

INTRODUCTION

Part II of the Vilas County All-Hazards Mitigation Plan provides general geographical information on Vilas County including demographic and economic characteristics. The general development patterns of the County are described in terms of current land use and future development trends.

In addition to developing an understanding of the planning area, this chapter represents the beginning stages of assessing vulnerability by inventorying the numbers, types and values of existing buildings, infrastructure and critical facilities within each participating jurisdiction in the planning area. This overall summary of each jurisdiction's vulnerability to hazards describes the potential impact on the community.

Land use and development trends are analyzed to project the number and type of potential future buildings, infrastructure and critical facilities within each jurisdiction so that mitigation options can be considered in future land use decisions.

The resulting information is an important element of the planning process, since sound alternative mitigation strategies cannot be formulated and evaluated without an in-depth knowledge of the relevant conditions in the study area.

GENERAL GEOGRAPHY

LOCATION

Vilas County is located in north central Wisconsin (See Map 1) and is bounded by Iron and Price Counties on the west, Oneida County on the south, Forest County on the east and the Upper Peninsula of Michigan on the North. Vilas County lies 292 miles north of Milwaukee; 149 miles northeast of Green Bay; 86 miles north of Wausau and 224 miles north of Madison. Major metropolitan areas outside of Wisconsin with transportation linkages to Vilas County are Chicago, 364 miles southeast; Minneapolis-St. Paul, 266 miles southwest; and Duluth, 184 miles northwest.

The largest incorporated area is the City of Eagle River in the southeast corner. There are also a number of unincorporated "hamlets" within the County including: Arbor Vitae, Boulder Junction, Conover, Lac Du Flambeau, Land O' Lakes, Manitowish Waters, Phelps, Presque Isle, Sayner, Star Lake, St Germain, and Winchester which are distinguishable by their downtown-like business districts. The County is also home to the majority of the Tribal lands of the Lac du Flambeau Band of Lake Superior Chippewa Indians

CIVIL DIVISIONS

There are 15 municipalities (14 towns and 1 city) and one Tribal Nation in the Vilas County planning area. The City of Eagle River is the County Seat. These units of government provide the basic structure of the decision-making framework. The County has a total surface area of 1,018 square miles, of which about 14.9 % is water. The area and proportion of the County within each civil division is presented in Table 1. Lac Du Flambeau Tribal lands cover approximately 172 square miles between Vilas, Oneida and Iron Counties.

Table 1: Geographical Size by Civil Division				
Area in square miles				
Municipality	Water area	Land area	Total area	Area as % of County
Arbor Vitae town	8.69	62.57	71.26	7.0%
Boulder Junction town	18.47	81.92	100.39	9.9%
Cloverland town	3.80	31.38	35.19	3.6%
Conover town	7.21	79.97	87.18	8.6%
Lac du Flambeau town	27.40	100.30	127.71	12.5%
Land O'Lakes town	12.23	83.08	95.31	9.4%
Lincoln town	4.60	32.56	37.16	3.7%
Manitowish Waters town	6.08	30.35	36.43	3.6%
Phelps town	13.96	94.86	108.82	10.7%
Plum Lake town	11.13	88.93	100.03	9.8%
Presque Isle town	12.73	61.71	74.44	7.3%
St. Germain town	6.04	34.00	40.04	3.9%
Washington town	6.15	41.40	47.55	4.7%
Winchester town	5.47	48.13	53.60	5.3%
Eagle River city	0.18	2.55	2.73	0.03%
Vilas County	144.14	873.71	1,017.84	100%
<i>Source: U.S. Census and NCWRPC</i>				

TOPOGRAPHY

Vilas County is in the Northern Highlands area of Wisconsin. This area has some of the highest elevations in the state, ranging from about 1,560 feet above sea level along Squaw Creek in the southwest corner of the County to 1,845 feet at Muskellunge Hill. Relief is low.

The County has a diverse landscape ranging from broad, nearly level glacial outwash plains to rough, broken glacial moraines and areas of

pitted outwash. The County has three major areas with distinct physical characteristics. An area of drumlins and ground moraines is in the eastern part of the County. Its topography is characterized by low, smoothly rounded, elongated, and oval ridges that are nearly level to moderately steep and area interspersed with long, narrow drainageways.

The Winger Moraine, a major end moraine that is predominantly undulating to steep, extends across the northwestern part of the County. This end moraine is rough and broken. It is characterized by short, steep slopes and ridges and by numerous wet depressions, most of which have no outlets.

Outside of the moraine areas lies an outwash plain. Much of the outwash is pitted, resulting in a rolling or hilly topography with many enclosed basins and depressions. Large sand flats are in scattered areas on this outwash plain. The communities of Eagle River, Manitowish Waters, Conover, St. Germain and Boulder Junction are on these flats. The sand flats north of Conover, the ones south of Eagle River and the ones between Manitowish Waters and Lac du Flambeau are characterized by low relief. In some areas, these flats are pitted with depressions. Several small end moraines and drumlins also are in scattered areas on the outwash plain.

CLIMATE

Winters in Vilas County are very cold. Summers are short and fairly warm. A short freeze-free period in summer limits cropping to forage and small grain crops and to adapted vegetables. Precipitation is fairly well distributed throughout the year. It is highest in summer. Snow covers the ground during much of the period from late fall through early spring.

In winter, the average temperature is 13 degrees, and the average daily minimum temp is 3 degrees. In summer, the average temp is 64 degrees, and the average daily high is 75 degrees. Total annual precipitation is about 34 inches, of which about 25 inches, or more than 70%, usually falls in April through September. Thunderstorms occur on about 34 days each year. The average seasonal snowfall is about 85 inches. On the average, 87 days of the year have at least 1 inch of snow on the ground, but the number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 60%. Humidity is higher at night, and the average at dawn is about 80%. The sun shines 60% of the time possible in summer and 80% in winter. The prevailing wind is from the west-northwest. Average wind speed is highest in spring at 13 miles per hour.

