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LINCOLN COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

Draft for Review

Prepared with the assistance of the North Central Wisconsin Regional Planning Commission

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LINCOLN COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

prepared for:

Lincoln County Emergency Management

by:

North Central Wisconsin Regional Planning Commission

adopted by Lincoln County Board on:

Xxxxxxxx XX, 202X

This update was prepared at the request and under the supervision of the Lincoln County Public Safety Committee and its Emergency Management Director by the North Central Wisconsin Regional Planning Commission (NCWRPC). For more information, contact:

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INTRODUCTION

Part I of the Lincoln County All Hazards Mitigation Plan (AHMP) Update describes and documents the process used to develop the Plan Update. This includes how it was prepared and who (committee, organizations, departments, staff, consultants, etc.) was involved in the update process. It also describes the local government involvement, the time period in which the update was prepared, and who to contact to answer questions and make recommendations for future amendments to the Plan.

LEGISLATIVE REQUIREMENT FOR MITIGATION PLANNING

The development of the Marathon County All Hazards Mitigation Plan Update is a response to federal regulations requiring the update of a local hazard mitigation plan every five years. The Disaster Mitigation Act of 2000 (DMA2K) amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), creating the framework for state, local (counties and incorporated municipalities), tribal and U.S. territorial governments to engage in hazard mitigation planning to receive certain types of non-emergency disaster assistance. Requirements and procedures to implement hazard mitigation planning provisions may be found in the Code of Federal Regulations, Stafford Act Title 44, Chapter 1, Part 201 (44 CFR Part 201).

Since the DMA2K, additional laws have been passed that help to shape hazard mitigation policy. These are codified in amendments to the Sandy Recovery Improvement Act (SRIA) of 2013, the National Flood Insurance Act of 1968, and the Water Infrastructure Improvements for the Nation (WIIN) Act of 2016.

The following grant programs have hazard mitigation plan adoption requirements: Hazard Mitigation Grant Program (HMGP), Public Assistance Grant Program (PA), Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA), Fire Management Assistance Grant Program (FMAG), and Rehabilitation of High Hazard Potential Dams Grant Program (HHPD).

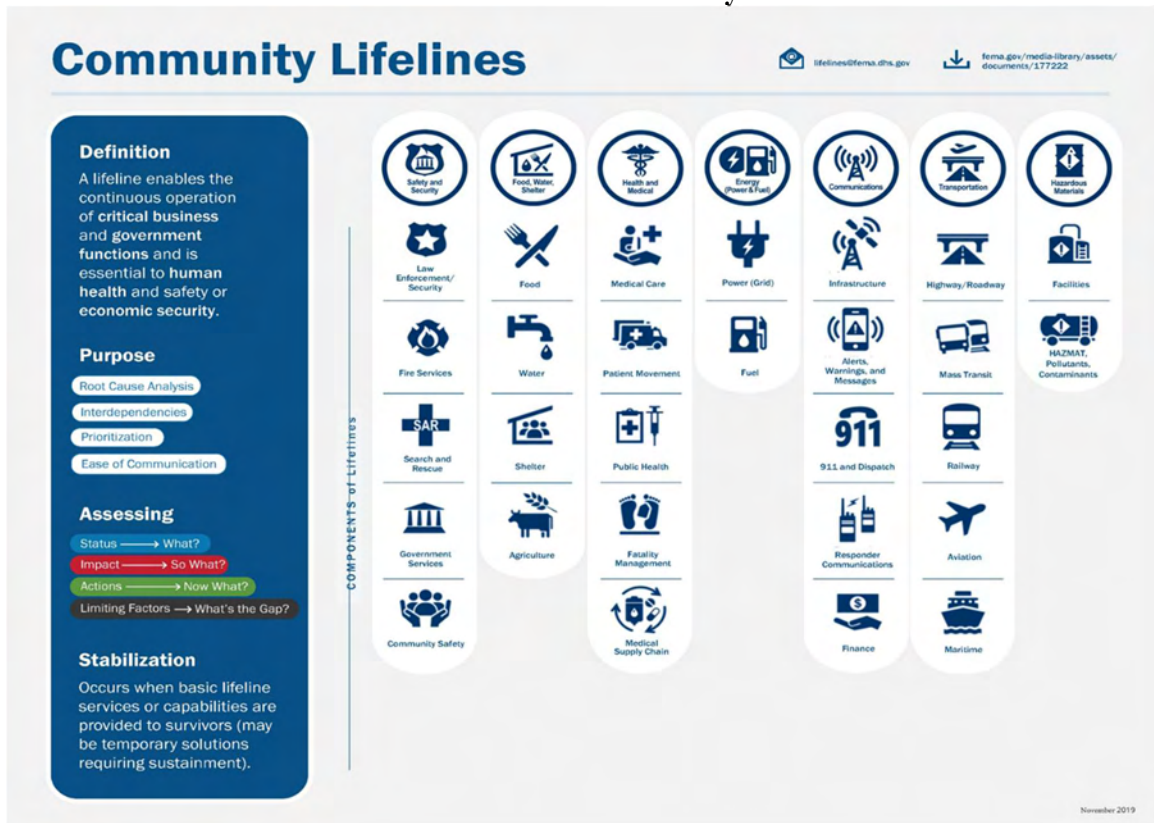
Local hazard mitigation plans form the foundation of a community's long-term strategy to reduce disaster losses and break the cycle of disaster damage, reconstruction and repetitive damage. The Federal Emergency Management Agency (FEMA) supports local mitigation planning to foster partnerships among all levels of government, to develop and strengthen non-governmental and private partnerships, to reduce the costs associated with disaster response and recovery by promoting mitigation activities, and to promote more disaster-resilient and sustainable communities.

Community resilience is the ability of a community to prepare for anticipated hazards, adapt to changing conditions, and withstand and recover rapidly from

disruptions. Activities such as disaster preparedness (which includes prevention, protection, mitigation, response and recovery) and reducing community stressors (the underlying social, economic and environmental conditions that can weaken a community) are key steps to resilience.

"Community lifelines" (see Figure 1) are the infrastructure of resilience that enable the continuous operation of critical government and business functions and is essential to human health and safety or economic security. FEMA developed the community lifelines concept as a disaster response tool, to highlight the priority areas of focus for initial incident stabilization. However, lifelines exist steady-state, and enable all other aspects of society. As such, FEMA now incorporates community lifelines into all of its planning and reporting requirements, including mitigation. Mitigation planning helps to understand risk to and vulnerability of lifelines, to prioritize mitigation investments, and to reduce the likelihood that lifelines will fail as a result of an incident.

FIGURE 1 - FEMA "Community Lifelines"



Source: FEMA.

The Stafford Act lays out requirements for local mitigation plans which are further clarified by FEMA policy guidance.

THE FIVE PARTS OF AN ALL HAZARDS MITIGATION PLAN UPDATE

The Lincoln County All Hazards Mitigation Plan Update was categorized into five parts in order to address FEMA’s local mitigation plan requirements. The five parts are as followed:

Part I:	Update Planning Process
Part II:	Planning Area
Part III:	Risk Assessment
Part IV:	Mitigation Strategy
Part V:	Plan Maintenance Process and Adoption

DEVELOPMENT OF THE ALL HAZARDS MITIGATION PLAN UPDATE

The Lincoln County Emergency Management Department received a Planning Grant at the beginning of 2022 to update its All Hazards Mitigation Plan through the Building Resistant Infrastructure and Communities (BRIC) program.

By mid-2022, the North Central Wisconsin Regional Planning Commission (NCWRPC) finalized a work agreement with Lincoln County, and began preparation of the All Hazards Mitigation Plan Update at the request of the County Emergency Management Director in June of 2022.

The update process included regular Task Force Committee meetings as well as extensive involvement from the local units of government within Lincoln County and the counties surrounding Lincoln. A variety of local and regional agencies were involved in the development of the Plan Update at various stages, and extensive opportunity for public participation was provided including public informational meetings and hearings. All sections of the Plan Update report were reviewed and analyzed by the planning team at subsequent meetings and revised as established in the design of the update process for this Plan.

The remainder of this chapter expands on and provides more detail on key aspects of the update development process.

KEY ELEMENTS OF THE UPDATE TO THE 2018 PLAN

The major enhancements to the Lincoln County All Hazards Mitigation Plan develop through this update are as follows:

- ✓ Review of Recommended Revisions - The final Crosswalk for the previous plan approval listed a number of "recommended revisions" which were addressed in this update through the experience of subsequent plan adoptions from other counties.

- ✓ Review and update of planning area chapter - The planning area description and inventory was improved with additional information and updated statistics.
- ✓ Expanded Hazard Coverage - New hazards addressed in the Update include: Pandemic.
- ✓ Review and update of risk assessment - The risk assessment was updated with documentation on recent hazard events. The priority level of hazards facing the County was also reviewed and updated.
- ✓ Climate Change – A new section directly addressing the impact of climate change is incorporated into the Risk Assessment. The previous plan made only indirect references.
- ✓ High Hazard Dams – High hazard potential dams were specifically addressed in the Risk Assessment as well as other areas of the Plan Update.
- ✓ Review and update of Mitigation Strategy - The mitigation strategies chapter begins with a complete progress report on the strategies from the 2018 plan, establishment of new set of strategies for next five-year cycle and an updated prioritization of projects.
- ✓ The concept of Community Lifelines is introduced into the Plan, see Chapter 1.
- ✓ The concept of Community Resilience is introduced into the Plan, see Chapter 5.
- ✓ New FEMA plan requirements were addressed, including: underserved/vulnerable populations, impacts of climate change on future conditions, effects of climate change and development trends, participating community capability assessment, and expanded NFIP requirements.

ALL HAZARDS MITIGATION PLAN UPDATE TASKFORCE

The Lincoln County All Hazard Mitigation Plan Update was prepared under the authorization of the Lincoln County Public Safety Committee:

- Jesse Boyd, Chair
- Steve Osness, Jr.
- Laurie Thiel
- Dana Miller

This Committee of the County Board delegated oversight of the update process to an ad-hoc Mitigation Planning Taskforce. During the course of the planning process there was some turnover of personnel in some positions on the Taskforce, however current position holders consist of the following:

- County Board Chair (Don Friske)
- Administrative Coordinator (Renee Krueger)
- Public Safety Committee Chair (Jess Boyd)
- Emergency Management Director (Tyler Verhasselt)

Periodic meetings were held with the NCWRPC Staff and the Mitigation Planning Task Force to provide guidance and input on the types of hazards to be considered, appropriate mitigation strategies, and to review draft reports.

LOCAL GOVERNMENT INVOLVEMENT

There were a number of opportunities for the local units of government to become involved in the update process. All jurisdictions participated in the original plan as well as this update through one or more of these opportunities.

In August of 2022 a hazard mitigation issues survey was sent to each town (unincorporated areas) chairperson and clerk requesting which hazards are a concern, input on past and future mitigation measures, and to document other information that could be incorporated into the All Hazards Mitigation Plan Update. Responses were received from 6 of 16 towns. A significant amount of information was gleaned from these questionnaires and incorporated into the planning document.

Some of the primary issues identified in the survey results include the following:

- Presence of extensive woodlands: high wind and wildfire (dead tree removal and brushing)
- Blockage of roads and downed power lines (high wind and winter storm)
- Road washouts: flooding
- Culverts (upgrading, enlarging) / ditching / building up roads
- Lack of funding for road work / maintenance to prevent flooding

The City of Tomahawk was formally introduced to the update process at a separate meeting on August 23, 2023 with NCWRPC and County EM Staff. The participants at this meeting provided information on hazards that have significance to the area, discussed critical facilities and provided mitigation strategy ideas for the plan. The following City officials participated in this planning meeting:

- Steve Taskay, Mayor
- Amanda Bartz, Clerk-Treasurer
- Al Elvins, Police Chief
- Paul Winter, Fire Chief

- Nick Rosenmeier, Street Dept. Leadperson

Discussion from this meeting indicated that the City's main hazard concern is the flooding potential due to the dams that the City is built around. Issues discussed included a nursing home located on the river and potential for bridge washout to bisect the community. The City's other top hazard concern is high wind due to expenses incurred for clean-up.

Other concerns discussed include the threats posed to its critical emergency infrastructure and water supply. Two things are of particular concern to City officials: 1) the proximity of a major liquified petroleum (LP) gas storage facility to its police, fire and public works facilities and 2) the proximity of railroad tracks carrying unknown chemicals past its municipal water supply wells (also noted use of herbicides to keep tracks clear of vegetation). Possible ways to help the City deal with these problems include construction of an emergency command center a safe distance from the LP storage and development of a second well field and water tower.

In addition to the dam failure/bridge washout, LP facility, and railroad issues, the City identified a number of other concerns, including: building collapse / entrapment due to the number of large structures for a small community, underground gas lines, computer system security / backup, and very large events such as the annual Fall Ride. Because of these unique vulnerabilities, the City has been working on, and recognizes the need for more, risk assessment and planning for emergency operations command and control to be able to better maximize their limited resources.

The City of Tomahawk does not have assets outside its planning area (city corporate limits).

The City of Merrill was formally introduced to the update process at a separate meeting on August 14, 2023 with NCWRPC and County EM Staff. The participants at this meeting provided information on hazards that have significance to the area, discussed critical facilities and provided mitigation strategy ideas for the plan. The following City officials participated in this planning meeting:

- Steve Hass, Mayor
- Corey Bennett, Police Chief, City Co-Administrator
- Josh Klug, Fire Chief
- Dustin Bonack, Street Superintendent
- Gabe Steinagel, Utility Manager

Tornado and dam failure/flooding remain the City's top hazard concerns. Dam failure / flooding has the potential to cut off parts of the city, and certain critical facilities lie in flood zones. Because of this potential the City talked about the need to operate from multiple command posts during a major event. They also identified

the need to protect wells from flooding and provide back-up power to keep them operating. Stormwater management and water system improvements to improve the City's ability to handle flooding were also discussed.

In addition, the City brought up communications issues such as citywide radio compatibility so that emergency services can coordinate with other city departments such as public works, and a back-up radio repeater with back-up power to ensure operation in case the primary system is compromised during an event. They also talked about replacing the chlorine gas component of their wastewater treatment to eliminate the leak threat.

The City of Merrill identified two asset properties lying outside its planning area (city corporate limits). These include the a park area in the Town of Merrill and the Merrill School Forest located in the Town of Rock Falls. Outside of the periodic presence of children, no extraordinary or unique risk were identified for these areas.

Following the city meetings, NCWRPC Staff also interviewed each city's Building Inspector who also have zoning administration duties. The primary discussion during these interviews revolved around floodplain zoning and NFIP compliance, refer to Table 7B in Part II.

NEIGHBORING COMMUNITY INVOLVEMENT

One of the requirements of the update process was to include neighboring communities. In previous plans, the NCWRPC experienced low attendance in response to invitations to county emergency management staff from surrounding counties. As a result, NCWRPC Staff emailed a copy of the Update draft to Emergency Management Staff from Oneida, Langlade, Marathon, Taylor and Price counties. The email asked for review and comment and solicited ideas about potential for coordination on mitigation strategies between the various counties.

LOCAL AND REGIONAL AGENCY INVOLVEMENT

Another requirement of the update process was to involve local and regional agencies that have a role in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and non-profit interests. Although many of these categories are satisfied by the Plan Taskforce (see above), to further meet this objective and provide an opportunity for greater participation in the planning process, the NCWRPC invited a diverse group of stakeholders to discuss potential hazard mitigation strategies.

The meeting was held on August 31, 2023 at the Lincoln County Service Center Building in Merrill. Agencies and organizations represented include the following:

- Kevin McFadden, Aspirus Health - Merrill

- Michael Dassler, Aspirus Health - Tomahawk
- Tom Boisvert, Lincoln County Conservation Program Manager
- Mike Huth, County Land Services Administrator / Zoning Program Manager
- Travis Spoehr, Lincoln County Information Technology Director
- Shelley Hersil, Lincoln County Health Dept. Director
- Kristin Bath, County Health Dept. Emergency Preparedness Specialist
- Michael Mandli, County Health Dept. Environmental Health specialist

A number of other agencies were invited but chose not to attend, see Appendix A for full list.

During the meeting, the Plan Update and its components were introduced to the attendees. Mitigation strategy ideas were solicited, and a number of ideas were discussed at length with the group. Part IV of the Plan was revised based on the meeting.

The meeting resulted in good discussion on a diverse range of topics spanning all four phases of emergency management. Meeting attendees talked about the importance of cyber security and internet access in maintaining vital operations; issues related to emergency event communications and the need for a community alert and notification system; and staffing shortages on both the public and private (e.g. medical) sides. Also discussed were mass care and sheltering issues including relocation in case of power outage or otherwise compromised facility (including both public and private care facilities); addressing functional needs; and environmental compliance (food and drinking water safety – camper safety).

Participants also talked about how COVID has challenged their operations, bringing to light supply issues, transportation issues, issues with patient (persons needing care) surge, messaging and communications and other logistical problems resulting from a major event. This also led to discussion about the need for redundancy and back-ups for everything from communications, power, water, to locations for mass care, sheltering, staging and operations.

Other interesting discussions revolved around drought conditions across much of the state, the impact on agriculture (and farmers), and the limited resources to address; as well as, the growing elderly population which can be isolated from information and resources, and the need to help those individuals.

UNDERSERVED COMMUNITIES AND VULNERABLE POPULATIONS

FEMA has placed an emphasis on underserved communities and socially vulnerable populations. These concepts present an opportunity to expand local hazard mitigation plans to help increase the community benefits of hazard mitigation.

The term “underserved communities” refers to populations sharing a particular characteristic or geography that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life. Social vulnerability is the potential for loss within an individual or social group, recognizing that some characteristics influence an individual’s or group’s ability to prepare for, respond to, cope with, or recover from an event.

Within Lincoln County and the Cities of Merrill and Tomahawk a number of general population groups that are often identified as underserved or vulnerable were identified. These include school aged children, disabled persons, the elderly, minorities, persons who speak with limited English proficiency, and low income individuals or families. Geographic analysis of these populations was conducted by NCWRPC Staff, see Appendix C, to assist with the analysis and discussion of the underserved and/or socially vulnerable populations within Lincoln County. No specific geographic locale was identified for any of these types of groups in Lincoln County, the City of Merrill or the City of Tomahawk, rather these populations are spread out across the planning areas.

Outreach and involvement to address underserved or vulnerable populations included identifying and contacting agencies and organizations that advocate or serve those individuals. Due to the small, rural nature of the area the number of resources is limited. The following were invited to participate in the mitigation planning process:

- Mike Rhea – Director, Aging & Disability Resource Center of Central WI
- Shelly Hersil, Director, Lincoln County Health Department
- Jessi Rumsey, Director, Lincoln County Social Services
- Shannon Murray, Superintendent, Merrill Area Public Schools
- Wendell Quesinberry, Administrator, Tomahawk School District
- Ryan Hanson, Administrator, Pine Crest Nursing Home
- Nursing Home Director, Riverview Health Services
- Nursing Home Director, Tomahawk Health Services
- Lynn Ross, Director, Merrill Housing Authority
- Director, Woodland Court Elder Services
- Director, Bell Tower Residence
- Director, Milestone Senior Living
- Director, Artisan Assisted Living & Memory Care

PUBLIC REVIEW PROCESS AND PLAN ADOPTION

Opportunities for public comment were provided to review the Plan Update during the drafting stage and prior to Plan Update approval. See APPENDIX A for copies of public meeting notices. Copies of draft Plan Update elements were made available on the Internet during the planning process. Links that open an email submission form to the County Emergency Management Director or NCWRPC Staff were provided for questions or comments. The final Plan Update document

will remain on the Internet until the next draft update is posted for review. The public can continue to submit questions or comments at any time via the email link. (See Contact Information, below, for web addresses.)

County Public Safety Committee meetings are always open to the public (unless entering into legal closed session), and the public can bring questions or comments regarding this Plan Update to any regular meeting. Meeting schedules can be obtained by checking the County website, contacting the County Clerk's Office or the Emergency Management Director (see Contact Information, below).

A public informational meeting on the draft update was held at the Lincoln County Service Center Building on August 31, 2023. Notices were distributed to each local unit of government and posted in the local newspapers. The meeting had three (3) members of the public in attendance. They were concerned about road washouts and asked about weather radios. Road washouts and weather radios are both addressed in the mitigation strategies recommended in this plan. There was some general discussion on these and a few other random topics. No written comments were submitted.

[PLACEHOLDER TEXT: The final adoption process will be summarized here upon its completion. Following WEM and FEMA signoff on the draft report, this process will include final committee review and approval with public hearing and draft resolution; county board meeting for adoption of Plan Update by resolution; and printing and distribution of final document.

]

The Cities of Merrill and Tomahawk were asked to adopt the Plan Update for their jurisdictions at their own properly posted and open public meetings, see APPENDIX B for the County and other local units resolutions of adoption.

INCORPORATED PLANS, STUDIES, REPORTS AND TECHNICAL DATA

Many plans, reports, and technical data sources were referenced and incorporated into the Lincoln County All Hazards Mitigation Plan Update. These sources include but are not necessarily limited to the following:

Wisconsin Department of Natural Resources, North Central Wisconsin Regional Planning Commission and Lincoln County geographic information system databases provided much of the base data for the mapping and analysis within the Update. Statistical reports and data from the US Census and Wisconsin Departments of Administration, Revenue and Workforce Development were used for the demographic background in Part 2 of this Update. Land use data in Part 2 was obtained from the Lincoln County Comprehensive Plan.

Wisconsin Department of Natural Resources Wetlands Inventory and Dams Database were used to identify and map wetlands and dams within the County for Maps and Tables in Parts 2 and 3 of this Plan. The WisDNR Dams Database also provided information on high hazard dams within the County. NFIP DFIRM flood zone maps for Lincoln County provided the mapping of 100-year floodplain areas in Part 2 and for the flooding risk assessment in Part 3. The FEMA Flood Insurance Study for Lincoln County provided background information on flooding conditions within the County. The FEMA Community Status Book was also referenced.

NOAA National Climatic Data Center severe weather event data was used extensively for the risk assessment in Part 3. The Wisconsin Initiative on Climate Change Impacts 2021 Assessment Report was used for climate change data and analysis. The wildfire section of the risk assessment was based on the Wisconsin Department of Natural Resources' fire occurrence database and statewide Communities At Risk (CAR) assessment.

Other plans, reports, and documents were reviewed by Staff during the update process including but not limited to the State of Wisconsin Hazard Mitigation Plan; the Hazard Analysis for the State of Wisconsin, the Wisconsin Repetitive Loss Report, the Lincoln County Zoning Ordinance, City of Merrill Zoning Ordinance, City of Tomahawk Zoning Ordinance, the Lincoln County Comprehensive Plan, City of Merrill Comprehensive Plan, City of Tomahawk Comprehensive Plan, the Lincoln County Land and Water Resource Management Plan, the Lincoln County Continuity of Operations Plan, the 2010 LTPO Preparedness in Wisconsin report, the North Central Wisconsin Pandemic Assessment and Future Response Plan and the North Central Wisconsin Regional COVID-19 Recovery Plan. Although some of these may not have been directly incorporated, the review provided valuable insight and direction to the update process.

CONTACT INFORMATION

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Merrill, WI 54452

Go to: <https://co.lincoln.wi.us/emergency-management>

INTRODUCTION

Part II of the Lincoln County All-Hazard Mitigation Plan provides general geographical information on Lincoln 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

Lincoln County is located in north-central Wisconsin (See Map 1). The largest urban areas are the City of Merrill, located along the Wisconsin River in the south-central portion of the County, and the City of Tomahawk, located along the Wisconsin River in the north-central portion of the County. There are also several unincorporated hamlets. The County is bounded on the north by Oneida County, on the east by Langlade County, on the south by Marathon County, and on the west by Taylor and Price Counties.

Lincoln County lies approximately 110 miles northwest of Green Bay; 118 miles northwest of the Fox Valley; 210 miles northwest of Milwaukee; 15 miles north of Wausau; 7 miles south of Rhinelander; 167 miles north of Madison; and 185 miles northeast of La Crosse. Major metropolitan areas outside of Wisconsin with transportation linkages to Lincoln County are Chicago, 299 miles southeast; Minneapolis-St. Paul, 190 miles west; and Duluth, 213 miles north.

CIVIL DIVISIONS

There are 18 municipalities (16 towns, City of Tomahawk, and City of Merrill) in the Lincoln County planning area. These units of government provide the basic structure of the decision-making framework. The County has a total surface area of 907 square miles, of which 3.1% is water. The area and proportion of the County within each civil division are presented in Table 1.

<i>Municipality</i>	<i>Area in square Miles</i>			<i>Area as % of County</i>
	<i>Total Area</i>	<i>Water Area</i>	<i>Land Area</i>	
Birch town	36.11	0.47	35.64	4.0%
Bradley town	63.03	8.24	54.79	7.0%
Corning town	146.43	0.25	146.19	16.1%
Harding town	72.84	1.45	71.39	8.0%
Harrison town	72.33	3.38	68.95	8.0%
King town	36.93	3.43	33.5	4.1%
Merrill city	8.09	0.57	7.52	0.9%
Merrill town	53.19	1.58	51.61	5.9%
Pine River town	63.98	0.53	63.45	7.1%
Rock Falls town	49.17	1.49	47.68	5.4%
Russell town	36.33	0.54	35.79	4.0%
Schley town	48.36	0.21	48.15	5.3%
Scott town	30.73	0.56	30.17	3.4%
Skawanaw town	35.89	0.59	35.31	4.0%
Somo town	36.29	0.14	36.16	4.0%
Tomahawk city	9.46	1.58	7.88	1.3%
Tomahawk town	71.63	1.73	69.9	7.9%
Wilson town	36.22	1.29	34.92	4.0%
<i>Lincoln County</i>	<i>907</i>	<i>28.03</i>	<i>878.97</i>	<i>100.0%</i>

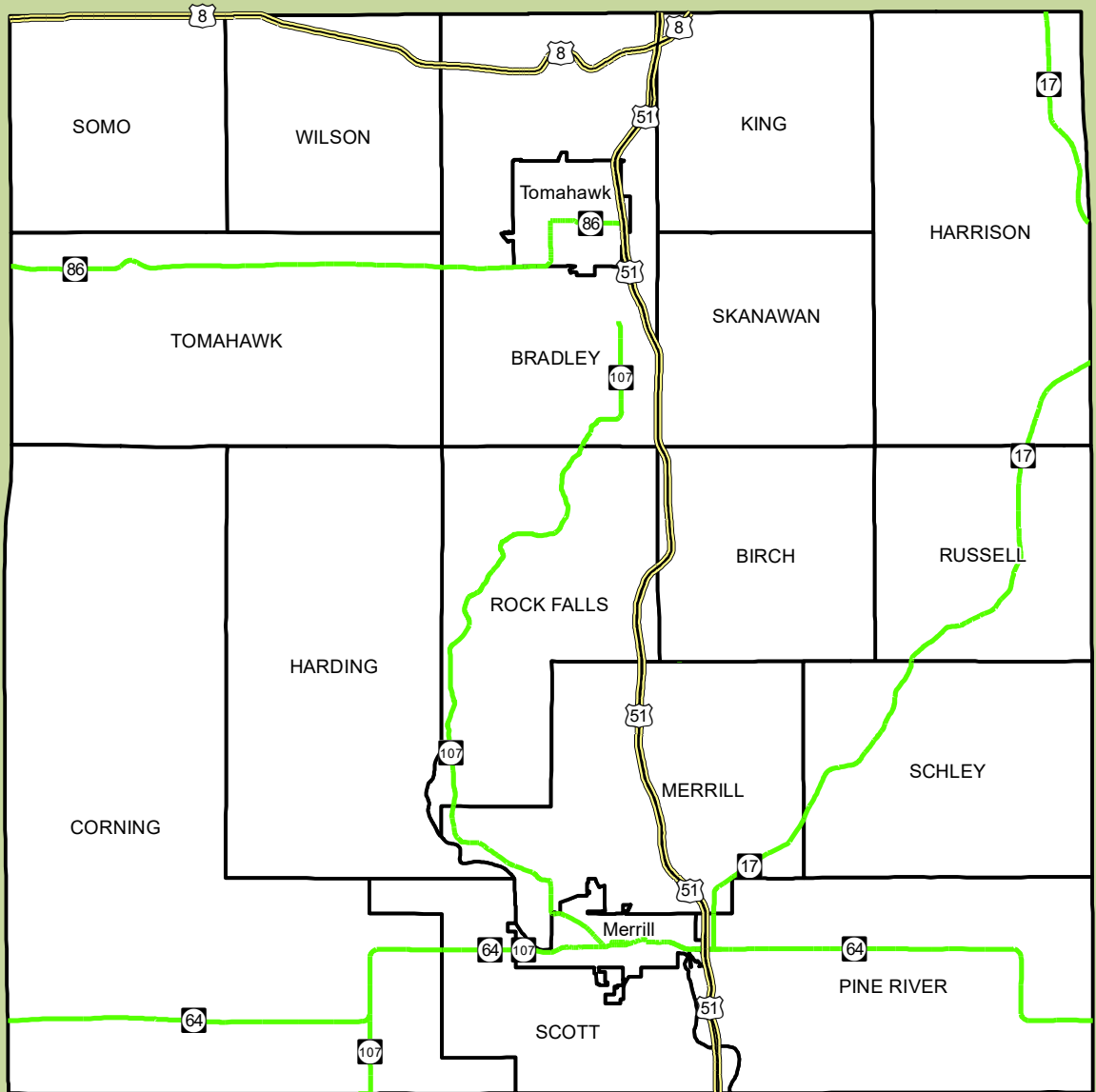
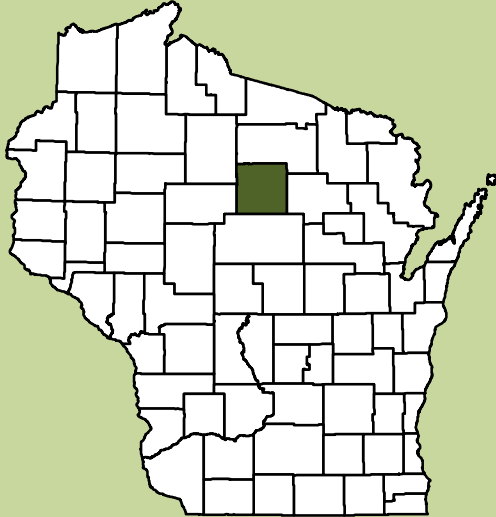
Source: US Census and NCWRPC 2022.

TOPOGRAPHY

Lincoln County is in the Northern Highland physiographic region of Wisconsin. This region has some of the highest elevations in the State, and elevations in the County range from about 1,910 feet above sea level just east of Ament Lake in the northeast to about 1,220 at the point where the Wisconsin River leaves the County. Merrill is about 1,300 feet above sea level, and Tomahawk is about 1,450.

The physiography, relief and drainage of the County are primarily the result of glaciation. They are modified by ridges of hard bedrock in the southern part of the County. The landscape is very diverse. Moraines, eskers, kames, ice-contact lake basins, and drift-mantled ridges and hills of bedrock are generally in the highest positions on the landscape. These landforms are interspersed with lower areas of outwash plains, drumlins, lake plains, and bogs and other depressional areas where organic soils have formed.

The most prominent physiographic feature is the broad belt of end moraine that extends across the County from the northeastern part to the south-central and then through the west-central area. This end moraine area has the highest elevations and the roughest terrain in the County.



Source: WIDNR, NCRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCRPC is not responsible for any inaccuracies herein contained.



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CLIMATE

Winters in Lincoln County are very cold, and summers are short but fairly warm. The short frost-freeze period limits the production of crops. An annual average of 126.9 days had a snow depth equal to or greater than .1 inches. The prevailing wind is from the southwest, and average wind speed is highest in spring at 12 miles per hour. Precipitation is fairly well distributed throughout the year, reaching peak in summer, and snow covers the ground during much of the period from late fall through early spring.

In winter, the average temperature is 15 degrees F with the average daily minimum at 4 degrees. The lowest temperature on record (Merrill) was -48 in January of 1909. Soils usually freeze to depth ranging from a few inches up to one foot, but occasionally can freeze to several feet when cold temps occur before appreciable snow cover. In summer, the average temperature is 66 degrees and the average daily maximum temperature is 79 degrees. The highest recorded temperature was 110 degrees in July of 1936.

Average total annual precipitation is 33.6 inches. Of this about 70% usually falls in April through September. The heaviest 1-day rainfall on record (Merrill) was 11.25 inches over July 23 and 24 of 1912. Thunderstorms occur on about 34 days each year. Average seasonal snowfall is about 53 inches, with 108.2 inches (2019) being the greatest total on record. The highest 1-day snowfall on record (Merrill) was 21.2 inches on January 6, 1929.

DEMOGRAPHIC AND ECONOMIC PROFILE

POPULATION AND HOUSEHOLDS

The 2020 US Census for Lincoln County shows a population of 28,414 people (refer to Table 2). This represents a 1.14 percent *decrease* from the 2010 Census reported population of 28,743 people. This is in contrast to relatively strong growth in neighboring counties like tourism and retirement driven Oneida and urban/commercial center Marathon, which parallel the overall state growth rate. However, the slightly declining trend is in-line with other adjacent counties more similar in character to Lincoln like Langlade, Price and Taylor. If this growth trend continues at the current level, there will be approximately 28,091 people in Lincoln County in 2030 and 27,771 people in 2040.

