases.

Table 6-6 Wind River Reservation Critical Facilities Summary

Facility Type	Count
Medical Clinic	1
Communication	6
School	11
Fire Station	2
HAZMAT	1
Total	21

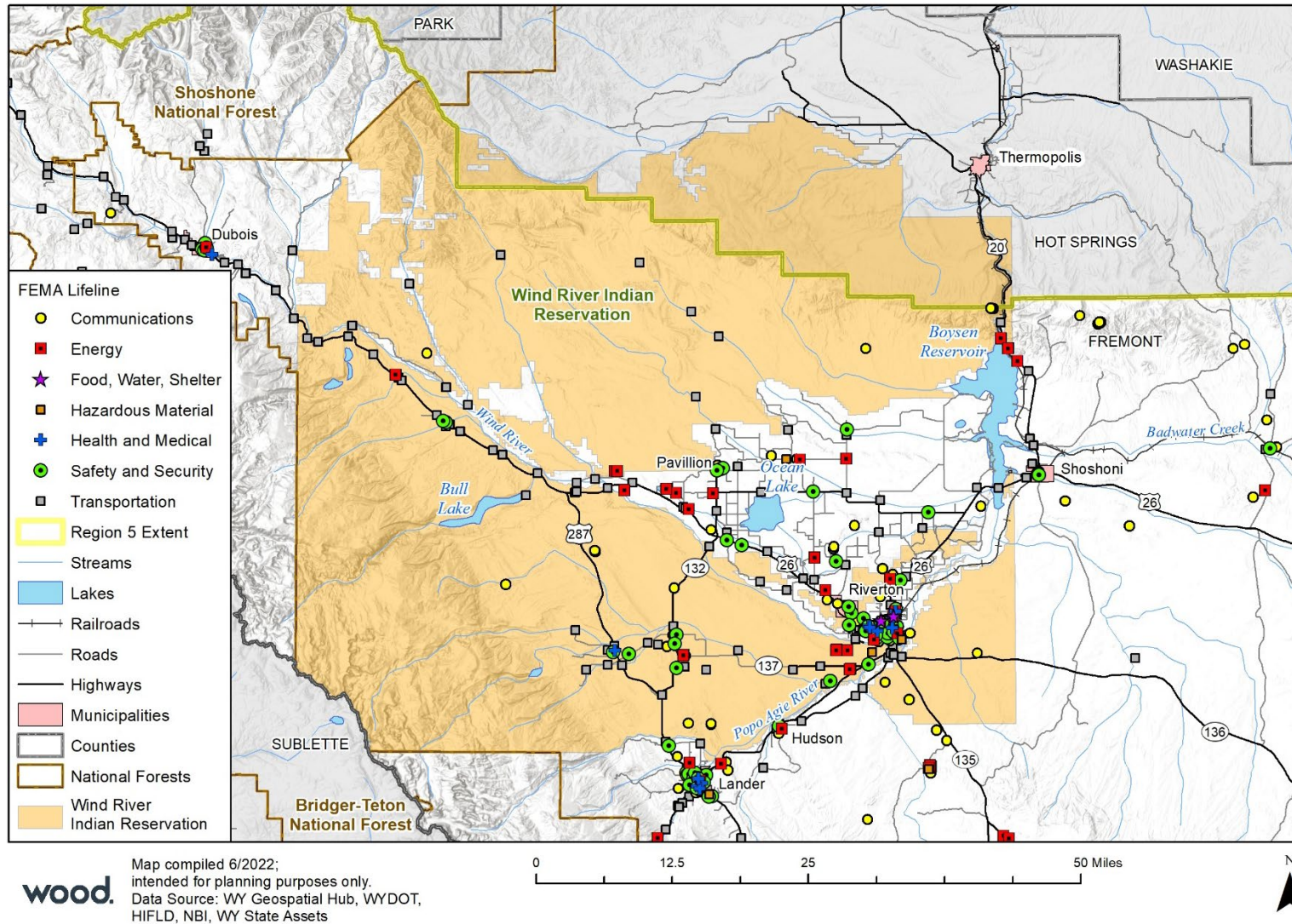
Based on Hazus inventory there are seven important transportation systems, covering 454 kilometers. There are 57 bridges. The replacement value of the transportation network is approximately \$1,487,000,000. There are six utility systems, including one potable water system, three wastewater facilities, and four communications facilities. A map below provides the approximate location of critical facilities in and around the Reservation.

Other key Infrastructure include electrical transmission and distribution. Much of the electrical infrastructure on the Wind River Reservation is both dilapidated and operating at capacity. Much of the infrastructure was installed in the 1930s with limited upgrades since installation. Another challenge facing the aging infrastructure is that high winds and heavy snow can bring down poles or, at minimum, cause powerlines to arc. This often results in a significant power outage; most outages are prolonged due to both the remoteness and vastness of the reservation.

Oil and gas infrastructure have become an increasing source of revenue for the tribes. The Tribes have begun the process of exercising their sovereignty by taking over resource development at the Circle Ridge oil and gas site on the reservation. This undertaking has been unprecedented and is blazing a trail for other tribes and how they can develop their resources without using third party developers with most of the revenues staying on the reservation, benefiting the tribal membership directly. Over 80% of the tribal income comes from the development of these resources. Power outages and power quality issues are frequent, particularly so in the Circle Ridge area. Even a short outage can cause power quality issues that frequently result in the loss of electric pumps that operate at the Circle Ridge site, resulting in hundreds of thousands of dollars of lost income due to the needed repairs.

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Figure 3 Critical Facilities: Wind River Reservation and Adjacent Areas



6.2.2 Natural, Historic, and Cultural Assets

Assessing the vulnerability of the Wind River Reservation to disasters also involves inventorying the natural, historical, and cultural assets of the area. This step is important for the following reasons:

- The community may decide that these types of resources warrant more protection due to their unique and irreplaceable nature and contribution to the overall economy
- If these resources are impacted by a disaster, knowing so ahead of time allows for more prudent care in the immediate aftermath, when the potential for additional impacts are higher
- The rules for reconstruction, restoration, rehabilitation, and/or replacement are often different for these types of designated resources
- Natural resources can have beneficial functions that reduce the impacts of natural hazards, such as wetlands and riparian habitat, which help absorb and attenuate floodwaters

Historic and Cultural Resources

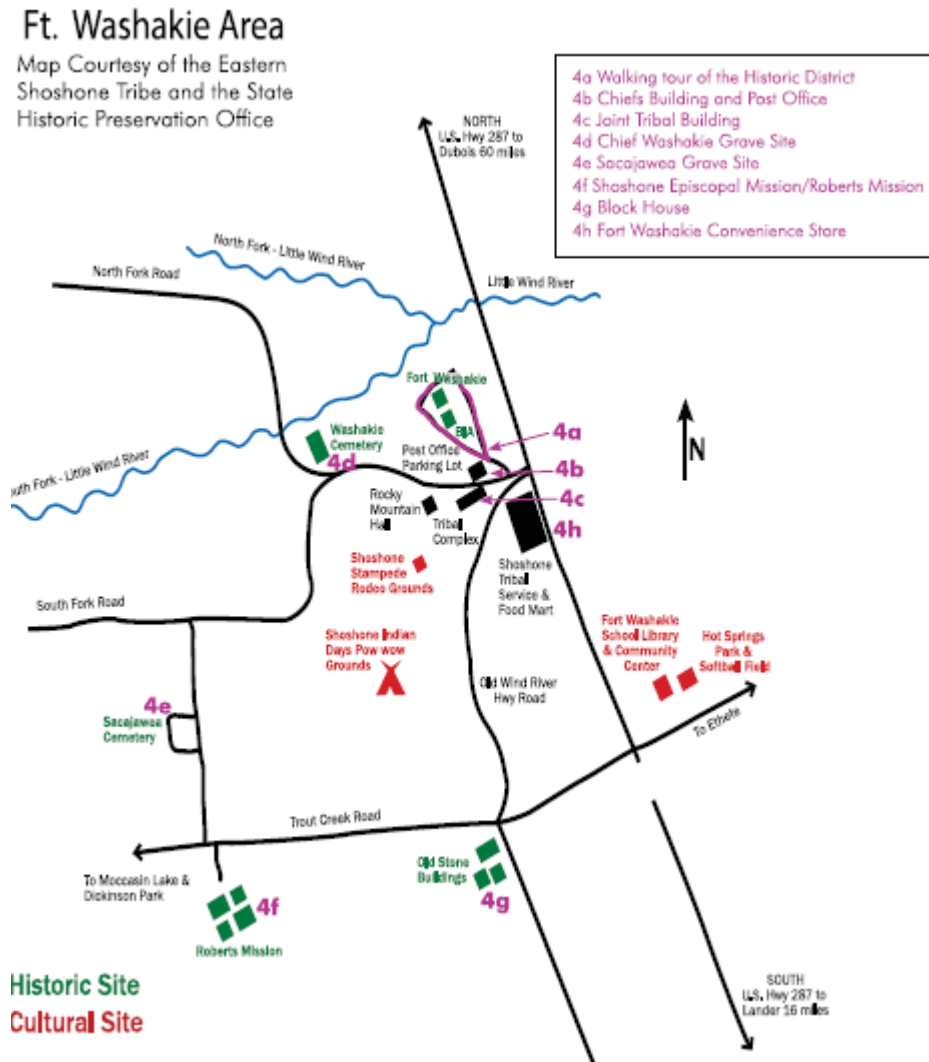
A historic property not only includes buildings but other types of structures, such as bridges and dams. It can also include prehistoric or culturally significant Native American sites, roads, byways, historic landscapes, and many other features. The National Register of historic places lists the BMU Bridge over the Wind River and St. Michael's Mission (both in Ethete) as two historic places, however, there are also numerous sacred cultural sites within the Reservation boundaries. As per requirement 201.7(c)(2)(ii)(D), cultural and historically significant sites located within the Tribal planning area include:

- Fort Washakie Historic Area
- Joint Tribal Building
- Block House
- BIA Agency Compound
- Chief Washakie Grave Site/Monument
- Crowheart Butte
- Sacajawea Grave Site
- Shoshone Cultural Center
- St Michaels Mission in Ethete
- St Stephens Church and historic area
- Diversion Dam Rest Area
- Arapahoe Ranch

In regard to potential hazard risk the St Stephens area could be affected by wildfire, potentially dam failure. The Arapahoe Ranch was also affected by a grass fire in the past and sits below the Anchor Dam.

The map of Fort Washakie below highlights a few of the cultural and historic sites.

Figure 6-4 Ft. Washakie Cultural and Historic Sites



Natural Resources

Natural resources are important to include in benefit-cost analyses for future projects and may be used to leverage additional funding for projects that also contribute to community goals for protecting sensitive natural resources. Awareness of natural assets can lead to opportunities for meeting multiple objectives. For instance, protecting wetlands areas protects sensitive habitat as well as attenuates and stores floodwaters.

Wetlands

Wetlands are a valuable natural resource for communities, due to their benefits to water quality, wildlife protection, recreation, and education, and play an important role in hazard mitigation. Wetlands reduce flood peaks and slowly release floodwaters to downstream areas. When surface runoff is dampened, the erosive powers of the water are greatly diminished. Furthermore, the reduction in the velocity of inflowing water as it passes through a wetland helps remove sediment being transported by the water. They also provide drought relief in water-scarce areas where the relationship between water storage and streamflow regulation are vital.