Insert Map 1 Location

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DEMOGRAPHIC AND ECONOMIC PROFILE

POPULATION AND HOUSEHOLDS

According to the Wisconsin Department of Administration (WDOA), Vilas County had an estimated population of 23,047 for 2020. This represents a greater than 6% increase over the 2017 Census reported population of 21,607 people. Vilas has outpaced all of its neighbors and the overall state average (refer to Table 2). If the growth rate continues at the current level, there will be approximately 25,582 people in Vilas County in 2025, and 28,117 people in 2030.

Table 2: Population of Adjacent WI Counties				
County	2017	2020	# Change	% Change
Vilas	21,607	23,047	1,440	6.6%
Forest	9,256	9,179	-77	-0.8%
Iron	5,927	5,698	-229	-3.8%
Oneida	36,225	37,845	1,620	4.4%
Price	14,028	14,054	26	0.18%
Wisconsin	5,783,278	5,893,718	110,440	1.9%

Source: U.S. Census, WisDOA and NCWRPC

Between 2010 and 2020, most of the communities within Vilas County have experienced a slight to significant increase in their population base with the exception of the Town of St. Germain, as shown in Table 3. The highest level of growth occurred in the Town of Winchester with a 37.8 percent increase between 2010 and 2020. The Town of Presque Isle was second with a 30.2 percent increase. Also notable was the City of Eagle River with a 16.4 percent increase. Most of the population change was above 5 percent in the municipalities and county since 2010.

Population concentrations and trends are important when prioritizing hazard mitigation strategies. Eagle River is the most densely populated and developed area in the County. Other areas of population concentrations include the Towns of Lincoln, St. Germain and Arbor Vitae. Map 2 shows areas of residential population concentrations in the County. Overall population density of the County is 23 persons-per-square-mile and ranges from a high of 596 in the City of Eagle River to a low of 5.5 in the Town of Plum Lake.

Table 3: Population and Households of Minor Civil Divisions						
Minor Civil Division	2010 Pop.	2010 Households	2020 Pop.	2020 Households	% '10-'20 Pop.	'10-'20 % Households
Arbor Vitae Town	3,316	1,501	3,403	1,576	2.62%	5.0%
Boulder Junction Town	933	441	1,057	514	13.29%	16.55%
Cloverland Town	1,029	470	1,068	498	3.79%	5.96%
Conover Town	1,235	574	1,318	605	6.72%	5.40%
Lac du Flambeau Town	3,441	1,269	3,552	1,684	3.23%	32.70%
Land O'Lakes Town	861	433	944	418	9.64%	-3.46%
Lincoln Town	2,423	1,102	2,659	1,226	9.74%	11.25%
Manitowish Waters Town	566	285	624	418	10.25%	46.67%
Phelps Town	1,200	544	1,238	660	3.17%	21.32%
Plum Lake Town	491	235	553	235	12.63%	0%
Presque Isle Town	618	298	805	240	30.26%	-19.46%
St. Germain Town	2,085	953	2,083	1,077	-0.10%	13.01%
Washington Town	1,451	679	1,587	800	9.37%	17.82%
Winchester Town	383	190	528	230	37.86%	21.05%
Eagle River City	1,398	684	1,628	736	16.45%	7.60%
County Total	21,430	9,658	23,047	10,917	7.5%	13.0%

Source: U.S. Census, WisDOA, American Community Survey 2012-2016, and NCWRPC

The County's population is generally older with a median age of 56 years in 2020, versus the statewide median age of 40 years. Over the next few decades, the residential base will become even older, aging more quickly than the state as a whole. In fact, the number of persons 60 and older will likely increase to more than 50 percent of the population by 2030. This will have implications affecting the demand for emergency services, medical facilities, CBRF's, and support services through Public Health, Social Services, and Commission On Aging.

SEASONAL POPULATION

In addition to the regular full-time resident population, Vilas County is known as a popular tourist destination. This is reflected in the make-up of its housing stock where 51% of all housing units have been identified as seasonal/recreational. The impact of this seasonal population cannot be overlooked when planning for hazards. Table 4 shows estimated seasonal housing units by municipality. The estimated seasonal population was determined based on the number of seasonal housing units and the average household size of those units. Determining when and for how long these seasonal residents will be in the County is problematic, but the numbers give some indication of what weekend or other peak period population levels might be.

Another component of the seasonal population includes short-term accommodations such as campgrounds or hotel-style lodging. The scope of this plan did not provide for a detailed inventory of accommodations; however the County Comprehensive Plan did identify 1,091 hotels/motels and short-term rental type accommodations and 35 campgrounds available around the County. The plan also estimated a peak seasonal population of over 27,000 in the County.

Table 4: Estimated Seasonal Resident Population		
Municipality	Seasonal Housing Units	Estimated Seasonal Population
Arbor Vitae town	1,142	2,295
Boulder Junction town	822	1,652
Cloverland town	589	1,184
Conover town	932	1,873
Lac du Flambeau town	1,800	3,618
Land O'Lakes town	1,056	2,123
Lincoln town	901	1,811
Manitowish Waters town	718	1,443
Phelps town	940	1,889
Plum Lake town	553	1,112
Presque Isle town	1,193	2,398
St. Germain town	1,058	2,127
Washington town	1,080	2,171
Winchester town	631	1,268
Eagle River city	77	155
Vilas County	13,492	27,119
<i>Source: U.S. Census and NCWRPC</i>		

EMPLOYMENT

According to the Wisconsin Department of Workforce Development (WI DWD), Vilas County had 9,434 employed residents in 2020.

The leisure & hospitality sector has the highest number of employees in Vilas County at about 1,773 or 18.8% of total employment in 2020. Within the leisure & hospitality sector is the prominent sub-sector: food service & drinking places. With the extent of lakes and recreation land, Vilas County is a popular tourist destination, creating more demand for restaurants, bars and hotels. Although food service is the second highest industry sub-sector, none of these employers appear on the list of top employers in the County (refer to Table 5) as jobs in food service and drinking places tend to be seasonal with primarily part-time positions.

Education & health is the second leading employment sector in the County with about 1,647 positions or 17.5% of total employment. The Education sub-sector is well represented on the top employers list with Northland Pines School District as well as Lac du Flambeau public school. As a result of the demand for health services generated by the County's aging population, health services are also a large source of employment with three major facilities among the top employers in the County: Ascension Health Care, Lac du Flambeau Health Services and Marshfield Clinic.