Population concentrations and trends are important when prioritizing hazard mitigation strategies. Approximately 38 percent of the population is classified by the Census as urban and 62 percent is rural. The City of Merrill is the most densely populated and developed area in the County. Other areas of population concentrations are the City of Tomahawk, waterfront development in the Towns of Harrison, King, Bradley, Wilson, Merrill, and Harding, and the unincorporated “hamlets” of Gleason, Bloomville, and Irma. Map 2 (Land Use) shows areas of population concentrations in the County. Overall population density of the County

is about 31.3 persons-per-square-mile and ranges from a high of 1,155 in the City of Merrill to a low of 3.4 in the Town of Somo.

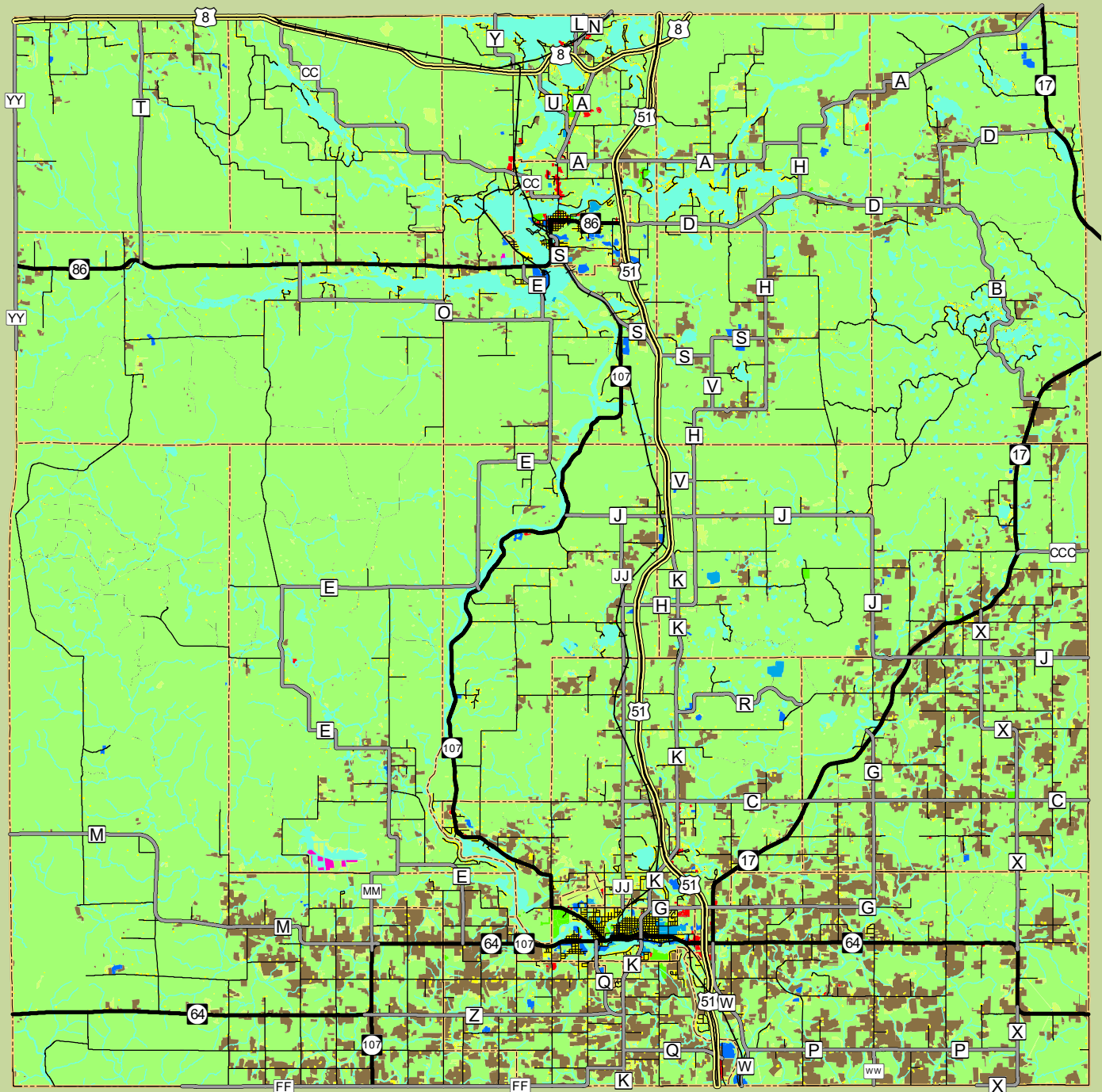
County	2010	2020	Change	% Change
Lincoln	28,743	28,415	-328	-1.14%
Langlade	19,977	19,491	-486	-2.43%
Marathon	134,063	138,013	3,950	2.95%
Oneida	35,998	37,845	1,847	5.13%
Price	14,159	14,054	-105	-0.74%
Taylor	20,689	19,913	-776	-3.75%
Wisconsin	5,686,986	5,893,718	206,732	3.64%

Source: US Census and NCWRPC 2022.

Between 2010 and 2020, about half of the communities within Lincoln County have experienced a slight to moderate decrease in their population base, while the other half generally saw slight to moderate increases (refer to Table 3). The highest level of growth occurred in the Town of King with a 12.7 percent increase between 2010 and 2020. The growth rate in King also yielded the highest total number of actual residents added with 109. The City of Merrill lost the most residents in declining by 314 people, but the Town of Corning faced the highest rate of decline at -6.6 percent.

The growth in households continues to outpace the growth in population, reflecting the aging population and on-going decline in persons-per-household. The Town of Birch increased 26.5%, for a net addition of 50 households. The City of Merrill added the highest number of actual households with 222. There were exceptions to household growth, with the percent of households decreasing in the Towns of Pine River, Russell, Schley, Somo, Wilson and the City of Tomahawk.

According to the Census the average age in Lincoln County is 47.9 or 8.3 years older than the state average of 39.6 years. About 27 percent of the population is 62 years and over while only 18 percent is under 18.



Legend

- | | |
|-----------------------|------------------------------|
| Minor Civil Divisions | Governmental / Institutional |
| US Highway | Industrial |
| State Highways | Open Lands |
| County Highways | Outdoor Recreation |
| Local Roads | Residential |
| Railroad | Transportation |
| Agriculture | Water |
| Commercial | Woodlands |
| Cranberry Bog | |



Source: WIDNR, NCWRPC, Airphoto interpretation 2015
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<i>Municipality</i>	<i>2010 Population</i>	<i>2010 Households</i>	<i>2020 Population</i>	<i>2020 Households</i>	<i>2010 – 2020 Change in Population</i>	<i>2010 – 2020 Change in Households</i>
Birch town	594	189	570	239	-4.0%	26.5%
Bradley town	2,408	1089	2,382	1,113	-1.1%	2.2%
Corning town	883	330	825	391	-6.6%	18.5%
Harding town	372	140	364	148	-2.2%	5.7%
Harrison town	833	356	828	374	-0.6%	5.1%
King town	855	373	964	432	12.7%	15.8%
Merrill city	9,661	4,175	9,347	4,397	-3.3%	5.3%
Merrill town	2,980	1,204	2,881	1,396	-3.3%	15.9%
Pine River town	1,869	754	1,874	749	0.3%	-0.7%
Rock Falls town	618	266	635	309	2.8%	16.2%
Russell town	677	276	693	269	2.4%	-2.5%
Schley town	934	378	950	372	1.7%	-1.6%
Scott town	1,432	537	1,377	623	-3.8%	16.0%
Skanawan town	391	165	386	150	-1.3%	-9.1%
Somo town	114	52	123	35	7.9%	-32.7%
Tomahawk city	3,397	1,480	3,441	1,319	1.3%	-10.9%
Tomahawk town	416	193	458	206	10.1%	6.7%
Wilson town	309	137	317	132	2.6%	-3.6%
Lincoln County	28,743	12,094	28,415	12,654	-1.1%	4.6%

Source: US Census and NCWRPC 2022.

SEASONAL POPULATION

In addition to the regular full-time resident population, the impact of seasonal population cannot be overlooked when planning for hazards. Although not as significant as in neighboring Oneida County, 20.8 percent of Lincoln's housing stock has been identified as seasonal/recreational. Roughly 22 percent of the County's seasonal housing units are in Bradley. There are also significant units in the towns of Harrison (16.3%) and King (12.0%). Table 4 shows estimated seasonal residents by municipality. 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 Wisconsin DNR completed a general inventory as part of its statewide comprehensive outdoor recreation plan. That inventory identified 713 hotel/motel

beds, 28 bed and breakfast beds and 76 other types of beds available around the County. The DNR also identified 574 campsites in various campgrounds across the County as well as educational/recreational camps with capacity for 406 individuals. Short term, special event attendance can result in a major influx of population in a given localized area and present unique problems in a disaster situation. For example, the annual Tomahawk Fall Ride brings many thousands of people into the area for just a few days.

Table 4: Estimated Seasonal Resident Population

<i>Civil Division</i>	<i>Est. 2020 Seasonal Housing Units</i>	<i>Est. 2020 Seasonal Population</i>
Birch town	35	83
Bradley town	794	1,699
Corning town	141	298
Harding town	131	322
Harrison town	585	1,295
King town	432	964
Merrill city	57	121
Merrill town	74	153
Pine River town	38	95
Rock Falls town	168	345
Russell town	79	204
Schley town	32	82
Scott town	31	69
Skanawan town	138	355
Somo town	71	250
Tomahawk city	188	490
Tomahawk town	256	569
Wilson town	338	812
Lincoln County	3,588	8,057

Source: US Census and NCWRPC 2022.

EMPLOYMENT

According to the Wisconsin Workforce Development, the Manufacturing sector, the Trade, Transportation & Utilities sector, and the Education & Health Services sector are the top employers in Lincoln County. The Manufacturing industry produces everything from wood products to motorcycle accessories and parts to paper and metal products and is the largest employer, with 2,187 workers. The Trade, Transportation, and Utilities sectors employed 2,004 workers in 2020. The school districts and healthcare facilities are also some of the largest employers in the area, employing 1,785 persons. Together these three sectors employ over 59 percent of the County’s workers. Identifying locations of large employment is important when prioritizing hazard mitigation strategies. Table 5 displays the top employers in the area.

Beginning in 2020, the Corona Virus Pandemic had a significant impact on employment. Over the course of 2020, employment in Lincoln County decreased by 815 jobs or 7.5% across all industries, according to the Wisconsin Department of Workforce Development. For most of the state, the Leisure & Hospitality sector suffered the greatest losses, however, in Lincoln it was the Manufacturing sector that experienced the highest numerical loss in employment with 331 (-13.1%). Public Administration had the greatest proportional loss in employment with 200 (-19.5%). Leisure & Hospitality had the third most job losses in Lincoln County with 141 (-13.6%). It is interesting to note that Lincoln County’s annual employment had been increasing by about 68 jobs on average over the 2010s until being interrupted by the pandemic. The County did have a quick bounce back with nearly half of the job losses recovered by the end of 2020. However, as of June 2021, employment was still down 6.4% and the pace of recovery has slowed considerably, according to Workforce Development. The point where employment will reach pre-pandemic levels is unknown.

Table 5: Selected Major Employers in Lincoln County

<i>Company</i>	<i>Product or Service</i>	<i>Size</i>	<i>Location</i>
Merrill Public School	Public Education	500-999	Various locations
Church Mutual Insurance Co.	Insurance Carrier	500-999	City of Merrill
County of Lincoln	County Public Employment	250-499	Various locations
Packaging Corp. of America	Paper Mill	250-499	City of Tomahawk
WI Dept. of Corrections	Correctional Facilities - Public	250-499	Various Locations
Harley-Davidson Motor Co.	Motorcycles and Parts	250-499	City of Tomahawk
Lincoln Wood Products, Inc.	Wood Windows and Doors	100-249	City of Merrill
Sierra Pacific Windows	Wood Windows and Doors	100-249	City of Merrill
Weinbrenner Shoe	Leather Finishing	100-249	City of Merrill
School District of Tomahawk	Public Education	100-249	City of Tomahawk

Source: Wisconsin DWD County Workforce Profile 2013, Lincoln County Profile 2017, and NCWRPC 2022.

LAND USE/LAND COVER AND DEVELOPMENT PATTERNS

Table 6: Lincoln County Generalized Land Use		
<i>Description</i>	<i>Acres</i>	<i>%</i>
Agriculture	52,832.89	9.1%
Commercial	1,049.75	0.2%
Cranberry Bog	254.00	0.0%
Governmental / Institutional	790.38	0.1%
Industrial	1,623.04	0.3%
Open Lands	15,151.55	2.6%
Outdoor Recreation	890.85	0.2%
Residential	12,808.46	2.2%
Transportation	7,907.59	1.4%
Water	17,370.41	3.0%
Woodlands	469,494.27	80.9%
Total	580,173.19	100.0%
<i>Source: NCWRPC Base 2015 w/ minor updates thru 2022.</i>		

Land use is an important determinant in the potential impact a particular hazard may have, and in actions 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 North Central Wisconsin Regional Planning Commission (NCWRPC) has categorized land use in Lincoln County into eleven classifications based on land use

data compiled in 2015 and analyzed in 2016. The data has had minor updates since 2016 from various other projects around the County. A full update is pending at the time of this writing. This generalized land use provides a "big-picture" understanding of land use and development patterns within Lincoln County. Map 2 shows the land use and surface water in Lincoln County. Table 6 shows the acreage and percent of each classification.

FORESTRY AND AGRICULTURE

The dominant land-use in Lincoln is forestry. Land area is approximately 81 percent forested, comprised of approximately 469,494 acres of woodland. Agricultural land covers another 9.1 percent of the County’s land area, which is mostly located on previously forested tracts that were cleared by early settlers. Dairy, beef, cash crops, ginseng, strawberries, cranberries, apples and maple syrup make up the core of what Lincoln County farmers produce off the land. A short growing season, irregular topography, and relatively poor soil productivity, limits most of the agricultural production to the southern portions of the County.

COMMERCIAL AND INDUSTRIAL DEVELOPMENT

Commercial and industrial development makes up only about 0.5 percent of the total County area. Such land use is mostly located in and around the two cities of Merrill and Tomahawk. There are three designated industrial parks in the County; one in each of the cities and Town of Merrill. Other industrial sites are located in the Town of Bradley. Commercial activity is also located in the Cities of Merrill & Tomahawk and the Towns of Bradley & Merrill where these areas serve as sub-regional service hubs supported by the surrounding forestry and agri-business industry. Commercial activity in the unincorporated areas is primarily dominated

by private commercial recreation. However, some rural centers act as mini service hubs with notable commercial/industrial development. For example, within Gleason there is a bank, gas station, bowling alley, post office, race track, limited commercial, and a variety of restaurants.

RESIDENTIAL DEVELOPMENT

Land in residential development makes up approximately 2.2 percent of the total county area. Residential concentrations are scattered throughout the County (see “Population and Households” above). Much of the scattered rural development is related to direct recreational demand as various types of housing have clustered along streams and lakes.

There are a number of mobile home parks in the County. According to the Census American Community Survey 5 Year Estimates, there were about 996 mobile homes in 2020. This is about 6 percent of housing units for the County compared to about 3.4 percent for the entire State. This is significant due to their vulnerability in natural hazards especially tornadoes. Map 8 (Tornado Vulnerability) displays the mobile home concentrations within the County.

SURFACE WATER

Lincoln County is located in the Upper Wisconsin River drainage basin. There are thirteen watersheds within the County, with seven major tributaries: Somo, Spirit, New Wood, Copper, Pine, Prairie and Tomahawk Rivers all flowing into the Wisconsin River, which generally bisects the County from north to south.

The total surface water area of lakes and streams in Lincoln County contains approximately 17,370 acres. More than half of the County’s 500 plus lakes are artificial impoundments on the Wisconsin River. Lake Mohawksin is the largest of these lakes at 1,909 acres. Over eighty-six percent of the lakes are less than 10 acres, while only 3% are over 100 acres.

Within the watersheds, there are 246 interior rivers and streams covering about 668 miles (see Map 3). All the streams, like the lakes, are important in the hydrological and ecological regime and should be protected by shoreland zoning and physical protective measures. The 285-foot drop of the Wisconsin River is moderated by six water control structures, which help to control flooding.

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

Floodplains

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 a map as

floodplains should be able to handle the severest (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 that is built 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, City of Merrill, and City of Tomahawk have completed a Flood Insurance Study and a Flood Insurance Rate Map (FIRM) that encompasses Lincoln County, see Table 7A 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 7A: FEMA Community Status Book Report Communities Participating in the National Flood Insurance Program Wisconsin - Lincoln County				
<i>Community</i>	<i>Initial FHBM</i>	<i>Initial FIRM</i>	<i>Current Map</i>	<i>Program Entry</i>
Lincoln County	09/22/78	02/19/86	08/16/11	02/19/86
City of Merrill	na	07/20/73	08/16/11	07/20/73
City of Tomahawk	na	09/04/85	08/16/11	09/04/85

Source: FEMA 2022.

Lincoln County participated with FEMA in updating its FIRM to new digital standards. The digital FIRMs are referred to as DFIRM. The NCWRPC downloaded the DFIRM from the County for use in this plan. Although unofficial, the digital files indicate there are 18,100 acres of floodplain in Lincoln County, or 3.1 percent of the land area. Map 4 shows the approximate floodplains in Lincoln County. Floodplains in Lincoln are generally small and floods occur only during

periods of exceptionally heavy rainfall. Currently, there are no repetitive loss structures, those with multiple flood insurance claims, in Lincoln County. Table 7B summarizes NFIP compliance efforts for Lincoln County and the Cities of Merrill and Tomahawk.

TABLE 7B Compliance with NFIP Requirements – Participating Jurisdictions			
	Lincoln County	City of Merrill	City of Tomahawk
NFIP Status	Participating	Participating	Participating
Adoption of Minimum NFIP Criteria	Floodplain zoning ordinance adopted based on State Model	Floodplain zoning ordinance adopted based on State Model	Floodplain zoning ordinance adopted based on State Model
Adoption of Latest FIRM	DFIRM 8/16/11	DFIRM 8/16/11	DFIRM 8/16/11
Implementation and Enforcement of floodplain regulations	Zoning Program Manager administers Chapter 20 Code of Ordinances – Floodplain Zoning Ordinance	Zoning Administrator administers Chapter 107 Municipal Code – Floodplain & Shoreland Wetland Zoning	Building Inspector administers Chapter 38 Municipal Code – Floodplain Zoning
Designated Agency for NFIP Compliance	Land Services Department / Zoning Program Manager	Building and Zoning Department / Zoning Administrator	Planning and Zoning Department / Building Inspector
Implementation of Substantial Damage Provisions of Ordinance	Zoning Program Manager oversees inspections on all damaged floodplain structures to determine if substantial damage has occurred after an event.	Building Inspector inspects all damaged floodplain structures to determine if substantial damage has occurred after an event.	Building Inspector inspects all damaged floodplain structures to determine if substantial damage has occurred after an event.
Floodplain Management Efforts that Contribute to Continued Compliance with NFIP	Comprehensive Planning to keep development from encroaching on floodplains. / Enforcement of Floodplain Ordinance. / Update ordinance as required in conjunction with WisDNR.	Comprehensive Planning to keep development from encroaching on floodplains. / Enforcement of Floodplain Ordinance. / Update ordinance as required in conjunction with WisDNR.	Comprehensive Planning to keep development from encroaching on floodplains. / Enforcement of Floodplain Ordinance. / Update ordinance as required in conjunction with WisDNR.
Reasons for Non-participation	N/A	N/A	N/A

Source: NCWRPC interviews with local zoning officials, 2023.

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 (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.

Third generation flood mapping is now underway across the country. Known as Risk MAP or Risk Mapping, Assessment and Planning, this process is being coordinated by the Department of Natural Resources in Wisconsin. Lincoln County has not yet been scheduled for Risk MAP at the time of this writing.

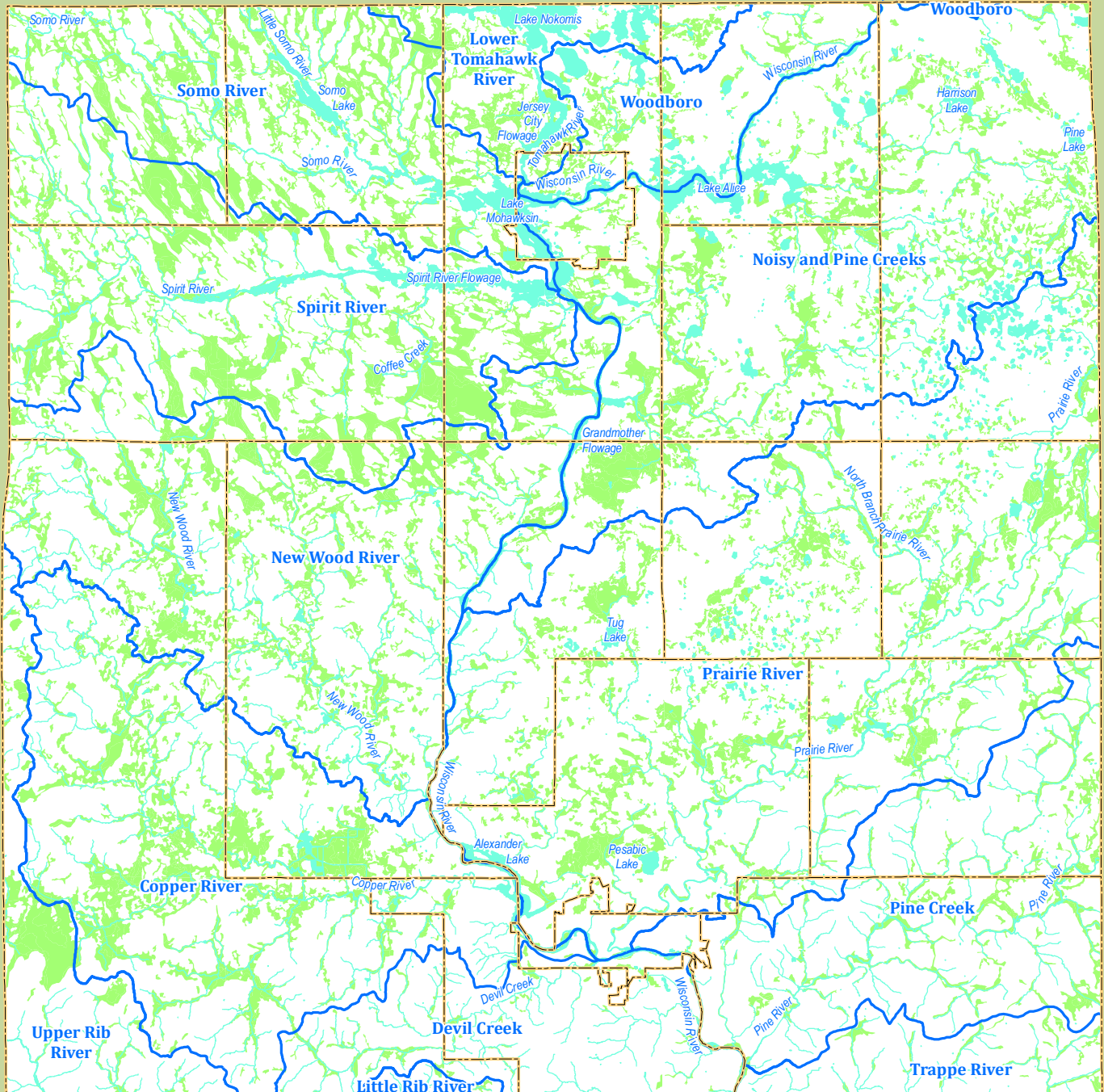
HFIAA repeals and modifies certain provisions of the Biggert-Waters Flood Insurance Reform Act, and makes additional program changes to other aspects of the program not covered by that Act. Many provisions of the Biggert-Waters Flood Insurance Reform Act remain and are still being implemented. The new 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 floodprone properties in alternatives to mitigate both flood risk and flood insurance costs for those properties.

Wetlands

Wetlands perform many indispensable roles in the proper 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 are able to 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.

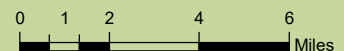
According to the GIS mapping of Lincoln County, there are 121,356.56 acres of wetlands, or 21 percent of its total area. Map 3 shows these wetland areas to be scattered throughout Lincoln County. There are no main concentrations of wetlands, except that cattails and bulrushes in shallow water, and alder, sedges and grasses in the saturated areas dominate wetland communities.

Loss 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 DNR has promulgated minimum standards for managing wetlands and generally, local zoning controls development of these areas.



Legend

-  Minor Civil Divisions
-  Watershed Boundaries
-  Wetlands
-  Water



Source: WI DNR, NCWRPC

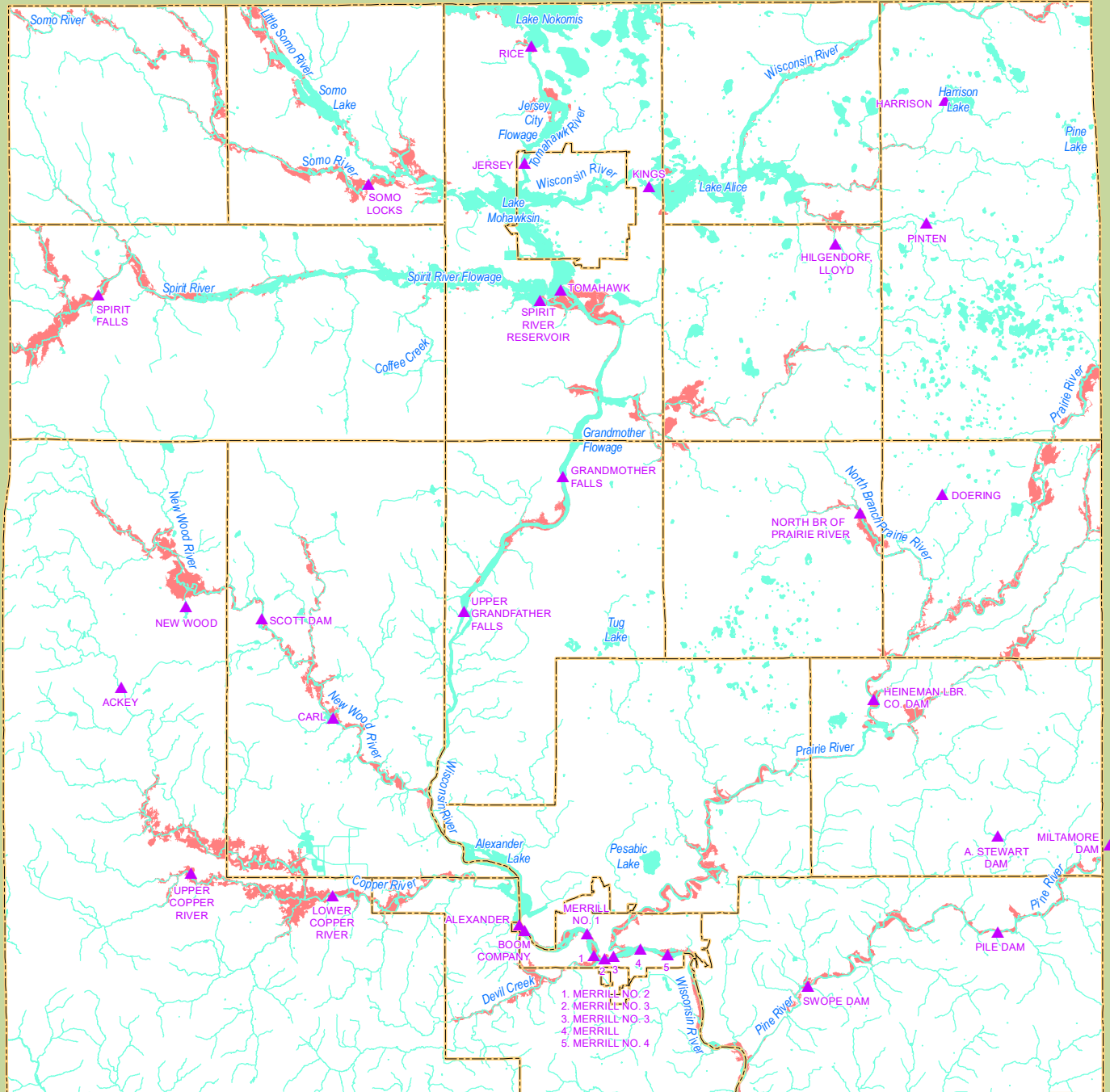
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Legend


- Minor Civil Divisions
- Dam Size**
- Large
- DFIRM Floodplains
- Water

"Some dam sites may be abandoned"



Source: WI DNR, NCRWPC & FEMA

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OTHER LAND COVER/USES

Recreational lands including parks and outdoor sports facilities total about 891 acres or 0.2 percent of the County area. Other lands may have recreational aspects, particularly woodlands. Governmental, public and institutional lands total about 0.1% of the County area. Open lands cover about 15,151 acres or 2.6% of County area. These include grasslands, scrub and other barren lands.

FUTURE GROWTH AND DEVELOPMENT IN LINCOLN COUNTY

Natural features, including the Wisconsin River, and the region's major transportation corridors, particularly U.S. 51, have largely dictated the County's land use pattern. The County's adopted Comprehensive Plan predicts this will continue to be the case.

Lincoln County's population has decreased slightly over the last decade. By 2040, Lincoln County will have declined to a population of about 27,771, a loss of 643 residents from the 2020 Census. However, household sizes continue to decrease, resulting in a need for more housing units to accommodate the population. This has led to a 5% increase in the number of new housing units since 2020 even while population has declined. The following discusses how these new housing units might be dispersed across the County and what other development will be brought along with it.

The northern two-thirds of the County is dominated by publicly and privately owned forest lands. Public forest uses are most prevalent in the Towns of Harding, Harrison, Somo, Tomahawk and Wilson. So growth will be slower in those areas. Private managed forest covers large portions of the Towns of Corning, Harding and King, so these areas should see slow but steady growth over time.

Agricultural areas cover much of the southern portion of the County, throughout the Towns of Russell, Schley, Pine River, Scott and eastern Corning, particularly along the Prairie River basin. Several Christmas tree farms are interspersed with general agricultural uses in the Town of Pine River. Tree farms are also common in King, Skanawan and Wilson. As with the forestry-based communities mentioned above, the agriforestry nature of these towns indicate a slow growth dispersed widely across the landscape over time. Commercial developments will be very minimal, and typically of a home-based business variety. New infrastructure or public facilities will be very minimal, if any.

The central part of the County contains large areas of recreational land. Public recreation uses like Council Grounds State Park, Newwood Wildlife Area, Menard Island Resource Area and Underdown Recreation Area, can be found in the Towns of Birch and Merrill. Private recreational uses like golf courses, racetracks and campgrounds are located in the Towns of Bradley, Rock Falls, Merrill and Scott. These recreational amenities along with easy access to the freeway make these

areas more attractive for residential developments; however, it is still expected to be primarily dispersed, low-density. Commercial developments will again be very minimal, as well as, new infrastructure or public facilities.

There are two basic exceptions to the development pattern described thus far: the Cities of Merrill and Tomahawk and the County's waterfront areas. Within the central recreation area lie the two cities of Merrill (south central) and Tomahawk (north central). It is in and around these cities where the most significant concentrated new residential development is expected to occur. These areas in and around the cities contain the most intensive land uses in the County including a mixture of residential, commercial and industrial. More substantial infrastructure is also anticipated in association with this development. New roads, sewer and water lines are the most common infrastructure to expand with new development adjacent to the cities.

Waterfront residential development is most prominent in the Towns of Bradley, Harding, Harrison, King, Merrill and Wilson. Waterfront areas in these municipalities will continue to see development pressure. A new subdivision is being developed in the Town of Wilson.

In Merrill, around 42 new single-family residences have been built in various areas of the City, and the Fox Point Apartment complex has 250 units under development with more planned. Commercial development has continued on the City's east side, along with some existing industrial operation expansions around the City including: Lincoln Wood, Hurd, Weinbrenner and Precision Tool. The City is also developing an expansion of its industrial park (66 acres). Tomahawk has one new small subdivision with 4 of 12 parcels built. A new apartment complex is being planned which will have 3 2-story buildings with a total of 84 new units.

Again, new public and community facility development across the County will continue to be limited due to economic constraints and state-imposed levy limits. However, a number of long-term construction projects have been completed over the last several years in the Cities of Merrill and Tomahawk. In Merrill, these include: a fire station, airport terminal and hangar, Humane Society building (with Lincoln County), grandstand and other upgrades at the festival grounds, high school football field, Enrichment Center and Expo Hall, Aquatic Center, and a water treatment plant. The City of Merrill expects an extended break in new facility development in the wake of these projects. In Tomahawk, the City has been working on wellhouse upgrades and long range planning for a possible new fire service building. The County recently completed major expansion of its jail facility and its Pine Crest Nursing Home. Future County projects include the upgrade or replacement of its Highway Shops in both Tomahawk and Merrill. The Tomahawk building was originally constructed around 1944 and has structural problems. The County is evaluating these buildings.