Endangered Species

To further understand natural resources that may be particularly vulnerable to a hazard event, as well as those that need consideration when implementing mitigation activities, it is important to identify at-risk species (i.e., endangered species) in the planning area. An endangered species is any species of fish, plant life, or wildlife that is in danger of extinction throughout all or most of its range. A threatened species is a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. Both endangered and threatened species are protected by law and any future hazard mitigation projects are subject to these laws. Candidate species are plants and animals that have been proposed as endangered or threatened but are not currently listed.

There are ten federally recognized endangered, threatened, or candidate species in Fremont County according to the U.S. Fish and Wildlife Service. Endangered species are listed based on County area, and there are no lists for Tribal boundaries, therefore Table 6-7 lists the species based on Fremont County information along with state listed species.

Table 6-7 Endangered and Threatened Species in the Wind River Reservation Area

Common Name	Scientific Name	Type of Species	Status
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Bird	Recovery
Yellow-Billed Cuckoo	<i>Coccyzus americanus</i>	Bird	Threatened
Whitebark Pine	<i>Pinus albicaulis</i>	Conifers and Cycad	Candidate
Fremont County Rockcress	<i>Boechea pusilla</i>	Flowering Plant	Candidate
Ute Ladies'-Tresses	<i>Spiranthes diluvialis</i>	Flowering Plant	Threatened
Desert Yellowhead	<i>Yermo xanthocephalus</i>	Flowering Plant	Threatened
Grizzly Bear	<i>Ursus arctos horribilis</i>	Mammal	Threatened Under Review
Black-Footed Ferret	<i>Mustela nigripes</i>	Mammal	Endangered
Gray Wolf	<i>Canis lupus</i>	Mammal	Recovery
Canada Lynx	<i>Lynx canadensis</i>	Mammal	Threatened
North American Wolverine	<i>Gulo luscus</i>	Mammal	Proposed Threatened

Source: <http://www.fws.gov/endangered/>

6.3 Vulnerability to Specific Hazards

This section details vulnerability to specific hazards, where quantifiable, only where it differs from that of the region. The results of detailed GIS analyses used to estimate potential for future losses are presented here, in addition to maps of hazard areas and details by jurisdiction and building type. For a discussion of the methodology used to develop the loss estimates refer to Chapter 4 of the Base Plan. In many cases Chapter 4 contains information that differentiates the risk by County and the Wind River Reservation thus the information is not duplicated here. For most of the weather-related hazards the risk does not vary significantly enough from the rest of the region and thus the reader should refer to Chapter 4 of the base plan. Only unique issues or vulnerabilities are discussed, where applicable.

6.3.1 Avalanche

Wyoming is one of the top-ranking states for avalanche hazard because of its rural character and mountain recreation. However, the Wind River Reservation is less susceptible because most avalanche events are concentrated in the western part of the state along the Teton range. Generally, the avalanches occur in remote areas and have little impact, except when unwary backcountry travelers get caught and buried. Avalanches cause two primary hazards—roadblocks and death or injury. There are no known critical facilities

in avalanche prone areas in the Wind River Reservation, and buildings and infrastructure are scarce in the more mountainous areas. The overall significance of this hazard is low across the planning area and does not vary.

6.3.2 Dam Failure

Five dams within the Reservation have been classified as a high hazard by the U.S. Department of the Interior. The Washakie and Ray Lake Dam are owned by the Bureau of Indian Affairs, and the Bull Lake Dam, Pilot Butte Dam, Anchor Lake Dam, and Boysen Dam are owned by the Bureau of Reclamation. All five high hazard dams have written Emergency Action Plans. No significant dam failures have occurred in the past. However, the Washakie Dam has posed some concerns over the years.

- A failure of the Washakie Dam would endanger the community of St. Stephens and parts sections of Fort Washakie, Ethete, Arapaho, and Riverton. Several hundred people live in the dam inundation area. The northern section of Fort Washakie would have up to 20' of water, the northern section of Ethete would likely have 19' of water, and much of the community of Arapaho would have 13' of water
- Modifications were made to the Washakie Dam in 2000 to increase dam safety, including adding a gravel drain layer downstream of the sand chimney

Table 6-8 identifies each high hazard dam, the communities impacted by dam failure, and the value of potential damages

Table 6-8 High Hazard Dams Affecting the Wind River Reservation

Dam Name	Areas Affected	Number of Vulnerable Structures	Potential Building Loss Value
Washakie Dam	St. Stephens, Fort Washakie, Ethete, Arapaho, Riverton	100	\$10,000,000
Ray Lake Dam	St. Stephens, Riverton	25-50	\$5,000,000
Bull Lake Dam	Morton, Kinnear, Johnstown, St. Stephens, Riverton	25-50	\$5,000,000
Pilot Butte Dam	Pavillion, Morton, St. Stephens, Riverton, U.S. Highway 26, State Highway 132, State Highway 133, Chicago and Northwestern Railroad, farmsteads	25-50	\$5,000,000
Anchor Lake Dam and Boysen Dam	Thermopolis	Not significant for the Reservation	

Source: Wind River Indian Reservation Draft Hazard Mitigation Plan, 2006

6.3.3 Drought

Like the rest of the region, drought is a high significance hazard for the Reservation. There is no available information to quantify the repercussions of drought for the Reservation specifically, but extensive economic and environmental impacts. Drought can be widespread and pervasive for several years. Though the primary source of economic revenue is mining and oil/gas, agricultural output is also a significant contribution. Sustained years of drought pose a threat to the Reservation's economic diversification and overall financial resilience. The Tribes have senior water right, however a lack of adequate water storage causes human-caused "drought" almost every year. Most supply comes from reservoirs and rivers but well

water is used to augment those sources. Well water projects are ongoing in Ethete, Boulder Flats, and Shoshone. Refer to the Chapter 4 in the Base Plan for additional discussion of drought risk.

6.3.4 Earthquake

Although no large, damaging earthquake has occurred on the Wind River Indian Reservation, there is a sufficient risk to warrant further profiling of the hazard. The Uniform Building Code identifies five seismic zones 0-4; 0 representing an insignificant risk, up to 4, which means a very significant risk. The Wind River Indian Reservation lies within two seismic zones: 1 and 2.

There are two active fault systems and one suspected fault system nearby or within the reservation. The active systems are the South Granite Mountain Fault System and the Stagner Creek Fault System; the suspected system is Cedar Ridge/Dry Fork Fault System.

Through the use of the modeling program Hazus a 2,500-year probabilistic earthquake scenario was analyzed based on Census Tracts located within the Reservation. Hazus estimated direct economic losses to buildings in two categories: capital stock losses and income losses. Capital Stock Losses includes structural damages, non-structural damages, loss of contents, and inventory loss. Income losses include relocation losses, capital related losses, wages lost, and rental income loss. Estimates suggest the following losses on the Wind River Indian Reservation:

Table 6-9 Wind River 2,500-Year Probabilistic Earthquake Scenario Loss Estimates

Capital Stock Losses		Income Losses	
Structural Damage	\$3,048,400	Wages Lost	\$522,300
Non-Structural	\$13,215,100	Capital Related	\$384,400
Content	\$6,100,300	Rental	\$603,700
Inventory	\$199,400	Relocation	\$2,037,000
Total	\$22,563,200	Total	\$3,547,400
Total Estimated Building Loss:		\$26,110,000	

Under current building conditions, an earthquake could potentially cause over \$246 million in direct economic losses. The Hazus earthquake scenario also produced the following estimates:

- Of the 4,000 buildings found in the study area, 444 (9%) will likely have at least moderate damage
- 62 buildings will have at least extensive damage
- 4 buildings will be damaged beyond repair
- Schools would likely be impacted but no school is likely to sustain at least moderate damage
- Damages to the highway system is estimated to be about \$307,000
- Along the 5,326 miles of potable water pipelines, there will likely be 184 leaks and 46 breaks. Damages to potable water systems is estimated to be \$4,307,400.
- Along the 3,196 miles of wastewater lines, there will likely be 92 leaks and 23 breaks. Damages to the wastewater system is estimated to be \$195,206,300.
- 2 households will be displaced
- 9 people will have injuries

If building codes were improved on the Wind River Indian Reservation, estimated building losses would be cut in half. According to this scenario, building codes would have saved \$16,736,000. Nine fewer buildings would have been destroyed.

6.3.5 Expansive Soils

Meetings with the Tribal representatives did not indicate any known issues related to expansive soils in the area. It is known that there are areas where expansive soils occur, including north of Riverton. Potential for swelling is predominantly moderate for the Reservation and associated impacts are negligible. While there are areas of potential risk that are identified, the Wind River HMPC indicated that this hazard presents little to no impact. A geotechnical analysis is a recommended practice prior to construction so any issues can be mitigated. The Tribal HMPC noted Beaver Creek and east end of the reservoir were problem areas. Bentonite mines exist on northern portion of Reservation. Overall, expansive soils are a low significance hazard across the Reservation. See Chapter 4 of the base plan for more information on the location of various soil types, probability of expansion, and exposed building values.

6.3.6 Extreme Cold

Based on historical records, extreme cold is an annual occurrence for the Wind River Reservation and surrounding region. Though the probability of this even is highly likely, damages or lives lost occur less often. Extreme cold can cause a problem for utility infrastructure and communications, as well as livestock and crops. There is always a risk to people, however, danger is higher for Access Functional Needs Individuals which include the elderly, children, people with health concerns, and individuals living without adequate shelter/heating. The overall significance of this hazard is medium across the Reservation. Refer to Chapter 4 of the base plan for more information.