Retail trade includes operations such as gasoline stations, furniture stores, food and beverage stores, and novelty shops that also often depend on seasonal tourism is the third leading sector in Vilas County with 1,318 or 14.0% of total employment.

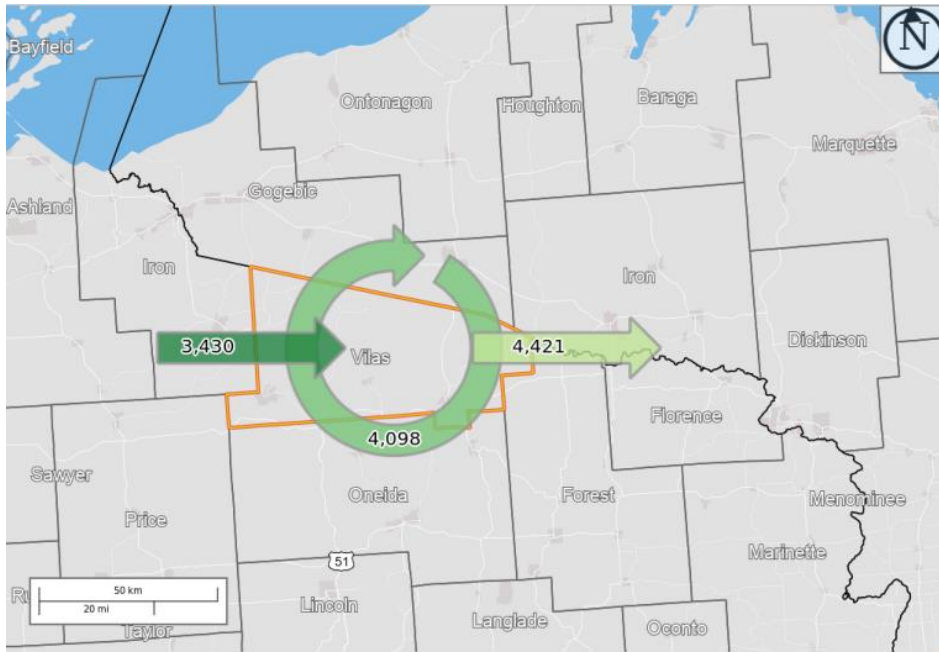
Construction includes the subsectors of construction of buildings, heavy and civil engineering construction, and specialty trade contractors that provide about 889 jobs or 9.4% of total employment in Vilas County. It is not unusual to employ a high number of construction jobs given Vilas County's 7.5 percent population growth over the past decade.

Table 5: Top Employers in Vilas County		
Company	Product or Service	Location
Aspirus, Inc.	General medical & surgical hospitals	Various Locations
Northland Pines School Dist.	Elementary & secondary schools	Various locations
Lac du Flambeau Band of Lake Superior Chippewa	Tribal government and services	Lac du Flambeau
Trig's Food & Drug Store	Supermarkets & other grocery stores	Eagle River
Pukall Lumber Company	Building supply manufacturing & sales	Arbor Vitae
County of Vilas	Executive & legislative offices	Various Locations
Lac du Flambeau School District	Elementary & secondary schools	Lac du Flambeau
Mastec Eagle River	Electric Contractors	Eagle River
State of Wisconsin	Executive & legislative offices	Various locations
Pick n Save (Kroger)	Supermarkets & other grocery stores	Eagle River

Source: NCWRPC. Representative Sample in Random Order. May not include all operations of similar sizes.

Identifying locations of large employment is important when prioritizing hazard mitigation strategies. Analyzing employment sectors within the County confirms Eagle River and Lac du Flambeau as the primary employment and service hubs in the County, however, many of the unincorporated "places" like Arbor Vitae are also significant employment centers.

In addition to the seasonal swells in employment, the number of people working in a given locality fluctuates on a daily basis. The county is a net exporter of labor. In other words, the County has fewer local jobs than residents who work. Over 45% of the County's workforce enters from other counties while about 52% of working residents travel to work outside the county. A visual representation of worker inflow and outflow in Vilas County can be found in Figure 1.

Figure 1: Vilas County Worker Inflow and Outflow, 2020

Source: U.S. Census LEHD, 2020

LAND USE/LAND COVER AND DEVELOPMENT PATTERNS

Land use is an important determinant in the potential impact a particular hazard may have, and in action which may be taken to mitigate the hazard impacts. An understanding of the amount, type, and spatial distribution of urban and rural land uses within the County is an important consideration in the development of a sound hazard mitigation plan.

The NCWRPC has categorized land use in Vilas County into classifications. Aerial photos were used to digitize a land use Geographic Information System (GIS) coverage. Map 2 shows the land use and development concentrations in Vilas County. Table 6 shows the acreage and percent of each classification.

AGRICULTURE

Very little productive agricultural land exists within Vilas County in terms of traditional agriculture and production of cash crops. In fact, such uses comprise less than 1% of the county's total land uses. The Town of Washington has the largest area of tillable land in the county. Sandy soils and a limited growing season make cash cropping very difficult. However, cranberry operations in the Towns of Boulder Junction and Manitowish Waters have been a strong agricultural component in production and for generating tourism.

COMMERCIAL (BUSINESS)

Commercial uses are found throughout the county. In all less than 1% of the county's land is in this use. Commercial uses include hotels, motels, and resorts which are located throughout the county, particularly along lakeshores. It also includes commercial developments located along highways, such as gas/service stations, gift shops, restaurants, etc. Other commercial uses include those uses which provide goods and services required by both year-round and seasonal populations such as grocery stores, medical facilities, banks, etc.

There are several small communities with concentrations of development, including a mix of residential and commercial, with the largest being the City of Eagle River. There is concentrated commercial in the form of local downtown areas in several towns such as Boulder Junction, Manitowish Waters, St. Germain, Phelps, Presque Isle, Sayner, and Land O' Lakes to name a few. The downtown areas play a large role in Vilas County's community character and northwoods aesthetic. Most of the local business activity is located along the road system, scattered throughout the county. Higher concentrations of commercial uses exist along the state and federal highways, including STH 70, USH 45, and STH 51. Much of the local business activity is home-based, and consists of local trade, service, and retail.