IMPACT OF CHANGES IN POPULATION, LAND USE AND DEVELOPMENT

The dynamics of a given community's population, how land use changes over time and how local development trends affect population and land use have implications for emergency services and hazard mitigation. The Hazard Mitigation Taskforce identified the following impacts from its assessment of the changes in population, land use and development trends within Lincoln County and the Cities of Merrill and Tomahawk:

- Increases in new housing and other development can increase the vulnerability and risk to hazards. For example, growth and development can increase the risk of flooding by increasing stormwater runoff, disrupting natural drainage systems and reducing flood storage.
- Increases in population and/or housing also results in increasing demand for emergency services, which is a particular challenge during tight governmental budgetary conditions, as has been persistent in Wisconsin for some time now.
- With the majority of the County being sparsely populated rural areas, both costs to provide services and response times increase. In addition, communications and mitigating potential impacts are often more challenging (e.g., warning systems and public storm shelters).
- Lincoln 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. Seniors who reside in remote, rural areas may need special attention during a hazard event (e.g., transportation for dialysis during a winter storm, access to medicine or other medical needs).
- There is geographic variability across the County. Emergency service needs, mitigation priorities, and local resources will vary by community and area. Many residents have access to resources, tools, equipment, and friends or family that enable them to "weather the storm," clean up storm damage, and offer support to their neighbors and community.
- Although the number has been declining, there remains a significant number of mobile homes in the County, which are more vulnerable during certain types of storm events.
- Lincoln County's many farming and agricultural operations have unique hazard risks and vulnerabilities that must be considered, prepared for, and mitigated, if possible. The large amount of public forest land and shoreland development, with associated outdoor recreational uses and seasonal homes, also have unique risks and challenges.
- Manufacturing continues to be a significant part of the County's economy, particularly in the Cities of Merrill and Tomahawk, but does have inherent hazard risks and vulnerabilities, such as large-span buildings, concentrations of employees, or extreme operating parameters (temps, pressures, etc.).

PUBLIC FACILITIES AND SERVICES

TRANSPORTATION

The transportation system of Lincoln County provides the basis for movement of goods and people into, out of, 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).

Two major U.S. Highways, U.S.H. 8 and U.S.H. 51 serve Lincoln County. U.S. 8 runs an east-west arc through the extreme northern portion of the County, while U.S. 51 runs a north-south course through the center of the county. U.S. 51 is a four-lane facility and links the County to Interstate 39 at Wausau.

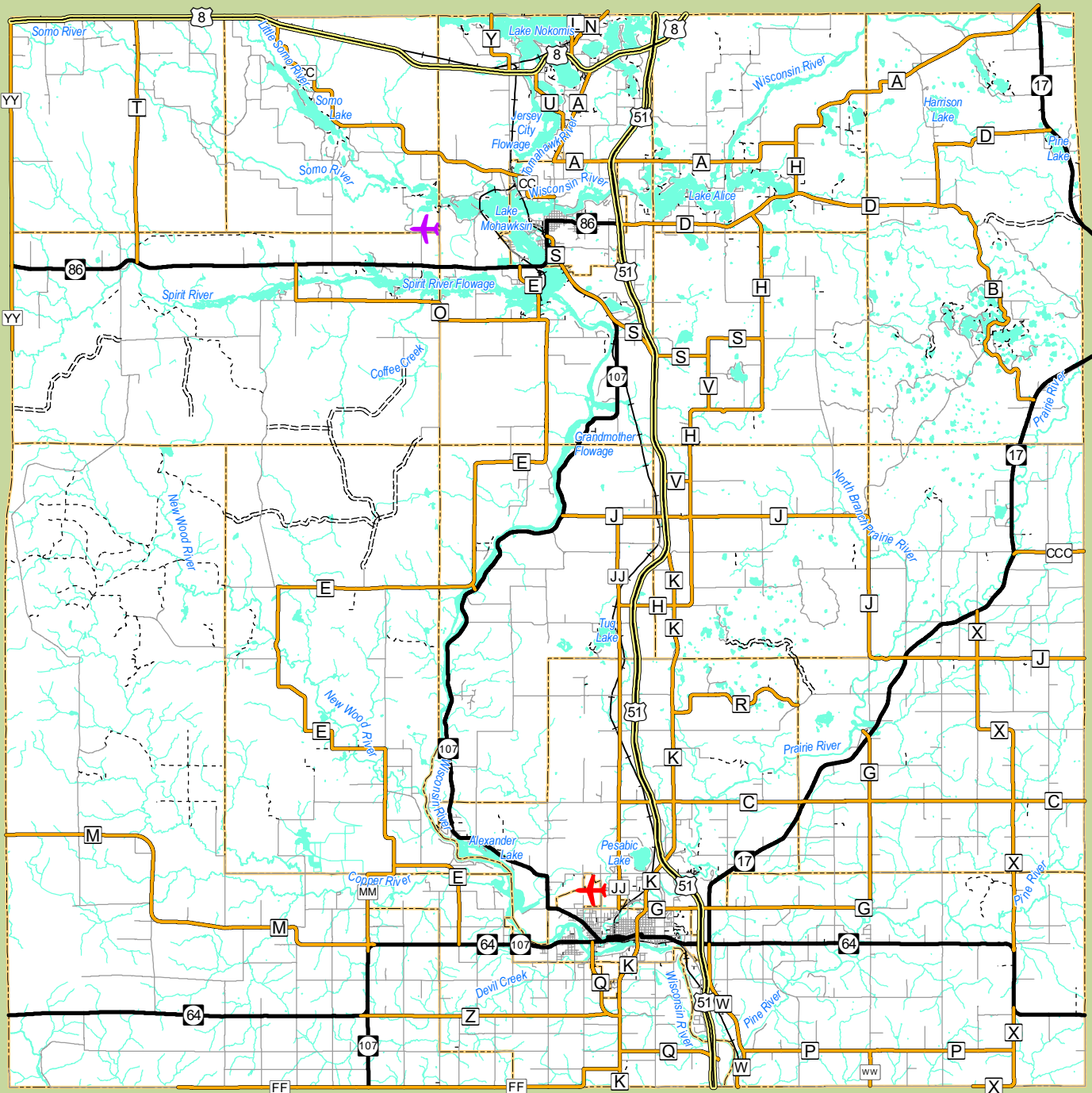
Four state highways access the County. Highways 64 and 86 run east-west paths. Highway 86 is in the northern half of the County through Tomahawk, while Highway 64 serves the southern half, running through the City of Merrill. Highway 107 moves north-south connecting Tomahawk and Merrill. Highway 17 cuts a northeasterly track through the southeast corner of 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 agricultural and timber resources to the county's two cities and major highways. Local roads provide access to local development, farming and forestry areas, as well as the County's lake areas.









The U.S./State and County highways in Lincoln County include a large network of bridges owned by the federal, state, county and local governments. The majority of the State bridges are under/over passes along U.S. 51. The County system contains the majority of bridges in the area.

Lincoln County Commission on Aging coordinates transit services for the elderly and disabled in the county. Other private operators and non-profits provide supplemental services. Non-emergency Medical Transportation is emphasized, but other needs are met as resources allow. In Merrill, the city operate a regular bus transit services within the City limits.

The Tomahawk Railway and Watco provide rail serve in Lincoln County. The Tomahawk Railway is a 6-mile rail line serving the mills and distribution center in the City of Tomahawk. The Watco line runs through the center of the County and connects Merrill and Tomahawk to the greater freight rail network.



Legend

-  Minor Civil Divisions
-  US Highway
-  State Highways
-  County Highways
-  Local Roads
-  Private Roads
-  Forest Roads
-  Railroad
-  Water
-  Medium General Aviation
-  Small General Aviation



Source: WI DNR, NCWRPC

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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, see Map 6

The protection of the public water supply from potential contamination from hazards such as flooding is a consideration for hazard mitigation planning. The City of Merrill and Tomahawk provide municipal water supplies for domestic and commercial use, while the Lincoln Hills School provides water for their students.

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, such as the Wisconsin River. Also of concern during periods of flooding is the threat of damage to infrastructure of associated facilities. Three municipal wastewater treatment facilities serve Lincoln County. The Cities of Merrill and Tomahawk, along with the Gleason area in the Town of Russell are provided with service.

The infrastructure of electric and telephone lines should be considered in the events of high wind, ice storms, tornadoes, flooding, and fire. Wisconsin Public Service provides Lincoln County with electric service throughout the County. As of 2001, an independent company, American Transmission Company LLC (ATC), owns, maintains, and operates the major transmission facilities located in the State of Wisconsin, including Lincoln County. The general locations of the major electrical transmission facilities, owned by ATC are shown on Map 6.

Frontier is the primary provider of traditional telephone service in the County. With cellular phones playing an increasingly important role in communications, see Map 6 for tower locations within the County.

The ANR pipeline is the main source of natural gas in the County. A segment of the pipeline traverses the County north-south between Merrill and Tomahawk. A spur line to serve the City of Antigo in Langlade County branches off the main north-south line near the Marathon County line and lies just inside Lincoln County.

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.

There are a number of fire service providers that serve the local units of governments in Lincoln County. The Cities of Merrill and Tomahawk, and Towns of Russell, Corning, and Pine River offer fire services to the areas and one department, Crescent, lies outside the County. The Merrill Fire Department is the

only one that provides full-time service, while the remainder of the departments relies on volunteers for this service.

Additionally, there are EMS and First Responder providers in the County: Merrill EMS, Tomahawk EMS, Oneida County EMS, Tripoli First Responders, Russell First Responders and Pine River First Responders.

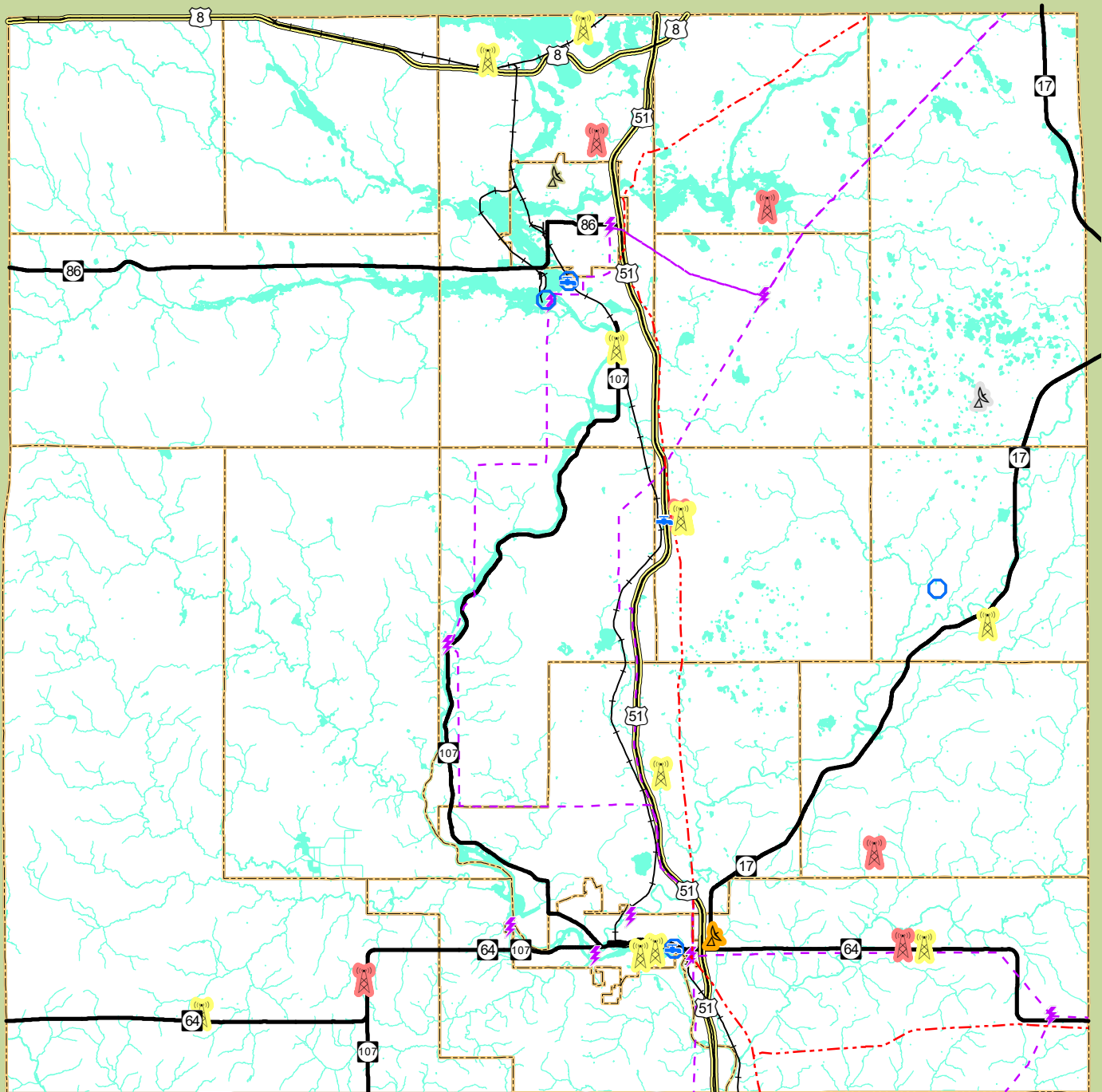
The Lincoln County Sheriff's Office provides service to all the towns and the cities for law enforcement. The Cities of Merrill and Tomahawk also have their own police departments. The main correctional facilities within the County include the Lincoln County Jail in Merrill and Lincoln Hills School, a state facility for troubled youth, near Irma.

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. The County has hospitals in Merrill and Tomahawk. Nursing homes 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 most of the year. Map 7 shows the location of selected critical community facilities within Lincoln County.

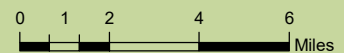


Aspirus Merrill Hospital



Legend

- Minor Civil Divisions
- US Highway
- State Highways
- Railroad
- Water
- Public Water Supply
- Waste Water Treatment Plant
- Pipeline
- High Voltage Powerline
- Substations
- AM / FM Tower
- AM Tower
- Celltower
- Communications Tower
- FM Tower



Source: WIDNR, NCWRPC

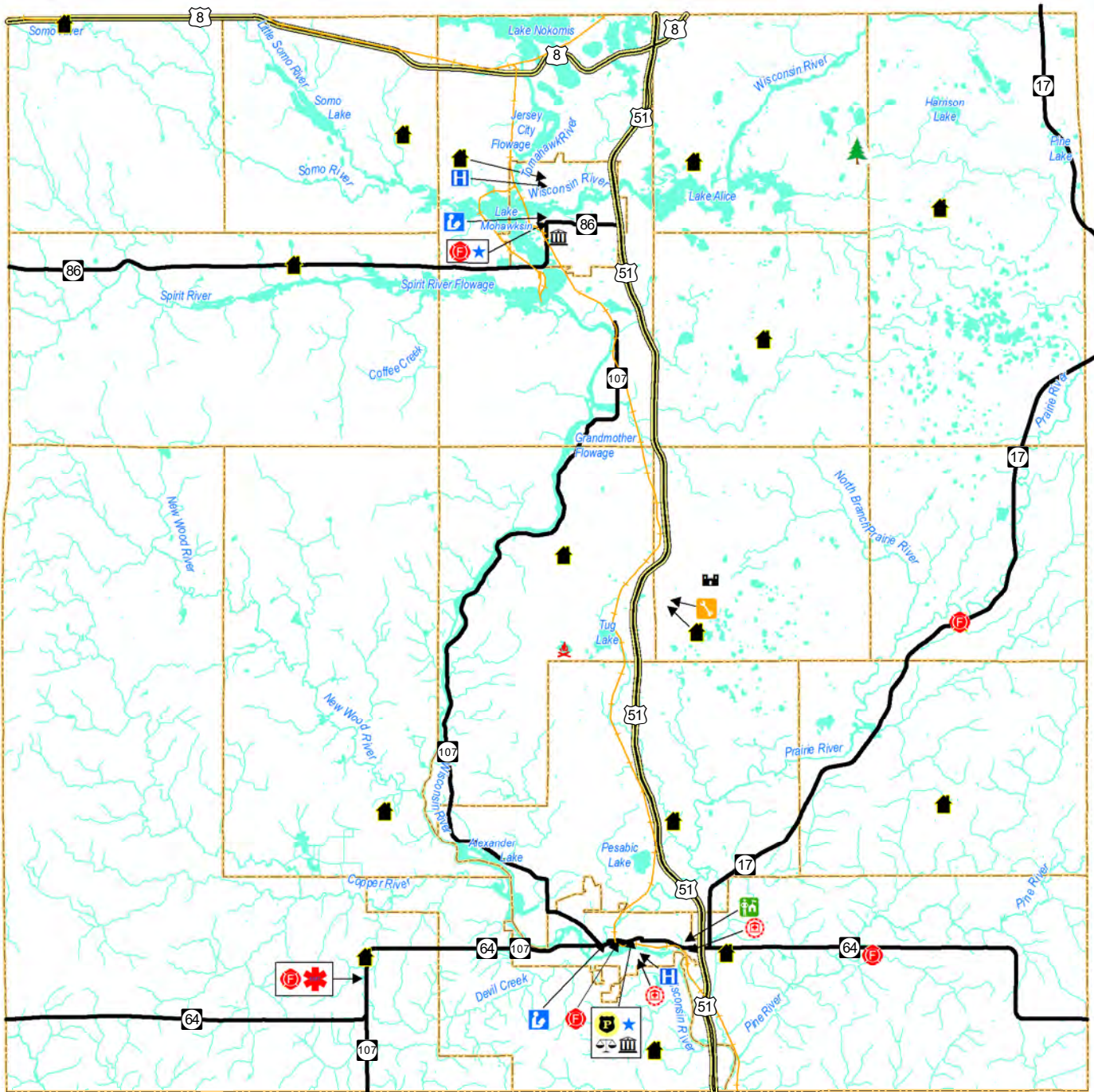
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Legend

- | | | |
|-----------------------|--------------------------------|--------------------|
| Minor Civil Divisions | Correctional Facility | Girl Scout Camp |
| US Highway | County Forest and Parks Garage | Health Services |
| State Highways | Court House | Hospitals |
| Railroad | DNR Ranger Station | Police Department |
| Water | Library | Sheriff Department |
| Treehaven | EMS Building | Town Halls |
| City Hall | Fire Stations | |



Source: WIDNR, NCWRPC

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INVENTORY & VALUE OF STRUCTURES/PROPERTY IN LINCOLN COUNTY

The value of the real estate and personal property in a community reflects the upper end of the potential for property damages 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 land, improvements, and personal property, with the percent each municipality represents of the county total.

Table 8: Equalized Value by Municipality					
<i>Municipality</i>	<i>Land</i>	<i>Improvements</i>	<i>Personal Property</i>	<i>Total</i>	<i>% of Total</i>
Birch town	\$16,248,100	\$23,484,200	\$313,400	\$40,045,700	1.6%
Bradley town	\$168,057,800	\$269,241,400	\$6,719,100	\$444,018,300	17.9%
Corning town	\$32,596,500	\$48,480,000	\$1,585,000	\$82,661,500	3.3%
Harding town	\$25,449,800	\$34,144,200	\$3,300	\$59,597,300	2.4%
Harrison town	\$85,050,900	\$88,269,300	\$856,900	\$174,177,100	7.0%
King town	\$63,667,500	\$105,709,800	\$758,600	\$170,135,900	6.9%
Merrill town	\$51,022,300	\$146,560,200	\$866,500	\$198,449,000	8.0%
Pine River town	\$34,430,000	\$102,567,800	\$551,100	\$137,548,900	5.6%
Rock Falls town	\$38,458,300	\$46,405,000	\$397,000	\$85,260,300	3.4%
Russell town	\$10,987,900	\$31,037,900	\$418,700	\$42,444,500	1.7%
Schley town	\$23,518,500	\$41,448,700	\$316,400	\$65,283,600	2.6%
Scott town	\$27,247,500	\$72,013,700	\$232,100	\$99,493,300	4.0%
Skawanaw town	\$24,487,400	\$36,694,000	\$386,300	\$61,567,700	2.5%
Somo town	\$9,350,800	\$9,329,600	\$15,900	\$18,696,300	0.8%
Tomahawk town	\$35,284,100	\$35,816,300	\$577,400	\$71,677,800	2.9%
Wilson town	\$34,330,000	\$34,446,200	\$1,794,700	\$70,570,900	2.8%
Tomahawk city	\$44,273,000	\$182,480,600	\$10,951,800	\$237,705,400	9.6%
Merrill city	\$46,780,000	\$353,684,700	\$17,208,700	\$417,673,400	16.9%
Lincoln County	\$771,240,400	\$1,661,813,600	\$43,952,900	\$2,477,006,900	100%

Source: Lincoln County Land Records, WI Dept. of Revenue and NCWRPC 2022.

As stated above, 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 Lincoln 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 critical facilities are listed with the general location they are in and the value of the facilities. Estimates for local government facilities are given in Tables 9b - d.

Table 9a: Value of County Owned Properties		
<i>Name</i>	<i>Value*</i>	<i>Location</i>
Courthouse	\$10,168,667	Merrill City
Service Center	\$8,942,933	Merrill City
Sheriff/Safety Building	\$21,641,694	Merrill City
Health & Human Services	\$5,150,474	Merrill City
Salt Shed	\$188,681	Tomahawk City
Pine Crest Nursing Home	\$26,143,265	Merrill City
Central Highway Department	\$5,176,160	Merrill City
Salt Shed	\$200,748	Merrill City
Highway Sign Shop	\$962,698	Merrill City
Highway Facilities - Tomahawk	\$1,216,825	Tomahawk City
Salt Shed / Storage	\$261,496	Tomahawk City
Forestry Dept. - Shop	\$1,849,625	Irma
Forestry Building - Harrison Hills	\$66,635	Gleason
Humane Society	\$221,397	Merrill
Outdoor Recreation Facilities	\$368,742	Various Locations
Solid Waste	\$1,905,581	Merrill City
Total	\$84,465,621	

*Includes insured buildings, contents and property in the open.
Source: Lincoln County 2021.

Table 9b: Value of City Owned Properties Tomahawk	
<i>Property</i>	<i>Value*</i>
Airport	\$634,364
City Hall	\$1,732,712
Fire Station	\$1,165,075
Harley North	\$1,240,707
City Garage	\$1,585,362
Library	\$4,026,024
Wastewater Plant & Lift Stations (4)	\$5,114,824
Senior Center	\$329,166
Historical Society & Museum	\$421,474
Waterworks	\$2,580,391
Kwahamot Ski Area	\$386,801
Other Parks and Rec.	\$3,775,489
Misc Other	\$3,285,946
Total	\$26,278,335

*Includes insured building, contents and property in the open.
Source: Local Gov't Property Insurance Statement of Values 2017 & NCWRPC Estimate 2022.

Table 9c: Value of City Owned Properties Merrill	
Property	Value*
Landfill Site (former)	\$57,591
Airport	\$2,841,097
City Hall/Police	\$10,347,300
Fire Station 1	\$3,819,772
City Garage	\$3,845,143
Library	\$8,843,147
Wastewater Plant	\$18,572,848
Weinbrenner Factory	\$17,413,811
Warehouse	\$2,212,773
Pump Houses (3)	\$533,190
Lift Stations (2)	\$334,879
Merrill Area Rec. Center (MARC)	\$5,166,523
MARC Multipurpose Building	\$5,541,188
Merrill Festival Grounds	\$2,330,208
Other Parks and Rec.	\$2,228,915
Misc Other	\$3,331,864
Total	\$87,420,250

**Includes insured building, contents and property in the open.
Source: Local Gov't Property Insurance Statement of Values 2017 & NCWRPC Est. 2022.*



Lincoln County Courthouse

Table 9d: Value of Town Owned Properties		
<i>Municipality</i>	<i>Property</i>	<i>Value*</i>
Birch town	Town Hall	\$110,250
Bradley town	Town Hall/Community Center	\$456,750
	Other Buildings	\$310,800
	Other Property	\$166,950
Corning town	Town Hall	\$110,250
	Fire Station	\$220,500
Harding town	Town Hall	\$120,750
	Storage Garage	\$14,700
	Outhouse	\$8,400
Harrison town	Town Hall	\$110,250
King town	Town Hall	\$110,250
Merrill town	Variety of properties	\$311,850
Pine River town	Town Hall/Fire Station/Misc.	\$1,742,216
Rock Falls town	Town Hall	\$110,250
Russell town	Town Hall/Fire Station	\$316,050
Schley town	Town Hall / Garage	\$303,222
Scott town	Town Hall	\$110,250
Skawanaw town	Town Hall	\$110,250
Somo town	Town Hall	\$110,250
Tomahawk town	Town Hall	\$110,250
Wilson town	Town Hall	\$99,750
	Storage Building	\$10,500
	Storage Building	\$11,550
	Storage Building	\$5,250

*Includes insured buildings, contents and property in the open.
Source: Local Government Property Insurance Declarations 2017 and NCWRPC Estimates 2022.



Town of Tomahawk Town Hall

INTRODUCTION

Analyzing the hazards facing a community is an important and vital step in the mitigation planning process. Before mitigation strategies can be determined, a risk assessment must be made. Part III of this Lincoln County All-Hazards Mitigation Plan will focus on the following:

- Identification of all types of natural hazards that can affect Lincoln County
- An analysis of the hazards identified as pertinent to Lincoln County

The hazard analysis will consist of:

- Background information
- History of previous occurrences of hazard events
- An analysis of the County's vulnerability to future events
- An estimate of future probability and potential losses from the hazard

HAZARD IDENTIFICATION

The process of identifying those hazards that should be specifically addressed in the Lincoln County All Hazards Mitigation Plan was based on consideration of a number of factors. The process included a review of past hazard events to determine the probability of future occurrences and threat to human safety and property damage.

Worksheets from the Wisconsin Guide to All-Hazards Mitigation Planning have been used by previous planning committees to evaluate and rank the listing of possible hazards to help identify which hazards should be included in the Plan according to threat to human safety and possible damage to property.

For this update of the Plan, the Mitigation Planning Committee reviewed the listing from the most recent previous plan and determined that the list remained accurate for the new update with the addition of pandemic due to COVID. As such, the list of hazards identified for inclusion in this Plan Update, in priority order, is as follows:

1. Tornado
2. Winter Storms/Extreme Cold
3. Thunderstorm/High Wind/Lightning/Hail
4. Drought/Extreme Heat
5. Cyber Attack
6. Flooding/Dam Failure
7. Forest/Wild Fires
8. Epidemic/Pandemic

Although fog can be an issue, it is not covered directly in this Plan due to a lack of ways to effectively mitigate against it. Low magnitude earthquakes do occur occasionally in Wisconsin, however, none have exceeded a magnitude of 3.9, which would have vibrations similar to the passing of a semi-truck, therefore, earthquakes are not covered in this plan. Lincoln County does not have

avalanche, coastal hazard, hurricane, tsunami or volcano issues and conditions for landslide, subsidence or expansive soil problems are not significant in the County.

This Plan Update focuses on natural hazards that have or could cause disasters that can be mitigated on a local level. Hazards that are considered "technological" or "manmade" include things like transportation incidents, structure fire, hazardous material incidents, civil disturbances, mass casualty events, war, criminal activity and terrorism (including active shooter, biological, chemical, explosive and nuclear attack). Current mitigation planning regulations do not require inclusion of technological or manmade hazards, so they are not dealt with directly in this Plan. This is in part to maintain the manageability of the mitigation planning activity and also to reduce redundancy. Due to Homeland Security requirements, counties already plan and prepare for many of these types of events, so they are not included in this planning process to avoid duplication. However, local mitigation plans do have the option to include technological or manmade hazards, and many counties in Wisconsin, including Lincoln, choose to cover cyber-attack in their mitigation plans.

Some events that may under certain conditions be considered technological or manmade hazards in and of themselves such as supply disruption (including fuel shortage), power outage, computer failure, communications disruption, and municipal water contamination or water system failure are more commonly consequences of a hazard event, at least in central Wisconsin. As such, they are dealt with indirectly in this Plan as they relate to an addressed hazard. For example, heavy snow, high wind or tornado often results in power outage.

CLIMATE CHANGE & HAZARD RISK ASSESSMENT

While the assessment of hazard risk is largely based on past weather events and existing development trends, projecting future risks and vulnerabilities is also subject to the influence of possible large-scale, longer-term climatic changes. This section explores how the area's climate is changing and how climate change may impact the probability and severity of natural hazards.

There is ongoing debate over the existence, causes, severity, and impacts of global climatic changes, such as global warming. According to the National Academy of Sciences, the Earth's surface temperature has risen by about 1 degree Fahrenheit in the past century, with accelerated warming during the past two decades. There is strong evidence that most of the warming over the last 50 years is attributable to human activities. Increasing global temperatures are expected to raise sea level and impact local climate conditions such as precipitation levels. Changing regional climate could alter forests, crop yields, and water supplies. It could also affect human health, animals, and many types of ecosystems. Most of the United States is expected to warm, although sulfates may limit warming in some areas. Scientists currently are unable to determine which parts of the United

States will become wetter or drier, but there is likely to be an overall trend toward increased precipitation and evaporation, more intense rainstorms, and drier soils.

Regardless of the debate over the causes of climate change, there is clear evidence that Wisconsin's climate is indeed changing. The 2003 report entitled *Confronting Climate Change in the Great Lakes Region* published by the Union of Concerned Scientists and the Ecological Society of America projected that by 2030, summers in Wisconsin may resemble those in Illinois overall, in terms of temperature and rainfall. By 2100, the summer climate will generally resemble that of current-day Arkansas, and the winter will feel much like current-day Iowa.

To further document these climate changes and explore their impacts on our State, the Wisconsin Initiative on Climate Change Impacts (WICCI) was formed as a collaborative effort of the University of Wisconsin and the Wisconsin Department of Natural Resources. The following are some of the key climatic trends being experienced in Wisconsin according to their analysis (www.wicci.wisc.edu):

1. **RISING TEMPERATURES** - Average temperatures are rising and are projected to continue to rise. The annual average temperature in Lincoln County has increased between 0.5 and 1.5 degrees between 1950 and 2006. Both cities of Merrill and Tomahawk are +0.5 degrees over that time period. Between 1980 and 2055, annual average temperatures are projected to increase by 4 to 6 degrees across the County. More extreme heat events are also projected. The number of days projected to be 90° F or greater will increase by 14-16 days in Lincoln County between 1980 and 2055 with City of Tomahawk on the 14-day end and City of Merrill on the 16-day end.
2. **MORE PRECIPITATION** - Lincoln County is experiencing more annual precipitation, and is expected to get wetter in the future, but there is significant seasonal and geographic variation to the precipitation. The data shows that the annual average precipitation has increased across the County over the past fifty years by 1 to 2 inches.
3. **HEAVIER PRECIPITATION EVENTS** - Heavy precipitation events appear to be increasing in frequency. In the past, the region experienced heavy precipitation events of two or more inches about ten times per decade (once each year). The County, including Merrill and Tomahawk, is projected to experience 2.5 additional heavy precipitation events per decade by 2055.

HAZARD ANALYSIS

The hazard analysis for each hazard included in this plan is broken down into four components, as follows:

1. Background on Hazard - The next step after identifying a hazard is to define the hazard and give some general background behind it. This can include

occurrence of hazard within the County or State. This section may also give some indication of the risk to public health and safety and to personal and public property.

2. History of Hazards - Past experiences of disasters is an indication of the potential for future disasters for which Lincoln County would be vulnerable. A review of past occurrences for each identified hazard in Lincoln County was completed.

Some disasters have had damages that exceeded the capabilities of local communities and state agencies. Federal assistance is then requested. Federal assistance may be offered through a variety of programs. Assistance may be directed to agricultural producers, individuals and families, businesses, or local governments. There have been six natural disasters in Lincoln County, where a Presidential Declaration was declared between 1971 and 2021. They include the following:

- 1973 Flooding – Presidential Disaster Declaration
- 1976 Drought – Presidential Disaster Declaration
- 1977 High Winds/Hail – Presidential Disaster Declaration
- 1993 Flooding – Presidential Disaster Declaration
- 2002 Severe Storms/Flooding/Tornado – Presidential Disaster Declaration
- 2020 Covid-19 Pandemic – Presidential Disaster Declaration

It should be noted that this significantly underestimates the number of hazards that have occurred in Lincoln County. Almost every year there are significant weather events or disasters that cause millions of dollars in damage across the state for which no Federal disaster assistance is requested. Major indicators of hazard severity are the deaths, injuries, and economic losses resulting from natural hazards and disasters.

The National Oceanic and Atmospheric Administration (NOAA) and National Climatic Data Center (NCDC) publish the National Weather Service (NWS) data describing recorded weather events and resulting deaths, injuries, and damages. From January 1, 1950 to December 31, 2021, NCDC reported 421 severe weather events for Lincoln County.

Note that since the NCDC data is somewhat incomplete, particularly the further back in time, this report focuses on the 10-year period from 2012 through 2021 (120 events). Other sources of data are used to supplement the NCDC data. These sources included other plans, reports, documents from Lincoln County Emergency Management, past local newspaper articles, the Wisconsin Department of Natural Resources, Wisconsin Emergency Management (WEM), and the National Weather Service.

3. Vulnerability Assessment For Hazards - For each hazard identified, a summary of the impact that may be caused to the community is given. When

possible, existing buildings, infrastructures, and critical facilities located in the hazard areas are identified. Critical facilities are community buildings that are especially important to the health and welfare of the population following hazard events. Examples of such facilities include hospitals, police & fire stations, town halls, and shelters.

Because this is a multi-jurisdictional plan, FEMA requires that the plan assess each jurisdiction's risks where they vary from the risks facing the entire planning area. This section of the plan will identify variations in vulnerability for specific municipalities where they occur.

4. Future Probability and Potential Dollar Losses for Hazard - The historic data and vulnerability assessment for each hazard is used to project the potential future probability of that hazard occurring in the county and the potential damages in dollars that might be reasonably expected. This section sets the benchmark to mitigate for each hazard.

HAZARD ANALYSIS - TORNADOS

Background on Tornado Hazard

A tornado is a relatively short-lived storm composed of an intense rotating column of air, extending from a thunderstorm cloud system. It is nearly always visible as a funnel, although its lower end does not necessarily touch the ground. Average winds in a tornado, although never accurately measured, are between 100 and 200 miles per hour, but some tornados may have winds in excess of 300 miles per hour.