6.3.7 Flood

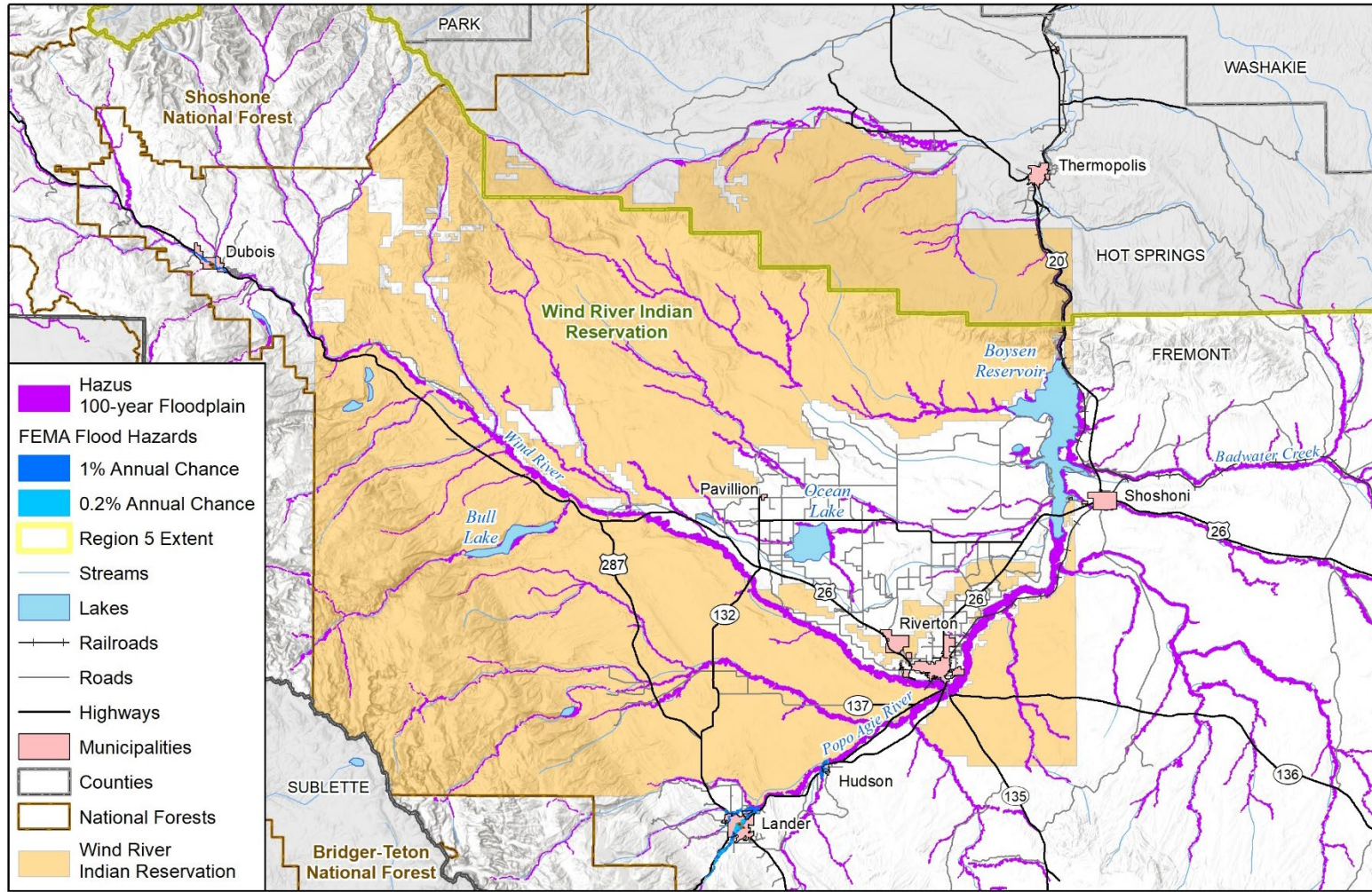
Flooding on the Wind River Reservation can come from creeks and rivers flooding their banks, flash flooding due to localized flooding and flooding associated with the spring snowmelt or rapid melting of accumulated snowpack adjacent to structures. Ice jams can also cause flooding. The 2010 flooding was the most damaging in recent years but flooding also occurred in 2011 and 2012. Flooding in 2017 occurred due to ice jams and rapid melting of snow and high snowpack runoff from the Wind River Range. The Reservation was part of a major disaster declaration for flooding June 7-22, 2017; the declaration was received on August 5th, 2017 (FEMA-4327-DR) making available Public Assistance and Hazard Mitigation Grant Program funding. The HMPC noted that 3,000 cfs is the threshold on the Little Wind River above which flooding begins to occur.

Because the Tribes are not required to participate in the National Flood Insurance Program (NFIP), it is difficult to fully understand the Wind River Reservation's flood threat. This lack of participation has limited resources needed for studying and mapping the Reservation's flood risk.

Other input from the Tribal HMPC's regarding flooding include:

- In Fort Washakie and Ethete, most of the populated areas, businesses, and public buildings are outside of the path of a flood along the Little Wind River. There are some houses located near the Little Wind River that are vulnerable from major flooding.
- In Fort Washakie, smaller tributaries that might cause problems include Trout Creek, Crooked Creek, and Sage Creek.
- In Ethete, smaller tributaries that might cause problems include Sage Creek, Mill Creek, and the Coolidge Canal.
- In Arapaho, the housing subdivisions, businesses, and public buildings are outside of the path of a major flood along the Little Wind River and the Popo Agie River. Several properties in St. Stephens are vulnerable to flooding, including the Middle School, and High School. Some populated areas do exist near these two rivers.

Figure 6-5 Wind River Reservation FEMA and Hazus Flood Hazards



Map compiled 5/2022;
 intended for planning purposes only.
 Data Source: WY Geospatial Hub, WYDOT,
 FEMA NFHL 2/5/2014, Hazus-MH MR2

0 12.5 25 50 Miles



In the event of a 100-year flood (1% annual chance), the Wind River Reservation has \$34.8 million of total building exposure, which accounts for 375 structures on 188 parcels, and impacts 475 people. An overwhelming majority (89%) of these structures are located on parcels in residential zones, though 47% of the buildings are considered exempt. The exposed contents are valued at \$12.2 million, while improved value amounts to over \$22.6 million. For a more detailed analysis of flood exposure loss, refer to Chapter 4 of the base plan.

6.3.8 Hail

Hailstorms occur sporadically throughout Region 5, and primarily impact buildings and agriculture. Most of the damages associated with this hazard are related to crops, though there is potential for significant structural destruction from particularly large hailstones. Like drought, a threat to agricultural productivity inherently limits the economic versatility of the Reservation. The Wind River Reservation comprises a little more than 1/3 of Fremont County, where \$25,500 of property damage and \$608,226 of crop damage from hail has occurred. The probability of future occurrence for this event is likely, but the magnitude of these events is limited. Overall, hail poses a medium threat across the Reservation. Though it should be noted that property damages will be higher in the more populated areas, potential crop damages would be concentrated in the rural areas.

6.3.9 Hazardous Materials Spill

There is limited information regarding statistics on hazardous materials being transported into, or through the Wind River Reservation, but the HMPC noted that fixed facility and transportation hazards both exist. Concerns noted in 2022 included:

- Pipelines crossing rivers and streams were noted as a source of potential damage
- A gas leak occurred 7-8 years ago near Beaver Creek
- Extractive industries are the biggest source of spills
- The economic profile in this annex indicates that there are two industrial factories Peak Sulfur, Inc. and Huish Detergents, Inc located on Goes In Lodge Road, fifteen miles northeast from 17 Mile Road. Together, these companies ship high-grade sulfuric acid for etching and cleaning of microcircuits
- Oil field H₂S venting was noted
- Aquifer contamination a concern
- Many petroleum and other flammable products transported by truck, many with mixed payloads that do not list amounts
- Trucks traffic from the Chem Trade asset plant was noted as well as the plant itself. Does the plant have an incident plan or coordinate with surrounding community?
- Railroad goes through the northern Reservation in the Wind River Canyon; has been derailed in past

See Chapter 4 of the base plan for more analysis regarding hazardous materials transportation and vulnerability.

6.3.10 High Winds and Down Bursts

High winds pose a ubiquitous threat throughout the State of Wyoming, but it is difficult to assess vulnerability as it relates to location because winds typically occur on a regional scale. The main risks associated with high wind events are related to inadequately constructed buildings, flying debris, car accidents, and damages to electrical/power infrastructure. High wind events are often somewhat random and damages from high winds are often described in a regional context, though downbursts occur in smaller extents. Due to the large portion of the Wind River Reservation in Fremont County, it is likely the reservation experiences similar impacts from wind events to that of the county. This includes the documented wind speeds reaching up to 126.6 mph and single events that can result in hundreds of thousands of dollars in

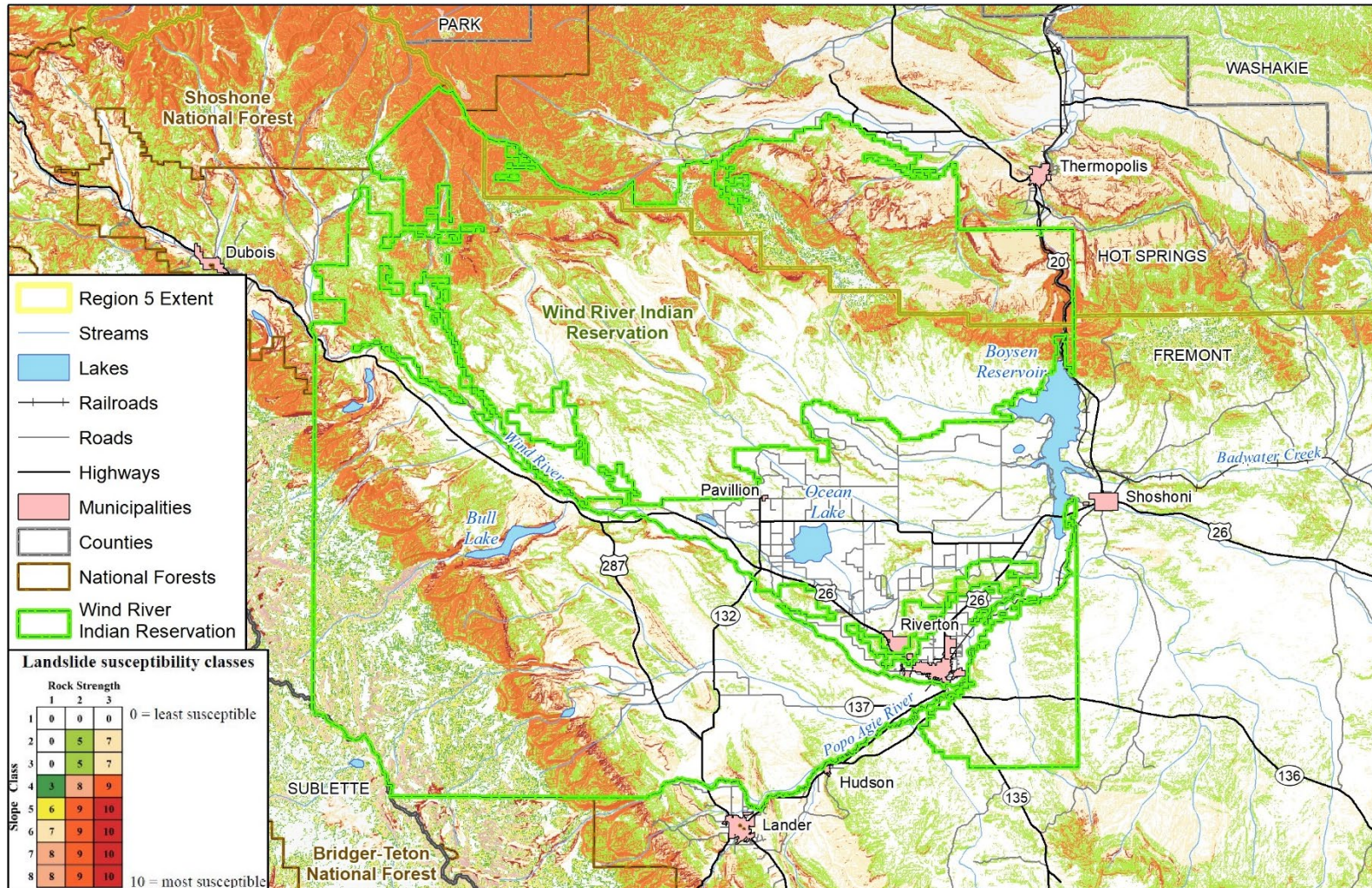
property and crop damages. The probability of future occurrence for this event is likely, but the magnitude of these events is negligible. Overall, high winds pose a medium threat across the Reservation and do not vary between the jurisdictions. See Chapter 4 of the base plan for more information on wind zones, events, and impacts.