GOVERNMENT/PUBLIC/INSTITUTIONAL

Such uses are comprised of lands used for public schools, cemeteries, airfields, active and closed landfill sites, transfer stations/recycling sites, public facility and service buildings (i.e., municipal buildings, community centers), and provision of community utilities and services such as power, gas, and telephone.

INDUSTRIAL

Industrial uses in Vilas County are very low and comprise less than 1% of the county's total existing land use. The majority of industrial uses in the county consist of active and abandoned gravel pits. Because of the desire for municipal water, sewer, fire protection, cheap land and other services, most industrial uses are typically located in incorporated municipalities, which is why the highest concentration of industrial use occurs in the City of Eagle River. Although historically industrial uses have been segregated from residential areas, certain industrial facilities may be compatible with these areas if there is an adequate buffer and protection. Because protection of the natural environment, including water, air, and forest resources is so important in Vilas County, heavy polluting industries will likely not be a part of the area's industrial growth. The City of Eagle River does have the county's only industrial parks.

Table 6 Generalized Land Use in Vilas County		
General Category	Acres	Percent
Agriculture	4,629	0.7%
Commercial	3,974	0.6%
Industrial (includes quarries)	1,388	0.2%
Governmental/Public/Institutional	1,622	0.2%
Open Lands	1,594	0.2%
Outdoor Recreation	1,790	0.3%
Residential	37,518	5.8%
Transportation	6,267	1.0%
Woodlands	495,393	76.1%
Water	96,713	14.9%
Total Acres	650,886	100.0%
<i>Source: NCWRPC GIS Inventory 2020</i>		

OPEN LANDS

Open lands are areas that have no development and are clear of large concentrations of trees, such as open wetlands or fallow farm fields. Less than 2% of land is in this category.

OUTDOOR RECREATION

Vilas County has many areas that are dedicated for public parks and outdoor recreation. With an array of recreational resources provided from local, county, state, and federal sources, the effects of a growing population and accompanying service demands will place greater demands on the recreational facilities. Less than 1% of the county is used for parks and recreation, but that does not include the vast resources of land and outdoor recreation found in the Nicolet and Chequamegon National Forests, the Northern Highland-American Legion State Forest, and the Vilas County Forest.

RESIDENTIAL USES

Residential development has consumed less than 6% of the total land in Vilas County. Residential uses are split into four categories: single family, single family with business, two-family residential, and multi-family residential. Residential development patterns can be generally characterized into four categories. These include: 1) high and low density lakeshore residential, 2) community and neighborhood concentrations, 3) remote subdivisions, and 4) rural, large-parcel forestry/residential. A majority of residential development occurs along or in close proximity to the lakeshore areas. Lakeshore development has occurred on the majority

of the county's lakes which are 50 acres or greater. As the larger lakes become developed, the trend will shift the development pressure to the numerous smaller-sized lakes (less than 50 acres). Much of the lakeshore development consists of second homes and seasonal conversions to permanent housing. Scattered low-density development is occurring in many areas of Vilas County, radiating outward from the lakeshore areas. This demand is impacting land prices and is also creating a larger market (demand) for forested land as available lakeshore property is becoming scarce and expensive.

WOODLANDS

Over three-fourths of the county is comprised of forest land. The majority of this land in forest use is owned and managed by public entities including the U.S. Forest Service, Wisconsin Department of Natural Resources, and the Vilas County Forestry Department. Much of this land is heavily used for recreation and for commercial timber production.

These areas are not only used by local residents, but also attract people from around the nation, and thus protection of these areas is important to maintaining the county's viable tourist economy. Protection of environmentally sensitive areas, such as riparian and forested habitats and floodway areas, whether on public or private land, is important for the same reason.

SURFACE WATER

Vilas County contains approximately 96,650 acres of surface water, including lakes, streams, and islands, which comprise approximately 14.9% of the county's total area. There are approximately 1,320 lakes in Vilas County, including 563 named lakes and 757 unnamed lakes, more than any other county in the state. There are approximately 263 lakes of 50+ acres. The largest is Trout Lake at 3,816 acres. It is also the deepest lake in the County with a maximum depth of 115 feet. There are 3,383 miles of shoreline in Vilas County.

In addition to the significant number of lakes in the county there are also numerous rivers and streams, totally approximately 402 miles. The major river system which travels through Vilas County is the Wisconsin River, which originates at Lac Vieux Desert in the Town of Phelps. Because Vilas County has some of the highest elevations in the state, it is the source of other major river systems such as the Flambeau which with the Wisconsin drain to the Mississippi as well as the Brule and Menominee which flow to Lake Michigan and the Presque Isle discharging to Lake Superior.

Insert Map 2 Land Use

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The majority of Vilas County lies within two watersheds: the Upper Chippewa River Basin in the west/northwest and the Upper Wisconsin River Basin in the central, southern, and eastern areas. In addition, a small portion in the east is included in the Upper Green Bay Basin. Overall, 13 watersheds are included within the county either completely or partially.

Floodplains and wetlands are important subsidiary components to the surface water system as described below.

Floodplain

The primary value of floodplains is their role in natural flood control. Flood plains represent areas where excess water can be accommodated whether through drainage by streams or through storage by wetlands and other natural detention/retention areas. Specific areas that will be inundated will depend upon the amount of water, the distance and speed that water travels, and the topography of the area. If uninterrupted by development, the areas shown on Map 4 as floodplains should be able to handle the most severe (regional) flood, i.e., those that have a probability of occurring once every one hundred years.

There is a value in preserving and protecting these natural flood control areas from encroachment. First, by preventing development in the floodplain, the cost of building dikes, levies, or other man-made flood control devices will be saved. Second, for each structure constructed in a flood-prone area, that area expands, potentially subjecting other structures originally built outside the delineated flood hazard area to the risk of flooding. Each new structure (or modification to existing) placed in the flood plain puts more life and property in danger.

Counties, cities, and villages are required to adopt reasonable and effective floodplain zoning ordinances. The requirement is found in section 87.30 of the Wisconsin Statutes and Chapter NR 116 of the Wisconsin Administrative Code. Floodplain zoning is designed to protect individuals, private property, and public investments from flood damage.