A tornado path averages four miles, but may reach up to 300 miles in length. Widths average 300 to 400 yards, but severe tornados have cut swaths a mile or more in width, or have formed groups of two or three funnels traveling together. On average, tornados move between 25 and 45 miles per hour, but speeds over land of up to 70 miles per hour have been recorded. Tornados rarely last more than a few minutes in one location or 15 to 20 minutes in a ten-mile area.

Tornados are classified into six intensity categories, EF0-EF5, see Table 10. This scale is an updated or "enhanced" version of the Fujita Tornado Scale (or "F Scale"). The scale estimates wind speeds within tornados based upon the damage done to buildings and structures. It is used by the National Weather Service in investigating tornados and by engineers in correlating building design standards against anticipated damage caused by different wind speeds.

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornados, known as "Tornado Alley". Tornado Alley extends northeast from Oklahoma into Iowa and then across to Michigan and Ohio. Winter, spring and fall tornados are more likely to occur in southern Wisconsin than in northern counties. Tornados have occurred in Wisconsin every month except February.

Table 10: Tornado Wind and Damage Scale		
Tornado Scale	Wind Speeds	Damage
EF0	65 to 85 MPH	Some damage to chimneys, TV antennas, roof shingles, trees, and windows.
EF1	86 to 110 MPH	Automobiles overturned, carports destroyed, trees uprooted
EF2	111 to 135 MPH	Roofs blown off homes, sheds and outbuildings demolished, mobile homes overturned.
EF3	136 to 165 MPH	Exterior walls and roofs blown off homes. Metal buildings collapsed or are severely damaged. Forests and farmland flattened.
EF4	166 to 200 MPH	Few walls, if any, standing in well-built homes. Large steel and concrete missiles thrown far distances.
EF5	OVER 200 MPH	Homes leveled with all debris removed. Schools, motels, and other larger structures have considerable damage with exterior walls and roofs gone. Top stories demolished
<i>Source: National Weather Service</i>		

History of Tornadoes in Lincoln County

The most recent tornado event within the study period occurred on July 8, 2021. Thunderstorms developed across northeast Wisconsin during the evening hours ahead of an approaching cold front. The strongest storms produced a swath of damaging winds, with wind gusts of 60 to 80 mph, and isolated tornadoes. A tornado formed at 8:40 PM near Pine River in southern Lincoln County and produced damage to dozens of trees, continuing south into Marathon County. Total path length between the two counties was estimated at 2.68 miles long, with a width of 300 yards. Peak wind was estimated to be 90 mph.

Two other tornadoes occurred during the study period in 2013 and 2019. On July 19, 2019 a line of severe thunderstorms moved across much of central, north central, and eastern Wisconsin during the evening hours. Widespread tree and power line damage was reported from central Wisconsin into the Fox Valley and

lake shore. WPS reported over 50,000 outages at the height of the storm. The worst damage was associated with a macroburst, a large downburst of straight-line winds that affected a large swath from Pelican Lake in Oneida County, southeast through Langlade and Oconto counties. Hundreds of thousands of trees were snapped or uprooted, resulting in damage to dozens of homes and cottages. The damage path was about 60 miles long and up to 10 miles wide at times. Winds were likely near 100 mph in the hardest hit areas near Lily in northeast Langlade County and near the Langlade-Oconto County line southwest of Boot Lake. Within Lincoln County scattered trees were damaged in northwest part by winds estimated at 75-80 mph.

On July 9, 2013, thunderstorms formed along a weak boundary and produced several funnel clouds and four weak tornadoes. Damage by the tornadoes was minimal, affecting mainly wooded areas and open fields. One of the tornadoes touched down about six miles south of Irma and moved east for about 4 miles. A few trees and power lines were knocked down. Average path width was 75 yards.

Many in the Merrill area are still feeling the effects of the April 10, 2011 tornado. Wind speeds reached 140 mph, placing the tornado in the EF3 category. A number of people were injured and total damages were cited around \$11 million, however, it did not qualify for Federal disaster assistance. Several businesses in the Merrill Industrial Park were heavily damaged and numerous residences in the Town of Merrill were destroyed. Costs for debris removal, law enforcement and road repairs was approximately \$450,000 and was partly covered by the Wisconsin Disaster Fund.



Merrill 2011

Including these 3 events, Lincoln County has had 25 verified tornadoes from 1950 to 2021 (Table 11). In addition, there have been five reported funnel clouds since 1950 which are not included in these statistics. The most recent of these funnel cloud reports came on September 19, 2012 when a funnel cloud was spotted over Tomahawk. Thunderstorms developed ahead of a cold front and a strong upper level system. Some of the storms produced large hail, damaging winds, and funnel clouds, including the one over Tomahawk. Another interesting report came on April 11, 2010 when a "dust devil" was reported to have caused about \$600 damage at a residence in Gilbert just south of Tomahawk.

A more severe event occurred on September 30, 2002, when a F2 tornado touched down for 3 miles uprooting and snapping off thousands of trees in its path. A house in the path also sustained major structural damage, all of the outbuildings on the property were demolished, and a camping trailer was crushed after being thrown 300 feet. A car was also thrown into a tree, resting 15 feet above the ground and two barns were also destroyed. The total estimated damage accounted for was

roughly \$75,000. The storms also knocked out power to around 3,000 customers in the Tomahawk area and about 600 customers in the Rhinelander and Crandon areas. This tornado, combined with other tornados, storm damage and flooding across 19 counties, including Lincoln, resulted in a disaster declaration.

<i>Date</i>	<i>Time</i>	<i>Location</i>	<i>Length (miles)</i>	<i>Width (yards)</i>	<i>Deaths</i>	<i>Injuries</i>	<i>F-Scale</i>
7/28/21	1940 CST	T.Pine River	1.4	300	0	0	EF1
7/19/2019	1747 CST	Tripoli	6.5	50	0	0	EF0
7/9/2013	1359 CST	Irma	4.1	100	0	0	EF0
4/10/2011	1710 CST	T. Merrill	20	1,050	0	3	EF3
7/11/2004	1640 CST	T.Wilson	0.1	10	0	0	F0
7/11/2004	1613 CST	T.Wilson	0.1	10	0	0	F0
7/11/2004	1613 CST	T.Wilson	0.1	10	0	0	F0
7/11/2004	1545 CST	Irma	0.1	10	0	0	F0
9/30/2002	1830 CST	T. Tomahawk	3	250	0	0	F2
7/30/2002	1825 CST	T. Merrill	0.1	25	0	0	F0
7/30/2002	1808 CST	T. Merrill	9	200	0	0	F0
7/30/2002	1747 CST	T. Merrill	1	150	0	0	F0
4/18/2002	1549 CST	T. Bradley	0.1	25	0	0	F0
5/5/1999	1630 CST	T. Tomahawk	0.1	25	0	0	F0
3/29/1998	1928 CST	T. Tomahawk	5	75	0	0	F0
7/16/1997	1438 CST	T. Merrill	1	100	0	0	F2
7/18/1996	1620 CST	T. Tomahawk	3	100	0	0	F1
6/14/1991	1155 CDT	T. Harding	1	50	0	0	F1
6/16/1979	1540 CST	T. Skanawan	N/A	N/A	0	0	F1
6/16/1979	1530 CST	T. Skanawan	N/A	N/A	0	0	F1
6/13/1976	2045 CST	T. Pine River	6	50	0	0	F1
7/24/1962	1700 CST	T. Corning	1	50	0	0	F2
9/3/1961	1700 CST	T. Corning	1	33	0	0	F1
6/30/1958	1730 CST	T. Russell	2	50	0	0	F2
5/3/1955	1800 CST	T. Rock Falls	7	33	0	2	F1

Source: National Climatic Data Center

On July 30, 2002, two months before the F2 tornado, three of four confirmed F0 tornados touched down in Lincoln County and the other touched down in Marathon County. The damage from these three tornados totaled \$105,000 destroying a barn and an outbuilding, tearing roofs off numerous buildings, and moving others off of their foundations. The tornados also demolished a mobile home and snapped many trees and tree limbs.

Out of the tornados reported in Lincoln County, none claimed a life and the May 3, 1955 tornado was the only one in addition to 2011 to have noted injuries, however

several others have caused significant damages. The July 16, 1997, F2 tornado touched down in the Town of Pine River and damaged several homes, vehicles, and silos, and it destroyed several barns, sheds, and crops with total damage estimated at \$525,000.

Tornado Vulnerability Assessment

Though Lincoln County is mostly a rural county, there are concentrations of population scattered throughout the County. Subdivisions, rural unincorporated communities, and the cities of Merrill and Tomahawk can be regarded as more vulnerable because tornados pose more of a threat to human safety and property damage in more concentrated areas, see Map 8.

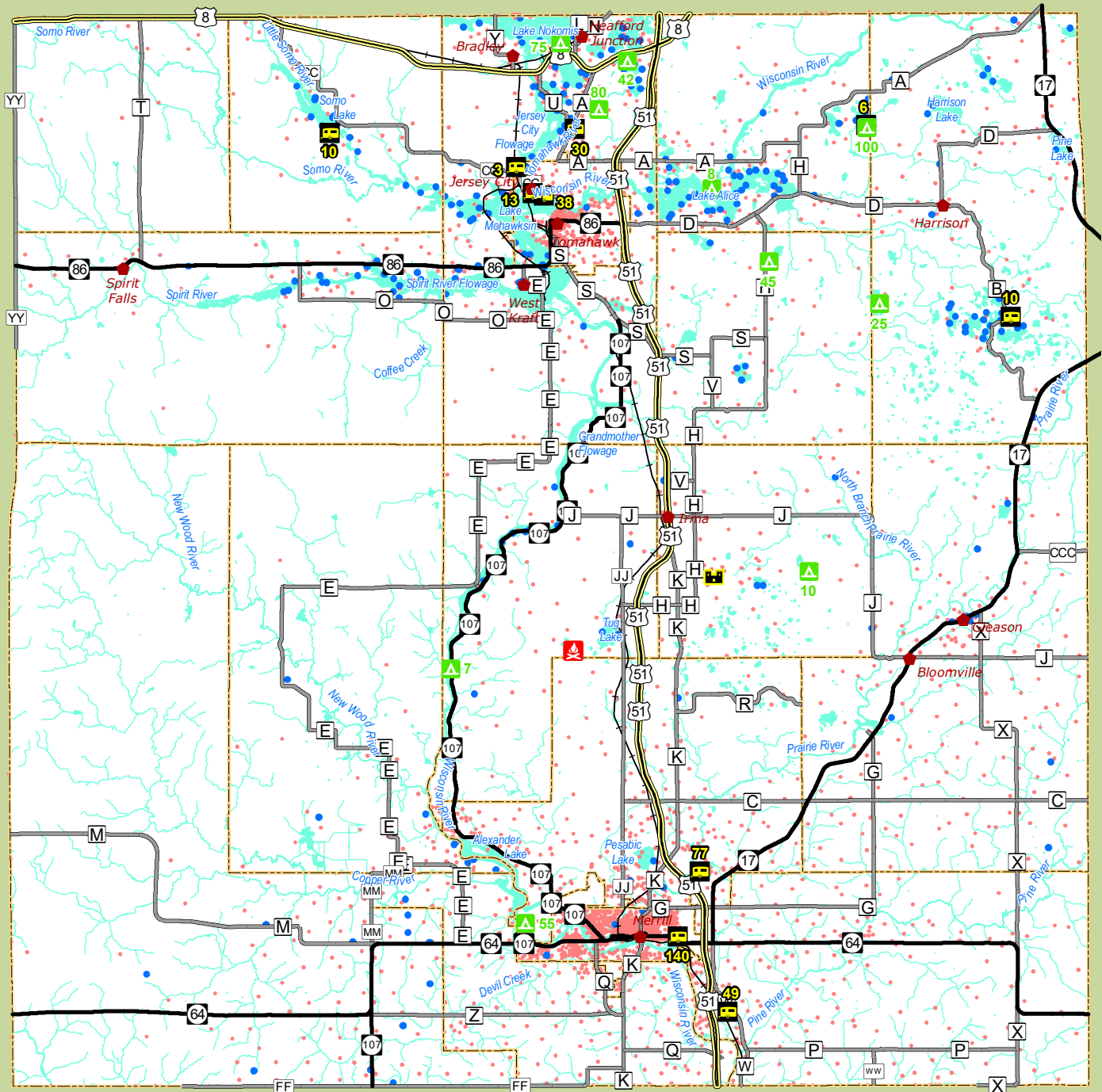
Mobile homes are of significant concern in assessing the hazard risks from tornados, since they comprise about 6.5 percent of Lincoln County's housing units. In general, it is much easier for a tornado to damage and destroy a mobile home than a standard site-built home. Research by the NWS shows that 40 percent of all deaths in the nation from tornados were in mobile homes; compared to 29 percent in permanent homes, and 11 percent in vehicles.

While mobile homes are scattered throughout the County, many are concentrated in mobile home parks. Lincoln County has approximately 11 mobile home parks, see Map 8 for locations. Within these park sites, there are approximately 330 individual sites. The largest is located in the City of Merrill with about 85 sites. The second largest is just north of the City in the Town of Merrill with about 65 sites. The total number of mobile homes reported in the 2021 American Community Survey (Census) reported for Lincoln County was 1,033.














Besides mobile homes, campground patrons are vulnerable to tornados because there usually is little shelter provided. Treehaven is the University of Wisconsin – Stevens Point field station where summer environmental classes are taught, and about 125 students and staff reside from May – August. Lincoln Hills School is a Type 1 Secured Juvenile Correctional Facility, where an average daily budgeted population of 345 are housed. Tornado shelters are provided onsite at both Treehaven and Lincoln Hills School.

The following is a list of things that may be affected by a tornado. Much of this list can be referenced in Part II.

- Community facilities – hospitals, schools, jails
- Public Service – police and fire departments
- Utilities – power lines, telephone lines, radio communication
- Transportation – debris clean-up, sign damage
- Residential – nursing homes, mobile homes/parks, garages, trees and limbs, roofing, siding, windows
- Businesses – signs, windows, siding, billboards
- Agricultural – buildings, crops, livestock



Legend

-  Minor Civil Divisions
-  US Highway
-  State Highways
-  County Highways
-  Railroad
-  Water
-  Population Concentration
-  Campgrounds
-  Mobile Home Parks
-  Girl Scout Camp
-  Correctional Facility
-  Seasonal Housing Unit Pattern
1 Dot = 10 people
-  Resident Population Unit Pattern
1 Dot = 10 people



Source: WI DNR, NCWRPC

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.

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Based on review of the historic events of tornados, there are no specific areas in the county that have unusual risk of occurrence. The events are a countywide concern. General vulnerability by geographic area (local unit of government) is identified in Map 8. However, in their mitigation survey results, the Towns of Birch, King and Rock Falls identified tornado as a top vulnerability concern based on the presence of extensive woodlands citing the potential for downed trees blocking roads and downed power lines resulting in power outages. Discussion during the city mitigation planning meetings reveal that the City of Merrill still recalls the impact of the 2011 tornado, keeping tornado a high priority for them. High wind impacts are a concern for the City of Tomahawk, but feeling that tornados are not common in the area, their priority is more toward straight-line winds in general.

Future Probability and Potential Dollar Losses – Tornados

Based on the historic data presented here (frequency of past events - 2012 to 2021), Lincoln County can expect a tornado about once every 3 years on average. This equates to a probability of 0.33 or about a 33 percent chance in a given year. Table 12 indicates the probability of tornados of a specific magnitude. However, these probabilities are slightly skewed by multiple tornado events, 3 on July 30, 2002 and 4 on July 11, 2004. The County did not experience a tornado between 2005 and 2010 or 2014 and 2018.

Table 12: Probability of Intensity for any given Tornado in Lincoln County						
Tornado Scale	F0	F1	F2	F3	F4	F5
Number of Reported Tornados*	13	8	4	1	0	0
Probability of Occurrence	50%	31%	15%	4%	<1.0%	<1.0%
<i>Source: National Weather Service & NCWRPC – *Based on historical data from 1950 through 2021.</i>						

Historic data is again used to estimate potential future dollar losses due to a tornado. Estimated damages resulting from various tornados in Lincoln County range from \$0 to \$11 million, including the 2011 event. On average, Lincoln County might expect damages of \$509,040 per tornado, however, only one of the 25 historic tornados, in addition to the 2011 event, resulted in damages exceeding \$500,000, four others had \$250,000, and the rest were \$100,000 or less. Over the next ten-year period, tornado losses in Lincoln County could approach \$1,527,120.

Climate change can be expected to lead to more frequent, higher intensity tornados. This will affect more people over a wider area of the County, and resulting damages will be higher.

HAZARD ANALYSIS - WINTER STORMS / EXTREME COLD

Background on Winter Storms/Extreme Cold Hazard

A variety of weather phenomena and conditions can occur during winter storms. For clarification, the following are National Weather Service approved descriptions of winter storm elements:

Heavy snowfall – the accumulation of six or more inches of snow in a 12-hour period or eight or more inches in a 24-hour period.

Blizzard – the occurrence of sustained wind speeds in excess of 35 miles per hour accompanied by heavy snowfall or large amounts of blowing or drifting snow.

Ice Storm – an occurrence where rain falls from warmer upper layers of the atmosphere to the colder ground, freezing upon contact with the ground and exposed objects near the ground.

Freezing drizzle/freezing rain – the effect of drizzle or rain freezing upon impact on objects that have a temperature of 32 degrees Fahrenheit or below.

Sleet – solid grains or pellets of ice formed by the freezing of raindrops or the refreezing of largely melted snowflakes. This ice does not cling to surfaces.

Wind chill – an apparent temperature that describes the combined effect of wind and low air temperatures on exposed skin.

Winter storms can vary in size and strength and include heavy snowfall, blizzards, ice storms, freezing drizzle/freezing rain, sleet, wind chill, and blowing and drifting snow conditions. Extremely cold temperatures accompanied by strong winds can result in wind chills that cause bodily injury such as frostbite and death.

True blizzards are rare in Wisconsin. They are more likely to occur in the northwestern part of the state than in south-central Wisconsin, even though heavy snowfalls are more frequent in the southeast. However, blizzard-like conditions often exist during heavy snowstorms when gusty winds cause the severe blowing and drifting of snow. Heavy snow and ice have been part of nearly every winter in Lincoln County.

Dangerously cold conditions can be the result of the combination of cold temperatures and high winds. The combination of cold temperatures and high wind creates a perceived temperature known as "wind chill". Wind chill is the apparent temperature that describes the combined effect of wind and air temperatures on exposed skin. When wind blows across the skin, it removes the insulating layer of warm air adjacent to the skin. When all factors are the same, the faster the wind blows the greater the heat loss, which results in a colder feeling.

As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.

The National Weather Service issues wind chill advisories when wind chill readings of -20 to -34 degrees are expected. Wind chill warnings are issued when wind chill values are expected at or below -35 degrees. Extreme cold events are most likely during the months of January and February.

History of Winter Storms/Extreme Cold in Lincoln County

The NCDC has reported 27 significant winter storm events for Lincoln County between 2012 and 2021. All of these storms contained some form of snow, sleet, freezing rain, or ice conditions.

The most recent winter storm event occurred on December 10, 2021 when a surface low tracked northeast from the central Plains through the western Great Lakes region late Friday night (12/10) into Saturday morning (12/11), bringing 8 to 14 inches of snow to northern Wisconsin and portions of central and northeast Wisconsin. Gusty winds of 30 to 40 mph led to blowing and drifting of snow and power outages across portions of northern Wisconsin with over 14,000 customers reported without power. The highest snowfall totals across Lincoln County included 13.5 inches in Irma, 12.7 inches near Merrill, 11.5 inches near Tomahawk, and 10.0 inches near Harrison.

On February 23-24, 2019 a fierce, late-winter blizzard produced heavy snow, freezing rain, and high winds across much of central and northern Wisconsin as an area of low pressure rapidly deepened across the Great Lakes. At the height of the storm travel was not recommended across parts of central and northern Wisconsin as blizzard conditions made travel nearly impossible. The combination of ice, snow, and strong winds caused power outages and tree damage in many locations. This is the storm that resulted in the chain-reaction pileup involving 131 vehicles where one motorist was killed and 71 others injured in the largest traffic accident in Wisconsin history.

In Lincoln County over the two-day storm included 16.1 inches at the Rice Reservoir and 15.7 inches near Merrill. Parts of central and east-central Wisconsin received up to one-half inch of ice accumulation in addition to the snow. Measured wind gusts in the 50 mph to 60 mph range were recorded at many locations. Snow and blowing snow caused whiteout conditions in Lincoln County for most of the afternoon. Some power lines were downed by strong winds, and gusts to 43 mph were recorded at both Merrill Municipal Airport and Tomahawk Regional Airport.

On April 13-15, 2018, A low pressure system that moved from the Plains, across Illinois, to the Ohio Valley brought two periods of heavy precipitation and strong northeast winds to the area. The historic late season winter storm pummeled northeast and north-central Wisconsin from the evening of April 13th through the afternoon of April 15th. The storm brought blizzard or near-blizzard conditions to

much of the area and made roads impassable from time-to-time. Winds of 35 to 50 mph caused sporadic power outages. The highest reported snowfall totals in Lincoln County were 19.2 inches near Bradley, 18.5 inches west of Merrill, and 15.2 inches at Rice Reservoir Number 2.

Notable snowfall is attributed to the winter storm event on March 22, 2011. A low pressure system that moved across northern Illinois from Iowa received plenty of moisture from the Gulf of Mexico. This abundant moisture allowed the late-season storm to produce significant heavy, wet snow and some thundersnow across parts of central and northeast Wisconsin on March 22nd-23rd. During the two-day period, many locations received more than a foot of snow. Lightning from the storm destroyed a house in Marathon County. The high water content of the snow caused more problems than would normally be expected with storms having similar snowfall totals. Some of the highest snowfall totals from across the area included 18.8 inches in Shawano County and 18.0 inches at Irma. The 17.8 inches of snow that fell in Green Bay was the most from a single storm in more than 120 years. It was also the third highest storm total since Green Bay weather records began in 1886.

The National Weather Service has classified the December 11, 2010 snowstorm as a blizzard. In Merrill, 14.7 inches of snow fell with winds gusting up to 40 mph between December 11 and 12, causing numerous cancellations and rescheduling. The snow developed as low pressure moved from Wyoming to Lake Michigan. The pressure difference between an arctic high over southern Canada and the low pressure storm system generated strong winds resulting in severe blowing snow and blizzard conditions across the State. The Governor declared a state of emergency in all 72 counties and the state's Emergency Operations Center was activated. The State Patrol advised against traveling as it was difficult to keep the blowing and drifting snow off the highways. There were numerous slide-offs and accidents across the state including 9 slide-offs and 3 other crashes reported by the Lincoln County Sheriff's Office, although no injuries were noted. Frigid temperatures followed the storm with actual air temps dropping to -23 degrees.

On December 8, 2009 heavy snow developed as low pressure rapidly deepened as it moved into Lake Michigan. Strong winds generated by the deepening low created blowing snow and near blizzard conditions on the morning of the 9th across northeast Wisconsin. During the height of the snow, lightning and thunder were reported in central Wisconsin. Snow fall totals ranged from 8 to 16 inches across northern, central and east-central Wisconsin.

On December 23, 2007, a low pressure system over Missouri rapidly intensified as it moved into eastern Wisconsin during the early morning hours. Precipitation associated with the system began in the form of rain and then rapidly changed to snow as winds circulating around the low brought much colder air into the area. Heavy snow fell, and combined with west winds gusting over 40 mph to produce near blizzard conditions across much of the region. Six-foot high snow drifts made

some roads impassable in central Wisconsin where over a foot of new snow fell. The highest reported snowfall total was 18.2 inches in Wood County while 14.3 inches was reported at Merrill.

On December 22, 2006, rain quickly turned to snow as an upper low-pressure system moved across Wisconsin. The snow caused roads to become slippery, and hundreds of vehicle accidents were reported. Heavy, wet snow stuck to power lines and tree branches causing them to snap under its weight. The downed tree limbs and power lines knocked out electricity to more than 30,000 customers, between Stevens Point and Rhinelander, including Merrill and parts of Lincoln County. About 11,000 customers were still without electricity on the morning of the 24th.

On November 10, 2006, 8 to 16 inches of snow fell from west-central into north-central Wisconsin as a low-pressure system moved across the region. There were reports of more than 220 accidents on slick roads in Marathon and Lincoln counties. One of the accidents involved a logging truck that dumped part of its load onto U.S. Highway 51 in Lincoln County, snarling traffic for several hours. Two minor injuries were reported in Lincoln County accidents. Merrill recorded 12.0 inches of snowfall. The snow fell at a rate of 1 to 2 inches per hour at the height of the storm.

From the NCDC, 7 extreme cold temperature events have affected Lincoln County from 2012 to 2021. The most recent was on February 14, 2021 when a cold air mass remained across northern Wisconsin from the 14th to the 15th with lows of -25 to -40 degrees. The combination of the bitter cold and light winds created wind chills of -35 to -45 across central and north-central Wisconsin. Several locations including Merrill set record low temperatures on the morning of the 15th. The low temperature of -32 degrees in Merrill broke the previous record of -30 degrees, set in 1913.

On January 29, 2019, cold air moved into northern Wisconsin as a strong low-pressure system departed and high pressure over the Plains moved toward the region. Low temperatures on the morning of January 30th were mainly in the -15 to -30 degree range and wind chills mostly -35 to -55. Temperatures across the area remained below zero throughout the day on the 30th. Schools and many businesses closed, public transportation suspended or curtailed service, and the U.S. Postal Service even suspended deliveries due to the bitter cold.

Several locations set or tied their records for the coldest daytime high temperatures on January 30th including Merrill. The high temperature in Merrill on January 30th was -5 degrees, tying the record for the coldest daytime high, set in 1907. The low temperature at Tomahawk was -36 on the morning of January 31st.

on January 5, 2015. Temperatures in the 12 below to 22 below zero range combined with west winds of 10 to 20 mph to produce dangerous wind chills during

the night of January 4th and the morning of the 5th. These dangerous wind chills were mainly across parts of central and north central Wisconsin. The wind chill dropped as low as 35 below zero at Merrill.

On January 27, 2014, high pressure over the Plains and upper level flow from the Canadian Plains brought extremely cold temperatures and wind chills to the area. Temperatures fell to lows in the 15 below to 28 below zero range. West winds of 10 to 20 mph combined with the frigid air to produce wind chills in the 35 below to 45 below zero range. The coldest temperature recorded in Lincoln County was 23 degrees below zero at Merrill with wind chills as low as 40 below zero.

On January 6, 2014, a bitterly cold arctic air mass, the coldest to impact the region in years, spread across the area following the passage of a cold front. Temperatures fell to lows in the 16 below to 32 below zero range. The cold temperatures, combined with west winds of 10 to 20 mph, produced wind chills in the 40 below to 55 below zero range. The coldest recorded temperature in Lincoln County was 30 degrees below zero at Tomahawk with wind chills as low as 51 below zero.

An extended cold streak occurred in February of 1996 when a frigid arctic air mass became entrenched across central and northeast Wisconsin. Actual temperatures remained below zero for more than 130 hours straight and dropped to 45 below at Harrison. The extreme cold temps combined with west winds of 10 to 15 mph produced wind chills from 50 to 70 below zero on February 2. The cold weather was responsible for many school closures, stalled vehicles, frozen pipes, and broken water lines, as well as, electrical and phone outages resulted from snapped lines. All outdoor events at the Badger State Games had to be canceled and ski hills were closed.

Winter Storms/Extreme Cold Vulnerability Assessment

Winter storms and extreme cold present a serious threat to the health and safety of affected citizens and can result in significant damage to property. Heavy snow or accumulated ice can cause the structural collapse of buildings, down power lines, motor vehicle accidents, or isolate people from assistance or services. Extreme cold includes the risk of frostbite and hypothermia.

The following is a list of things that may be adversely affected by a winter storm or extreme cold. Much of these community assets can be referenced in Part II:

- Infrastructure – operation of emergency services, operation of public facilities and schools
- Utilities – down power and telephone lines
- LP Gas at residences freezing in temps below -40 degrees
- Septic systems - freezing
- Transportation – automobile accidents, roadway plowing, salting/sanding
- Residential – roofs

- Businesses –commerce
- Agricultural – livestock, frost or snow damage to crops

Based in review of the historic events of winter storms and extreme cold, there are no specific areas in the county that have an unusually high risk. The risk for winter storms and extreme cold is relatively uniform and a county-wide concern. However, in their mitigation survey results, the Towns of Birch, Harding, Rock Falls and Wilson identified winter storms as a top vulnerability concern, citing downed powerlines and blocked roads as problems in their heavily wooded areas.

Future Probability and Potential Dollar Losses – Winter Storms/Extreme Cold

Based on historical frequency, Lincoln County can expect 2.7 major winter storm events per year on average. In other words the probability is 1.00 or a 100% chance in a given year.

For extreme cold temperatures, based on historical frequency, Lincoln County can expect an occurrence about every 1.4 years on average for a probability of 0.7 or a 70% chance in a given year. However, since extreme cold temperatures often accompany winter storms, a probability of 100% chance in a given year cannot be ruled out.

Estimating potential future losses for winter storms is difficult. Damages and losses are typically widespread. Auto accidents and additional snow removal time are typical impacts of winter storms, and such claims are not aggregated or tracked for monetary damage. Winter storms do have the potential to be extremely destructive, particularly in the case of ice storms. Potential future losses per incident might range from \$5,000 to \$2 million based on experiences from other counties.

Climate change can be expected to lead to more frequent, more powerful winter storm events and occurrences of severe cold. Heavier, more frequent winter storms will increase the frequency of power outages, structural collapse and transportation impacts.

HAZARD ANALYSIS - SEVERE THUNDERSTORM / HIGH WIND / HAIL / LIGHTNING

Background on Severe Thunderstorm Hazard

The National Weather Service definition of a *severe thunderstorm* is a thunderstorm event that produces any of the following: downbursts with winds of 58 miles per hour or greater (often with gusts of 74 miles per hour or greater), hail 1 inch in diameter or greater, or a tornado. Strong winds, hail, and lightning will be addressed in this section; however, tornadoes are referenced as a separate hazard due to their unique severity.

Lightning results from discharge of energy between positive and negative areas separated by rising and falling air within a thunderstorm. This discharge heats the surrounding air to 50,000 degrees. Hail results as the warm rising air cools, forming ice crystals which are held by the updrafts until accumulating enough weight to fall. The hail size depends on strength of the updrafts keeping it up.

Thunderstorm frequency is measured in terms of incidence of thunderstorm days or days on which thunderstorms are observed. Wisconsin averages between 30 and 50 thunderstorm days per year depending on location. A given county may experience ten or more thunderstorm days per year. The southwestern area of the state normally has more thunderstorms than the rest of the state.

History of Severe Thunderstorms in Lincoln County

The NCDC has reported 27 severe thunderstorm events for Lincoln County between 2012 and 2021. These storms typically contain some form of heavy rain and strong winds. About 15 significant hail events, typically related to a severe thunderstorm were listed during this time period, however, there were no notable lightning incidents identified. In 1977, one of the six Presidential Disaster Declarations (since 1971) for Lincoln County was associated with severe storms with high winds and hail being the primary cause of damages.

The most recent thunderstorm event occurred on August 11, 2021 when thunderstorms developed ahead of a cold front during the afternoon across northeast Wisconsin. The strongest storms produced wind damage, large hail and 2 tornadoes. Rainfall amounts of 2 to 4 inches fell across central and southern Marathon County, producing flash flooding across these areas. Thunderstorm winds downed trees and power lines in Irma.

On the night of June 10, 2017 thunderstorms developed in the Dakotas in response to very warm and humid air interacting with a stalled frontal system. The line of storms moved across Minnesota and into western Wisconsin on the morning of June 11th and continued across much of central, north central and northeast Wisconsin during the late morning and early afternoon hours. The storms produced damaging winds, mainly north of Highway 29, downing numerous trees and power lines, flattening at least 2 barns (one southwest of Gleason), and causing roof damage to several other buildings. A 20-foot section of barn roof was carried by wind 500 yards into a field. At one point, 55,000 people were without power. Strong winds downed multiple trees in Gleason as well as a few in Merrill. Torrential rainfall that caused street flooding in Merrill.

On May 17, 2017 low pressure tracking northeast from the Missouri Valley brought several rounds of thunderstorms and heavy rain to northeast Wisconsin during the afternoon and evening hours. Three distinct rounds of activity brought damaging winds as high as 80 mph and hail as large as an inch in diameter. Thunderstorm winds downed at least a dozen trees and destroyed an outbuilding east of Tomahawk.

On September 4, 2014, thunderstorms formed north of a warm front and propagated east across northern Wisconsin. The storms produced wind gusts in excess of 60 mph, large hail, and heavy rainfall. The high winds caused scattered tree damage in Merrill. Quarter size hail fell in Harrison.

On June 26, 2013, an upper level disturbance triggered thunderstorms that moved across central and north central Wisconsin. The storms produced isolated severe weather across the area, including large hail, wind damage and heavy rainfall. The heavy rain in and around Merrill caused some street flooding with 1.77 inches of rain recorded with a 1-hour period at the Merrill Airport. High winds knocked trees onto power lines and a house. Reported hail ranged from nickel to quarter size at Merrill and Tomahawk.

On July 27, 2010, following an earlier strong thunderstorm on July 14. A cold front combined with a warm and humid air mass triggering thunderstorms that moved northeast Wisconsin. The storms produced hail to golf ball size, wind gusts to 95 mph, funnel clouds and heavy rainfall that led to flash flooding in some areas. Numerous trees and power lines were downed with power outages around Merrill. Winds were estimated at 60 mph at the intersection of County J and I-39.