6.3.11 Landslide/Debris Flow/Rockfall

The State of Wyoming is rich with geologic history, shaped by a myriad of processes and mass movement events. As a result, landslides are one of the most common hazards affecting people and infrastructure. Transportation networks and roadways are largely impacted by landslides, and previous events have been noted in the Wind River Canyon. Additionally, incidents of debris flow have been recorded in the northern area of the Reservation, along the border of Fremont County and Hot Springs County (See Figure 6-3).

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Figure 6-6 Wind River Reservation Landslide Hazard



Map compiled 5/2022;
intended for planning purposes only.
Data Source: WY Geospatial Hub, WYDOT,
Wyoming State Geological Survey

0 12.5 25 50 Miles



6.3.12 Lightning

All areas in western Wyoming are susceptible to lightning strikes. Impacts to persons and property are likely to remain isolated. The most salient impacts associated with lightning events are the effects of loss of power or wildfire. Lightning events can be major issues for the power system with many surge arrestors on power lines. Structural fire and injuries/fatalities are less likely, though it should be noted that outdoor workers, outdoor enthusiasts, and livestock are more vulnerable to lightning strikes. The probability of future occurrences is highly likely across the reservation, but severity is limited. Overall, lightning poses a high threat across the Reservation as it can affect the local power grid, and does not vary between the jurisdictions. See Chapter 4 of the base plan for more information on lightning events and impacts.

6.3.13 Mine Subsidence

There are numerous abandoned mine sites with subsidence-prone underground conditions in the Wind River Reservation area, though not as many sites are recorded as in the other Region 5 counties. Mines in the region have been identified and there are mitigation projects designed to reduce the impacts from underground mining and subsidence, and to remove the threat they pose to the surrounding area. The unmitigated identified mines pose little to no threat to infrastructure in the surrounding area. Mine subsidence events occur occasionally, and the degree of risk and impact varies based on the characteristics of each mine. Refer to Chapter 4 of the base plan for a more detailed vulnerability assessment and location of abandoned mine sites.

6.3.14 Severe Winter Weather

Winter storms are a yearly feature of the Wyoming climate and may occur anywhere in the state. Blizzard conditions bring the triple threat of heavy snowfall, strong winds and low temperatures. Poor visibility and huge snowdrifts are major hazards caused by blowing snow. These storms disrupt work, make travel difficult or impossible, isolate communities, kill livestock by the hundreds or thousands and sometimes leave human fatalities in their wake. Severe winter weather can affect the power grid on the Reservation. The overall significance of this hazard is high across the Reservation and does not vary between communities. Refer to Chapter 4 of the base plan for more information.

6.3.15 Tornado

Many documented tornadoes occurring in the counties in Region 5 are given low ratings simply because they are formed over open land and result in little or no damage. The area surrounding the Wind River Reservation has more recorded tornado events compared to Sublette County, but the overall significance is still very low. There is no information related specifically recording tornado events within the Reservation, but data from Fremont County and southwestern Hot Springs County notes that since 1950, there have been 22 recorded tornadoes, and of these events, there were four fatalities, no injuries, and no crop damages. Most property damages were accrued from two individual events in 1980 and 1986, where \$250,000 worth of damages were recorded, however, most events were associated with fewer damages (\$2,500-\$25,000 range). Region 5 tornado events are very small in terms of magnitude, with limited associated impacts, and the low-level significance of this event does not vary across jurisdictions.

All property is vulnerable during tornado events, but properties in poor condition or in particularly vulnerable locations may risk the most damage. Mobile homes are more vulnerable to the impacts of a tornado event compared to housing types due to methods of construction. Statewide, mobile homes represent about 13% of total housing compared to 6.1% Nationwide. The Wind River Reservation has a notably higher percentage of mobile homes as total housing compared to the statewide and national averages, with 19% of occupied housing units as mobile homes or other housing types.

Region 5 tornado events are very small in terms of magnitude, with limited associated impacts, and the low-level significance of this event does not vary across jurisdictions. See Chapter 4 of the base plan for more information on tornado events and impacts.

6.3.16 Wildfire

Over the period 1992-2021, fire data was compiled by the Bureau of Land Management and the U.S. Forest Service. Some summary findings of the BLM as well as information outlined in the Wind River 2006 Hazard Mitigation plan are bulleted below:

- The busiest fire year during the period was 1994 when 86 fires burned almost 4,800 acres
- In the year 2000, the Kate's Basin Fire, ignited by lightning, burned almost 140,000 acres, accounting for 93 percent of all acreage burned during the ten-year period
- The Pass Creek Fire and the South Fork II Fire occurred in 2002, burning 13,000 and 150,000 acres respectively
- In April 2005, wildfire posed a significant threat to the town of Fort Washakie, leading to the evacuation of 600 residents

Roughly 16 percent of all fires on the Reservation have been naturally caused and 84 percent were caused by humans. The percentage of human-caused fires on the Reservation is disproportionately high, compared to the rest of Wyoming, where 25 to 40 percent of fires are caused by humans. The high number of human-caused events on the Reservation is related to the high amount of debris burning that occurs on the Reservation.

The Wind River Reservation does not have its own CWPP, though Wind River Reservation areas are included in the Fremont County Community Wildfire Protection Plan (2019), which is a useful wildfire mitigation planning tool. A community assessment was conducted during the CWPP development using a Fire Hazard Severity Scorecard based on the International Wildland-Urban Interface Code, combined with processes referenced in the Firewise Communities Publication Hazard Assessment Methodologies. Each community was given a high, moderate or low wildfire hazard rating, based on a number of factors including physical infrastructure, roads, fire behavior components such as fuels and topography, water supplies, available fire protection and local fire occurrences. The communities identified within the reservation are listed below, grouped by their hazard severity rating. See the CWPP for additional descriptions of these communities and mitigation recommendations. These areas include:

- **Moderate** – St Stephens, Crowheart, Fort Washakie, Ethete, Lander Front, Boulder Flats, Johnstown Valley

In addition to assessing risk and contributing factors to risk, the plan also outlines mitigation strategies. Fort Washakie, Crowheart, and Ethete were all rated high in the previous CWPP, due to the abundance of shrub land, arid grass, and sage covered hills, however they are all rated moderate in the 2019 assessment. The available infrastructure does provide for large fire equipment off the main access roads, however, the cluster housing development patterns restricts access to individual home sites with limited turn around areas. Arapahoe and Boulder Flats are rated moderate.

Another method of estimating vulnerability is to determine the value of structures that are located within wildfire risk areas. For this plan update, GIS was used to create a centroid, or point, representing the center of each parcel polygon, which was overlaid on the wildfire hazard layer. For purposes of this analysis, it was assumed that every parcel with an improved value greater than zero was developed in some way, thus only improved parcels and their values were analyzed. An analysis of the value of those parcels (the improvement value plus estimated value of building contents) quantifies the potential losses from wildfires. A population estimate was also generated by taking the number of residential properties and assuming each housing

unit has the average Fremont County household size of 2.6 residing there. The results of this analysis are summarized in Table 6-10. The total values shown below include both structure value and contents and can be used as an estimate of potential losses since wildfires typically result in a total loss. An estimated \$130 million in property is potentially exposed to the wildfire hazard throughout the Wind River Reservation, as well as an estimated 8,728 residents.

Table 6-10 Wind River Reservation Buildings & Parcels at Risk to Wildfire

Wildfire Risk	Improved Parcels	Building Counts	Improved Value	Estimated Content Value	Total Exposure	Population
Highest	194	1,828	\$19,170,829	\$11,274,692	\$30,445,521	4,753
High	160	755	\$22,169,270	\$11,176,447	\$33,345,717	1,963
Medium	75	286	\$11,578,314	\$6,495,587	\$18,073,901	744
Low	206	382	\$26,303,072	\$16,431,553	\$42,734,625	993
Lowest	32	106	\$3,333,433	\$1,666,717	\$5,000,150	276
Total	667	3,357	\$82,554,918	\$47,044,996	\$129,599,914	8,728

Source: WYWRAP, Wind River Indian Reservation, Wyoming CAMA 2021, Wood GIS Analysis

The Wind River Reservation has a significant wildfire threat and an increasing threat of wildland-urban interface fires. Several large wildfires have occurred in the past few years. During the period 1992-2002, 30 wildfires have been at least 100 acres in size. During this period, a total of 155,432 acres have burned; however, 93 percent of the total burned in one single fire—Kate’s Basin in 2000.

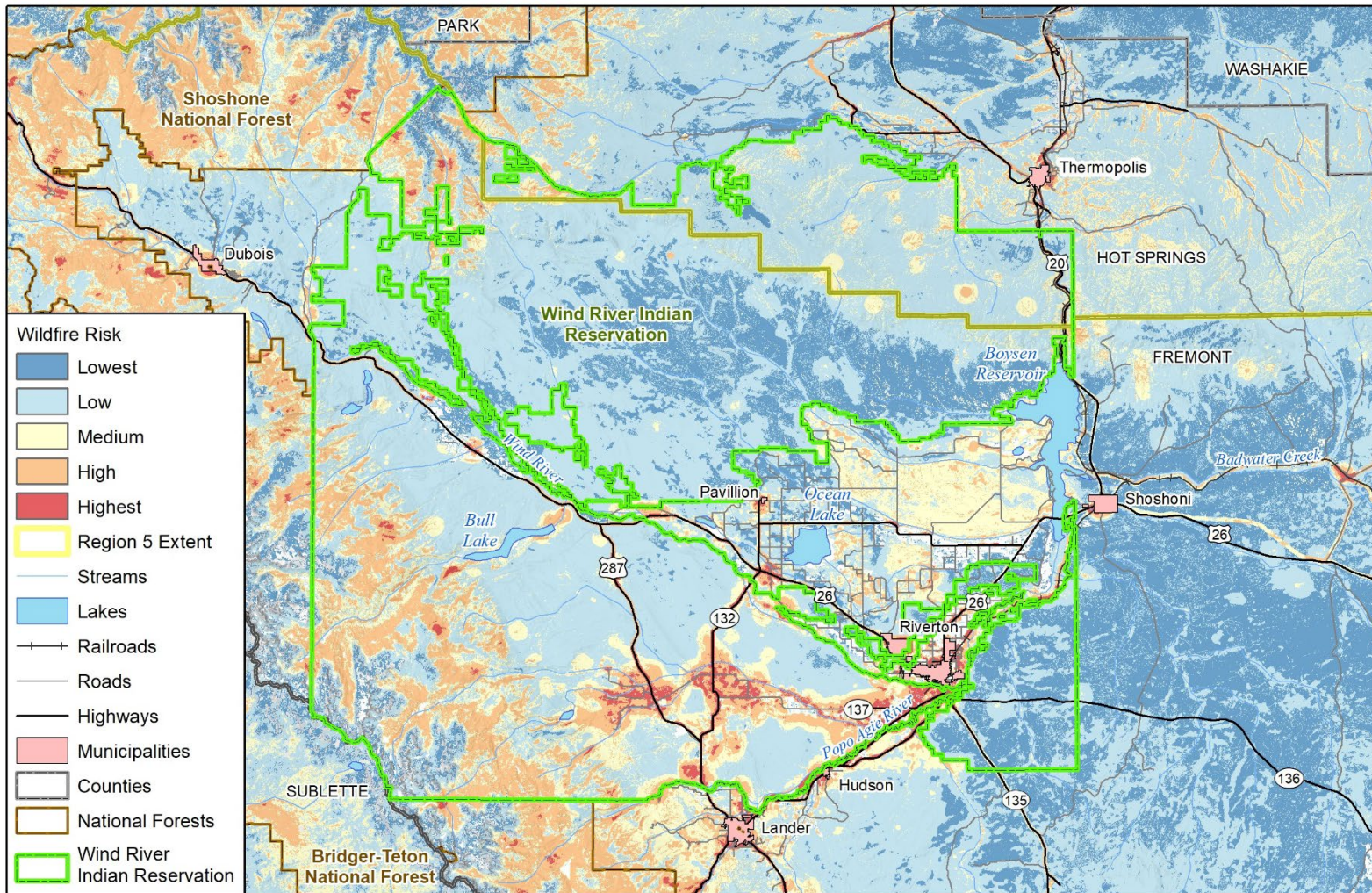
The Kate’s Basin Complex Fire was a large wildfire that burned approximately 138,000 acres on the Wind River Reservation, Hot Springs County, and Fremont County, Wyoming. The Kate’s Basin and Blondie fires were both ignited by lightning on August 7, 2000. Eventually, the two fires merged. One firefighter lost his life, when a fire truck was burned during the event. A Burn Area Emergency Rehabilitation team was requested upon extinguishing the fire to assess cultural, forest, range, soil and watershed, geological, and wildlife resources impacts. The plan identified emergency stabilization and rehabilitation treatments to be implemented.