Floodplain zoning maps identify areas where major floods occur. Regulations prohibit development in the floodway, the most dangerous flood area. In other flood areas, the flood fringe, development that is built above flood levels and otherwise flood-protected is allowed if it is in accordance with local ordinances. For regulatory purposes, a floodplain is generally defined as land where there is a one percent chance of flooding in any year (also known as the 100-year floodplain).

In order to participate in the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP), the County has

completed a Flood Insurance Study and a Flood Insurance Rate Map (FIRM) that encompasses Vilas County, see Table 7 for summary of NFIP status. This FIRM delineates the “A” Zones including the floodway and flood fringe which are those areas inundated by the 100-year flood within the County.

**Table 7 FEMA Community Status Book Report
Communities Participating in the National Flood Insurance Program
Wisconsin - Vilas County**

Community	Initial FIBM	Initial FIRM	Current Map	Program Entry
Vilas County	04/17/81	06/05/12	06/05/12	02/21/14
City of Eagle River	12/28/73	06/05/12	06/05/12	N/A

Source: FEMA, 2023.

Concerns about the maps had made Vilas County hesitant to join the National Flood Insurance Program (NFIP). In 2010, as part of FEMA's effort to modernize the floodplain maps, the Wisconsin DNR began updating the Vilas County maps, resolving some of the discrepancies. The new maps use new digital mapping standards and are thus referred to as DFIRMs. The revised maps became effective starting June 5, 2012. Based on these new maps, Vilas County reconsidered its stance on the NFIP, and joined in February 2014. However, the City of Eagle River still has not reconsidered entry into the NFIP. Note that federal lending regulations require flood insurance whether or not a community participates in the NFIP. NFIP participation reduces the cost of the insurance.

For purposes of this plan, the NCWRPC downloaded the revised floodplain mapping from the County's land records database. Although unofficial, these digital files indicate there are **6,251 acres** of floodplain in Vilas County, or about one percent of the area of the County. Map 4 shows the approximate area of the revised floodplains in Vilas County. Floodplains in Vilas are generally small and floods occur only during periods of exceptionally heavy rainfall or in conjunction with snowmelt. Currently, there are no repetitive loss structures, those with multiple flood insurance claims, in Vilas County.

The Biggert-Waters Flood Insurance Reform Act was signed into law in July, 2012. This act implemented significant reforms to the structure of flood insurance under the National Flood Insurance Program (NFIP). Then, on March 21, 2014, President Obama signed the Homeowner Flood Insurance Affordability Act of 2014 (HFIAA) into law amending the NFIP further. These new laws impact the various elements of the NFIP, including Insurance, Flood Mapping, Mitigation, and Floodplain management.

HFIAA repeals and modifies certain provisions of the Biggert-Waters Flood Insurance Reform Act, and makes additional program changes to other aspects of the program not covered by that Act. Many provisions of the Biggert-Waters Flood Insurance Reform Act remain and are still being implemented. The new law lowers the recent rate increases on some policies, prevents some future rate increases, and implements a surcharge on all policyholders. The Act also repeals certain rate increases that have already gone into effect and provides for refunds to those policyholders. Both of these laws are important to local floodplain managers and planners because rate structure increases may increase interest of policy holders that own flood prone properties in alternatives to mitigate both flood risk and flood insurance costs for those properties.



Boulder Lake (NCWRPC)

Wetlands

Wetlands perform many indispensable roles in the function of the hydrologic cycle and local ecological systems. In terms of hazard mitigation, they act as water storage devices in times of high water. Like sponges, wetlands absorb excess water and release it back into the watershed slowly, preventing flooding and minimizing flood damage. As more impermeable surfaces are developed, this excess capacity for water runoff storage becomes increasingly important.

The DNR has identified the location of wetlands on their WISCLAND database. According to this, Vilas County has about 110,632 acres, or 17 percent of its total area. Map 2 shows these wetland areas in Vilas County. These wetlands include a wide variety of wetland types ranging from emergent/wet meadow to scrub/shrub, to deciduous and coniferous forested wetlands. One of the largest wetland areas in the County, at about 18 square miles, is Powell Marsh, a designated waterfowl refuge.

Eradication of wetlands can occur through the use of fill material. This can destroy the hydrological function of the site and open the area to improper development. The Wisconsin Department of Natural Resources (DNR) has promulgated minimum standards for managing wetlands.

Vilas County flew Quality Level 1 Light Detection and Ranging (LiDAR) county-wide with 8 points nominal pulse density per sq meter in the spring of 2022 as a strategic partner with USGS. The county expects the USGS

to have the finalized base data later this year and anticipates the full deliverables in early 2024.

With new high-density LiDAR data available the county hopes it will prompt movement by FEMA to update floodplains county-wide with more accurate delineation that will encourage participation in the flood insurance program.

Insert Map 3 Surface Water

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Insert Map 4 Floodplain

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FUTURE GROWTH AND DEVELOPMENT IN VILAS COUNTY

Vilas County's population has increased 6.6% over the last 3 years (2017 to 2020) for a net gain of 1,440 residents. While the County continues to grow, the rate of growth has declined from the very high rates observed during the 1990's.

From a net growth perspective, residential migration into Vilas County has been solely responsible for all of its population growth because natural growth has been negative (more deaths than births). This growth pattern is reflective of an aging population and the trend in seasonal-to-permanent housing markets.

Based on the county existing land use map (Map 2), a large percentage of existing shoreline on the larger lakes is developed. The focus will move to smaller lakes and stream areas, then to the off-water parcels. In recent years, the demand for private forest land has increased dramatically. The reason for this can be primarily attributed to the decreasing available supply of waterfront property. As the amount of available waterfront property in the county declines, the demand for forest land has been increasing.

According to the current Vilas County Comprehensive Plan, development patterns can be generally characterized into four categories. These include: 1) high and low density lakeshore residential, 2) community and neighborhood concentrations, 3) remote subdivisions, and 4) rural, large-parcel forestry/residential. A majority of residential development occurs along or in close proximity to the lakeshore areas. Lakeshore development has occurred on the majority of the county's lakes which are 50 acres or greater. As the larger lakes become built out, the trend will shift the development pressure to the numerous smaller-sized lakes (less than 50 acres). Much of the lakeshore development consists of second homes and seasonal conversions to permanent housing. Scattered low-density development is occurring in many areas of Vilas County, radiating outward from the lakeshore areas. This demand is creating a larger market (demand) for forested land as available lakeshore property is developed.