One person was injured on April 23, 2001 when a mobile home was flipped on its side by thunderstorm winds 5 miles northeast of Tomahawk. This storm also downed more than 100 trees near Alice Lake. Two cottages were destroyed and six others were damaged when trees landed on them.

The most recent hail event noted by NCDC occurred on June 10, 2021. Thunderstorms developed ahead of a cold front across the Upper Peninsula during the afternoon hours. These storms dropped south through north-central and central Wisconsin during the late afternoon and early evening hours, producing isolated wind damage and small hail. Nickel size hail fell near Irma.

On August 2, 2015, a thunderstorm that rapidly intensified over central Wisconsin dropped large hail, up to two inches in diameter, in and around Merrill as it moved across southern Lincoln County. Hail completely covered the ground in some locations. Penny size hail was reported southeast of Merrill, half dollar size hail was reported at the intersection of Highways 64 and 51, and golf ball size hail was reported west of Merrill.

Softball size hail fell near Highway 86 and County D near Tomahawk during a wide-spread hail event on April 25, 2008.

Lightning struck and burned a vacant house near Tomahawk on September 25, 1998. A lightning strike punched a hole in the roof and significantly damaged the electrical system of a home 3 miles northwest of Merrill on September 10, 1996.

In May 1996, lightning started a fire that destroyed a home 3 miles southeast of Merrill. Damage was estimated at \$150,000.

Severe Thunderstorm Vulnerability Assessment

The National Weather Service can forecast and track a line of thunderstorms that may be likely to produce severe high winds, hail, and lightning, but where these related hazards form or touch down and how powerful they might be remains unpredictable. The distribution of thunderstorms and related hazard events have been widely scattered throughout the County.

Many thunderstorm events (without tornadoes) have caused substantial property and infrastructure damage, and have the potential to cause future damage. In order to assess the vulnerability of the Lincoln County area to thunderstorms and related storm hazards, a review of the past events indicate significant impacts to:

- Infrastructure – hospitals, schools, street signs, police and fire departments
- Utilities – electric lines/poles/transformers, telephone lines, radio communication
- Transportation – debris clean-up
- Residential – mobile homes, garages, trees and limbs, siding, & windows
- Businesses – signs, windows, siding, & billboards
- Agricultural – buildings, crops, & livestock
- Vehicles – campers, boats, windshields, body, & paint

Based on review of the historic patterns of thunderstorms associated with high wind, hail, or lightning, there are no specific municipalities that have unusual risks. The events are relatively uniform and a countywide concern. However, in their mitigation survey results, the Towns of Birch, Harding, King, Rock Falls, Tomahawk and Wilson identified high winds as a top vulnerability concern, citing downed powerlines and blocked roads as problems in their heavily wooded areas. Straight-line winds were identified as a top concern by City of Tomahawk during the city mitigation planning meeting citing clean-up concerns and expenses.

Future Probability and Potential Dollar Losses – Severe Thunderstorms

Based on historical frequency, Lincoln County can expect 2.7 thunderstorm events per year on average. In other words, the probability is 1.0 or a 100% chance of multiple storms in a given year. The probability of a thunderstorm with damaging hail in Lincoln County is also at 1.0 or 100% chance with about 1.5 incidents in a given year. There was insufficient data to determine the probability of a significant lightning event in a given year.

According to the NCDC, historic thunderstorm events with associated high wind averaged \$8,000 in damage per incident. There was insufficient data to calculate average hail or lightning damages. Losses in Lincoln County associated with severe thunderstorms could approach \$216,000 over the next ten-year period.

Climate change can be expected to lead to more frequent, higher intensity severe thunderstorms and resultant high winds, hail and lightning. This will affect more people over a wider area of the County, and resulting damages will be higher.

HAZARD ANALYSIS - DROUGHT / EXTREME HEAT

Background on Drought / Extreme Heat Hazard

A drought is an extended period of unusually dry weather, which may be accompanied by extreme heat (temperatures which are 10 or more degrees above the normal high temperature for the period). There are basically two types of drought in Wisconsin: agricultural and hydrologic. Agricultural drought is a dry period of sufficient length and intensity that markedly reduces crop yields. Hydrologic drought is a dry period of sufficient length and intensity to affect lake and stream levels and the height of the groundwater table. These two types of drought may, but do not necessarily, occur at the same time.

Droughts, both agricultural and hydrologic, are relatively common in the state. Small droughts of shortened duration have occurred at an interval of about every ten years since the 1930's.

Extended periods of warm, humid weather can create significant risks for people, particularly the elderly who may lack air conditioning or proper insulation or ventilation in their homes. Animals are also at risk during extended periods of heat and humidity. The National Weather Service issues a Heat Advisory when the Heat Index ranges from 105 to 114 degrees daytime and remains at or above 80 degrees at night, during a 24-hour period. The heat index combines the effects of heat and humidity to better reflect the risk of warm weather to people and animals. When heat and humidity combine to reduce the amount of evaporation of sweat from the body, outdoor activity becomes dangerous even for those in good shape. The index measures the apparent temperature in the shade. People exposed to the sun would experience an even higher apparent temperature. A heat index of 105 is considered dangerous and prolonged exposure can result in heat stroke, exhaustion and cramps. People should be reminded to use extreme caution when the heat index is between 95 and 105. A heat index of 95 occurs when the temperature is 90 degrees and the relative humidity is 50 percent.

History of Drought / Extreme Heat in Lincoln County

The period of analysis for this plan began with historic drought across much of the U.S. Nationally, what is now known as the 2012-2013 North American Drought was affecting over 80% of the U.S. as well as parts of Canada and Mexico. This drought exceeded the 1988-89 drought, which also affected Wisconsin (to a lesser extent in Lincoln), as one of the costliest natural disasters in U.S. history.

Previously, NCDRC reports indicate that much of Wisconsin including Lincoln County was under droughty conditions between 2005 and 2013. At one point, the

Governor had declared a state of emergency to get assistance to the state's agricultural sectors. The extended dry conditions posed serious challenges for farmers from drought stressed crops to issues providing feed for livestock. Beginning in 2013, improved rainfall across the Midwest gradually relieved the drought in Wisconsin.

While droughts come and go, there is increasing evidence that parts of the U.S., namely the Southwest, are enduring long-term “megadrought” conditions. This is partly related to climate change, which worsens droughts by increasing temperatures, thereby turbocharging the loss of moisture from plants and soils. Climate change is also shifting weather patterns in ways that favor drier conditions in the Southwest U.S., pushing storm tracks northward which explains why a significant portion of the state has remained “water-logged” and struggling with on-going/recurring flood conditions over the last several years. It is interesting to note however that some parts of the state, particularly in northern Wisconsin, continue to trend towards drought.

The recent, 2022, images of exposed Mississippi Riverbed illustrate the nation’s ongoing struggle with drought, bringing it a little bit closer to home for Wisconsin. Although the record-breaking drought throughout the Mississippi River basin was beginning to ease at the time of this writing, low water levels have impacted barge traffic and grain exports by slowing shipments from the Midwest to the Port of New Orleans, costing billions of dollars.

Lincoln County was one of 64 counties that were included in a Presidential Emergency Declaration for the drought of 1976-1977. Statewide agricultural losses during this drought were set at \$624 million. A number of wells in the County went dry and financial assistance was needed to drill new ones. Federal assistance totaled only 19% of losses attributed to the drought.

Despite all this drought, there are no incidences of extreme heat listed by the NCDC for Lincoln County between 2012 and 2021. The last excessive heat event reported by the NCDC was in 1999 when consecutive days of high temperature between July 23 and July 31 combined with high humidity levels resulted in numerous heat related illnesses. The heat caused some roads to buckle.

Drought / Extreme Heat Vulnerability Assessment

Droughts can have a dramatic effect on the farms and other agricultural activities as well as forestry enterprises located throughout Lincoln County. With forestry and agriculture being important sectors of the County’s economy, droughts can have disastrous effects. Even small droughts of limited duration can significantly reduce crop growth and yields, adversely affecting farm income. More substantial events can decimate croplands and result in total loss, hurting the local economy.

Irrigation can negatively impact the environment by drawing water that naturally goes to aquifers and surface water. Drought can exacerbate the problem when

high withdrawal rates versus little precipitation deplete waterbodies and aquifer supplies, therefore decreasing drinking water supplies, drying streams, and hindering aquatic and terrestrial wildlife. During severe droughts, some wells - mainly private wells - will go dry.

Another significant area of impact from drought includes the tourism sector of the economy. As water levels go down, there is less tourism seen in the County. The past drought conditions reduced water levels on many lakes and streams across the County.

Droughts can trigger other natural and man-made hazards as well. They greatly increase the risk of forest fires and wildfires because of extreme dryness. In addition, the loss of vegetation in the absence of sufficient water can result in flooding, even from average rainfall, following drought conditions.

The following is a list of things that may be adversely affected by a drought. Much of these community assets can be referenced in Part II.

- Infrastructure – municipal water supplies
- Surface water – groundwater reserves, recreation, and wildlife
- Forests - forest products
- Agricultural - crops, livestock

The areas most susceptible to drought conditions would be agricultural towns. Agricultural land is scattered throughout the County but is more concentrated in the southern and eastern parts of the County, see Map 2. In their mitigation survey results the Towns of Rock Falls identified drought/extreme heat as a top vulnerability concern primarily due to the increased risk of wildfire in their heavily wooded areas.

According to the Wisconsin Emergency Management, excessive heat has become the most deadly hazard in Wisconsin in recent times. Extreme heat can happen anywhere within Lincoln County affecting everyone, however the elderly and young are the ones with the highest risk of getting heat related injuries, which can lead to death. Ways to prevent injuries include wearing light-colored clothing, drink plenty of water, slow down, and do not stay in the sun for too long.

Future Probability and Potential Dollar Losses – Drought/Extreme Heat

Based on the historic data presented here (frequency of past events), Lincoln County can expect a drought every ten years on average, which is a probability of 0.10 or a 10 percent chance in a given year. Significant severe drought is somewhat less common, affecting Wisconsin once about every 15 years.

Drought is another hazard lacking good loss figures at the county level. However, a look at aggregate data from two previous major droughts for which figures are available can give some indication of potential impact. Those droughts resulted in

losses of \$9.6 million (1976-77) to \$18 million (1987-88) per affected county in Wisconsin on average.

Normally, central Wisconsin is known for its cold winters, however, extreme heat waves will affect Lincoln County in the future. There was insufficient data available to determine the probability of a significant extreme heat event in a given year.

Climate change can be expected to lead to rising average annual temperatures. The increased heat will fuel more extreme weather of all types, including excessive heat which is already one of the most deadly hazards in Wisconsin. Drought conditions will become more frequent and persistent.

HAZARD ANALYSIS - CYBER ATTACK

Background on Cyber Attack Hazard

A vast array of networks form the foundation of our means to communicate and travel, power our homes, run our economy, and provide government services. Yet, cyber-attacks have increased dramatically in the United States over the last decade, exposing sensitive personal and business information, disrupting critical operations, and imposing high costs on the economy.

A cyber-attack is the actual or potential disruption of government information systems. Information technology systems are connected in networks or through the Internet, and thus are at risk of cyber-attack. An attack may be a deliberate effort to gain access to the system or processes; or it may be the result of a randomly initiated threat, such as a worm or virus. Unlike physical threats that prompt immediate action, cyber threats are often difficult to identify and comprehend. Among these dangers are viruses erasing entire systems, intruders breaking into systems and altering files, or intruders stealing confidential information.

Cyber-attack may result in the loss of confidence in the government's ability to protect citizens. However, the support services performed in the aftermath of an event can rebuild the reputation of the government's ability to provide services to the people in time of need.

With the extensiveness of information technology (IT) and cyber networks in nearly all parts of society, effectively securing critical infrastructure requires investments in network resiliency as well as cyber infrastructure protection. As all levels of government now rely on cyber networks and assets to provide public safety and economic prosperity, their operations depend on information systems that are maintained, protected, and secured from exploitation and attack.

History of Cyber Attack in Lincoln County

Cyber-attacks have increased throughout the world and are a major issue due to the increasing reliance on computers and networked technology. The probability of Lincoln County experiencing cyber-attacks is based on the increase of cyber-attacks throughout the country.

In Lincoln County's experience with firewalls and network security appliances, they are under continuous hacking attacks. So far, however, they have had viruses but not any hacking breaches. Lincoln County conforms as best it can to industry standards, utilizing products and vendors who specialize in these areas.

Other counties in the area have experienced viruses that resulted in loss of data from Department file servers including documents, pictures, pdf files, etc. Databases have had to be rebuilt. Denial of service issues have occasionally been a problem in the past. Denial of Service attacks are designed to overload a network with useless traffic preventing legitimate users access and crashing the system.

In 2023, a serious cyberattack afflicted Lincoln County's next-door neighbor, Langlade County, highlighting the seriousness of this threat. Langlade's technology services faced catastrophic software failures caused by a LockBit ransomware attack. Specific details regarding the file encrypting malware attack have not been disclosed, the effects include emergency phone lines becoming non-operational along with disruption of email and other communication channels. A strong back-up program has enabled the County to recover from this attack.

Cyber Attack Vulnerability Assessment

The impact of a cyber-attack on property, facilities, and infrastructure is dependent on the type of event and the location in which it occurs. Cyber-attacks, in all probability, will have limited effect on public properties, buildings, or infrastructure, but may severely affect the transportation of goods and services to and from critical facilities. Infrastructure damage or interruption of power or communication services could have a substantial impact; but effects are minimized through thorough planning on the part of the utility and its determination to resume critical services. Economic and financial systems could potentially be significantly impacted, depending on the scope, breadth, and success of the cyber-attack.

All government and personal computers and networks within Lincoln County are susceptible to cyber-attack. The County has 840 computers and 70 servers comprising its network. Attention must be given to security education and awareness, so we do not place too much faith in technology's ability to protect data. Inadequate security awareness can facilitate access to critical computer systems, making them vulnerable to attacks. Secure off-site back up is critical for reestablishing operations if a serious cyber-attack does occur. The County does maintain off-site back up of its computer data and is looking at updating the back-up system. The City of Merrill also maintains off-site back-up of critical data and

has set up the ability to continue government operations from the Fire Department in the event something happens to City Hall.

Cyber-attacks may last from minutes to days depending upon the type of intrusion, disruption, or infection. Generally, no direct effects are felt by the built environment, but secondary effects may occur depending upon the system being attacked. Denial of service attacks can cripple all or part of a county computer system and are hard to protect against. The County is planning fail safes against denial of service type attacks.

The spectrum of cyber risks is limitless, and serious threats can have wide-ranging effects. Transportation, power, and other services may be disrupted by large scale cyber-attacks. The extent of the disruption is highly uncertain, as it will be determined by many unknown factors such as the target and size of the incident. Vulnerability to data breach and loss increases if a network is compromised. Information about citizens and employees can be at risk.

Future Probability and Potential Dollar Losses – Cyber Attack

Although there is currently insufficient data to determine an accurate probability, the data suggests that the percentage chance of a serious cyber-attack on Lincoln County in any given year is estimated to be 20 percent.

The threat of cyber-attack has been identified as a significant and growing threat to Lincoln County. The level of success or damage will vary greatly. Intrusion detection systems log attack attempts almost every day. There are constant probes by individuals and groups with intent to cause anything from total system shutdown to simply “seeing if they can do it.”

No accurate method of estimating potential losses related to cyber-attack is available at this time for Lincoln County; however this will be monitored and reviewed for the next plan update.

Climate change has the potential to complicate cyber security through the stress of more extreme operating environments. These stresses may also lead to an increase in frequency in cyber attack activity.

HAZARD ANALYSIS - FLOODING/DAM FAILURE

Background on Flood/Dam Failure Hazard

There are a variety of classifications for flooding including coastal, dam failure, flash, lake, riverine, stormwater and urban/small stream. Lincoln County has the potential for all these types except coastal. The following descriptions of the types of flooding are compiled from various FEMA and other notable hazard planning sources:

Coastal – Different from other types of flooding which relate to movement of water through a watershed, coastal flooding is due to the effect of severe storm systems on tides resulting in a storm surge. Primarily known as an ocean-based event, the Great Lakes coastal areas can also be affected.

Dam Failure – More of a technology related hazard than a natural hazard, various factors can result in the failure of the structural technology that is a dam, thus causing flooding of areas downstream of the dam often similar in effect to flash flooding.

Flash – Involves a rapid rise in water level moving at high velocity with large amounts of debris which can lead to damage including tearing out of trees, undermining buildings and bridges, and scouring new channels. Dam failure, ice jams and obstruction of the waterway can also lead to flash flooding. Urban /built-up areas are increasingly subject to flash flooding due to removal of vegetation, covering of ground with impermeable surfaces and construction of drainage systems.

Lake – Prolonged wet weather patterns can induce water-level rises that threaten lakeshore areas.

Riverine – Also known as overbank flooding, this is the most common type of flooding event. The amount of flooding is a function of the size and topography of the watershed, the regional climate, soil and land use characteristics. In steep valleys, flooding is usually rapid and deep, but of short duration, while flooding in flat areas is typically slow, relatively shallow, and may last for long periods.

The cause of flooding in rivers is typically prolonged periods of rainfall from weather systems covering large areas. These systems may saturate the ground and overload the streams and reservoirs in the smaller sub-basins that drain into larger rivers. Annual spring floods are typically due to the melting of snowpack.

Stormwater – Water from a storm event that exceeds the capacity of local drainage systems, either man-made or natural, can result in flooding. Inadequate storm sewers and drainage systems are often the primary factor resulting in this type of flooding.

Urban and Small Stream – Locally heavy rainfall can lead to flooding in smaller rivers and streams. Streams through urban or built-up areas are more susceptible due to increased surface runoff and constricted stream channels.

Flooding in Lincoln County tends to occur in the spring when melting snow over frozen soil adds to normal runoff and in summer or early fall after intense rainfalls. This runoff builds up until the river or stream overflows its banks, for as long as a week or two and then slowly recedes inch by inch. The timing and location of this

type of flooding is fairly predictable and allows ample time for evacuation of people and protection of property.

Flooding is a notable hazard in Lincoln County, particularly because the Wisconsin River runs right through the middle of the county and the two major cities. As described in Part II, there are approximately 668 miles of rivers and streams in Lincoln County within 13 watersheds. All but a small portion of the County is within the Upper Wisconsin River (Headwaters) Basin.

Floodplains exist along the Wisconsin River and the tributaries that feed into it. These floodplains are narrow along tributaries and lakes but extensive throughout the County. Floodplains are described in Part II and shown on Map 4. The Federal Emergency Management Agency (FEMA) identifies these floodplains on Digital Flood Insurance Rate Maps (DFIRMs), which the NCWRPC obtained from Lincoln County. While not officially certified, this digital floodplain data is a useful planning tool.

There are 48 dams in Lincoln County according to the DNR, but most do not pose a significant hazard if they would fail. These dams serve many useful purposes including agricultural uses, providing recreational areas, electrical power generation, erosion control, water level control, and flood control. According to the DNR, Lincoln County has 16 large dams (see Map 4), 24 small dams and the others were not classified. The Wisconsin DNR regulates all dams on waterways to some degree; however the small dams are not stringently regulated for safety purposes. The Federal Energy Regulatory Commission has jurisdiction over large dams that produce hydroelectricity. Alexander, Grandmother Falls, Jersey, King, Merrill, Rice, Spirit River Reservoir, Tomahawk (Pride's) and Upper Grandfather Falls all have FERC licenses.

A dam can fail for a number of reasons such as excessive rainfall or melting snow. It can also be the result of poor construction or maintenance, flood damage, weakening caused by burrowing animals or vegetation, surface erosion, vandalism or a combination of these factors. Dam failures can happen with little warning resulting in the loss of life and significant property damage in an extensive area downstream of the dam.

The WDNR assigns hazard ratings to large dams within the state, see Table 13 for Lincoln County. When assigning hazard ratings, two factors are considered: existing land use and land use controls (zoning) downstream of the dam. Dams are classified into three categories that identify the potential hazard to life and property downstream should the dam fail. A high hazard indicates that a failure would most probably result in the loss of life. A significant hazard indicates a failure could result in significant property damage. A low hazard exists where failure would result in only minimal property damage and loss of life is unlikely. For Lincoln County, there are seven dams that have a high hazard rating: Alexander, Grandmother Falls, Jersey, Kings, Rice, Tomahawk, and Upper Grandfather Falls.

Spirit River Reservoir is the only one having a significant rating, while the rest are rated low.

FEMA has a grant program for rehabilitation of high hazard potential dams (HHPD) However, applicants must be a non-federal, governmental organization or an eligible nonprofit organization as described under section 501(c)(3) of the Internal Revenue Code of 1986 (IRC) and exempt from tax under section 501(a) of such code. For example, If a community has a municipal dam that needs to be rehabilitated, they can apply to the state to receive the grant as a sub-recipient. There could also be a community that has a private dam that poses unacceptable risk, and they may want to be the applicant that would work directly with the state to execute a subaward the rehabilitation of that dam.

Table 13: DNR Large Classified Dams In Lincoln County

<i>Dam Name</i>	<i>Miles From Next City</i>	<i>Hazard Rating</i>	<i>Name Of Next City</i>	<i>Owner</i>	<i>EAP Year</i>
ALEXANDER	1	HIGH	MERRILL	WI PUBLIC SERVICE CORP.	2019
CARL (Grandpa's Lake)	0	LOW		PRIVATE	2015
DOERING	0	LOW		DOERING FAMILY TRUST	
GRANDMOTHER FALLS	16	HIGH	MERRILL	PCA HYDRO INC	2018
HARRISON	0	LOW		LINCOLN COUNTY FORESTRY	2017
JERSEY	0	HIGH	TOMAHAWK	WI PUBLIC SERVICE CORP.	2019
JUNE LAKE	0	LOW		HANSON BROS LLC	2010
KINGS	1	HIGH	TOMAHAWK	TOMAHAWK POWER & PULP	1996
MERRILL	0	LOW	MERRILL	WI PUBLIC SERVICE CORP.	2019
NEW WOOD FLOWAGE	0	LOW		WI DNR	2016
OLIVOTTI LAKE		LOW		GIRL SCOUTS	2013
PINTEN	0	LOW		PINTEN'S FAMILY TRUST	
RICE (Lake Nokomis)	2	HIGH	TOMAHAWK	WI VALLEY IMPROVEMENT CO.	2018
SPIRIT RIVER RESERVOIR	1	SIGNIFICANT	RIVER OAKS SUB.	WI VALLEY IMPROVEMENT CO.	2018
TOMAHAWK (Pride's)	2	HIGH	RIVER OAKS...	WI PUBLIC SERVICE CORP.	2019
UPPER GRANDFATHER FALLS	10	HIGH	MERRILL	WI PUBLIC SERVICE CORP.	2019

Source: WDNR Statewide Dams Database 2021.

All dams perceived as posing a threat to downstream development have a dam failure analysis performed in order to identify the hydraulic shadow (that area of land downstream from a dam that would be inundated by water upon failure of the dam during a regional flood). This information is used to develop an Emergency Action Plan (EAP) for the dam, which includes provisions for notifying emergency personnel and warning affected downstream residents of a failure.

History of Flooding/Dam Failure in Lincoln County

Flooding is significant hazard of concern in Lincoln County, being the principal cause of damage in three of six Presidential Disaster Declarations in Lincoln County (1973, 1993, 2002) since 1971. Disaster declaration was requested for

flooding in 1971 but not awarded. NCDC has reported 2 flooding events in Lincoln County for the study period between 2012 and 2021.

In both cases, strong thunderstorms with heavy rainfall caused street flooding in the City of Merrill. On June 11, 2017, there was “minor street flooding.” On September 4, 2018, “several streets were closed in Merrill due to flooding.” The 2018 event resulted from recording breaking rainfall in excess of 3 inches in some locations.

In September of 2010. Heavy rain fell across the County between September 22 and 23, causing streams to overflow their banks and resulting in the closure of 21 roads, mainly in the southern part of the County. A number of other roads were passable but had water near or over the roadway. Many basements had water in them and Merrill area schools were closed due to flooding and high water. Rainfall totals across exceeded 2.5 inches. The highest recorded total was 4.38 inches at Spirit Falls where the NCDC reported flash flooding. Flooding continued across the southern part of the County for several days after the rainfall ended. Minor flooding continued along the Wisconsin River into the morning of the 26th.

Warm temperatures during the second week in April 2002 led to significant runoff from snow melt across much of northern Wisconsin. Additional rainfall then resulted in minor flooding in the Wisconsin River basin. A boat landing and some low areas on a County highway become covered by water. The flooding primarily affected agricultural lands and parks. The flooding combined with other storm damage across the area including tornadoes led to a disaster declaration.

In September of 2000, the Tomahawk area experienced urban and small stream flooding resulting from severe storms with heavy rain. The storms caused widespread problems including minor street flooding in Tomahawk.

Heavy runoff from spring snow melt compounded by rain in April 1996 resulted in widespread minor flooding across northern Wisconsin. With numerous roads and culverts washed out in several counties including Lincoln. The Wisconsin River in Merrill rose to 2 feet above flood stage on April 21. Street flooding was reported in the Merrill area. A faulty gate on the Prairie River Dam was blamed for a water back up that resulted in the flooding of the 1200 block of 14th Street and a park. Area basements were filled with 3 feet of water and eight homes suffered damage.

One of the worst flood events experienced by Lincoln County, the state, and entire Midwest was the Flood of 1993. The flooding in Lincoln County was a result of several compounding factors including heavy rains and flooding in the fall of 1992, above average amounts of precipitation in the spring of 1993, and unusually heavy amounts of rain onto already saturated ground from early June throughout July.

Lincoln County was one of the 47 counties that were included under the disaster declaration; however their eligibility was only for individual assistance. Public

facilities suffered minor impact compared to other counties. One highway built through a swamp had some damage, along with minor flooding problems reported at the City of Merrill Library and High School. Individual assistance disaster aid paid out \$41,540 to private citizens. The majority of these funds were used for basement damage (furnace or water heater and personal property), damage to septic systems, or contaminated wells.

The local businesses and economy were also impacted from the flood. Some stores suffered basement flooding, which resulted in merchandise damage. Tourism levels measured slightly lower than normal, and the logging industry reported inventories to be very low, resulting in increased prices. The farmers in Lincoln County received the greatest impact. While some fields were flooded by riverside overflows, the excessive moisture and saturated soils were the greater problem. Emergency financial assistance was provided to over 52 farmers encompassing 78 farms. Agricultural disaster assistance funds paid out over \$120,000, but the estimated crop losses countywide were over \$4 million.

Another flood event of note where Lincoln County received public assistance was in 1973. The 1973 flood affected a total of thirty-five counties, which were along the Mississippi and Wisconsin Rivers and bordering the Great Lakes. Total private and public damage losses were set at \$24 million.

Discounting the faulty dam gate in 1996, Lincoln County has not experienced a dam break with any loss of life or substantial property damage. However, during the last mitigation plan process there was some concern about the aging of the dam structures within the County.

Flood/Dam Failure Vulnerability Assessment

Flood events in the County have caused substantial property and infrastructure damage in the past and have the potential to cause future damage, since a significant number of structures still exist in the floodplain. Looking at past events, the following have been significantly impacted by flooding:

- Infrastructure – flooded public facilities, and schools
- Utilities - down electric lines/poles/transformers, telephone lines, and radio communication
- Roadways – washouts, inundated roadways, debris clean-up
- Residential structures – flooded basements, damaged septic systems
- Businesses – loss of commerce
- Agriculture - inundated cropland

To assess the vulnerability of Lincoln County to flooding hazards, basic inventory data in Part II must be analyzed. For this purpose, consideration should be given to structures (specifically critical facilities), infrastructure, and cropland.

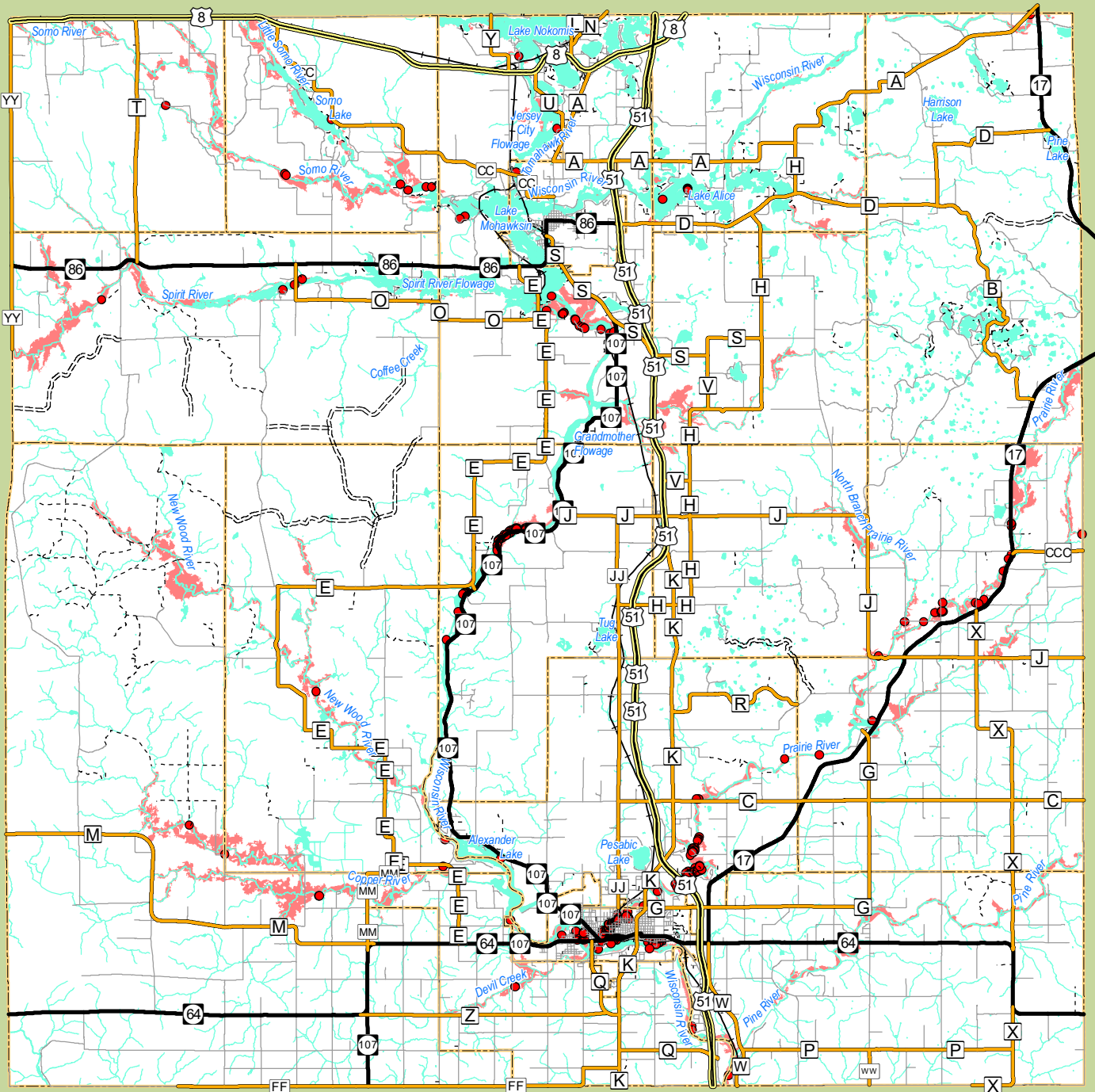
One of the first reports to reference in assessing vulnerability to structures during flooding is the State of Wisconsin Repetitive Loss Report. This Report provides the status of repetitive loss structures by community. Repetitive loss structure means a structure covered under an NFIP flood insurance policy that (1) has incurred flood-related damage on two occasions, in which the cost of repair, on average, equaled or exceeded 25% of the value of the structure at the time of each such flood event; and (2) at the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage (44 CFR § 77.2(i)). Severe repetitive loss structure means a structure that is covered under an NFIP flood insurance policy and has incurred flood-related damage (1) for which four or more separate claims have been made under flood insurance coverage, with the amount of each claim (including building and contents payments) exceeding \$5,000 and with the cumulative amount of such claims payments exceeding \$20,000; or (2) for which at least two separate flood insurance claims payments (building payments only) have been made, with cumulative amount of such claims exceeding the value of the insured structure (44 CFR § 77.2(j)).

The information is used as a floodplain management tool and to supplement information provided by communities for flood mitigation grants administered WEM. According to the report, there are no repetitive loss structures in Lincoln County. Since no structures are listed in the Repetitive Loss Report, structures within floodplains were analyzed. The floodplain boundaries (as well as the watershed boundaries) within Lincoln County are shown on Map 4. These areas are generally located along the Wisconsin River and its major tributaries.

Table 14 shows the number of structures in each municipality identified as “vulnerable to flooding” according to proximity to floodplains. There were a total of 268 structures identified as within the designated floodplain boundaries (see Map 9). by the NCWRPC following the methodology below:

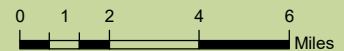
Methodology – Structures within Floodplains:

1. NCWRPC imported the County's DFIRM digital floodplain maps from into a GIS coverage for the County.
2. A building point cover was digitized from county lidar data along the floodplain areas.
3. The floodplain coverage was then combined with the building point coverage to identify those structures within the floodplain boundary.
4. Total structures within the floodplain were then tabulated by municipality.
5. Average values from U.S. Census data were used to determine the total value for the identified vulnerable structures.