In 2002, the South Fork II Fire burned 150,000 acres, above the Washakie Reservoir, which has caused some watershed issues that are still being addressed by fire officials. Also, near the reservation in 2002, the Pass Creek Fire burned 13,000 acres and cost \$3.3 million to contain as a subdivision was at risk.

On April 17, 2005, a wildfire occurred, stretching for at least five miles, eventually threatening Fort Washakie. The fire posed a threat to the town, and the town of nearly 600 was evacuated. No injuries were reported and only the abandoned Bureau of Indian Affairs former headquarters for the Wind River reservation had burned by late afternoon. Flames were being fueled by thick vegetation in the Little Wind River bed and winds gusting to 35 mph. The cause of the blaze was not immediately known.

Figure 6-1 below illustrates the wildfire risk across the Wind River Reservation.

Figure 6-7 Wind River Reservation Wildfire Risk



Map compiled 5/2022;
 intended for planning purposes only.
 Data Source: WY Geospatial Hub, WYDOT,
 Wyoming Wildfire Risk Assessment Portal,
 Wyoming State Forestry Division

0 12.5 25 50 Miles



7 Mitigation Capabilities Assessment

Thus far, the planning process has identified the hazards posing a threat to the Reservation and described, in general, the vulnerability to these risks. The next step is to assess what loss prevention mechanisms are already in place. This part of the planning process is the mitigation capability assessment. Combining the risk assessment with the mitigation capability assessment results in the Reservation’s “net vulnerability” to disasters and more accurately focuses the goals, objectives, and proposed actions of this plan.

The HMPC used a two-step approach to conduct this assessment for the Tribes. First, an inventory of common mitigation activities was made through, the use of, a matrix. The purpose of this effort was to identify policies and programs that were either in place, needed improvement, or could be undertaken, if deemed appropriate. Second, the HMPC reviewed existing policies, regulations, plans, and programs to determine if they contributed to reducing hazard-related losses or if they inadvertently contributed to increasing such losses.

7.1 Regulatory Mitigation Capabilities

Table 7-1 lists planning and land management tools used to implement hazard mitigation activities and indicates those that are in place on the Wind River Reservation. This information was collected through collaboration with the HMPC and discussion revolving around FEMA mitigation action worksheets. Excerpts from applicable policies, regulations, and plans and program descriptions follow to provide more detail on existing mitigation capabilities.

Table 7-1 Wind River Reservation Mitigation Capabilities

Regulatory Tool (Ordinances, Codes, Plans)	Yes/No	Comments
Plans and Regulations		
General or Comprehensive Plan	N	
Zoning Ordinance	Y	Law and Order Code of the Shoshone and Arapaho Tribes. Title XI: Regulation of Natural Resources and Land, Chapter 5
Subdivision Ordinance	Y	Law and Order Code of the Shoshone and Arapaho Tribes. Title XI: Regulation of Natural Resources and Land, Chapter 5
Growth Management Ordinance	N	
Floodplain Ordinance	N	According to the Tribal HMPC the BIA does review and permit new construction; in some cases, flood hazard areas may be identified which may affect permitting.
Other Special Purpose Ordinance (Stormwater, Steep Slope, Wildfire)	N	
Special Use Permits	Y (Sometimes)	
Transfer of Development Rights	Y	Tribes
Building Code	Y	Shoshone and Arapaho Law and Order Code is under revision
Erosion or Sediment Control Program	N	
Storm Water Management Program	N	

Regulatory Tool (Ordinances, Codes, Plans)	Yes/No	Comments
Site Plan Review Requirements	N	
Capital Improvements Plan	N	
Economic Development Plan	Y	
Local Emergency Operations Plan	N	
Other Special Plans	Y	Interpretive plan and land use plan; Drought Plan in development.
Community evacuation plans	Y	Ft. Washakie, Ethete, Arapaho
Resource Management Plan and a Range Management Plan	Y	Volunteer Fire Departments, BIA, Forest Service
Flood Insurance Study or Other Engineering Study for Streams	N	
Elevation Certificates (for Floodplain Development)	N	
Forest Fire Fuel Reduction	Y	
Performance Standards	Y	Emergency Action Plans (EAPs) for dams
Surge Protectors and Lightning Protection	Y	Utility
Utility Location	Y	Managed by the Tribes for hazardous materials, landslides, extreme weather and winter storm
Tree Management Program	Y	Bureau of Indian Affairs- Forestry
Rural Addressing System	Y	Each Tribal Business Council (TBC), BIA
Open Space / Conservation Program	No	There is a conservation program in the beginning stage.
Floodplain Management Plan	No	
Community Wildfire Protection Plan (CWPP)	Y	Within Fremont County CWPP
Structures and Infrastructure		
Facility Inspections/Reporting	Y	Local FPD or County
Construction of Barriers Around Structures	Y	County Fire
Structural Retrofits (Reinforcement, Flood-proofing, Bracing, Etc.)	Y	With County and Corp
Channel Maintenance	Y	Bureau of Indian Affairs
Dams/Reservoirs Maintenance	Y	Bureau of Indian Affairs
Hazardous Materials Waste Storage Sites	Y	Tribes
Levees and Floodwall Maintenance	N	
Saferoom/Shelters for Schools	N	
Secondary Containment System	Y	Following EPA guidelines
Site Reclamation/Restoration/Revegetation	Y	Bureau of Indian Affairs
Snow Fences	N	
Water Supply Augmentation	Y	Army Corps of Engineers
Debris Control	Y	Tribes

Regulatory Tool (Ordinances, Codes, Plans)	Yes/No	Comments
Stream Stabilization	Y	Work with NRCS
Flood Insurance	N	
Hazard Information Centers	Y	Brochures provided by FEMA and DHS
Public Education and Outreach Programs	Y	Brochures, earthquakes, WX, Flood
Real Estate Disclosure	N	
Crop Insurance	Y	Up to the individual
Lightning Detectors in Public Areas	Y	RAWS station in Little Washakie
Rain and Stream Gauges	Y	National Weather Service
Weather Radios in Structures Downstream of High Hazard Dams	Y	TBC and National Weather Service
Rural Firefighting Equipment	Y	Volunteer Fire Departments, BIA, Forest Service
Hazus GIS Capabilities	Y	Each TBC and FEMA
Natural Systems Protection		
Best management Practices (BMPs)	Y	NRCS, BIA, Forestry
Forest and Vegetation Management	Y	BIA, BLM, NRCS, USFS
Hydrological Monitoring	Y	Tribes with NWS and staff
Stream Corridor Restoration	Y	BIA, Tribes, NRCS
Stream Dumping Regulations	Y	Clean Water Act
Urban Forestry and Landscape Management	N	
Wetlands Development Regulations	Y	Tribes, NRCS, USFWS, Corp
Emergency Services		
Emergency Response Services	Y	EOP, joint with Fremont County
Hazard Threat Recognition	Y	THIRA in progress in 2017 - earthquake, fire, landslide
Hazard Warning Systems (Community Sirens, NOAA Weather Radio)	Y	Only in Ft. Washakie
Health and Safety Maintenance	Y	HIS, Tribal Health, pod exercising
Periodic Disaster Drills in Schools	Y	School districts, American Red Cross, Wyoming Department of Education

Wind River Reservation Land Use Development Code

The primary goals and objectives for the land use and development plan centralize around the implementation or enforcement of ordinances and resolutions related to regional and community land uses. Regional land use goals include transportation improvement projects, industrial cultivation, recreation services, and wildlife preservation. Community land use goals highlight agricultural issues related to growth management, commercial and industrial business development, economic diversification, and public services. The regulatory policies in place reflect objectives defined in the previously mentioned goals and reflect the environmental, and cultural values of the Wind River Indian Reservation. The plan includes a section on zoning, which ultimately highlights the need for the establishment of more comprehensive ordinances to protect property and encourage organized and orderly growth management. Additionally, the plan identifies four goals related to land use planning: (1) develop guidelines to protect Reservation

lands and resources, (2) purchase land for Tribal development and revenue, (3) develop projects which are compatible with existing uses, (4) provide regulations to enforce building standards. Currently, implementation of such goals and regulations falls under the responsibility of Tribal Employment Rights Office. However, one of the plan's objectives includes the establishment of a joint planning and development office, to better coordinate and conduct planning decisions.

In addition, Agricultural Resource Management Plan, Wind River Reservation January 2018

The WRIR Agricultural Resource Management Plan is designed to provide a comprehensive plan for agricultural development. The ARMP has focused on creating an institutional organization to assist and manage agricultural activities on the WRIR. This includes not only the agricultural production, but also processing, distribution, marketing and resource improvements. The benefits of the plan directly impact tribal trust lands, but with an integrative approach broadens the impacts to allotted lands and even fee simple lands within the reservation boundary. Individuals, businesses, organizations and political entities work together to accomplish the goals and objectives of the plan. The ARMP is designed to assist in guiding improvements to environmental management involving water, soils and vegetative characteristics on the WRIR along with the administrative logistics in land leasing, improvements and distribution of financial support. The balance between these two aspects of agricultural management is key to preserving and rehabilitating the natural land resources and ensuring that management and administrative actions do not create barriers to agricultural development.

The scope of the Agricultural Resource Management Plan follows the outline established by the American Indian Agricultural Resource Management Act of 1993 (P.L. 103-177, 25USC3701).