Three major trends are identified in the Comprehensive Plan relative to development in the County:

- ✓ Conversion of seasonal to permanent residences will increase as the baby-boomer generation migrates northward for its retirement location.

- ✓ Waterfront development pressure and cost of shoreline property will increase as fewer lakefront properties are available.
- ✓ Large, privately-owned parcels adjacent to lakes will likely face heavy development pressure for subdivision.
- ✓ Pressure as the result of 2017 Wisconsin Act 59 allowing rentals of seven days or more.

The Comprehensive Plan projects overall residential land demand based on the addition of 700 units for year-round residents, and an additional 400 units for seasonal uses. This accounts for seasonal housing making up about 56 percent of the housing stock. Combined about 1,400 new housing units (2010–2030) or about 70 per year per year will be added to the housing stock. Assuming a county wide average of about 2 acres of land needed per unit, 140 acres per year on average is expected to be needed to accommodate anticipated population growth by the year 2040.

Commercial and industrial development is subject to market forces and difficult to predict, however, the Comprehensive Plan projects future development of about 200 acres for commercial uses and about 70 acres for industrial uses over the next 20 years.

Therefore, between 2020 and 2040 based on data presented in the County Comprehensive Plan, it is anticipated that approximately 970 acres will be needed every five-years to support residential, commercial and industrial development demands in Vilas County. Over the twenty-year period about 43,880 acres will be needed to meet overall development demands. However, the backlog of parcels currently available will buffer the amount of "new" acreage taken for development.

New infrastructure or public facilities will be somewhat minimal as budget constraints will curtail local government ability to develop new facilities and result in a tendency to make do with existing infrastructure and delay expansion plans. However, the county is seeing some facility improvements and expansions to meet pressing needs.

In an effort to address an increasing need for more space, Vilas County recently completed an 11-million-dollar expansion of the County Courthouse in 2017. The expansion of the courthouse also involved relocating the numerous departments that were located in the former Vilas County Jail building into the Courthouse. A new communications tower was erected in Conover, and the County has also developed new RV and equestrian campgrounds. The City of Eagle River recently expanded and upgraded its sewer and water facilities as well as a new electric sub-station and high voltage line to create loop redundancy to reduce power outages.

In 2016, the Manitowish Waters Airport rebuilt and extended its primary runway. The Town of Conover has recently completed or is planning the following: recycling transfer station, salt shed, town shop, park buildings and recreational facilities. The Town of Washington will be completing a new fire station within the next 3 years. Improvements at the Town of Winchester include expansion and remodeling of the town community center/library and a new garage. The Lac du Flambeau Band of Chippewa have been adding and expanding facilities including residential treatment facility, tribal dental offices, and youth facility.

CHANGES IN POPULATION, LAND USE, AND DEVELOPMENT TRENDS

The following are implications of Vilas County's population, housing, economic, and land use trends for emergency services and hazard mitigation.

1. Increases in population, housing, and other new development increase the vulnerabilities to hazard risks. Growth can also increase the risk of flooding by increasing stormwater runoff, disrupting natural drainage systems, and reducing flood storage.
2. Increases in population and housing also result in increasing demand for emergency services, which is a special challenge during governmental budgetary constraints.
3. Vilas County's population is aging. Demands for senior services in the county will only increase, including for emergency response. The aging population poses unique challenges for emergency preparedness and response services, such as sheltering-in-place and evacuation strategies. Large numbers of seniors who reside in rural areas may need special attention during a hazard event (e.g., transportation for dialysis during a winter storm, access to medicine.)
4. In some areas, there have been significant numbers of new slab-on-grade residential construction during the past decade. These housing units may not have access to a safe room or storm shelter. There are some mobile homes that also exist in the county, which are more vulnerable during certain types of storm events.

PUBLIC FACILITIES AND SERVICES**TRANSPORTATION**

The transportation system of Vilas County provides the basis for movement of goods and people into, out of, through, and within the County. An efficient transportation system is essential to the sound social and economic development of the County and the Region. The analysis of transportation routes should be considered in the possible event of a disaster (See Map 5).

The principal highways serving Vilas County are (north-south) US Highways 45 & 51 and State Highway 17 and (east-west) State Highways 47 and 70. State Highways 32, 47 and 155 also serve the County. These highways link the County with neighboring communities and are vital to the County's tourism and recreation-based economy.

Networks of county trunk highways collect traffic from rural land uses. These county highways serve an important role in linking the area's recreation and timber resources to the County's major highways and population centers. Local roads provide access to local development and forest areas, as well as the County's lake areas.

Northwoods Transit Connections is a joint service through the Oneida-Vilas Transit Commission to provide transportation for the elderly and disabled as well as the general public within the two counties and surrounding area. A volunteer driver network is also available.

The County does not have any rail lines within its boundaries; however, access to rail service through the Watco is available in Rhineland, just south of Vilas County. The line runs east-west through the southern and central part of Oneida County with access at Rhineland.

Insert Map 5 Transportation

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Commercial air service is available at the Rhinelander-Oneida County Airport located approximately two miles west of the City of Rhinelander. In addition, there are a number of smaller airports serving corporate and tourism/recreation uses. These include Eagle River Union Airport, Lakeland/Noble F. Lee Memorial Airport in Arbor Vitae, Land O' Lakes Airport, Manitowish Waters Airport and Boulder Junction Airport. There are also a number of privately owned air strips in the County.

UTILITIES

Utility systems are important in hazard mitigation planning because of the dependency on water, wastewater treatment, gas service, electricity, and communications. Because of this reliance and vulnerability to hazards, utility systems must be identified for this Plan.

The protection of the public water supply facilities from potential contamination from hazards such as flooding is a consideration for hazard mitigation planning. Vilas County has four municipalities that manage water and waste water services through a public system. The City of Eagle River has a municipal water and sewer system that serves commercial, residential and industrial customers. Land O Lakes municipal water and sewer system services approximately 50% of the residents in Land O Lakes. The Phelps Sanitary District #1 serves 90% of the community of Phelps. The Lac du Flambeau Tribal public sewer system serves approximately 75% of the households in Lac du Flambeau including Tribal facilities.