Legend

- Minor Civil Divisions
- US Highway
- State Highways
- County Highways
- Local Roads
- Private Roads
- Forest Roads
- Railroad
- Structures in Floodplains
- Floodplains
- Water



Source: WI DNR, NCWRPC

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Lincoln County has seven dams within its boundaries that have a high hazard rating, and one that has a significant hazard rating. The Willow Reservoir dam, upstream from Lincoln County, is large with a high hazard rating that would affect Lincoln County if it failed. All nine of these major dam complexes, located on the Wisconsin River and its tributaries, have Emergency Action Plans.

Included in the plans are the warning procedures, identified areas that could be expected to flood during a dam break, and water flow coordination procedures among all the dams on the Wisconsin River.

To understand the potential

risk from dam failure, a similar methodology was followed, starting with NCWRPC digitization of the inundation maps from the EAPs (Map 10), see Table 15. Average values for structures within the inundation areas are tabulated.

In addition to structural damage from flooding, there would be significant damage to public roadways, particularly to roadway surfaces, culverts, and bridges. Flooding would inundate or close roadways due to washouts from a period of a few days up to as much as several months. Such interruptions in the County transportation network would cause travel delays through detours.

The agriculture industry is a sector that faces substantial losses, during floods, cool, rainy/wet, sunshine deficient climatic conditions of the spring and summer create a general condition of high water and saturated soils throughout the County.

Flood conditions can leave farmers with the following economic setbacks:

- Delayed planting (reduced growing season)
- Seed and agricultural chemicals washing out of fields
- Rotting of plants due to excess moisture
- Areas where planted crops are left in the fields due to excessive moisture
- Crops not reaching full maturity or stunted growth

<i>Municipality</i>	<i>Number</i>	<i>Total Value</i>	<i>Average Value</i>
Birch town	0	\$-	\$165,800
Bradley town	16	\$3,483,200	\$217,700
Corning town	2	\$415,800	\$207,900
Harding town	3	\$623,400	\$207,800
Harrison town	1	\$205,300	\$205,300
King town	7	\$1,647,100	\$235,300
Merrill town	63	\$10,779,300	\$171,100
Pine River town	3	\$600,000	\$200,000
Rock Falls town	45	\$8,437,500	\$187,500
Russell town	15	\$1,944,000	\$129,600
Schley town	2	\$360,800	\$180,400
Scott town	1	\$198,300	\$198,300
Skawanaw town	0	\$ -	\$208,300
Somo town	1	\$250,000	\$250,000
Tomahawk town	4	\$680,000	\$170,000
Wilson town	7	\$1,124,900	\$160,700
Merrill city	97	\$8,681,500	\$89,500
Tomahawk city	1	\$135,600	\$135,600
Lincoln County	268	\$39,566,700	\$184,489

Source: U.S. Census and NCWRPC 2022.

- Requirements by farmers to expend higher amounts of money on additional soil amendments
- Lower quality (nutritional value) of harvestable crops as a feed source.

Reductions in quantity can result in loss of revenues from cash crops and increased expenses for purchasing the needed livestock feed from outside sources. Additionally, reductions in crop quality result in lower prices received for cash crops and increased amounts spent for nutritional supplements to animal feed, which need to be added even in much of the purchased feed.

Table 15: Approximate Value of Structures in Dam Failure Inundation Area

<i>Dam</i>	<i># Structures (Lincoln Co.)</i>	<i>Total Improvement Value</i>	<i>Average Value Per Structure</i>
Willow River Reservoir	225	\$32,265,000	\$143,400
Rice	26	\$5,660,200	\$217,700
Jersey	10	\$1,356,000	\$135,600
Kings	140	\$18,984,000	\$135,600
Tomahawk	24	\$5,224,800	\$217,700
Spirit River Reservoir	2	\$435,400	\$217,700
Grandmother Falls	10	\$1,875,000	\$187,500
Upper Grandfather Falls	0		
Alexander	213	\$19,063,500	\$89,500

Source: US CENSUS and NCWRPC 2021.

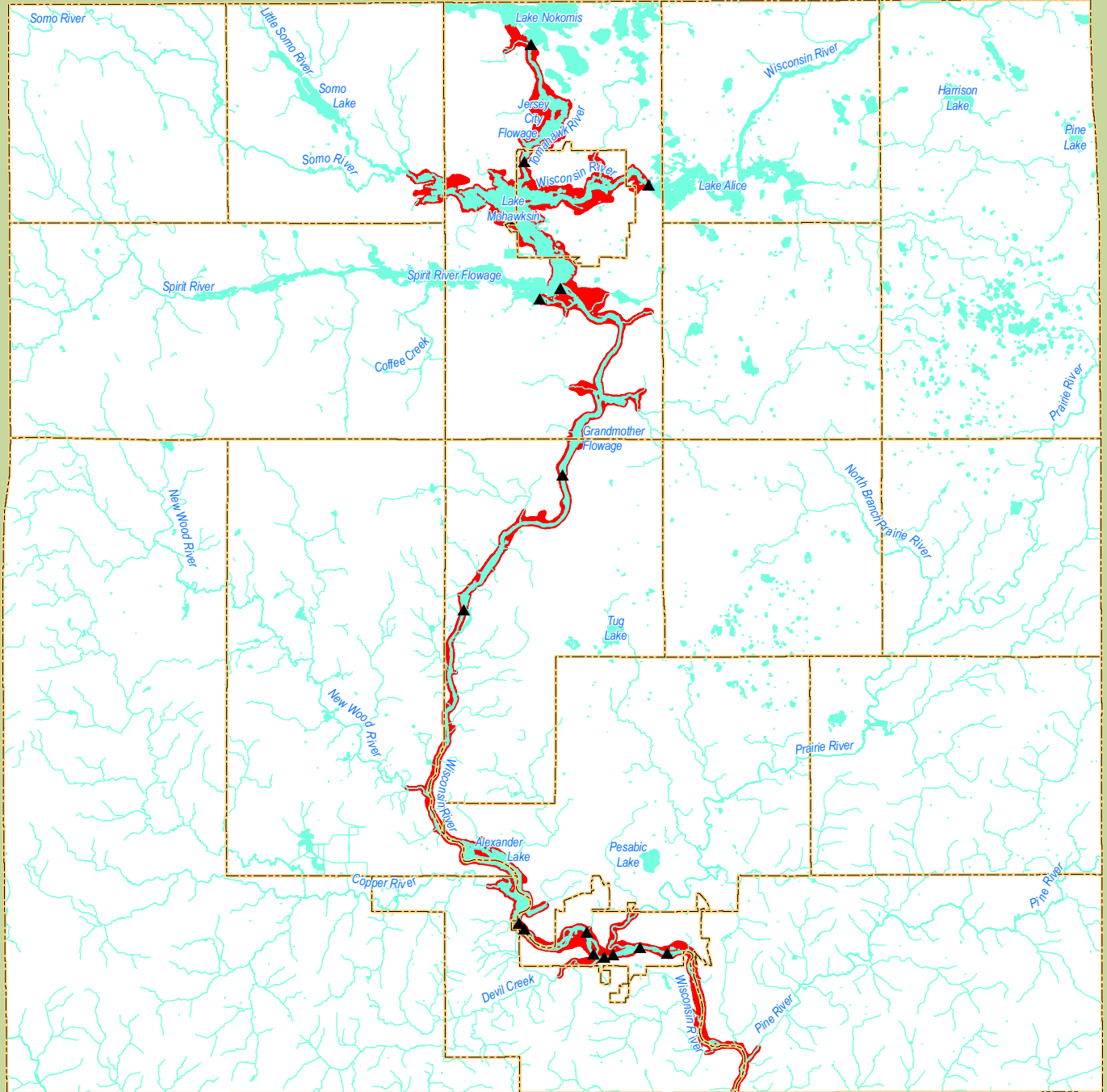
The saturated soil conditions responsible for these woes can occur anywhere throughout the County. Agricultural land in Lincoln County is primarily located in the south and eastern portions of the County. These farming areas were previously forested tracts that were cleared by early settlers, which are composed of hard pan soils with poor drainage qualities.

Economic losses to farmers can generate a ripple effect to the local community as well. Reduction in farm income will curtail the farmers’ ability to purchase new equipment and make other improvements. Farmers will have less money to spend at farm dealers / suppliers, building / hardware suppliers, fertilizer, feed & seed dealers and other agribusiness and retail establishments. The state will see reduced tax revenues. Farmers will have less money to save and invest, and suffer still more increases in debt load.

The forest products industry is affected similarly to agriculture. Forestlands become too wet for logging operations and many water-logged tree plantations suffer high mortality rates. Mill inventories become very low, resulting in increased prices for consumers.

Lincoln County, Wisconsin Dam Failure Inundation Areas Map 10

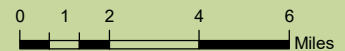
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Legend

DAM_OFFICI

- ▲ Dam Locations
- Minor Civil Divisions
- Inundation Areas
- Water



Source: WI DNR, NCWRPC

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Areas considered to have a higher risk for flood impact include those communities with structures in floodplains shown in Map 9 or those with structures in dam break inundation areas shown in Map 10. Both Merrill and Tomahawk indicated in their planning meetings that flooding, particularly related to dam failure, is one of their top hazard concerns. Both cities also cited potential for flooding to cut off access to parts of the communities. Both Rock Falls and Town of Tomahawk recognized the threat of low-lying areas with residences below their dams. Town of Wilson cited annual road washout problems.



Dam in Northern Lincoln County

Future Probability and Potential Dollar Losses – Flood/Dam Failure

Based on the historic data presented here (frequency of past events - 2012 to 2021), Lincoln County can expect a flood event about every 5 years on average. This equates to a probability of 0.2 or about a 20 percent chance in a given year. However, localized heavy rainfall will continue to cause spot flooding from time to time. With 3 disaster declarations related to flooding, Lincoln County should anticipate and prepare for another major flood event in the future.

To estimate potential future dollar losses due to flood, historic data from past flood events for which we have loss figures is used. Lincoln County can anticipate property and crop losses of approximately \$508,128, on average, between the public and private sector for each significant flood occurrence. Over the next ten-year period, flood losses in Lincoln County could approach \$1,000,000.

Potential flood losses for structures by jurisdiction are reflected in Table 13. While structures outside mapped floodplains may also be lost or damaged in a flood, structures within flood plains represent the greatest risk for flood damages.

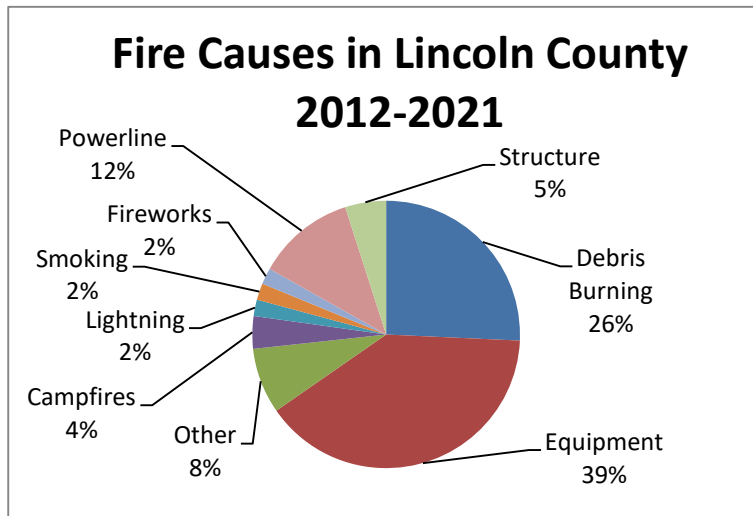
As indicated earlier, no dam breaks have been identified within Lincoln County. Therefore, there is no historic frequency upon which to base a future probability, other than to say that the probability of a dam failure is very low. However, the number of significant dams and the risk illustrated in their EAPs make dam failure an important hazard to plan for. Table 14 shows potential structural losses from failure of each significant dam that would affect Lincoln County.

Climate change can be expected to lead to more annual precipitation with more frequent and heavier high precipitation events. This will lead to more flooding and potential for dam failure. Flood damages will affect more people over a wider area of the County, and resulting damages will be higher.

HAZARD ANALYSIS - FOREST FIRES/WILDFIRES

Background on Forest Fires/ Wildfires Hazard

A forest fire is an uncontrolled fire occurring in a forest or in woodlands outside the limits of incorporated villages or cities. A wildfire is any instance of uncontrolled burning in brush, marshes, grasslands or field lands. For the purpose of this analysis, both kinds of fire are being considered together.



Forest fires and wildfires

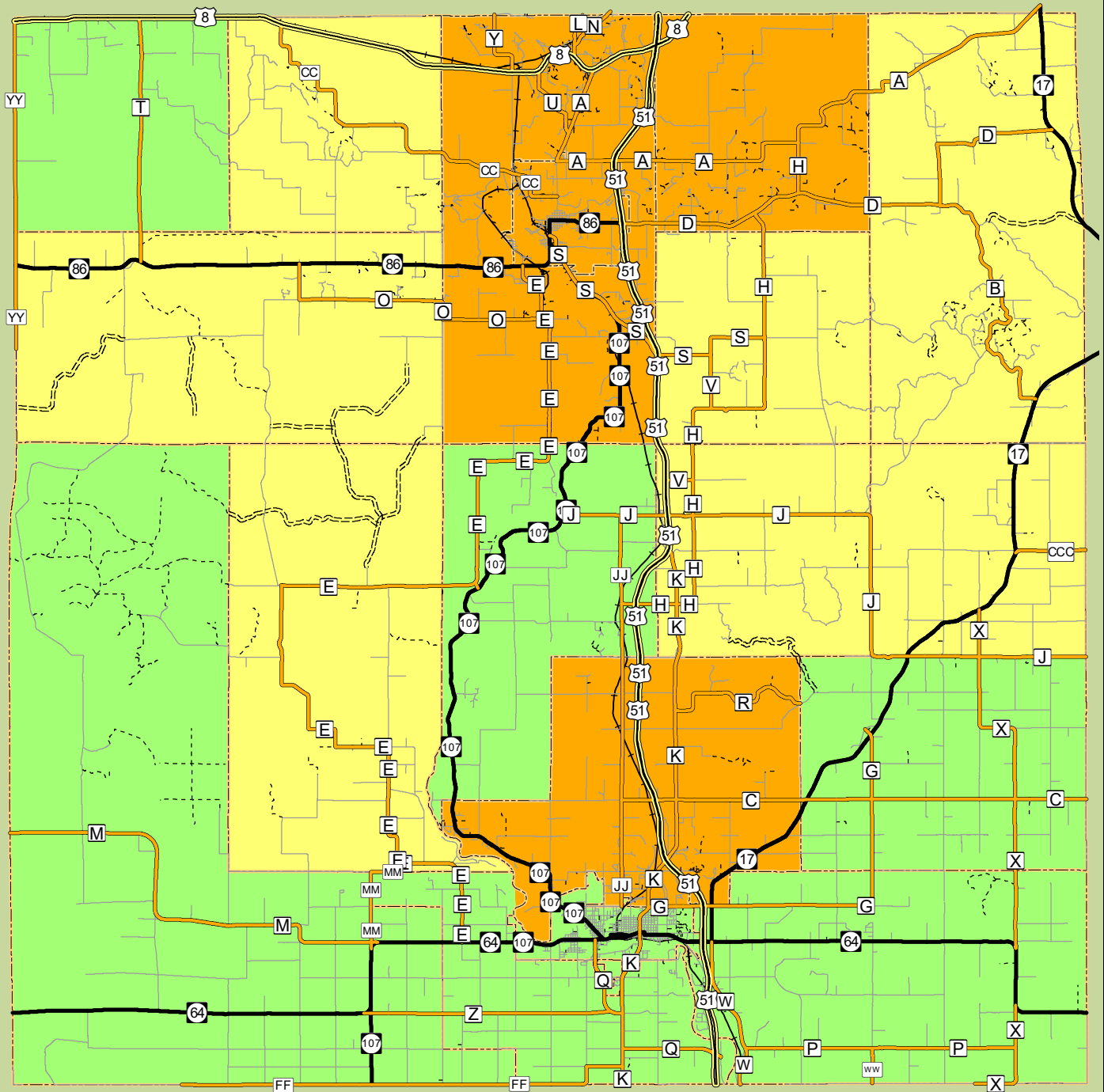
can occur at any time whenever the ground is not completely snow covered. The season length and peak months may vary appreciably from year to year. Land use, vegetation, amount of combustible materials present and weather conditions such as wind, low humidity and lack of precipitation are the chief factors for fire season length.

History of Forest Fires/Wildfires in Lincoln County

The Wisconsin DNR maintains a database of wildfire data which represents the most comprehensive source of information for analyzing fire trends in an area such as Lincoln County. This data is now accessible through its Internet based Wildfire Dashboard. Available data currently goes back to 2012 which corresponds with our study period for this plan. Between 2012 and 2021, there was an average of 19 fires that have burned 10.4 acres, annually. The typical fire in Lincoln County burns about 0.55 acres.

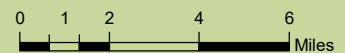
May is the leading month for wildfire in Lincoln with 42% of the total number of fires between 2012 and 2021. Wildfires have occurred each month of the year except January and February in Lincoln County.

The Town of Merrill experienced the most wildfires between 2012 and 2021 with 37 (Bradley was close behind with 33.), but the Town of Rock Falls leads the County in total acres burned with 23.7. The Town of Russell actually had no wildfire occurrences and consequently had the least area burned at zero acres. over the time period. The other towns ranged from 2 to 16 wildfires. Within the urban areas, City of Tomahawk experienced 8 wildfires (0.71 acres burned) from 2012 to 2021 while City of Merrill had 5 (1.43 acres burned).



Legend

- | | | | |
|--|-----------------------|----------------------|---------|
| | Minor Civil Divisions | Wildfire Risk | |
| | US Highway | | High |
| | State Highways | | Concern |
| | County Highways | | Low |
| | Local Roads | | |
| | Private Roads | | |
| | Forest Roads | | |
| | Railroad | | |



Source: WI DNR, NCWRPC

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The chart above breaks down the causes of wildfire within Lincoln County between 2012 and 2021 as classified by the WDNR. The principal cause of wildfire with 39% in Lincoln County over this period is equipment which includes vehicle, motor and other machinery related causes except railroad. Debris burning, typically number one in Wisconsin, is the next leading category at 26% of wildfires within the County. Powerlines resulted in about 12% of wildfires, and lightning, the only natural cause of fire, was responsible for around 2%.

There has been some correlation between drought or heat waves and increased risk of wildfire in Lincoln County. The drought conditions from 2004 to 2010 shows a significant spike in the number and size of fires (with the exception of 2008 where the numbers are way down). Fire numbers also spike in the heatwave years of 1994 and 1995, however the numbers are comparably down a bit in the 1999 dry spell year.

Forest Fires/Wildfires Vulnerability Assessment

Lincoln County has approximately 469,494 acres of forestland, or 81 percent of the area, scattered throughout the County. The potential for property damage from fire increases each year as more dwellings are developed on wooded land.

Rural buildings may be more vulnerable because of lack of access. Access to buildings off main roads is sometimes long, narrow driveways with minimal vertical clearance and no turn around areas large enough for emergency vehicles making it hard for emergency vehicles to combat fires. These buildings also may not have much of a defensible space because of little area between the structures themselves and highly flammable vegetation.

Campgrounds are also a concern because campfires cause about 4 percent of fires in Lincoln County as indicated by the Wisconsin Department of Natural Wildfire Database described above, see pie chart. Lincoln County has a number of campgrounds such as those shown on Map 8.

The trend toward introducing more human development into fire prone areas has brought about the term wildland urban interface or WUI. The WUI identifies areas where structures and human development meet or intermingle with undeveloped wildlands. It is within these areas where wildfire poses the greatest risk to human lives and property.

The WDNR has completed a statewide evaluation of fire risk, referred to as the CAR or Communities At Risk assessment. This assessment uses extensive DNR geo-databases to analyze and map hazardous woodland fuel types and the degree of the intermixing of development with wildlands. The maps identify the level of risk for each community on a scale of very high, high, moderate, or low, and also have a community of concern designation. The Towns of Bradley, King, Merrill and the City of Tomahawk are rated high. Birch, Harding, Harrison, Russell, Skanawan, Tomahawk and Wilson are designated as communities of concern.

The Towns of Corning, Pine River, Rock Falls, Schley, Scott, Somo, and the City of Merrill are rated low risk for wildfire. See Map 11.

Future Probability and Potential Dollar Losses – Forest Fires/Wildfires

Forest and wildfires are relatively common occurrences in Lincoln County. Over the 10 year analysis, there has been an average of 19 fires per year in the County. In other words, the probability is 1.0 or 100% chance of wildfire each year.

Because of the relatively small impact of typical individual fires in the County, loss data is not tracked. This makes it difficult to develop an estimate of potential future dollar losses. However, with 19 fires per year, the County should expect some fires to "get out of hand" with the potential to easily exceed the \$1.4 million in damages of the 2005 Cottonville Fire that occurred in Adams County, for example.



Cottonville Fire, 2005

Climate change can be expected to lead to more frequent, higher intensity tornados. This will affect more people over a wider area of the County, and resulting damages will be higher.

Climate change can be expected to lead to an increase in wildfire occurrences and the conditions for any given fire to get out of control. Rising average annual temperatures will exacerbate drought conditions contributing to wildfire risk.

HAZARD ANALYSIS - EPIDEMIC/PANDEMIC

Background on Epidemic/Pandemic Hazard

Communicable diseases, sometimes called infectious diseases, are illnesses caused by organisms such as bacteria, viruses, fungi and parasites. Sometimes the illness is not due to the organism itself, but rather a toxin that the organism produces after it has been introduced into a human host. Communicable diseases may be transmitted (spread) either by: one infected person to another, from an animal to a human, or from some inanimate object (doorknobs, table tops, etc.) to an individual. Some communicable diseases can be spread in more than one way.

Pandemic Influenza is a global disease outbreak. An outbreak occurs when a new influenza virus emerges for which people have little or no immunity, and for which there is no vaccine. The disease spreads easily from person to person, causes serious illness or death, and can sweep across the county and around the world in a very short time frame.

History of Epidemic / Pandemic Lincoln County

COVID-19 is a disease caused by a new virus strain that began spreading in people in December 2019. On March 11, 2020 the COVID-19 outbreak was characterized as a pandemic by the World Health Organization. Then on April 4, 2020 a Presidential Disaster Declaration was signed for the pandemic in the United States. Over the next three years, the pandemic was dynamic and constantly changing with cases surging in waves coinciding with new variants of the virus. However, On May 11, 2023, the federal government ended the Public Health Emergency in the U.S. as much of the population had returned to life as normal. A low level of COVID-19 virus activity remained in the community, and there were still concerns about surges or new variants. As of the end of the public health emergency, the U.S. Center for Disease Control has reported that there have been approximately 103,910,034 cases of COVID-19 in the United States alone with a death toll now exceeding 1 million at 1,135,343.

Virus pandemics are naturally occurring events. Global outbreaks of Influenza-type viruses have occurred four times in the last century, in 1918, 1957, 1968 and 2009. The greatest loss occurred in 1918 when the Spanish Flu (H1N1) killed an estimated 50 million worldwide between 1918 and 1919. The death total in the United States was about 675,000. The Asian Flu (H2N2) occurred from 1957 to 1958 with about 70,000 deaths in the United States and 1-2 million worldwide. The Hong Kong Flu (H3N2) occurred from 1968 to 1969 with about 34,000 deaths in the United States and 700,000 worldwide.

2009 saw the rise of a new variant of the H1N1 virus, popularly referred to as the Swine Flu. During the Swine Flu outbreak from April 2009 through March 2010, 43-88 million H1N1 cases were estimated to have occurred in the United States with 8,720 to 18,050 deaths according to the Center for Disease Control (CDC). Spread of H1N1 flu occurs in the same way that seasonal flu spreads. Flu viruses are spread mainly from person to person through close range coughing or sneezing by people with influenza. As a result of preparation and mitigation strategies such as vaccinations and public education, the threat of a full blown H1N1 pandemic in the U.S. has receded. The possibility for a pandemic, though, still exists.

A previous pandemic flu threat that still looms is the avian flu. Birds can contract avian flu and pass it along to humans. Some strains of the avian flu are more virulent than others. Public health experts continue to be alert to the risk of a possible re-emergence of an epidemic of avian among people primarily in Asia in 2003. People who had been very close contact with infected birds (for example, people who lived with chickens in their houses) contracted a virulent form of avian flu and there was a high death rate from this disease. Thus far, the avian flu virus has not mutated and has not demonstrated easy transmission from person to person. However, were the virus to mutate in a highly virulent form and become easily transmissible from person to person, there would be significant potential for

a pandemic that could disrupt all aspects of society and severely affect the economy.

The Lincoln County Health Department tracks communicable disease through a channel of communications at the local, state and regional levels between public health, private physicians, hospitals, and labs. This communication channel allows for prompt investigation of possible outbreaks and unusual situations, and to implement control measures to minimize further transmission of disease to others.

In Lincoln County, there have been 9,106 total cases of COVID-19 resulting in 160 deaths as of the end of the public health emergency in May of 2023. For Wisconsin, total cases reached 2,014,524 with 16,485 deaths. By comparison, there were 13,511 confirmed or probable cases of the 2009 H1N1 from April 2009 to March 2010 with 1,320 hospitalized and 55 deaths across Wisconsin.

The next epidemic / pandemic situation may not be a "flu" but could be a developing "super bug" such as antibiotic resistant MRSA or some as yet unknown bacteria or virus.

Epidemic / Pandemic Vulnerability Assessment

Most communicable diseases are dealt with through traditional health department activities. The complexity and magnitude of a new rogue virus such as Covid-19 or a Pandemic Influenza outbreak would tax the normal capabilities of the medical service community and the Emergency Management Department would assist in all activities surrounding an event of this severity.

The possibility of a communicable disease epidemic or pandemic outbreak is equal across the County, but the ability to predict where and when an event will occur is very difficult. As COVID-19 has demonstrated, even an isolated little county in northern Wisconsin cannot avoid the impacts of a global pandemic. Although Lincoln County's overall case rate was slightly lower than the state average (33,001 per 100,000 versus 34,599) the COVID death rate in the County was more than double (580 per 100,000 versus 283).

Future Probability and Potential Dollar Losses – Epidemic / Pandemic

Post COVID-19, the future probability of a communicable disease / pandemic outbreak is difficult to determine. The probability would appear low, but the threat exists, and the impact of a widespread event is very severe as displayed by the effects of COVID-19. Significant economic disruption can occur due to loss of employee work time and costs of treating or preventing spread of the pathogen.

A probability of an outbreak might be calculated across a hundred-year period. Based on the five major events identified here, the likelihood of an event occurring in any given year would be 5%.

The effect of climate change on epidemics or pandemics is unknown at this time.

INTRODUCTION

Hazard mitigation is any action taken to reduce or eliminate the long-term risk to human life and property damage from natural hazards. This chapter describes the mitigation goals and actions to be taken by Lincoln County and its local units of government for each of the hazards identified in Part III – Risk Assessment. The intention is to reduce or avoid long-term vulnerability to the identified hazards.

Part IV of the Lincoln County All Hazards Mitigation Plan will discuss the following factors in establishing the multi-jurisdictional mitigation strategies:

- Benchmark Progress of Previous Plan 2018-2023
- Review of Mitigation Goals
- Prioritize Identified Mitigation Strategies
- Establish Mitigation Action Plan

PROGRESS REPORT 2018 - 2023

Table 16 identifies the completed, deleted or deferred mitigation actions from the previous 2018 Plan. For each action recommendation, a brief status report is provided which describes the progress made on that measure. If an item remains unchanged, a description is provided as to why no action has been taken and whether that item is deferred to the new plan.

The table also provides the new status of each recommendation with regard to the updated plan alongside the original timeframe target for comparison. Many of the recommendations are on-going efforts and are carried over as such in the updated action plan. Some have had significant progress or have been deferred, but are recommended for further action with new target date or on-going status. If the recommendation has been completed with no further specific action anticipated within the next five-year planning period, it is shown as "Removed from list" and will not appear in the updated action plan. In some cases, an incomplete action is not selected for various reasons (noted) and is also shown as "Removed from list".

This progress report serves as a benchmark for progress in achieving the multi-jurisdictional mitigation goals of Lincoln County and the local jurisdictions that participated in the Plan.



2011 Tornado Damage, Merrill

TABLE 16 BENCHMARK FOR PROGRESS 2018 - 2023 PLAN			
2018-2023 Plan Measure	Progress Report	Original Status	New Status
Continue to promote the increased use of National Oceanic and Atmospheric Administration (NOAA) weather radios.	Past grant applications were not funded and program has fallen off. County EM seeking to reinvigorate program.	On-going (1)	On-going (1)
Continue to add/update Emergency Management Department link off existing County website.	Website actively maintained with hazard information.	On-going (2)	On-going (2)
Verify that back-up utilities are available at all critical facilities, including necessary maintenance.	Installation at some county and local facilities. More evaluation needed.	On-going (3)	On-going (3)
Create second street to the hospital in the City of Tomahawk. Work with DNR and Corps of Engineers on wetland issues.	Not yet completed. Remains concern. Wetlands issues blocking progress.	2021 (4)	2028 (4)
Work toward development of county-wide early warning systems possibly including all telephone message cast and cable TV broadcast, etc.	County will begin implementing system in 2024.	On-going (5)	2024 (5)
Consider developing county-wide disaster shelter plan possibly including i.d. available shelters, trailer park shelter needs, notification procedures, etc.	County EM Director reports as done.	On-going (6)	Completed (-)
Establish a second well field and water tower for the City of Tomahawk	Recommendation expanded into larger water system improvements for Tomahawk and Merrill. Budget constraint has been the limiting factor.	2020 (7)	2028 (7)
Develop Emergency Response Zone Atlas - print and distribute.	Project in development for completion in 2025.	2019 (8)	2025 (8)
Establish an "off-site" emergency command post to mitigate proximity of Tomahawk's police, fire and public works facilities to each other and to high hazard threats (LP gas).	Recommendation shifted focus to overall incident response capabilities. Budget constraint has been the limiting factor for this recommendation.	2022 (9)	2026 (9)
Update radio / emergency communications system interoperability within the City of Merrill.	City reports need for new radios for Police/Fire with recycle of older sets to other key Depts for interoperability -budget constraint is limiting factor.	2020 (10)	2026 (10)
Continue to develop and enhance new County EOC location as well as County mobile command post.	Project underway to update primary PSAP call center to Next Gen 911 and create back-up call center/EOC.	2022 (11)	2025 (11)
Address gaps in emergency interoperable communications coverage by installing communication towers/repeaters in problems areas like western Corning and the far northwest corner of County.	Limited progress. Additional work needed. Budget constraint has been a limiting factor for this recommendation.	2021 (12)	2026 (12)
Improve addressing / fire number signing to improve emergency response in Town of Tomahawk.	County has address signing program in place.	2018 (13)	Completed (-)

2018-2023 Plan Measure	Progress Report	Original Status	New Status
Town of Harding should develop a local emergency response plan.	Status unknown. Not reported as current priority by Town.	2018 (14)	Removed from list (-)
Town of Merrill should install emergency generator at Town Hall.	Merged with recommendation #3.	2019 (15)	Removed from list (-)
Lincoln County should develop a Continuity of Operations / Government (COOP / COG) Plan.	County EM Director reports as done.	2020 (16)	Completed (-)
Analyze water towers for tornado strength.	No progress to date.	2019 (17)	2025 (14)
Encourage mobile homes and exterior attachments such as carports and porches to have tie-downs with ground anchors.	Limited progress to date.	On-going (18)	On-going (15)
Promote winter hazards awareness including home and travel safety measures.	County EM continues to work with Health Dept. on extreme cold safety awareness.	Annual (19)	Annual (17)
County/City continued compliance in the National Flood Insurance Program (NFIP)*.	Updated recommendation text. On-going effort of the County and both Cities.	On-going (20)	On-going (18)
If evidence of recurring flooding is an issue with specific properties after a significant flood event, investigate, as a possible solution, the voluntary acquisition/removal of buildings in a floodplain with flood damage.* (FEMA NFIP requirement)	Has not been needed to date.	As needed (21)	As needed (19)
Culvert sizing evaluation and maintenance program.	County Highways continues its program. Local culvert maintenance is still an issue.	On-going (22)	On-going (20)
Continue to work with dam owners to maintain EAPs for each significant and high hazard dam.	On-going effort of the County in conjunction with dam owners and local governments.	On-going (23)	On-going (21)
Improve ditching and culverts along town roads in Birch, Corning and Tomahawk to better manage water and control flooding.	On-going effort. New towns reported this issue including: Birch, Harding and Wilson.	On-going (24)	On-going (24)
Determine if critical facilities are adequately grounded to eliminate lightning damage. Install surge protection as necessary.	No progress to date.	2018 (25)	2025 (26)
Promote lightning safety awareness to reduce risk.	County does lightning safety awareness as needed.	Annual (26)	Annual (27)
Assist population with reducing heat disorders through awareness program as needed.	County EM working with Health Department on extreme heat safety awareness.	As needed (27)	As needed (28)
Develop countywide drought mitigation plans for multi-agency approaches to water conservation, drought prediction, stream and groundwater monitoring.	No progress to date.	As needed (28)	As needed (29)

TABLE 16 <i>Continued</i>			
2018-2023 Plan Measure	Progress Report	Original Status	New Status
Promote Firewise program and related educational materials to increase community awareness of wildfire risk within the County.	Combined public informational efforts of WDNR, area fire departments and County EM.	Annual (29)	Annual (30)
Develop driveway ordinances and private road standards as well as possible zoning recommendations to ensure emergency vehicle access where lacking.	Some towns have ordinances, etc. along these lines, but more could be done in some areas.	2022 (30)	On-going (31)
Develop "area-wide" Community Wildfire Protection Plan For Tomahawk fire district covering northern Lincoln County and southwestern Oneida.	No traction was achieved for area-wide planning effort, and recommendation was re-focused on individual, local CWPPs.	2020 (31)	On-going (32)
Implement multi-layered process of assessment, patching, and training to prevent cyber-attacks.	On-going efforts of County and Cities, but more is needed.	On-going (32)	On-going (33)

LOCAL HAZARD MITIGATION GOALS

The mitigation strategy is based on a set of goals to reduce or avoid long-term vulnerabilities to the hazards identified in the Risk Assessment. The goals were established by the previous Mitigation Plan Taskforce during the development of the original plan. The update Plan Taskforce reviewed the goals and concurred that these goals, with some minor revisions, continue to represent the desired conditions to strive for through the mitigation efforts of the County and municipalities.