Law and Order Code of the Shoshone and Arapaho Tribes

Chapter 5 of Title XI of the Shoshone and Arapaho Law and Order Code of the Shoshone and Arapaho Tribes outlines the zoning code for the land within the Wind River Indian Reservation. The chapter describes the designation of land use (residential, rural, commercial, industrial), as well as the stipulations for subdivisions and mobile home parks. However, there is no mention of hazards in the code.

Eastern Shoshone Tribe Capabilities

The Eastern Shoshone Tribe operates a 9-person Volunteer Firefighter Department in Fort Washakie. The department has a three-bay fire hall; the department provides service to Fort Washakie and surrounding areas, including Ethete and surrounding areas. According to the Fire Chief, a new four-bay fire hall is necessary in Fort Washakie, and several new trucks. A new fire hall is also necessary in Ethete. If a fire hall could be established in Ethete, response times in Ethete would be seriously improved.

The Fort Washakie Volunteer Fire Department operates under the Fremont County Fire District. A Mutual Aid agreement exists between the Fort Washakie Firefighter Department and Fremont County to assist each other when needed.

The Tribe does not have ambulance service. Ambulance service is provided by Fremont County. However, there are four trained Emergency Medical Technicians in Fort Washakie.

The Tribe does not have Search and Rescue capability. Search and Rescue needs are provided by Fremont County. The Tribe has full time access to a helicopter through BIA Forestry, during the summer fire season, which runs from June 20 to September 20.

Opportunities for Improvement

Based on the capabilities assessment, the Eastern Shoshone Tribe has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the tribe to expand or improve on their policies, programs and fiscal capabilities and further protect the community.

As an example, the Wind River Reservation became StormReady designated by the National Weather Service in recent years. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and WOHS including FEMA. Additional training opportunities will help to inform tribal staff members on how best to integrate hazard information and mitigation projects into their departments. Continuing to train staff on mitigation and the hazards that pose a risk to the reservation which will lead to more informed staff members who can better communicate this information to the public.

Other opportunities include improved cross-jurisdictional communication on evacuation and awareness to mitigate life safety impacts during dam incidents, floods, or wildfires including the development of brochures and using existing communication capabilities through social media, other media, including a Mass Communications Warning System. Other specific opportunities for improvement include:

- Increase tribal staffing capabilities related to emergency management and hazard mitigation
- Explore becoming a Firewise community
- Consider joining the National Flood Insurance Program (NFIP)
- Improve alert and warning capabilities

Northern Arapaho Tribe Capabilities

The Northern Arapaho Tribe does not have any Tribal firefighting equipment or capability. Firefighting needs in Ethete are met by the Fort Washakie Volunteer Fire Department. Ambulance Service and Search and Rescue needs in Ethete are provided by Fremont County. Firefighting, Ambulance Services and Search and Rescue needs in Arapaho are met through the Fremont County and Bureau of Indian Affairs. Hot Springs County also provides firefighting capability as needed for the Owl Creek Mountains and other areas of the Reservation that are within Hot Spring County.

Opportunities for Improvement

Based on the capabilities assessment, the Northern Arapaho Tribe has several existing mechanisms in place that already help to mitigate hazards. There are also opportunities for the tribe to expand or improve on their policies, programs and fiscal capabilities and further protect the community.

As mentioned above, the Wind River Reservation became StormReady designated by the National Weather Service in recent years (date), improving the capabilities of communities within the reservation.

Other opportunities include improved cross-jurisdictional communication on evacuation and awareness to mitigate life safety impacts during dam incidents, floods, or wildfires including the development of brochures and using existing communication capabilities through social media, other media, including a Mass Communications Warning System. Other specific opportunities for improvement include:

- Explore becoming a Firewise community
- Consider joining the National Flood Insurance Program (NFIP)
- Improve alert and warning capabilities
- Review hazard related elements during Law and Order Code update.

7.1.1 Federal Government Capabilities

BIA Capability

BIA maintains a wildland fire fighting facility in Fort Washakie. The BIA works closely with the Forest Service and the Bureau of Land Management, who both maintain wildfire fighting capability in the area, and work cooperatively on hazardous fuels reduction projects. The BIA works with all federal agencies that have a wildfire fighting capability. At Fort Washakie, BIA maintains a type III team, which is capable of handling local wildfire fighting situations. When wildfires increase in size, BIA can call in type II or type I teams, as necessary.

The BIA Safety of Dams (SOD) program provides technical assistance to the Tribes including updating of Emergency Operations Plans and related training and exercises. The BIA also assists with dam safety inspections, monitoring and rehabilitation of tribally owned dams.

United States Forest Service

The Forest Service has firefighting capability and does fuels treatment work within the Shoshone National Forest. Assets include ten employees, two type 6 engines, one in Dubois and one in Lander. A four-person hand crew is stationed in Dubois and a fuels specialist is stationed in Lander.

7.1.2 County Capability

Within Fremont County there are two Rural Fire Protection Districts. These fire units are supported by multiple battalions, in addition to numerous volunteers (+100) and lots of equipment such as engines, trailers, pumps, and tenders.

Fire protection districts include:

- Fremont County Fire Protection District
- Lander Volunteer Fire Department

The Fremont County CWPP includes communities located within the Wind River Reservation boundaries (Arapahoe, Boulder Flats, Crowheart, Ethete, Fort Washakie), and the plan assesses risk and identifies mitigation recommendations, in addition to designating resources and support for wildfire protection and risk reduction.

7.2 Administrative and Technical Mitigation Capabilities

Table 7-2 Administrative and Technical Capabilities

Administrative/Technical Resources	Yes/No/Other	Comments
Planning Board / Commission	No	
Mitigation Planning Committee	Yes	
Maintenance Programs (tree trimming, clearing drainage, etc.)	Yes Forest Fuel reduction program, Tree management program	
Emergency Manager	Yes	

Administrative/Technical Resources	Yes/No/Other	Comments
Building Official	Fremont County, Northern Arapaho Tribal Housing; Shoshone Tribal Housing; HUD	Work with Fremont County Fire; Fremont County Electrical Inspector
Floodplain Administrator	No	
Community Planner	No	
Transportation Planner	Yes	
Civil Engineer	Yes	
GIS Capability	Yes Each TBC and FEMA	
Warning Systems / Services (flood)	No	In process in 2023
Warning Systems / Services (other / multi hazard)	Yes Only in Ft. Washakie	
Grant Writing / Management	Northern Arapaho – Yes: Grants writer; Eastern Shoshone – Yes: Grants Management person	
Other:	Best management Practices (BMPs), Hydrological Monitoring, Stream Corridor restoration program, Rain and stream gauges, Lightning detection in public areas (RAWS Station in Little Washakie), Structural retrofits, Channel maintenance, Water Supply augmentation, Debris control	

7.3 Financial Capabilities

Table 7-3 identifies financial tools or resources that the jurisdictions have access to or are eligible to use and could potentially be used to help fund mitigation activities.

Table 7-3 Financial Capabilities Available

Financial Resources	Accessible/Eligible to Use (Yes/No)	Has This Been Used for Mitigation in the Past?
Levy for Specific Purposes with Voter Approval	N	
Utilities Fees	N	
System Development / Impact Development Fee	N	
General Obligation Bonds to Incur Debt	N	

Financial Resources	Accessible/Eligible to Use (Yes/No)	Has This Been Used for Mitigation in the Past?
Special Tax Bonds to Incur Debt	N	
Open Space / Conservation Fund	N	Need to research with the creation of a Conservation District WRIR
Stormwater Utility Fees	N	
Capital Improvement Project Funding		
Community Development Block Grants (CDBG)	Y	Tribal Housing has used
Indian Community Development Block Grant (ICDBG)	Y	Tribal Housing has used
Bureau of Indian Affairs Home Improvement Program (HIP)	Y	
FEMA Hazard Mitigation Assistance	Y	No
Other: See Funding Sources subsection in this annex (Section 8.3)	Y	Y

8 Mitigation Strategy

This section describes the mitigation strategy and mitigation action plan for the Wind River Reservation. See Chapter 5 of the base plan for more details on the process used to develop the mitigation strategy.

8.1 Mitigation Goals

The overall vision of the Wind River Hazard Mitigation Plan is to reduce the disaster vulnerability on the Reservation. This vision will be realized through accomplishing the mitigation actions identified in the following sections, which pertain to the following six specific goals:

- Goal #1: Protect Life and Property, implement activities that will protect lives and reduce property loss which may occur as a result of natural or man-made hazards.
- Goal #2: Increase Public Awareness, provide resources for outreach and education programs to increase public awareness of risks associated with natural and man-made hazards.
- Goal #3: Increase Knowledge, gather information necessary to assess and develop plans to avoid and respond to risks and events associated with natural and man-made hazards.
- Goal #4: Protect natural systems, historic and cultural resources, and the environment from the impacts of hazards.
- Goal #5: Strengthen partnerships related to hazard mitigation.
- Goal #6: Enhance emergency services and reduce impacts to critical infrastructure & lifelines.

8.2 Mitigation Actions

This section provides updates on the actions identified in the 2017 hazard mitigation planning process and new actions identified during the 2022 Regional Plan development.

8.2.1 Progress on 2017 actions

During the 2022 planning process the Wind River Reservation Planning Team reviewed all the mitigation actions from the 2017 plan. Of their 28 mitigation actions from 2017, 26 of the identified actions are continuing or are implemented annually, demonstrating ongoing progress in building the community's resiliency to disasters. One action was deleted, and another action was completed since 2017, with details on these actions provided in Table 8-1.

Table 8-1 Completed and Deleted Mitigation Actions

2017 ID	Mitigation Action	Hazards Mitigated	Jurisdiction	Priority	Status/ Implementation Notes
Multi-hazard – 3	Implement adult hazards awareness program	All Hazards	Eastern Shoshone Tribe, Northern Arapaho Tribe	Medium	Deleted. Action was determined redundant with another action that is continuing.
Multi-hazard – 5	Update critical facilities data	All hazards	Eastern Shoshone Tribe, Northern Arapaho Tribe	Medium	Completed. Done as part of the 5-year Hazard Mitigation Plan update process.

8.2.2 Identification and Implementation of Mitigation Measures

The Northern Arapaho and Eastern Shoshone Tribes have identified several potential hazard mitigation projects that would benefit the Reservation and reduce potential risks and vulnerabilities. The mitigation projects developed in the 2017 planning process were reviewed to reflect the current priorities of the Tribes and results of the risk assessment and planning process. Additional actions were added during the 2022/2023 planning process. These actions are summarized in Table 8-2.

The mitigation action items have been grouped according to hazard type, and classified in terms of priority (high, medium, and low – see prioritization process description in Chapter 5 of Regional Plan). The lead agency responsible for implementing the action is identified as well as an initial estimate of cost. Estimated cost is based on a scale where Low represents projects in the range of \$0-25K, Medium reflects \$25K-150K, and High is any action that would cost over \$150K. Potential funding mechanisms are discussed in Section 8.3. Moving forward the Tribes will use the mitigation action table to track progress on implementation of each project.