The protection of the wastewater facilities is an important consideration for hazard mitigation planning because of its potential to contaminate nearby waterbodies in the event of high water. Also, of concern during periods of flooding is the threat of damage to infrastructure and associated facilities.

Excel Energy, Wisconsin Public Service, WeEnergies, and Eagle River Light & Water provide electrical service and natural gas service throughout the county. Eagle River Light and Water services the City of Eagle River and the immediate surrounding area via power purchased through Wisconsin Public Power, Inc. (WPPI). WeEnergies services the northern half of the Town of Washington with electric, all of the Towns of Phelps, Conover, and Land O' Lakes with both electric and natural gas, and the Towns of Presque Isle, Boulder Junction, Manitowish Waters, and Winchester with gas facilities only. Wisconsin Public Service serves the remainder of the county with both gas and electric service. Gas and other petroleum pipelines are not mapped due to homeland security concerns.

Insert Map 6 Utilities

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The infrastructure of electric and telephone lines as well as broadband internet should be considered in the events of high wind, ice storms, tornadoes, flooding, and fire.

The primary telephone provider in the County is Frontier Communications. A number of providers offer cell phone services. Nationwide, cellular telephone systems account for about half of all 911 calls. Service coverage is based upon the handset receiving a direct line-of-sight signal from a system provider's antenna on a tower. Limitations for receiving a signal include topography and the thickness & type of building materials. Signals generally cannot travel well in dense forest cover, over tall hills, or through thick or multiple cement walls.

EMERGENCY SERVICES AND FACILITIES

The type and location of public emergency services are an important consideration in hazard mitigation planning, because of the potential direct involvement of such facilities in certain hazard situations.

Within Vilas County, fire suppression, rescue, and emergency medical services are municipally based. There are several fire departments in Vilas County, all staffed with volunteer personnel. All of these fire departments include rescue capabilities; nine of these fire departments provide ambulance service. Ambulance service in the City of Eagle River and the Towns of Cloverland, Lincoln, and Washington is provided by Aspirus Health based at the hospital in Eagle River. Ambulance service in the Town of Arbor Vitae is provided by Aspirus Health based at Howard Young



Medical Center. However, all of these municipalities are also served by municipal first responders. The City of Eagle River and the Towns of Cloverland, Lincoln, and Washington are members of a joint fire commission and are served by the Eagle River Area Fire Department.

Eagle River Area FD. (City of Eagle

River)

All fire and EMS agencies in Vilas County operate through agreements that form a Mutual Aid Box Alarm System (MABAS). MABAS is a coordinated, preplanned program to get the right equipment and personnel on scene in a timely fashion. Mutual aid agreements also include regional entities like federal and state fire suppression agencies and agencies in adjoining counties in Wisconsin and Michigan.

The lead law enforcement agency in Vilas County is the Vilas County Sheriff's Office. Other law enforcement agencies in the County include: the City of Eagle River Police Department and the Lac du Flambeau Tribal Police.

The Lac du Flambeau Band of Chippewa Indians has its own Police Department that is dispatched through the Vilas County Sheriff's Office Communication Center. The Tribal Police respond to calls on reservation lands in Vilas, Oneida and Iron Counties. In Vilas County this service area covers 71,345 acres.

The Eagle River Police Department provides police protection to City residents. Dispatching is provided for the Department through the Vilas County Sheriff's Office. The Eagle River Police Department has a mutual aid agreement with the Sheriff's Department.

CRITICAL COMMUNITY FACILITIES

In addition to emergency service facilities, other community facilities are also important in hazard mitigation planning. Government administration buildings serve as the headquarters that link to resources in helping solve potential problems. Hospitals are very important for knowing where injured residents have to be transported and as to how many people each hospital can handle if a hazard would breakout.

Two general medical and surgical hospitals serve Vilas County: Aspirus Eagle River Hospital in the City of Eagle River, a 25-bed facility, and Howard Young Medical Center located primarily in Oneida County (Arbor Vitae/Woodruff area). Clinics include Marshfield Clinic Eagle River Center, and Aspirus Clinics in Eagle River and Land O' Lakes.

There are various assisted living facilities located around Vilas County. Elderly care facilities are vulnerable, because of the high level of assistance with the residents that live there. The schools are another facility that is important since hundreds of the county's children are there for much of the year. Map 7 shows the location of selected types of critical community facilities within Vilas County.

Insert Map 7 Critical Facilities

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INVENTORY & VALUE OF STRUCTURES/PROPERTY IN VILAS COUNTY

The value of the real estate and personal property in a community reflects the upper end of the potential for property damage in each community. The annual equalized value of each municipality represents the Department of Revenue estimate of market value (Agricultural land is included at Use Value) of all taxable property. Property tax levies of jurisdictions are apportioned to each municipality on the basis of equalized value. Table 8 lists each municipality's total equalized values for real estate, personal property, and all property and the percent each municipality represents of the county total.

Table 8: Value by Municipality, 2020				
Municipality	Assessed Land Value	Assessed Improvement Value	Managed Forest Land Value	Estimated Fair Market Value
CITY OF EAGLE RIVER	\$52,116,900	\$133,026,300	\$0	\$222,577,300
TOWN OF ARBOR VITAE	\$209,753,900	\$336,336,400	\$9,086,900	\$681,867,900
TOWN OF BOULDER JUNCTION	\$248,110,700	\$249,219,600	\$1,595,200	\$624,844,000
TOWN OF CLOVERLAND	\$120,748,000	\$127,179,600	\$4,773,200	\$350,142,400
TOWN OF CONOVER	\$224,505,500	\$259,732,600	\$8,984,300	\$451,112,800
TOWN OF LAC DU FLAMBEAU	\$520,103,000	\$412,151,000	\$15,188,700	\$1,187,610,100
TOWN OF LAND O LAKES	\$247,709,000	\$199,280,000	\$13,709,200	\$515,880,800
TOWN OF LINCOLN	\$238,453,000	\$338,846,900	\$1,034,100	\$743,538,900
TOWN OF MANITOWISH WATERS	\$291,132,100	\$271,100,700	\$2,409,300	\$752,294,900
TOWN OF PHELPS	\$200,203,200	\$216,437,200	\$5,416,900	\$472,648,900
TOWN OF PLUM LAKE	\$146,461,000	\$109,780,500	\$9,723,700	\$340,829,800
TOWN OF PRESQUE ISLE	\$334,073,000	\$257,882,200	\$13,615,500	\$652,084,200
TOWN OF ST GERMAIN	\$336,903,200	\$364,652,100	\$7,657,000	\$836,663,000
TOWN OF WASHINGTON	\$257,371,000	\$250,224,000	\$6,560,000	\$740,926,500
TOWN OF WINCHESTER	\$150,652,000	\$135,867,300	\$9,523,100	\$333,179,500
County Total	\$3,578,295,700	\$3,661,716,400	\$109,277,100	\$8,906,201,000