The mitigation goals for reducing or avoiding the long-term vulnerability of Lincoln County are as follows:

- Prepare and protect residents and visitors from all natural hazards.
- Protect health, safety, and general welfare of county residents and visitors, along with mitigating future loss of property from tornados.
- Create safety awareness in citizens and travelers of Lincoln County to protect them during and after winter storm and extreme cold events.
- Continue compliance with the National Flood Insurance Program and work to reduce flood risk throughout Lincoln County and the Cities of Merrill and Tomahawk.
- Eliminate the loss of life and reduce the risk of property damage in downstream areas that result from a dam failure.
- Minimize the threat to human life and property damaged caused by severe storms and associated hail, lightning and high wind.
- Create safety awareness in citizens and visitors of Lincoln County to help protect themselves during extreme heat events.
- Minimize crop loss while maintaining water supplies during times of drought.

- Protect the safety and property of residents and visitors from forest and wildfires.
- Protect Lincoln County computer systems and data from cyber-attack to help ensure continuing, effective operations of county government and emergency services.
- Improve County preparedness for handling and recovering from an epidemic/pandemic.

PRIORITIZATION OF STRATEGIES

The Mitigation Planning Committee considered a number of factors in identifying and ranking proposed mitigation strategies. The matrix, below, describes the factors incorporated into the prioritization process. The resulting priority of each strategy is shown in the summary Table 17.

Prioritization Factors for Lincoln County Mitigation Strategies

<i>Strategy Prioritization Factor</i>	<i>Description of Factor Considerations</i>
Priority of Hazard Type	The ranking of hazard types, tornado, flooding, etc., accounts for threat to human safety and possible property damage and was carried over to groups of strategies by hazard type. Strategies believed to benefit multiple hazards (listed under "All Hazards") were valued higher.
Ease of Implementation	Strategies where existing staff and resources are adequate were valued higher than those where additional resources are necessary. Consideration was also given to strategies that meet other countywide goals or incorporated as part of another county project. Project timing was also a consideration as to when funding such as grant applications might be available and when various activities could be scheduled.
Perceived Cost versus Potential Benefit	Although a detailed cost-benefit analysis was deemed beyond the scope of this study, the Committee weighed the perceived costs of each strategy against the potential benefit anticipated. Proposals that seemed economically unfeasible were rejected.
Multi-jurisdictional Application	Strategies benefiting multiple jurisdictions were valued more than those pertaining to fewer jurisdictions.

Each strategy was scored based on these prioritization factors and assigned a high, medium or low rating to reflect their relative level of priority for that strategy. A 3-point weighted scale was used to average the scores into the overall high, medium or low priority for the County or local units as shown in Table 17.

MITIGATION ACTION PLAN

The mitigation strategies are organized by hazard beginning with some overall strategies that apply to a number of different hazards and are listed under the category, “all hazards”. For each hazard, a goal was established as to what the County intends to achieve by implementing the specific action strategies and is based on the risk assessment findings. Each action strategy is then briefly described and followed by a discussion of the jurisdictions/agencies that will pursue the action including the proposed lead jurisdiction/agency.

Each section of this part is broken down as follows:

Goal:

Broad, long-term mitigation goals to reduce or avoid vulnerabilities to the identified hazard are stated.

Action:

Each action strategy proposed to aid in achieving the overall goal for the identified hazard is described. A given action strategy may be comprised of a number of related sub-actions.

Participating Jurisdictions:

The proposed lead agency or lead jurisdiction (responsible unit) is identified along with a listing of the other agencies or jurisdictions that the recommended action applies to. This does not preclude other agencies or jurisdictions from participating in the action.

The chapter concludes with a summary of the recommended mitigation strategies shown in Table 17. Table 17 also contains project cost estimates where available, existing resources (authority, policies, programs. etc.) and potential time frames.

Hazard: All Hazards

Goal:

Prepare and protect residents and visitors from all natural hazards.

Action 1:

Lincoln County should continue to promote the use of National Oceanic and Atmospheric Administration (NOAA) weather radios across the County. Previously, the County distributed radios to key locations such as County buildings, schools, major employers, etc. Recent grant applications to refresh and expand this effort have not been successful. NOAA weather radios receive signals from a nationwide network of radio stations broadcasting continuous weather information from the nearest National Weather Service office. All National Weather Service forecasts, watches, warnings, and other hazard information like dam failures are broadcast 24 hours / 7 days a week. The

NOAA weather radio is a single source for comprehensive weather and emergency information; because the Emergency Alert System (formerly the Emergency Broadcast System) broadcasts use the same network of radio stations as one of many electronic methods to broadcast other hazard information.

Participating Jurisdictions for Action 1:

Lead agency will be Lincoln County Emergency Management. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns including: Birch, Bradley, Corning, Harding, Harrison, King, Merrill, Pine River, Rock Falls, Russell, Schley, Scott, Skanawan, Somo, Tomahawk, and Wilson.

Action 2:

The County should continue to add and update information on an Emergency Management web page link off the existing County website. The web page should contain information describing the types of hazards and how to respond to a hazard threat. The site should also contain information on ordinances pertaining to hazards (i.e. County floodplain zoning), locations of shelters, and links to other sites that provide valuable information on weather conditions, burning permits, etc.

Real time updates and information should also be posted to County social media portals such as Facebook and Twitter as situations unfold with links back to the EM webpage for residents to access more information and resources.

Participating Jurisdictions for Action 2:

Lead agency will be Lincoln County Emergency Management. The only directly participating jurisdiction will be Lincoln County.

Action 3:

Verify that back-up power and other necessary utilities are available at all critical facilities, including necessary maintenance. Plan/prioritize for back-up power generators where needed.

Critical facilities need operational utilities such as power, communications, water and sewer to function effectively. The need for back-up generators should electricity be cut off, obtaining alternative sources of potable water, and dealing with wastewater are issues that need to be examined. Back-up power (heat) is especially important at facilities that may be used to shelter people in case of a power outage during extreme cold weather. Lincoln County has evaluated its existing facilities and installed back up power generation where needed. This evaluation should be periodically revisited to ensure its kept up to date, and all active facilities are appropriately outfitted. The City of Merrill has previously identified this as a need and has installed emergency power generators for City Hall. However, Merrill has identified the need for generators at its municipal wells to keep the water system operational and at its communications towers/facilities to maintain communications in an emergency. The City of Tomahawk and all Town governments should address this issue. Existing back-up systems need to be maintained to ensure operation in time of need.

Participating Jurisdictions for Action 3:

Lead agencies will be Lincoln County, all Cities and all Towns. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Action 4:

The City of Tomahawk needs to create a second street to the hospital located in the City. The Aspirus Tomahawk Hospital in Tomahawk currently has access via only one public street. There are no side or rear streets adjacent to the hospital property. A number of hazards could cut off the access road causing a significant problem in getting disaster victims into the facility for the appropriate level of care as well as impeding the flow of medical equipment and supplies.

The design and cost of the roadway will depend on the selected location. Currently, there are wetland issues surrounding the property, and the City must work with the Wisconsin DNR and US Army Corps of Engineers. This plan urges the Department of Natural Resources and Corps of Engineers to facilitate wetland permitting associated with establishing an alternate access to the hospital.

Participating Jurisdictions for Action 4:

Lead agency will be the City of Tomahawk. The only directly participating jurisdiction will be the City of Tomahawk.

Action 5:

Early warning and access to information regarding a rapidly developing emergency situation is critical to mitigating impacts to people and property. The way people obtain and digest information in today’s world has changed, and technology is providing better, more efficient ways to reach people. Many counties across the state are using these new systems to provide early warning alerts and situational messaging to residents and visitors to help keep them safe.

Lincoln County should implement a technology based county-wide early warning system including directed alert notifications and messaging capabilities.

Lincoln County Emergency Management has been working with vendors such as RAVE and Everbridge to identify the best system functionality for the County. The system will be able to provide mass notifications countywide or by geographically selecting a specific area affected by an active situation. Every cell/telephone within the selected area will receive the alerts and related messaging/instructions including any visiting population. Opt in / opt out options will help tailor the system to individual residents needs.

There are annual fees associated with the service. Some sort of cost sharing arrangement is recommended to maintain the system long term for all communities within the County.

On-going information and education efforts will be required to promote the new system and build public awareness across the County for reliable and effective use.

Participating Jurisdictions for Action 5:

Lead agency will be Lincoln County Emergency Management, all Cities and all Towns. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Action 6:

Improve the fire lane through Bradley Park in the City of Tomahawk to facilitate emergency access. The current roadway is narrow and has had a number of washouts damaging the road.

Bradley Park is a large tract of land on the west side of the City of Tomahawk. A significant number of people regularly utilize the park, and usage spikes during special events. The park has limited streets in and around the area restricting emergency services access during a situation. Widening the roadway, stabilizing the base and correcting drainage problems would facilitate emergency access and response within the park.

Participating Jurisdictions for Action 6:

Lead agencies will be City of Tomahawk. The only directly participating jurisdiction will be the City of Tomahawk.

Action 7:

Make water system improvements in the Cities of Merrill and Tomahawk to protect municipal water supply for drinking water safety, preservation of firefighting capacity and stormwater management.

The City of Tomahawk needs water system upgrades including establishment of a second municipal well field and a second water tower. Currently, the City gets its entire water supply from a single well field and water tower. An incident affecting the water supply would likely impact all of the City's wells and/or water tower simultaneously. Many of the hazards covered in this plan have that potential. Another concern is the rail line that runs near the wells which carries potentially hazardous cargo that could threaten the water supply. The potential loss of water supply for the entire City presents public health concerns from lack of drinking water and economic concerns due to lack of water for industrial processes and tourism impacts. Further, a second tower would provide extra water storage capacity to help mitigate municipal well problems. Adequate fire flow is an issue in newly developing parts of the City that could be addressed through enhanced pressurization from the new second water tower.

The City of Merrill needs to elevate well sites or install berms or other floodproofing measures at some of its wells to protect from flooding. Back-up power generators are also needed at its wells to keep the drinking water and sanitation systems functioning in a power outage situation. General water, sewer and stormwater system improvements

are needed to reduce infiltration and inflow to keep excessive sewer flows from overloading the sewer system and wastewater treatment plant. These upgrades should also include elimination of use of toxic chlorine gas at the WWTP and replace with a safer UV system. A new well and water tower are also needed to maintain drinking water supply and adequate fire flow.

Participating Jurisdictions for Action 7:

Lead agencies will be the City of Merrill and City of Tomahawk. The only directly participating jurisdiction will be the City of Merrill and City of Tomahawk.

Action 8:

A county-wide emergency response zone atlas should be developed. Often referred to as a fire zone atlas, these atlas books were originally conceived to help direct firefighting and evacuation operations in rural areas at high risk for wildfire. A number of counties across the state have developed, or are developing these atlases, typically sponsored by and/or in conjunction with the WisDNR. Recognizing their potential value in responding to a wide variety of hazard events, many counties are utilizing them as a tool in responding to and managing other situations beyond fire.

Zones are drawn around groups of structures based on factors related to access and evacuation. The zones are named, colored-coded and indexed for ease of reference. Atlas books are distributed to police, fire and EMS units responsible for responding to emergency situations in rural areas of the county covered by the atlas.

Participating Jurisdictions for Action 8:

Lead agency will be Lincoln County Emergency Management in conjunction with Wisconsin Department of Natural Resources. Jurisdictions participating in this action will include Lincoln County, the Cities of Merrill and Tomahawk, and all Towns including corresponding police, fire and EMS departments.

Action 9:

The City of Tomahawk has identified the need to improve its local incident command capabilities. This would include satellite or alternate site(s) for emergency operations centers (EOC), in addition to the central department location downtown. These satellite EOCs would enable continuity of operations (COOP) contingencies for responding to a number of situations the City may face. Each EOC location should be equipped with upgraded communications and computer equipment including computer-aided mapping / geolocation capabilities.

The City of Tomahawk's critical emergency response facilities: police, fire and public works departments are all located within close proximity of each other downtown. So, a hazard event causing significant damage to one facility would also likely inflict similar damage on the others. In addition, a large LP gas facility is located adjacent to this area as well. A hazard causing an incident at the LP facility could threaten significant damage to these critical city operations.

The City is also notably bisected by a major river and a rail line. In the event of significant flooding, particularly if the Wisconsin River Bridge would washout, the City would be separated into two sides without access between them. Similarly, a rail incident could isolate a section of the City. In either of these cases, a long detour route would be necessary to circumnavigate the blockage hindering emergency response.

Participating Jurisdictions for Action 9:

Lead agency will be the City of Tomahawk. The only directly participating jurisdiction will be the City of Tomahawk.

Action 10:

Update radio/emergency communications system interoperability within the City of Merrill.

Due to on-going changes in regulations and technology (narrow banding, etc.), the City of Merrill has made some upgrades and modernized its emergency communications equipment including radios for police and fire. However, interoperability, or the ability for different radios to work with each other, is a significant problem for emergency services and local governments across the state, and Merrill is no different. Radio compatibility across various key City departments such as public works, needs to be addressed. New, compatible radios need to be acquired for these departments, and cross department interoperability needs to be maintained as system updates and technology changes continue such as "Next-Gen 911". The need for a backup repeater installation was identified (see Action 12).

Participating Jurisdictions for Action 10:

Lead agency will be the City of Merrill. The only directly participating jurisdiction will be the City of Merrill.

Action 11:

Upgrade Lincoln County Emergency Dispatch to Next Generation 911 and create a backup dispatch center/EOC. Lincoln County needs to upgrade its emergency dispatching (911) capabilities and reinforce its Emergency Operation Center.

The County has identified the need to replace its outdated, analog equipment with advanced hardware, software and peripherals. These upgrades to its Public Service Answering Point (PSAP) will provide the infrastructure necessary to implement Next Generation 911 (NG911). Upgrading to NG911 will allow Lincoln County to meet the communication needs and expectations of the public and provide reliable and redundant emergency communications services to its 18 municipalities. In addition to upgrading from analog to digital equipment, PSAP workstations will be expanded from three to four.

The current hardware and equipment will be re-purposed to outfit a secondary, back-up PSAP location for the County. In addition to being a back-up PSAP, it would also serve as an Emergency Operations Center (EOC) for the County. This secondary site will

have physical separation from the primary site to mitigate the impact of natural disasters or other emergency situations. A secondary PSAP is a critical element of Lincoln County's Continuity of Operations Plan (COOP).

Participating Jurisdictions for Action 11:

Lead agencies will be Lincoln County Emergency Management and Sheriff's Office. Lincoln County will be the only directly participating jurisdiction in this action.

Action 12:

Address gaps in emergency interoperability communications coverage by installing communications towers/repeaters in problem areas like western Corning and the far northwest corner of the County.

Existing County radio communication towers have good coverage from their high elevation location on Irma Hill. However, there are small areas or "gaps" that have been identified where communications could be improved. For example, the southwestern corner of the County (Pine River) was a coverage problem area until tower improvements were made in 2013. Western Corning is a candidate for an additional tower. In the far northwestern part of the County (i.e. Somo and Tomahawk) coverage can be "iffy" depending on weather conditions. See also Action 10.

Participating Jurisdictions for Action 12:

Lead agency will be Lincoln County Emergency Management and Sheriff's Office, as well as City of Merrill. Lincoln County, the City of Merrill and the Towns Corning, Harrison, Somo and Tomahawk will be the participating jurisdictions in this action.

Action 13:

Prepare a countywide assessment and response plan for potential power outage threat. Explore potential to update the 2010 LTPO Preparedness in Wisconsin planning exercise with a new statewide or regional planning workshop and tabletop exercise program.

Power outage can be a consequence of many of the hazards discussed within this Plan. For example, downed powerlines are frequently attributed to tornados or severe thunderstorm winds as well as heavy snow or ice events common in Wisconsin. However, there is less awareness of other potential causes of power outage such as cyber attack or power grid instability. The existing power infrastructure may not be keeping up with the growth in energy consumption resulting in that infrastructure carrying a higher load than it was designed to support. There has been some concern about the potential for extended period(s) of power loss in central Wisconsin.

Power is critical for maintaining emergency operations, sanitation, sheltering – particularly in excessive cold or heat conditions, and food safety.

The County should begin a strategic planning effort for addressing the power outage risk. This would entail working with the American Transmission Company (ATC) and

the power companies supplying electricity in Lincoln County (primarily Wisconsin Public Service or WPS) to understand the status of the local power grid and what might be done to address any issues.

The County should also work with WEM to organize a new Long-Term Power Outage Preparedness in Wisconsin state-wide planning workshop with tabletop exercises type program. This would bring a wider range of professionals and subject matter experts to bear on the problem as well as to stimulate awareness of this issue. Alternatively, a regional workshop would offer an opportunity to coordinate with Lincoln’s neighboring counties on a common problem, or a county level exercise would help plan for local response to a long-term power outage situation.

Participating Jurisdictions for Action 13:

Lead agency will be Lincoln County Emergency Management. Jurisdictions participating in this action will include Lincoln County, all Cities and all Towns.

Hazard: Tornado

Goal:

Protect health, safety, and general welfare of county residents and visitors, along with mitigating future loss of property from tornados.

Action 14:

The Cities of Merrill and Tomahawk should analyze water towers for strength and stability against tornadoes.

Participating Jurisdictions for Action 14:

Lead agency will be the Cities of Merrill and Tomahawk. The only directly participating jurisdictions will be the City of Merrill and the City of Tomahawk.

Action 15:

The County, cities and towns should encourage builders and owners of manufactured and mobile homes to use tie-downs with ground anchors to help secure the main structure and any exterior attachments such as carports and porches. Using these devices can reduce the risk of damage to mobile and manufactured homes. Local units with zoning (or other related) ordinances should strengthen applicable provisions and improve enforcement.

Participating Jurisdictions for Action 15:

Lead agencies will be Lincoln County Land Services (Zoning) Department, all Cities and all Towns. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Action 16:

Construct storm shelter / community safe room facilities or upgrade existing facilities for sheltering purposes including emergency/back-up power and sanitation facilities where appropriate. In the mitigation issues survey for this plan update, some towns indicated the need for an emergency shelter in their area, including the Towns of Birch and Rock Falls. Both towns indicated possible locations for a shelter were the Town Hall or adjacent to.

Participating Jurisdictions for Action 16:

Lead agencies will be the Towns of Birch and Rock Falls. The Towns of Birch and Rock Falls will be the only participating jurisdictions in this action.

Hazard: Winter Storm/Extreme Cold

Goal:

Create safety awareness in citizens and travelers of Lincoln County to protect them during and after winter storm and extreme cold events.

Action 17:

The County should promote winter hazards awareness, including home and travel safety measures, such as avoiding travel during winter storms and periods of extreme cold. If travel cannot be avoided, having a shovel, sand, warm clothing, food, water, and back-up heating system should be encouraged to have in vehicles.

Participating Jurisdictions for Action 17:

Lead agencies will be Lincoln County Emergency Management, all Cities and all Towns. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Hazard: Flood / Dam Failure

Goal:

Continue compliance with the National Flood Insurance Program and work to reduce flood risk throughout Lincoln County and the Cities of Merrill and Tomahawk.

Goal:

Eliminate the loss of life and reduce the risk of property damage in downstream areas that result from a dam failure.

Please note: actions denoted with an asterisk () relate to compliance with the National Flood Insurance Program (NFIP).*

Action 18*:

Lincoln County, the City of Merrill and the City of Tomahawk must continue diligent enforcement of their floodplain zoning ordinances and maintain those ordinances through periodic updates as required to accommodate any changes to regulatory standards in conjunction with the Wisconsin Department of Natural Resources.

Lincoln County, City of Merrill and City of Tomahawk are currently communities participating in good standing with the National Flood Insurance Program (NFIP). The County and Cities should work to ensure continued compliance. Compliance primarily entails adopting and enforcing floodplain management regulations that meet minimum criteria. All towns are included under the umbrella of the County through the state mandated county shoreland zoning. These regulations will continue to apply to and be enforced for new and existing buildings and infrastructure.

Participating Jurisdictions for Action 18:

Lead agencies include Lincoln County Land Services Department, the City of Merrill and the City of Tomahawk. The only directly participating jurisdictions are Lincoln County, the City of Merrill and the City of Tomahawk.

Action 19*:

To mitigate the long-term impacts of flooding, if evidence of recurring flooding is an issue with specific properties after a significant flood event, the County or other appropriate jurisdiction should investigate, as a possible solution, the voluntary acquisition and removal of buildings in the floodplain with flood damage. Property owners should be informed of their floodplain status and related insurance issues. A survey to gauge interest in buy-out and relocation of properties within the floodplain is recommended to help evaluate the County's options in capturing part of a major stream of federal mitigation dollars.

Participating Jurisdictions for Action 19:

Lead agencies include Lincoln County Land Services Department and Emergency Management, the City of Merrill and the City of Tomahawk. Participating jurisdictions will include: Lincoln County, the City of Merrill and the City of Tomahawk.

Action 20:

The County and local units of government should inventory the drainage culverts in roads of their respective jurisdictions. Each culvert should be evaluated for sizing and maintenance status. A program should be implemented that regularly maintains free flow through the culvert and phases in replacement of undersized units. This is critical to minimizing flood damage to roadways and preventing washouts.

Participating Jurisdictions for Action 20:

Lead agencies will be Lincoln County Highway Department, all Cities and all Towns. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Action 21:

Lincoln County continues to work with owners and operators to review, update and test dam failure Emergency Action Plans (EAP) for each significant and high hazard dam within Lincoln County. FEMA guidelines for dam safety indicate that training and exercises are necessary to maintain operational readiness, timeliness and responsiveness. The status of training and levels of readiness should be evaluated in periodic simulated emergency exercises for response personnel and the dam owner/operator.

Emergency situations and/or dam failures are not common events, but the dams within the County are aging and as a result becoming more of a concern. The EAP can become outdated, lose its effectiveness and no longer be workable if the plan is not practiced. Those involved may become unfamiliar with their roles and responsibilities, especially with the turn over of local officials. If the plan is not updated, the information contained in it may become outdated and useless.

There are five types of exercises, including: orientation seminar, drill, tabletop exercise, functional exercise and full-scale exercise. They range in complexity from simple to more complex, but it is not required that every exercise program include all five types. Lincoln County periodically coordinates such exercises, a tabletop and a functional exercise were completed during this planning process.

Participating Jurisdictions for Action 21:

Lead agency will be Lincoln County Emergency Management. Participating jurisdictions will include the Cities of Merrill and Tomahawk, and those Towns that could be affected, including Bradley, Wilson, Rock Falls, Harding, Merrill, Scott and Pine River. Federal and state officials should also be invited including DNR and State Patrol, as well as dam owners/operators.

Action 22:

The City of Merrill has identified the need to develop stormwater management plans to aid in the control of stormwater and reduction including construction of necessary retention ponds.

Participating Jurisdictions for Action 22:

Lead agency will be the City of Merrill. The only directly participating jurisdiction will be the City of Merrill.

Action 23:

Install new culverts to alleviate flooding on a section of town road where washouts occur annually in the Town of Wilson.

The Town of Wilson has a road that washes out almost every year. New, larger culverts need to be installed. However, the Town has a limited road budget. Another alternative would be to raise the road.

Participating Jurisdictions for Action 23:

Lead agency will be the Town of Wilson. The only directly participating jurisdiction will be the Town of Wilson.

Action 24:

In their hazard mitigation issues surveys, the towns of Birch, Harding and Wilson identified the need for improved ditching and culvert maintenance or upgrades along town roads to better manage water and control flooding. The Towns should consider advanced ditching techniques with rock retainers and sumps for water management to reduce flooding were appropriate.

Participating Jurisdictions for Action 24:

Lead agencies will be the towns of Birch, Harding and Wilson. Participating jurisdictions include the Towns of Birch, Harding and Wilson.

Hazard: Severe Thunderstorm/Hail/Lightning/Wind

Goal:

Minimize the threat to human life and property damaged caused by severe storms and associated hail, lightning and high wind.

Action 25:

Due to their heavily wooded nature, the towns of Birch, Harding and Wilson and Tomahawk identified the need for improved brushing and removal of trees long town road right-of-ways to reduce blow down from blocking roadways during severe storms.

Participating Jurisdictions for Action 25:

Lead agencies will be the towns of Birch, Harding and Wilson. Participating jurisdictions include the Towns of Birch, Harding and Wilson.

Action 26:

Determine if critical facilities such as hospitals, police buildings, fire halls, administration buildings, schools, and telecommunication antennas are adequately grounded to eliminate lightning damage. Lincoln County Emergency Management could coordinate efforts with cooperation from local units and private operators such as the hospitals.

Where necessary, install lightning grade surge protection devices for critical electronic components used by government, public service and public safety facilities, such as warning systems, control systems, communications and computers.

Participating Jurisdictions for Action 26:

Lead agencies will be Lincoln County Emergency Management, all Cities and all Towns. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Action 27:

Due to the wide variety of recreation activities throughout the County, public awareness of proven lightening safety guidelines to reduce risk should be promoted. Areas of concern include golf courses, country clubs, parks, ball fields (and other athletic fields), public beaches and boat launches. Efforts should be made to get managers and staff of such facilities "up to speed" with procedures and training for lightning safety. Another common measure is erecting of signs that inform people when to get out of the water or off a golf course (etc.) when lightening threatens.

Participating Jurisdictions for Action 27:

Lead agencies will be Lincoln County Emergency Management, all Cities and all Towns. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Hazard: Drought/Extreme Heat

Goal:

Create safety awareness in citizens of Lincoln County to help protect themselves during extreme heat events.

Goal:

Minimize crop loss while maintaining water supplies during times of drought.

Action 28:

To assist the population in reducing heat disorders, the County should promote extreme heat hazards awareness, including safety tips, medical information, and contact information for health officials. Information regarding checking on neighbors or other known residents that live alone or that may be at a disadvantage in fending for themselves should be included.

Participating Jurisdictions for Action 28:

Lead agencies will be Lincoln County Emergency Management and Health Departments, all Cities and all Towns. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Action 29:

Develop countywide drought mitigation plan to encourage multi-agency approaches to water conservation, drought prediction and stream and groundwater monitoring for ready implementation if needed. Rising average annual temperatures could drive more persistent drought. Droughts probably have the greatest impact on agricultural and tourism areas, and given the significance of the tourism sector of the County's economy, drought becomes an important hazard to prepare for.

Participating Jurisdictions for Action 29:

Lead agency will be Lincoln County Emergency Management, Land and Water Conservation and UWEX departments. Jurisdictions participating in this action will include Lincoln County, City of Merrill, City of Tomahawk, and all Towns.

Hazard: Forest/Wild Fires

Goal:

Protect the safety and property of residents from forest and wildfires.

Action 30:

Promote Firewise program and related educational materials to increase community awareness of wildfire risk within the County. The Towns and County should develop education and information for homeowners on protecting their homes and other structures from fires and promote Firewise. Since Lincoln County is mostly rural with vast woodlands, emphasis should be placed on construction and establishing defensible areas around structures. Roofs and exterior siding should be made of ignition-resistant materials. At least 30 feet should be left between homes and surrounding combustible vegetation. Outreach efforts can exist in the form of web sites, local newspaper articles, and pamphlets to homeowners.

Participating Jurisdictions for Action 30:

Lead agency will be local units of government. Participating jurisdiction would include Lincoln County, Wisconsin Department of Natural Resources, City of Tomahawk, all towns and area Fire Departments.

Action 31:

Local units of government should develop driveway ordinances and minimum standards for private roads to support emergency vehicle access where lacking. The ability of emergency response units to reach a site is often the critical factor in the effectiveness of the response. Inadequate private access roads or driveways are common problems in rural areas. In some cases emergency units cannot physically reach a target site due to narrowness, tight corners, steep slopes, etc. Other problems include lack of space to maneuver or turn around.

Participating Jurisdictions for Action 31:

Lead agencies will be all Towns. Jurisdictions participating in this action will include all Towns.

Action 32:

Towns with high risk of wildfire should develop Community Wildfire Protection Plans (CWPPs). In Lincoln County, the Towns of Bradley, King, Merrill and the City of Tomahawk have been identified by WDNR as high risk for wildfire. A CWPP identifies and prioritizes areas for hazardous fuels reduction treatments and recommends types

and methods of treatment that will protect at-risk areas and critical infrastructure. WisDNR has grant funding available for community wildfire protection planning.

Participating Jurisdictions for Action 32

Lead agency will be the respective jurisdictions with high risk of wildfire. Jurisdictions participating in this action will include: Towns of Bradley, King, Merrill and the City of Tomahawk.

Action 32:

Due to the nature of the pine "fuel" resulting in high risk for wildfire in the northern half of the County, Lincoln County should work with the northern towns, the City of Tomahawk and the Wisconsin Department of Natural Resources to develop an area-wide Community Wildfire Protection Plan (CWPP). Similar conditions also exist in southwestern Oneida County, presenting an opportunity to coordinate on a multicounty collaborative effort. The boundaries of the WisDNR Tomahawk Fire Response Unit make a logical planning area based on the similar conditions and risks throughout.

A CWPP identifies and prioritizes areas for hazardous fuels reduction treatments and recommends types and methods of treatment that will protect at-risk areas and critical infrastructure. WisDNR has grant funding available for community wildfire protection planning.

Participating Jurisdictions for Action 32:

Lead agency will be Lincoln County Emergency Management in conjunction with the Wisconsin Department of Natural Resources. Jurisdictions participating in this action will include: Lincoln County, the City of Tomahawk, the northern Towns, and the WisDNR, as well as Oneida County and towns in southwestern Oneida County.

Hazard: Cyber Attack

Goal:

Protect Lincoln County computer systems and data from cyber-attack to help ensure continuing, effective operations of county government and emergency services.

Action 33:

Counties must plan to respond to catastrophic cyber events the way plan to manage tornadoes, blizzards or other emergencies: determine which assets are at risk, figure out what they are worth to the county, and put in place the security controls to protect them so that if attacked, the worst does not happen.

The County should implement a multi-layered process of assessment, patching and training to prevent cyber-attacks. These preventive measures are described as follows:

- *Assessment*: ongoing analysis of networks and processes to check for weaknesses
- *Patching*: regularly updating software to fix vulnerabilities

- *Training*: educating staff, elected officials, and all others who access the network about the risks of cyber-attacks and what they can do to keep the network safe

Maintaining an up to date and complete back-up of files is critical for continuity of operations in the event of a major cyber-attack. County IT is working on implementing a new back-up system.

Participating Jurisdictions for Action 33:

Lead agency will be the Lincoln County IT Department. Other jurisdictions with significant computer infrastructure should also follow this recommendation. Jurisdictions participating in this action will include Lincoln County, City of Merrill, and City of Tomahawk.

Action 34:

The City of Tomahawk identified the need to strengthen the I.T. firewalls in its computer systems and establish off-site back up for all City data.

Participating Jurisdictions for Action 34:

Lead agency will be the City of Tomahawk. The City of Tomahawk will be the only directly participation jurisdiction.

Hazard: Epidemic / Pandemic

Goal:

Improve County preparedness for handling and recovering from an epidemic/pandemic.

Action 35:

Develop a pandemic preparedness response and recovery plan based on lessons from the Covid-19 Pandemic. Integrate and optimize use of the Regional Health Care Coalition. Lessons or issues identified during the Covid Pandemic include, but are not limited to, the following:

- Funding for contact tracing
- Testing sites plan
- Vaccine distribution plan
- Mass vaccination plan
- Personal protective equipment stockpile
- Messaging and message consistency

Each jurisdiction should make its own pandemic preparedness plan that coordinates with the County and adjacent municipalities. This effort should address/include development of memorandums of understanding for intergovernmental coordination and cooperation for testing sites, vaccine distribution/mass vaccination, and supply/distribution of personal protective equipment. The process should include an

information and education program to lay the groundwork regarding welfare of the community as a whole.

Participating Jurisdictions for Action 35

Lead agency will be the Lincoln County Health Department with Lincoln County Emergency Management. Jurisdictions participating in this action will include Lincoln County, the Cities of Merrill and Tomahawk and all Towns.

Action 36:

Work to implement the recommendations of the North Central Wisconsin Pandemic Assessment and Future Response Plan and the North Central Wisconsin Regional COVID-19 Recovery Plan. Both of these plans were prepared by the North Central Wisconsin Regional Planning Commission.

The purpose of the North Central Wisconsin Pandemic Assessment and Future Response Plan is to analyze various county and tribal response efforts related to the COVID-19 pandemic and to identify approaches to better address future pandemics. The overarching goal is to better prepare the region for future public health related disruptions.