Table 8-2 Mitigation Actions

Hazard ID	Project	Lead and Partner Agencies	Priority	Cost	Timeline	Status 2023
Drought-1	Create a drought management plan	Tribal Water Office, NOAA-NIDIS and National Drought Mitigation Center	High	L	1-2 years	Continue In-Progress. Tribal Water Office has been working on it.
Earthquake-1	Develop and implement seismic-resistant building standards as part of building code upgrades	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, Housing (HUD)	Medium	L	1-2 years	Continue - Not Started. There is a committee to revise the Shoshone and Arapaho Law and Order Code. This can be addressed when the committee is notified.
Earthquake-2	Carry out non-structural seismic retrofits on critical facilities, including strapping down computers, bolting heavy items, placing film on windows, bracing lights and ceiling panels, etc.	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, FEMA, Wyoming Homeland Security, American Red Cross, Private Sector businesses	High	L	5-10 years	Continue - Not Started
Earthquake-3	Carry out structural seismic retrofits on critical facilities, including chimneys to roofs, roofs to walls, and walls to foundations, etc.	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, FEMA, Wyoming Geological Survey	Medium	H	10 years	Continue - Not Started
Earthquake and Dam Failure -4;	Coordinate with other state and federal agencies on the installation of more seismograph monitors on the Reservation	USGS, Wyoming Geological Survey, Wyoming Homeland Security, FEMA, Bureau of Indian Affairs, Bureau of Reclamation	Medium	M	5 years	Continue - Not Started. See if any of the federal dams have seismic monitoring

Hazard ID	Project	Lead and Partner Agencies	Priority	Cost	Timeline	Status 2023
						ongoing. Bureau of Indian Affairs and Bureau of Reclamation own dams in the area.
Flood-1	Join the NFIP to formalize floodplain management practices, reduce losses to future development, and allow access to flood insurance	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe	Medium	L	1 year	Continue – Not Started.
Flood-2	Map flood hazard areas to increase awareness and support floodplain management and flood mitigation	FEMA	High	M	5 years	Continue - Not Started. Only available flood mapping is related to dam inundation or approximate areas modeled by Hazus
Flood-3	Mitigate flooding to proposed structures	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, BIA	Low	H	1-2 years	Continue In-Progress. Changed 'vulnerable structures' to 'proposed structures'; BIA reviews development permits near riverine areas.
Flood-4	Relocate the most vulnerable structures away from flood vulnerable areas	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe	Low	H	5 years	Continue - Not Started. May not be cost effective.
Flood-5	Implement permanent flood mitigation projects recommended by Army Corp of Engineers in 2017 including	Northern Arapaho Utilities	High	H	5 years	Continue - Not Started. Still needed In the process for moving the intake to a different

Hazard ID	Project	Lead and Partner Agencies	Priority	Cost	Timeline	Status 2023
	flood risk to water treatment plant intake					location, and is awaiting easement approval.
Hazardous Materials-1	Identify/map all hazardous materials sites	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, National Weather Service	Medium	L	1-2 years	Continue In-Progress. Chem trade; SERC has mapping with restrictions for viewing; WSP has identified Risk Management Plan facilities in HIFLD data
Multi-hazard-1; Wildfire, Flood, Hail, High Winds; Severe Winter Weather	Inform community of what to do before, during, and after a disaster	Wind River Family Health Cares, Shoshone Tribal Health, FEMA, Wyoming Homeland Security, American Red Cross	High	L	1-2 years	Annual Implementation
Multi-hazard-2 Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Hail Flood, Hazardous Materials, Lightning High Winds, Tornado, Wildfire, Severe Winter Weather	Implement a hazards education program for children through area schools	Wind River Family Health Cares, Shoshone Tribal Health, Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, Fire Department, School districts, Wyoming Dept. of Education	High	L	1-2 years	Annual Implementation. Funding through various tribal, state, federal programs
Multi-hazard-3 Avalanche, Dam Failure, Drought, Earthquake, Extreme Cold, Hail Flood, Hazardous Materials, Lightning High Winds,	Regularly search for funding for mitigation projects.	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe	High	L	1-2 years	Annual Implementation

Hazard ID	Project	Lead and Partner Agencies	Priority	Cost	Timeline	Status 2023
Tornado, Wildfire, Severe Winter Weather						
Multi-hazard-4 Avalanche, Dam Failure, Earthquake, Extreme Cold, Hail Flood, Hazardous Materials, Lightning High Winds, Tornado, Wildfire, Severe Winter Weather	Develop an all-hazards warning and notification systems	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe	Low	L	1-2 years	Continue In-Progress. Mass notification system in progress; stream gages for flooding; weather stations in schools; distributing all-hazard radios to residents near flood hazard areas, and two SnowTel Sites for snowpack gauging and prediction purposes
Multi-hazard-5 Avalanche, Dam Failure, Earthquake, Extreme Cold, Hail Flood, Hazardous Materials, Lightning High Winds, Tornado, Wildfire, Severe Winter Weather	Develop a Reservation-wide Community Emergency Response Team (CERT) Program	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe	High	L	1-2 years	Continue - Not Started
Multi-hazard-6 Dam Failure, Earthquake, Flood, High Winds, Tornado, Wildfire, Severe Winter Weather	Incorporate mitigation where feasible in the post-disaster recovery environment, including leveraging Section 406 mitigation funding available FEMA through Public Assistance and the 404 Hazard Mitigation Grant Program	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, Shoshone and Arapaho Transportation Department, Wyoming Homeland Security, and FEMA	High	M	1-2 years	Continue - Not Started

Hazard ID	Project	Lead and Partner Agencies	Priority	Cost	Timeline	Status 2023
Wildfire-1	Develop ordinances of wildland defensible space for new construction	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe	High	L	1-2 years	Continue - Not Started
Wildfire-2	Create defensible space on properties within wildland-urban interface areas	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, BIA Forestry, Fire Department	High	M	1-2 years	Continue In-Progress. BIA Forestry does education and awareness on defensible space
Wildfire-3	Develop codes and standards on building materials used in Wildland-Urban Interface (WUI) areas	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, BIA Forestry, Fire Department	Medium	L	1-2 years	Continue - Not Started. There is a committee to revise the Shoshone and Arapaho Law and Order Code. This can be addressed when the committee is notified to address
Wildfire-4	Treat structures in WUI areas to better resist fire	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe, Volunteer Fire Departments, BIA, Forest Service, County Fire Departments	Medium	H	1-2 years	Continue - Not Started
Wildfire-5	Assess wildfire risk on structures in WUI areas	Volunteer Fire Departments, BIA, Forest Service, County Fire Departments	Medium	L	1-2 years	Continue - Not Started
Wildfire-6	Build new fire stations in Ft. Washakie, Ethete, and Arapaho	BIA Forestry, Fire Department, FEMA's United States Fire Administration	High	H	1-2 years	Continue - Not Started
Wildfire-7	Develop a WUI Advisory Committee	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe	Medium	L	1-2 years	Continue - Not Started
Multi-hazard 7: Extreme Cold, Hail, High Wind,	Complete a micro grid installation to build resilience to short and long term power	Wind River Inter-Tribal Oil and Gas Commission	High	H - \$1.2M for phase 1	5-10 years	New in 2023. Possibly install on Commission lands.

Hazard ID	Project	Lead and Partner Agencies	Priority	Cost	Timeline	Status 2023
Lightning, Severe, Winter Weather, Wildfire	outages. WREC expects to develop an initial solar array for renewable energy generation to connect to a microgrid supporting the Circle Ridge oil and gas site to supply reliable power to the Tribes' primary source of income. This project is expected to expand to other locations around the Reservation with the microgrid area of service to include the Tribal cities, Tribal service buildings, existing Tribal housing, new senior housing, the Health Clinic, and existing Tribal buildings.					
Flood-6	Streambank erosion control near Ethete on Little Wind River to mitigate potential risk to structures on north and south side of river	Wind River Inter-Tribal Business Council, Eastern Shoshone Tribe, Northern Arapaho Tribe; Army Corp of Engineers	High	M	1-5 years	New in 2023

8.3 Funding Sources

Requirement 201.7(c)(3)(v) stipulates the identification of current and potential sources of federal, Tribal, or private funding to implement mitigation activities. Table 8-2 outlines a variety of grant programs, the associated point of contact, the distribution of financing responsibilities, as well as additional program characteristics.

Table 8-3 Wind River Reservation Funding Opportunities

Federal Grants						
Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal and Tribal Cost Share Requirements	Other Program Characteristics	Grant Application Due Date	*In Accordance with Requirement §201.4(b) Coordination with Other Agencies Where Applicable
FEMA, Hazard Mitigation Grant Program (HMGP)	FEMA Region VIII Building 710 Denver Federal Center Denver, CO 80225 (303) 235-4830	Flood Proofing, acquisition and relocation of flood-prone properties, wind resistant or retrofit, storm water improvements, education and awareness, All Hazards Mitigation Planning	Federal - 75% Tribal - 25%	Projects must be cost effective, environmentally sound and solve a problem	After a Presidential Disaster Declaration	
FEMA, Pre-disaster Mitigation (PDM) Program	FEMA Region VIII Building 710 Denver Federal Center Denver, CO 80225 (303) 235-4830	Grants can be used for management costs, information dissemination, and planning, technical assistance and mitigation projects	Federal - 75% Tribal- 25%	Projects must be Environmentally sound and cost effective	According to annual schedule determined by FEMA, typically in the fall	
FEMA, Building Resilient Infrastructure and Communities (BRIC)	FEMA Region VIII Building 710 Denver Federal Center Denver, CO 80225 (303) 235-4830	Large scale resilience projects. Flood Proofing, acquisition and relocation of flood-prone properties, wind resistant or retrofit, storm water improvements, education and awareness, All Hazards Mitigation Planning	Federal - 75% Tribal - 25%	Projects must be cost effective, environmentally sound and solve a problem	According to annual schedule determined by FEMA, typically in the fall	
FEMA, Flood Mitigation Assistance (FMA) Program	FEMA Region VIII Building 710 Denver Federal Center	Acquisition, relocation, elevation and flood-proofing of flood-prone insured	Federal - 75% Tribal - 25%	Tribal governments must be in compliance with the NFIP to be eligible. Rep. loss	According to annual schedule	*Wind River Indian Reservation is currently determining its intent to participate in the NFIP

Federal Grants						
Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal and Tribal Cost Share Requirements	Other Program Characteristics	Grant Application Due Date	*In Accordance with Requirement §201.4(b) Coordination with Other Agencies Where Applicable
	Denver, CO 80225 (303) 235-4830	properties, flood mitigation planning		properties are a high priority	determined by FEMA	
FEMA, Public Assistance (PA) Program	FEMA Region VIII Building 710 Denver Federal Center Denver, CO 80225 (303) 235-4830	Repair of Infrastructure damaged during a disaster resulting in a Presidential disaster declaration. Cost effective mitigation measures may be eligible during the permanent repair of damaged facilities	Federal - 75% Tribal - 25%	Reservation must be designated a PA Disaster Area by the President	After a Presidentially-declared PA disaster	
Economic Development Administration, Economic Adjustment Program	Region VIII 1244 Speer Boulevard Suite 670 Denver, CO 80204-3591 303-844-4715 303-844-3968 fax Robert E. Olson, Regional Director	Improvements and reconstruction of public facilities after a disaster or industry closing. Research studies designed to facilitate economic development	Federal - 50%- 70% Tribal- 30%-50%	Documenting economic distress, job impact and proposing a project that is consistent with a Comprehensive Economic Development Strategy are important funding selection criteria	Anytime	Wind River Indian Reservation will utilize EDA assistance when applicable
Economic Development Administration, Public Works and Development Facilities	Region VIII 1244 Speer Boulevard Suite 670 Denver, CO 80204-3591	Water and sewer, Industrial access roads, rail spurs, port improvements technological and related infrastructure	Federal - 50%- 70% Tribal- 30%-50%	Documenting economic distress, job impact and projects that is consistent with a Comprehensive Economic Development Strategy	Anytime	Wind River Indian Reservation will utilize EDA assistance when applicable