The valuation of property in a community reflects the potential for property damages across the community. However, only taxable properties are included in this valuation. Tax-exempt government properties are not included. With Vilas County owning many critical facilities that are needed in times of disaster, the potential for damages to these structures could be devastating for the county. In Table 9a, the county-owned facilities are listed with the general location they are in and the value of the facilities. Estimates for local government facilities are given in Table 9b - c. Tribal facilities are included in Table 9d.

Table 9a: Value of County-Owned Properties		
Name	Value*	Location
Courthouse - Justice Center	\$62,745,796	Eagle River city
Highway Department	\$4,701,559	Eagle River city
Highway Shop - Arbor Vitae	\$3,511,296	Arbor Vitae town
Highway Shop - Boulder Jct	\$2,933,789	Boulder Junction town
Forestry Office / Shop	\$1,263,928	Eagle River city
Fairgrounds	\$1,044,886	Eagle River city
Oldenburg Sports Complex	\$472,962	Cloverland town
Misc. Parks & Recreation	\$3,737,746	Various locations
E911 System, Towers, and buildings	\$4,449,831	Various locations
Total	\$84,897,170	Above locations
<i>*Includes insured buildings, contents, and property in the open.</i>		
<i>Source: Statement of Values, WI Local Gov. Prop. Ins. Fund 2013 & NCWRPC Estimate 2018.</i>		

Table 9b: Value of City Owned Properties

Property	Value*
Street Department	\$1,319,161
Dog Pound	\$101,000
City Parks & Rec. - various	\$890,062
Pleasure Island Golf Course	\$876,882
McKinley Blvd Golf Course	\$3,393,600
Info Bureau - Depot	\$448,440
City Hall	\$2,121,000
Sewer & Water - various	\$2,901,303
Pine Substation	\$151,500
Adams & Mill Substation	\$227,250
Airport	\$2,002,612
Misc. Buildings/Facilities	\$280,275
Sunstien Substation	\$3,535,000
Total	\$18,248,085
*Includes insured buildings, contents and property in the open. Source: City of Eagle River	

Table 9c: Value of Town Owned Properties

Municipality	Property	Value*
Arbor Vitae town	Town Hall / Community Center	\$1,256,615
	Fire Station	\$1,426,763
	Fireman's Park	\$353,822
	Town Garage	\$868,529
	Brandy Park	\$746,055
Boulder Junction town	Town Hall / Community Center	\$1,961,177
	Fire Station	\$677,329
	Museum	\$215,233
	Misc. Recreation	\$132,233
	Maintenance Garage	\$572,264
	Recycling Center	\$112,821
Cloverland town	Town Hall	\$457,017
<u>Conover town</u>	Town Hall / Community Center / FD	\$2,468,400
	Chamber Info Center	\$525,360
	Town Garage	\$471,593
	Town Park	\$1,534,214
<u>Lac du Flambeau town</u>	Town Hall	\$1,955,374
	Fire Department	\$1,246,946
	Transfer Station	\$255,297
<u>Land O' Lakes town</u>	Town Hall / FD	\$3,165,636
	Library	\$2,895,400
	Misc. Recreation	\$950,629
	Town Garage	\$795,269
	Airport	\$907,227
	Misc. Property	\$128,692
Lincoln town	Town Hall	\$1,338,577
Manitowish Waters town	Town Hall / Community Center	\$2,857,009
	Lion's Pavilion and other recreational	\$217,466
	Town Garage and Misc. Storage	\$682,040
	Airport	\$1,261,426
	Library	\$2,329,110

	Rest Lake Park	\$1,243,439
<u>Phelps town</u>	Town Hall / Garage / FD	\$2,765,183
	Misc. Property	\$215,800
	Town Hall	\$809,200
Plum Lake town	Town Garages/Salt Shed/Storage	\$2,290,200
	Library	\$1,922,200
	Misc Recreation & Other	\$1,71,400
	Fire Department	\$619,400
	Ambulance Station	\$308,400
	Town Hall/ Community Cntr / Library	\$2,282,011
<u>Presque Isle town</u>	Fire Department	\$889,497
	Town Garage / Salt Shed	\$1,442,472
	Transfer Station	\$164,245
	Misc. Recreation	\$305,988
St. Germain town	Town Hall	\$1,726,345
	Fire Department	\$na
<u>Washington town</u>	Town Hall	\$424,353
	Town Garage	\$894,729
	Recycling Center	\$83,892
	Misc. Property	\$11,896
Winchester town	Library	\$629,728
	Park Pavilion	\$241,935
	Town Garages	\$153,799
	Emergency Services Bldg	\$579,563
	Recycling Center	\$120,630
Source: Local Gov. Insurance Declarations & NCWRPC Estimates. *includes contents & property in the open		

Table 9d Value of Tribal Owned Properties

Name	Value
Casino / Hotel	\$125,000,000
Tribal Police Dept.	\$600,000
Zaasijiwan Headstart	\$240,000
Cultural Center	\$3,500,000
Community Wellness Ctr	\$7,000,000
Youth Center	\$450,000
Tribal Planning & Info Ctr	\$600,000
Tribal Center	\$4,700,000
GLITC	\$600,000
Health Care Center	\$1,500,000
Family Resource Center	\$330,000
Total	\$144,520,000

Source: NCWRPC Estimates.



Vilas County Courthouse. (NCWRPC)