Federal Grants						
Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal and Tribal Cost Share Requirements	Other Program Characteristics	Grant Application Due Date	*In Accordance with Requirement §201.4(b) Coordination with Other Agencies Where Applicable
	303-844-4715 303-844-3968 fax Robert E. Olson, Regional Director			are important funding selection criteria		
Small Business Administration (SBA) Loan Program for individuals and businesses	Herbert L. Mitchell, Office of Disaster Assistance, SBA, 409 3rd Street, SW, Washington, DC 20415;202-205-6734	Loans for repairing damaged structures following disasters; an additional loan amount of up to 20% may be loaned for mitigation actions	All loan amounts to be repaid by borrower	The mitigation measures must protect property or contents from damage that may be caused by future disasters	After a Presidential Disaster Declaration or following an SBA-only Disaster Declaration	
Community Development Block Grants / Entitlement Grants	Office of Block Grant Assistance, 451 Seventy Street SW., Washington, DC 20410-7000;202-708-3587	Used for long-term community needs: rehabilitation of residential, commercial building; homeownership assistance, down-payment assistance, interest rate subsidies; building new replacement housing; code enforcement; acquiring, construction, or reconstructing public facilities	No information	Citizen participation procedures must be followed. At least 70 percent of funds must be used for activities that principally benefit persons of low and moderate income. Formula grants to entitlement communities	Anytime. Sometimes extra funds are made available in special appropriations following disasters	* Wind River Indian Reservation will use CDBG funds as made available
Fire Suppression Assistance Program	Infrastructure Division, Response and Recovery Directorate,	Provides real-time assistance for the suppression of any fire on public (non-federal) or privately owned forest or	Federal - 70% Tribal - 30%	The State must first meet annual floor cost (percent of average fiscal year fire costs) on a single declared fire.	Funds from President's Disaster Relief Fund for use in a designated	SWO will utilize EDA assistance when applicable

Federal Grants						
Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal and Tribal Cost Share Requirements	Other Program Characteristics	Grant Application Due Date	*In Accordance with Requirement §201.4(b) Coordination with Other Agencies Where Applicable
	FEMA, 500 C Street SW., Washington DC 20472; 202-646-4240	grassland that threatens to become a major disaster		After the State's out-of-pocket expenses exceed twice the average fiscal year costs, funds are made available for 100 percent of all costs for each declared fire	emergency or major disaster area	
Historic Preservation: Repair and Restoration of Disaster-Damaged Historic Properties	Infrastructure Division, Response and Recovery Directorate, FEMA, 500 C Street SW., Washington DC 20472; 202-646-4621	To evaluate the effects of repairs to, restoration of, and to mitigate hazards to disaster-damaged historic structures working in concert with the requirements of the Stafford Act	Federal - 75% Tribal - 25%	Eligible to State and local governments, and any political subdivision of a State. Also, eligible are private non-profit organizations that operate educational, utility, emergency, or medical facilities	After a Presidential Disaster Declaration	
Transportation: Emergency Relief Program	Director, Office of Program Administration, FHWA, DOT, 400 Seventh Street SW., Washington, DC 20590; 202-366-0450	Provides aid for the repair of federal-aid roads and roads on federal lands	Federal - 100%	Application is submitted by the State department of transportation for damages to federal-aid highway routes, and by the applicable federal agency for damages to roads on federal lands	After serious damage to federal-aid roads or roads on federal lands caused by a natural disaster or by catastrophic failure	Wind River Indian Reservation will ask for repair of federal-aid roads, as needed, following disasters

Federal Grants						
Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal and Tribal Cost Share Requirements	Other Program Characteristics	Grant Application Due Date	*In Accordance with Requirement §201.4(b) Coordination with Other Agencies Where Applicable
Animals: Emergency Haying and Grazing	Emergency and Non-insured Assistance Programs, FSA, USDA, P.O. Box 2415, Washington, DC 20013; 202-720-4053	To help livestock producers in approved counties when the growth and yield of hay and pasture have been substantially reduced because of a widespread natural disaster	No information	Assistance is provided by the Secretary of Agriculture to harvest hay or graze cropland or other commercial use of forage devoted to the Conservation Reserve Program (CRP) in response to a drought or other similar emergency	Anytime	
Flood: Emergency Advance Measures for Flood Prevention	USACE Washington DC 20314; 202-761-4561	To mitigate, before an event, the potential loss of life and damages to property due to floods	No information	Assistance may consist of temporary levees, channel cleaning, preparation for abnormal snow packs, etc.	When flooding conditions warrant USACE action	Wind River Indian Reservation will seek assistance from USACE, as needed
Section 203: Tribal Partnership Program (TPP)	Chief, Plan Formulation and Project Management Section US Army Corps of Engineers, Omaha District 1616 Capitol Avenue	Provides authority of USACE in cooperation with Tribes and other federal agencies to study and carry out water resource development activities that will substantially benefit Tribes.	No cost share if under \$484,000; 50/50 if above \$48k; watershed assessments are 75/25	Maximum of \$12.5 million.	Contact Omaha District	

Federal Grants						
Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal and Tribal Cost Share Requirements	Other Program Characteristics	Grant Application Due Date	*In Accordance with Requirement §201.4(b) Coordination with Other Agencies Where Applicable
	Omaha, NE 68102 402-995-2701					
Section 22: Planning Assistance to States and Tribes (PAS)	Chief, Plan Formulation and Project Management Section US Army Corps of Engineers, Omaha District 1616 Capitol Avenue Omaha, NE 68102 402-995-2701	Technical planning and engineering services for a broad range of water-resource related issues.	50/50	Limit of \$2M per state or Tribe per year	Contact Omaha District	
Section 14: Streambank and Shoreline Protection	USACE Washington DC 20314; 202-761-4561	Construction of streambank and shoreline protection to prevent erosion from damaging public facilities and infrastructure.	65 federal /35 tribes	Privately owned properties not eligible.	Contact Omaha District	
Hazardous Materials: State Access to the Oil Spill Liability Trust Fund	Director, USCG National Pollution Funds Center, Suite 1000, 4200 Wilson Boulevard,	To encourage greater State participation in response to actual or threatened discharges of oil	No information	Eligible to States and U.S. Trust Territories and possessions	Following HAZMAT events	Wind River Indian Reservation will seek USCG assistance, as needed

Federal Grants						
Grant Program Name	Address and Telephone Contact Information	Eligible Activities	Federal and Tribal Cost Share Requirements	Other Program Characteristics	Grant Application Due Date	*In Accordance with Requirement §201.4(b) Coordination with Other Agencies Where Applicable
	Arlington, VA 22203-1804; 202-493-6700					
Wind River Indian Reservation		Matching funds for grants. In-kind: Office space, meeting space, telephone service, fax, office staff, office equipment, tribal vehicles	Federal % Tribe%	The mitigation measures must conform to Tribal priorities.	Anytime	

9 Implementation

9.1 Incorporation into Existing Planning Mechanisms

As per requirement 201.7(c)(1)(iii) and (iv), this plan includes appropriate incorporation, of existing plans, studies, and reports; and aims to integrate (to the extent possible) with other ongoing Tribal planning efforts as well as other FEMA programs and initiatives.

As described in the capability assessment, the Reservation has some programs and plans that already relate to reducing losses to life and property from hazards. Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. This plan leverages related planning efforts and recommends implementing actions, where possible, through these other program mechanisms. The FEMA Tribal Mitigation Planning Guidance suggests the following methods:

- Reviewing existing plans and reports to identify opportunities to integrate mitigation actions.
- Having mitigation planners/specialist serve on other Tribal programs and planning teams.
- Consolidating the planning requirements for all Tribal mitigation programs (HMGP, FMA, CRS, local comprehensive plans, and land use plans).
- Identifying overall goals or priorities common to other Tribal planning efforts.
- Requesting that legislation be passed or issuing an Executive Order mandating integration of mitigation actions into other planning initiatives.
- Describing actual ongoing efforts where mitigation actions have been integrated into planning mechanisms (e.g. comprehensive plans, capital improvement plans, and emergency operation plans) and implementation tools (e.g., building codes floodplain ordinances, and land use regulations).

This is the first document of its type and hazard mitigation discussion or programming is minimal, therefore the Wind River Reservation is limited in opportunities to incorporate this plan. However, the analysis and awareness catalyzed through this planning process can be used to encourage future planning efforts. Chapter 6 of the Regional Plan discusses the importance of implementation and incorporation of the principles of this plan into other planning mechanisms. Some specific opportunities for the Reservation to integrate this document include:

- Wind River Indian Reservation Land Use Development Plan, 2004.
- Wind River Reservation Interpretive Plan.
- Integrated Resource Management Plan.
- Wind River Native Advocacy Center Economic Development Strategic Action Plan, 2015.
- Wind River Drought Management Plan (in development).
- Updates to the Wind River Reservation Agricultural Resource Management Plan, 2018.

9.2 Monitoring, Evaluating and Updating the Plan

The Northern Arapaho and Eastern Shoshone Tribes will follow the procedures to review and update this plan in accordance with Region 5 as outlined in Chapter 6 of the Regional Plan. The Tribes realize that it is important to review and update this plan regularly and update it on a five-year cycle. The Wind River Annex to the Region 5 Plan will be evaluated on a regular basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities.

Specific to the Tribes, in accordance with 44CFR 13.11(c) the Tribes will comply with all applicable federal statutes and regulations in effect with respect to the periods for which it receives grant funding. In compliance with 44 CFR 13.11 (d) the Tribes will amend this plan whenever necessary to reflect changes in Tribal or federal laws and statutes as required by the law.

9.2.1 System for Monitoring Progress on Achieving Goals and Projects

In order to best evaluate any changes in vulnerability as a result of plan implementation and progress towards achieving goals, each Tribe will adhere to the following process:

- Monitoring of progress towards goals will take place through an annual review by the HMPC to track the status of mitigation actions. It is recommended that the annual review meeting occur during Tribal agency gatherings that occur regularly in the late winter/early spring to prepare for flood and spring runoff season
- Tribal emergency management coordinators will request activity reports from the department, program, enterprise or other entity implementing the projects and activities
- Tribal emergency management coordinators will coordinate with the entity to help ensure that project implementation and results make progress toward the mitigation goals and objectives. The results of this annual action tracking will be documented in a file and used to support subsequent updates of the plan

The annual review and five-year update will be initiated by the Tribal emergency management coordinators. Continued public involvement will be done in accordance with the procedures outlined in Chapter 6 of the Regional Plan.