The Regional Health Pandemic Assessment and Future Response Committee included a group of experts representing every county throughout the region. The committee included those directing county health departments and tribal health departments. In addition, coordinators from various agencies including those dealing with healthcare emergency readiness, seniors, persons with disabilities, and other specialty populations served on the committee. This group responded to a questionnaire and met virtually throughout the 2021 calendar year. During these meetings, the committee was able to analyze the response to the COVID-19 global pandemic and identify strengths and weaknesses. Through this process, recommendations were created to better respond to pandemics and similar health related disruptions in the future, as follows:

Recommendation 1: Meet Public Health Mission Objectives

1. Modernize and streamline data management and surveillance technology. Local public health relied on the state through the Wisconsin Electronic Disease Surveillance System (WEDSS). Managing this system was staff intensive. Infrastructural improvements are needed.
2. Continue to explore ways to improve metrics within rural communities.
3. Encourage specific state-level guidance related to recommendations for business, educational and municipal facilities best practices in real time during communicable disease threats.
4. Strengthen the department’s collection and dissemination of information that connects determinants of health with health outcomes.

Recommendation 2: Build on Intergovernmental and Interagency Collaboration

1. Continue to forge robust partnerships among health agency department and staff.
2. Continue to improve and enhance internal and external communication.

3. Continue to investigate opportunities for horizontal collaboration (among local health departments) and vertical collaborations (at the federal, state, and local levels).
4. Continue create and enhance interagency partnerships to enhance local public health services.
5. Explore opportunities for larger public health departments to partner with smaller local health departments to share services, where and when this would allow a reduction in duplication and offer enhanced services to smaller departments.
6. Consider a regional approach to establish uniformity and consistency across county and tribal lines.

Recommendation 3: Advance Health Equity

1. Weave equity into all aspects of health planning and policy.
2. Engage interested members of the community to be trusted partners on health planning concepts.
3. Continue to engage and include stakeholders with a focus on equity into all regional and state initiatives. This could include community members and nontraditional partners associated with social determinants of health (SDOH) such as planners, law enforcement, schools, and community organizations.
4. Continue to prioritize health equity and meaningful community engagement.
5. Continue to ensure that outreach and educational efforts address social and structural determinants of health equities.

Recommendation 4: Invest in Public Health

1. Encourage federal and state investment in local public health foundational capabilities.
2. Encourage legislatures to actively protect public health authority at the state and local levels so that experts can continue to promote solutions that encourage economic growth, reduce inequities, and address chronic health conditions.
3. Increase per capita health funding in the State of Wisconsin.
4. Secure more sustained and flexible local public health funding.
5. Bolster recruitment and retention of employees to continue to attract and maintain a talented and diverse workforce.
6. Continue to provide those in leadership roles with training and resources they need to lead a strong and diversified public health department.
7. Explore dynamic staffing models that allow local health departments to expand staffing resources in response to communicable disease threats.

In the aftermath of disasters, the most important questions typically center around recovery, how to become less vulnerable to a disaster, and how to be better prepared to deal with a disaster event in the future. When attempting to find answers to these questions, it is clear that the COVID-19 pandemic has brought many issues and vulnerabilities to the forefront, as communities, businesses, residents, and the entire world-at large were not well-prepared to deal with the health emergencies and economic shocks that resulted from the pandemic.

The purpose of North Central Wisconsin Regional COVID-19 Recovery Plan is to guide economic stabilization, recovery, and resiliency efforts within the North Central Wisconsin Region in the face of the current pandemic as well as future events that cause economic shocks. The plan promotes activities that prevent, prepare for, and respond to the COVID-19 pandemic, and in particular, to the economic injury caused by the pandemic, within North Central Wisconsin.

The plan puts forth a set of strategies that will help the Region's local economies recover from and become more resilient to economic shocks by identifying best-practices that help spur economic stabilization and recovery in the wake of economic shocks and that will help build local economic resilience. Helping local recovery and resiliency efforts will help the regional economy as a whole recover and grow back even stronger than before the disaster struck.

Participating Jurisdictions for Action 36:

Lead agency will be each respective jurisdiction. Jurisdictions participating in this action will include Lincoln County, the Cities of Merrill and Tomahawk and all Towns.

**TABLE 17 SUMMARY OF MITIGATION STRATEGIES
LINCOLN COUNTY ALL HAZARDS MITIGATION PLAN**

MITIGATION MEASURES (See Expanded Description in Plan Text)	RESPONSIBLE UNITS	COST ESTIMATE	EXISTING AND POTENTIAL RESOURCES TO IMPLEMENT	PROJECT ** TIMEFRAME	PRIORITY LEVEL
ALL HAZARDS					
1. Continue to promote the use of National Oceanic and Atmospheric Administration (NOAA) weather radios.	County EM Dept.	Staff Time	Mitigation Grant - Possible Radio sales to cover cost.	On-going	MEDIUM
2. Continue to add/update Emergency Management Department link off existing County website.	County EM Dept.	Staff Time	Dept. Budget	On-going	MEDIUM
3. Verify that back-up power and other necessary utilities are available at all critical facilities, including necessary maintenance. Plan/prioritize for back-up power generators where needed.	County / City of Merrill / City of Tomahawk / All Towns	Staff Time / Costs to be determined.	Dept. Budget / Mitigation Grants	On-going	HIGH
4. Create second street to the hospital in the City of Tomahawk. Work with DNR and Corps of Engineers on wetland issues.	City of Tomahawk	Costs to be determined	General Fund / Local Road Aids	2028	HIGH
5. Implement technology based county-wide early warning system including directed alert notifications and messaging.	County EM Dept. / Merrill / Tomahawk / All Towns	Costs to be determined	General Funds / Dept. Budgets / Cost Sharing	2024	HIGH
6. Improve fire lane through Bradley Park to ensure access for emergency response.	City of Tomahawk	Costs to be determined	General Fund / Local Road Aids	2027	MEDIUM
7. Water system improvements for drinking water safety, preservation of firefighting capacity and stormwater management.	City of Merrill / City of Tomahawk	Costs to be determined	General Fund / US RDA Water Facilities Grant/Loan	2028	MEDIUM
8. Develop Emergency Response Zone Atlas - print and distribute.	County EM Dept. / Wisconsin DNR	20,000	Wisconsin DNR tech. assist. and funding / WEM funding	2025	MEDIUM
9. Improve local incident command capabilities and establish alternate/back-up location to facilitate City of Tomahawk's response to emergency situations throughout the City.	City of Tomahawk	150,000	General Fund / Federal Assistance to Firefighters Grant (AFG)	2026	MEDIUM
10. Update radio / emergency communications system interoperability within the City of Merrill.	City of Merrill	Costs to be determined	General Fund / OJA Funding Programs	2026	HIGH
11. Upgrade Lincoln County Emergency Dispatch to Next Generation 911 and create backup dispatch center.	County EM Dept. / Sheriff's Office	200,000	General Fund / PSAP Grant Program	2025	HIGH

MITIGATION MEASURES (See Expanded Description in Plan Text)	RESPONSIBLE UNITS	COST ESTIMATE	EXISTING AND POTENTIAL RESOURCES TO IMPLEMENT	PROJECT ** TIMEFRAME	PRIORITY LEVEL
12. Address gaps in emergency interoperable communications coverage by installing communications towers/repeaters in problems areas like western Corning and the far northwest corner of County.	County EM Dept. / Sheriff's Office / City of Merrill	Costs to be determined	General Fund / OJA Funding Programs	2026	HIGH
13. Prepare countywide assessment and response plan for potential power outage threat. Explore potential to update the 2010 LTPO Preparedness in Wisconsin planning exercise with a new statewide or regional planning workshop and tabletop exercise program.	County EM Dept.	Staff Time	Dept. Budget	2027	MEDIUM
TORNADO					
14. Analyze water towers for tornado strength.	City of Merrill / City of Tomahawk	Costs to be determined	General Funds	2025	MEDIUM
15. Encourage mobile homes and exterior attachments such as carports and porches to have tie-downs with ground anchors.	County Land Services Dept. / All Cities / All Towns	Staff Time	Dept. Budgets	On-going	LOW
16. Construct storm shelter / community safe room facilities or upgrade existing facilities for sheltering purposes including emergency/back-up power and sanitation facilities where appropriate.	Towns of Birch and Rock Falls	Costs to be determined	Mitigation Grants / General Funds	2028	MEDIUM
WINTER STORM / EXTREME COLD					
17. Promote winter hazards awareness including home and travel safety measures.	County EM Dept. / All Cities / All Towns	Staff Time	Dept. Budget	Annual	LOW
FLOOD / DAM FAILURE					
18. County/City continued enforcement of floodplain zoning ordinances and maintenance of ordinances with periodic update as required in coordination with the WisDNR.*	County Land Services Dept. / City of Merrill / City of Tomahawk/ WisDNR	Staff Time	Dept. Budgets	On-going	MEDIUM
19. If evidence of recurring flooding is an issue with specific properties after a significant flood event, investigate, as a possible solution, the voluntary acquisition/removal of buildings in a floodplain with flood damage.* (FEMA NFIP requirement)	County Land Services Dept. / City of Merrill / City of Tomahawk	Costs to be determined	Mitigation Grants	As needed	MEDIUM
20. Culvert sizing evaluation and maintenance program.	County Hwy Dept. / All Cities / All Towns	Costs to be determined	Dept. Budgets	On-going	MEDIUM

MITIGATION MEASURES (See Expanded Description in Plan Text)	RESPONSIBLE UNITS	COST ESTIMATE	EXISTING AND POTENTIAL RESOURCES TO IMPLEMENT	PROJECT ** TIMEFRAME	PRIORITY LEVEL
21. Continue to work with dam owners to maintain EAPs for each significant and high hazard dam.	County EM Dept.	Staff Time	Dept. Budget	On-going	HIGH
22. Develop stormwater management plans including construction of necessary retention ponds.	City of Merrill	Cost to be determined	General Fund	2027	Medium
23. Install new culverts to alleviate flooding on section of town road where washout occurs annually.	Town of Wilson	25,000	General Fund / WisDOT LRIP, STP-L or Local Bridge Program.	2027	MEDIUM
24. Improve ditching and culverts along town roads in Birch, Harding and Wilson to better manage water and control flooding.	Towns of Birch, Harding and Wilson	Costs to be determined	General Funds / Local Road Aids	On-going	MEDIUM
SEVERE THUNDERSTORM / HAIL / HIGH WIND / LIGHTNING					
25. Improve brushing along town roads in Birch, Harding and Wilson to help prevent blow downs from blocking rights-of-way.	Towns of Birch, Harding and Wilson	Costs to be determined	General Funds / Local Road Aids	On-going	MEDIUM
26. Determine if critical facilities are adequately grounded to eliminate lightning damage. Install surge protection as necessary.	County EM Dept. / All Cities / All Towns	Staff Time	Dept. Budget	2025	LOW
27. Promote lightning safety awareness to reduce risk.	County EM Dept. / All Cities / All Towns	Staff Time	Dept. Budget	Annual	HIGH
DROUGHT / EXTREME HEAT					
28. Assist population with reducing heat disorders through awareness program as needed.	County EM Dept. / County Health Dept / All Cities / All Towns	Staff Time	Dept. Budgets	As needed	LOW
29. Develop countywide drought mitigation plans for multi-agency approaches to water conservation, drought prediction, stream and groundwater monitoring for ready implementation if needed.	County EM Dept. / County Land Conservation / County UWEX	Staff Time	Dept. Budgets	As needed	LOW
FOREST / WILD FIRE					
30. Promote Firewise program and related educational materials to increase community awareness of wildfire risk within the County.	Wisconsin DNR / Local fire depts / all towns	Staff Time	Dept. Budgets	Annual	MEDIUM
31. Develop driveway ordinances and private road standards as well as possible zoning recommendations to ensure emergency vehicle access where lacking.	Various Towns	Costs to be determined	General Funds	On-going	LOW

MITIGATION MEASURES (See Expanded Description in Plan Text)	RESPONSIBLE UNITS	COST ESTIMATE	EXISTING AND POTENTIAL RESOURCES TO IMPLEMENT	PROJECT ** TIMEFRAME	PRIORITY LEVEL
32. Develop Community Wildfire Protection Plans (CWPP) for higher risk communities.	High risk communities/ WisDNR	24,999 ea.	WisDNR National Fire Plan Funding	On-going	MEDIUM
CYBER ATTACK					
33. Implement multi-layered process of assessment, patching, and training to prevent cyber-attacks.	County IT Dept. / City of Merrill / City of Tomahawk	Costs to be determined	Dept. Budgets / General Funds	On-going	HIGH
34. Strengthen IT firewalls in City computer systems and establish off-site back up for all City Data.	City of Tomahawk	Costs to be determined	General Fund	On-going	HIGH
EPIDEMIC / PANDEMIC					
35. Develop a pandemic preparedness plan based on lessons from the Covid-19 Pandemic.	County Health and EM Depts. / All Cities / Regional Health Coalition	Staff Time	Dept. Budgets	2024	Medium
36. Work to implement the recommendations of the North Central Wisconsin Pandemic Assessment and Future Response Plan and the North Central Wisconsin Regional COVID-19 Recovery Plan.	County / City of Merrill / City of Tomahawk /All Towns	Costs to be determined	General Funds / EDA, USDA, CDBG, Mitigation and other programs	On-going	Medium
*Denotes actions related to compliance with NFIP. **Actual project implementation dependent on funding and staff availability.					

INTRODUCTION

Part V of the Lincoln County All Hazards Mitigation Plan Update describes the plan adoption, implementation, monitoring, evaluation and maintenance.

PLAN UPDATE ADOPTION

The adoption of the Lincoln County All Hazards Mitigation Plan Update lends itself to serve as a guiding document for all local government officials. It also certifies to program and grant administrators from the FEMA and WEM that the plan’s recommendations have been properly considered and approved by the governing authority and the jurisdiction’s citizens. Finally, it helps to ensure the continuity of mitigation programs and policies over time because elected officials, staff, and other community decision-makers can refer to the official document when making decisions about the community’s future.

Before adoption of the Plan Update by the incorporated areas, the update must be sent to the state and federal level to verify that all FEMA requirements are met. Once a draft of the updated Plan has been completed, it is submitted to the State Hazard Mitigation Officer (SHMO) at the state level at WEM. Previous drafts of the update have already been reviewed prior to this submittal. The SHMO will determine if the updated Plan meets requirements. Upon approval of the draft by WEM, the SHMO is responsible for showing the update to the FEMA Region V Office for review.

Prior to final approval by WEM and FEMA, the update must be formally adopted by Lincoln County and its incorporated areas by resolution. Incorporated communities that do not adopt the Plan Update cannot apply for mitigation grant funds unless they opt to prepare, adopt, and submit their own plan. Adoption of the Plan Update gives the jurisdiction a legal basis to enact ordinances, policies, or programs to reduce hazard losses and to implement other mitigation actions.

Both Cities within Lincoln County were offered one or more avenues to participate in the development of this Plan Update. Adoption of the Plan Update by a local unit of government certifies their participation. The Lincoln County Board has adopted this Update. Resolutions of adoption are contained in APPENDIX B.

PLAN UPDATE IMPLEMENTATION

Administrative Responsibilities

Once the Plan Update has been approved, stakeholders must be informed. The County Emergency Management Director will distribute copies to stakeholders. The County will make the Plan Update available to the public by linking the report on the Internet.

Along with monitoring the progress of the action projects, Lincoln County's Emergency Management Director and Emergency Management Committee should also work to secure funding to implement the Plan Update. State and federal agencies, nonprofit organizations, and foundations continually make grants available. Emergency Management should research these grant opportunities to determine eligibility for the County and its local units of government.

When implementing this Plan Update, innovative ways should be considered to involve active participation from nonprofit organizations, businesses, and citizens to implement the Update. The relationship between these groups will result in greater exposure of the Plan Update and provide greater probability of implementation of the action projects listed.

The role of department administrators, elected officials, and local administrators are to ensure that adopted actions from Part IV are considered in their budgets. It is understood that projects may not be carried out as they are scheduled in Part IV due to budget constraints. However, since many of these action projects are considered an investment in safeguarding the publics' health, safety, and property, they should be carefully considered as a priority.

Promote Success Of Identified Projects

Upon implementing a project covered by this Plan Update, it is important to promote the accomplishment to the stakeholders and to the communities. This will help inform people that the update is being implemented and is effective.

Community Disaster Resilience

There has been a growing movement in emergency management planning circles toward a "new" buzz word: resilience. There is a wide range of definitions for community resilience and what it entails, but in 2012 the National Academy of Sciences looked at the major federal agencies and independent organizations with work efforts related to resilience and determined that *"resilience is the ability to prepare and plan for, absorb, recover from, and more successfully adapt to adverse events. Enhanced resilience allows better anticipation of disasters and better planning to reduce disaster losses—rather than waiting for an event to occur and paying for it afterward."*

Many weather experts now expect severe weather events to become increasingly more frequent and intense. Recent events seem to corroborate this condition with multiple "short duration - high volume" rainfalls causing devastating flooding around the state in 2015, 2016, 2017 and 2018.

It is recommended that the County acknowledge these changing conditions and begin working toward an approach to incorporating a community resilience component into its planning and operations. County could coordinate with its cities on resiliency efforts.

Incorporation Into Other Local Planning Mechanisms

FEMA requires a process by which the mitigation plan is incorporated into other planning mechanisms where appropriate. When undergoing any planning process, County departments, local units of government and/or any professional staff assisting them, typically review and incorporate any related pre-existing plans as a matter of course.

The most applicable planning process outside of the mitigation plan are the local comprehensive plans for each community. The County's current comprehensive plan was completed in 2022. The 2022 Comprehensive Plan incorporates the previous (2018) mitigation plan as outlined below. In addition, the local comprehensive plans for the Cities of Merrill and Tomahawk were both updated in 2017. Both of these processes also incorporated the hazard mitigation plan in a similar fashion as outlined below. The NCWRPC, facilitator of the countywide hazard mitigation plan and updates, also assisted with the county and local comprehensive plan updates and works to integrate both plans as part of its standard planning process.

The following outlines how the mitigation plan is incorporated into each of the nine elements of these county and local comprehensive plans:

- *Issues and Opportunities Element* – a summary of major hazards local government is vulnerable to, and what is proposed to done to mitigate future losses from the hazards.
- *Housing Element* – an inventory of the properties that are in the floodplain boundaries, the location of mobile homes, recommendation on building codes, shelter opportunities, and a survey of homeowners that may be interested in a voluntary buyout and relocation program.
- *Utilities and Community Facilities Element* – identify critical facilities such as shelter, schools, medical, water infrastructure, etc. and make recommendations on how to mitigate specific risks factors
- *Transportation Element* – identify any transportation routes or facilities that are more at risk during flooding, winter storms, or hazardous material spills.
- *Agricultural, Natural Resources, and Cultural Resources Element* – identify the floodplains and agricultural areas that area at risk to hazardous events. Incorporate recommendations on how to mitigate future losses to agricultural areas.
- *Economic Development Element* – describe the impact past hazards have had on County and municipal business.
- *Intergovernmental Cooperation Element* - identify intergovernmental police, fire, and rescue service sharing agreements that are in effect, or which may merit further investigation, consider cost-sharing and resource pooling on government services and facilities.
- *Land Use Element* - describe how flooding have impacted land uses and what is being done to mitigate negative land use impacts from flooding; map and identify hazard areas such as floodplains, hazardous materials areas, and soils with limitations.

- *Implementation Element* – have action plans from this Plan implemented into comprehensive plans.

Continuing Incorporation of Mitigation Plan into Other Local Planning Mechanisms

To ensure that the countywide mitigation plan (previous/current/updates moving forward) will continue to be incorporated into other planning mechanisms, the NCWRPC works with county and local officials and staff to schedule comprehensive plan updates. Currently, the County Comprehensive Plan update is scheduled for 2031-2032 while both Merrill and Tomahawk are scheduled for 2026-2027. All of these updates have been identified for incorporation of the updated countywide All Hazards Mitigation Plan. County and Regional Planning Commission Staff will also work with county and local community planners to incorporate the mitigation plan into other future planning processes as appropriate.

JURISDICTION CAPABILITY ASSESSMENT

Lincoln County, the City of Merrill and the City of Tomahawk are relatively small communities in rural Wisconsin with limited resources and funding. However, they each have some capacity to support mitigation strategies. This section describes the existing authorities, policies, programs, funding and resources that the County and the Cities of Merrill and Tomahawk have available to support hazard mitigation.

Each jurisdiction has professional staff available to implement and manage mitigation programs. Most directly, Lincoln County has an Emergency Management Director whose responsibilities include mitigation. In addition, the County has a County Administrator and a number of departments including Sheriff, Health, Highway and Land Services (GIS Mapping, Conservation, and Zoning & Land Use) with expertise that can assist with mitigation. The Cities of Merrill and Tomahawk each have administrative, police, fire, public works, and zoning/building inspector staff that can assist with mitigation. Mitigation work is often made a part of the annual work plans for many of these departments/individuals.

Another way County and City Staff support mitigation is through involvement in various local planning activities and implementation of projects resulting from those plans. In addition to this countywide All Hazards Mitigation Plan, the County and both Cities maintain comprehensive plans that guide development and facilities based on risk and hazard areas. Other County plans include the County Emergency Response Plan and the Community Health Assessment and Improvement Plan. Merrill and Tomahawk also maintain emergency operations plans, and some departments such as Public Works develop plans to mitigate potential hazards that may affect their water systems.

Lincoln County, the City of Merrill and the City of Tomahawk also have regulatory authority for programs that control development to minimize risk and avoid hazard

areas. These regulatory authorities include the comprehensive planning law, zoning ordinances (including shoreland and floodplain regulations), subdivision and platting ordinances, and building codes.

Funding for mitigation programs comes primarily through taxing authority, annual County and City budgets, and Capital Improvements Programming. However, the County and Cities often rely on federal and state grant programs for any significant expenditures.

Ability to Expand and Improve Mitigation Capabilities

Lincoln County, the City of Merrill and the City of Tomahawk have been facing serious budget constraints for years, exacerbated by state-imposed levy limits. As a result, each of the communities is heavily dependent on grant funding. These conditions limit each jurisdiction's ability to expand or improve on its mitigation capabilities.

Being the smallest, the City of Tomahawk has fewer staff to carry the load, and budget conditions restrict the ability of all three jurisdictions to increase staffing levels for mitigation activities.

PLAN UPDATE MONITORING, EVALUATION AND MAINTENANCE

Planning is an ongoing process. Because of this, this document should grow and adapt in order to keep pace with growth and change of the County and its local jurisdictions. FEMA rules require that local plans be evaluated and updated at least every five years to remain eligible for assistance.

The Plan will be monitored and evaluated on an annual basis as needed by Emergency Management. The Lincoln County Emergency Management Director will evaluate incoming information against the contents of the Plan to determine possible need for revisions; and bring that information to the County Emergency Management Committee to discuss the evaluation and potential revisions to the Plan as needed. The Emergency Management Director is encouraged to consult/coordinate with the NCWRPC in the event of any revision.

Plan monitoring also includes evaluating and revising following disaster events to determine if the recommended actions are appropriate given the impact of the event. The risk assessment (Part III) should also be reviewed to see if any changes are necessary based on the pattern of disaster damage.

Full updates are required every five years. As a result, every fifth year, the review will be expanded to an overall plan update to meet FEMA requirements. All stakeholders and the public will again be involved in the update process. The County will conduct a survey and open comment meeting. This also provides an opportunity to inform on the progress of any projects.

The Lincoln County Emergency Management Committee and County Board must approve all changes and updates to the Plan.

Appendix A – Outreach and Meeting Information

Lincoln County All Hazards Mitigation Plan Update

Public Informational Meeting SIGN-IN

August 31, 2023 - 5:30 PM

	Name	Area of Residence	Email
1	Teresa Lepkowski	Town of Wilson	clerk@wilson-lincoln-wi.gov
2	Jane Kaczmarek	Town of Wilson	
3	Paul Stembach	Town of Wilson	Supervisor@wilson-lincoln-wi.gov
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Order Confirmation

Customer Details

Customer Name	North Central WI Regional Planning Commission
Company Name	North Central WI Regional Planning Commission
Address	210 McClellan St. STE 210 Wausau, Wisconsin 54403 United States of America
Phone	7158495510
Email	djohnson@ncwrpc.org

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LINCOLN COUNTY ALL HAZARDS MITIGATION PLAN PUBLIC INFORMATIONAL MEETING: Notice is hereby given by the Lincoln County Emergency Management Department that there will be a public informational meeting at the Lincoln County Service Center - Room 257 (County Board Room), 801 N Sales St., Merrill, WI on Thursday, August 31, 2023 at 5:30 p.m. to discuss the County's Draft All Hazards Mitigation Plan.

The meeting will be an open house format and will provide information about natural hazards that can affect the County and the strategies being developed to mitigate against future losses and reduce public expenditure for response and recovery. A copy of the draft plan material can be reviewed on the web at <https://www.ncwrpc.org/lincoln/lincolnhzdplan/>

All interested parties are encouraged to attend. For more information please contact the Lincoln County Emergency Management Director, Tyler Verhasselt at tyler.verhasselt@co.lincoln.wi.us

Online Ad Description

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Order Confirmation

Customer Details

Customer Name	North Central WI Regional Planning Commission
Company Name	North Central WI Regional Planning Commission
Address	210 McClellan St. STE 210 Wausau, Wisconsin 54403 United States of America
Phone	7158495510
Email	djohnson@ncwrpc.org

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NORTH CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

210 McClellan Street, Suite 210, Wausau, Wisconsin 54403
Telephone: (715) 849-5510 Fax: (715) 849-5110
Web Page: www.ncwrpc.org Email: staff@ncwrpc.org



SERVING ADAMS, FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, ONEIDA, PORTAGE, VILAS AND WOOD COUNTIES

MEMORANDUM

TO: Clerks, Lincoln County
FROM: Darryl L. Landeau, AICP: Senior Planner *DL*
DATE: July 31, 2023
RE: Lincoln Co. All-Hazards Mitigation Plan Public Meeting Notice

Lincoln County Emergency Management and the NCWRPC will be hosting an open house / public informational meeting on strategies to mitigate the effects of future natural disasters in Lincoln County. This meeting will take place in an open house format beginning at 5:30 pm on Thursday, August 31 in the Lincoln County Service Center, Room 257 (County Board Room), 801 N Sales Street, Merrill.

I am requesting that you please post the attached notice at one of your primary meeting posting locations where the public may view it.

With this help, I am hoping to encourage public attendance to gain more input. Public comments will become part of the County's All Hazards Mitigation Plan update currently being developed. Counties are required to make such plans as a result of the federal Disaster Mitigation Act. This Act put a national priority on hazard mitigation by requiring mitigation plans in order to be eligible for disaster mitigation grant programs from FEMA. Lincoln County is developing a multi-jurisdictional plan to establish eligibility for both the county and each municipality in the same way the county-wide outdoor recreation plan works with DNR grants. This in no way obligates or commits any local jurisdiction.

If you have any questions, please feel free to contact me at 715-849-5510 extension 308 or email to dlandeau@ncwrpc.org.

Thank you.

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SERVING ADAMS, FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, ONEIDA, PORTAGE, VILAS AND WOOD COUNTIES

PUBLIC MEETING NOTICE

COUNTY WIDE PLANS FOR NATURAL DISASTERS AND HAZARD MITIGATION

Lincoln County has received a grant through the Federal Emergency Management Agency (FEMA) to complete an update of its All-Hazards Mitigation Plan to protect the health and safety of residents from the impacts of natural hazards and to minimize and prevent damages caused by these events. The North Central Wisconsin Regional Planning Commission (NCWRPC) is assisting Lincoln County with this plan.

As part of this planning process, an opportunity is being provided to solicit public comment. A public informational / open house meeting is scheduled for the following date and place:

When: Thursday, August 31, 2023 at 5:30 p.m.
**Where: Lincoln County Service Center, Rm 257 (County Board Rm)
801 N Sales Street, City of Merrill**

Information on the plan can be viewed at <https://www.ncwrpc.org/lincoln/lincolnhzdplan/>

In addition to meeting FEMA requirements, this meeting will be a way to gather ideas on how to safeguard the residents and visitors of Lincoln County and protect property in the event of natural disasters. Public input in this process is very valuable.

For questions regarding this meeting or to provide comment if you cannot attend, please contact me at 715-849-5510 ext. 308, or by email at dlandeau@ncwrpc.org . Or, contact Tyler Verhasselt, the County's Emergency Management Director at 715-536-6228 or tyler.verhasselt@co.lincoln.wi.us .

Thank you.

Lincoln County All Hazards Mitigation Plan Update

Agency and Interest Group Meeting SIGN-IN

August 31, 2023 - 3 PM

	Name	Department/Organization	Email
1	Kevin McFadden	Aspirus Health - Merrill	Kevin.McFadden@aspirus.org
2	Michael Dassler	Aspirus Tomahawk	michael.dassler@aspirus.org
3	Tom Boisvert	Land Services	thomas.boisvert@co.lincoln.wi.us
4	MIKE HUTT	LAND SERVICES	MHUTT@CO.LINCOLN.WI.US.
5	Travis Spoehr	Inf. Technology	travis.spoehr@co.lincoln.wi.us
6	Shelley Hersil	Lincoln County Health Dept	Shelley.hersil@co.lincoln.wi.us
7	Kristin Bath	Lincoln County Health Dept	kristin.bath@co.lincoln.wi.us
8	Michael Mondli	Lincoln County Health Dept.	michael.mondli@co.lincoln.wi.us
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SERVING ADAMS, FOREST, JUNEAU, LANGLADE, LINCOLN, MARATHON, ONEIDA, PORTAGE, VILAS AND WOOD COUNTIES

MEMORANDUM

TO: Government agencies, County department staff, and other private or non-profit organizations within Lincoln County
FROM: Darryl L. Landeau, AICP: Senior Planner *DLL*
DATE: July 31, 2023
RE: Lincoln Co. All-Hazards Mitigation Plan Update Interest Group Meeting Notice

Lincoln County has received a grant through the Federal Emergency Management Agency (FEMA) to complete an update of its All-Hazards Mitigation Plan to protect the health and safety of residents from the impacts of natural hazards and to minimize and prevent damages caused by these events. The North Central Wisconsin Regional Planning Commission (NCWRPC) is assisting Lincoln County with this plan.

As a requirement of the planning process, an opportunity must be provided to local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as business, academia and private and non-profit interests to be involved. To meet this requirement, a stakeholder / interest group meeting is scheduled for the following date and place:

When: Thursday, August 31, 2023 at 3:00 p.m.
Where: Lincoln County Service Center – Room 257 (County Board Room)
801 N Sales Street, City of Merrill

In addition to meeting FEMA requirements, this meeting will be a way to gather ideas on how to safeguard the residents and visitors of Lincoln County and protect property in the event of natural disasters. Since you live and/or do business in or around Lincoln County, your input in this process is very valuable.

Please call or email me if you have any questions regarding this meeting. My number is 715-849-5510 ext. 308, and my email is dlandeau@ncwrpc.org . Or, contact Tyler Verhasselt, the County's Emergency Management Director at 715-536-6228 or tyler.verhasselt@co.lincoln.wi.us I highly encourage at least one staff person from your department or agency with responsibilities relating to or potentially impacted by natural hazards / disaster to attend.

Thank you.

Tyler Verhasselt, Director
Lincoln County Emergency Mgmt
801 N. Sales St., Ste 202
Merrill, WI 54452

Mike Huth
Lincoln Co. Zoning Administrator
801 N Sales St, Ste 103
Merrill, WI 54452

Jessi Rumsey, Director
Lincoln County Social Services
607 N Sales St, Ste 202
Merrill, WI 54452

Don Friske
Lincoln County Board Chair
801 N. Sales St., Suite 201
Merrill, WI 54452

Tom Boisvert
Lincoln Co Conservation
801 N. Sales St, Ste 103
Merrill, WI 54452

Wendell Quesinberry, Admin.
Tomahawk School District
1048 East King Rd
Tomahawk, WI 54487

WI Valley Improvement Company
2301 N Third St
Wausau, WI 54403

Emergency Services Dept
Aspirus Merrill Hospital
601 South Center Avenue
Merrill, WI 54452

Council Grounds State Park
N1895 Council grounds Dr.
Merrill, WI 54452

Merrill Housing Authority
Lynn Ross, Exec. Director
701 East 1st St
Merrill, WI 54452

ARDC Office Staff
ADRC-CW Merrill Office
607 N Sales St, Ste 206
Merrill, WI 54452

Ken Schneider
Lincoln Co. Sheriff
1104 E First St
Merrill, WI 54452

Rich McCullough, Manager
Merrill Airport
N2241 Airport Rd
Merrill, WI 54452

Dean Bowe
Lincoln Co Forestry Administrator
801 N Sales St, Ste 106
Merrill, WI 54452

Renee Krueger, Admin. Coordinator
Lincoln County
801 N Sales St, Ste 205
Merrill, WI 54452

Ryan Hanson, Administrator
Pine Crest Nursing Home
2100 E Sixth St
Merrill, WI 54452

Wisconsin DNR
101 Eagle Drive
Merrill, WI 54452

Emergency Services Dept
Aspirus Tomahawk Hospital
401 West Mohawk Drive
Tomahawk, WI 54487

Nursing Home Director
Riverview Health Services
428 N 6th St
Tomahawk, WI 54487

Clyde Nelson, Exec. Director
Merrill Area Chamber of Commerce
705 North Center Ave
Merrill, WI 54452

Bill Bialecki, Director
Lincoln Co. Economic Dev Corp
801 N Sales St, Ste 200
Merrill, WI 54452

Shelly Hersil, Director
Lincoln Co. Health Dept
607 N Sales St, Ste 101
Merrill, WI 54452

Art Lersch
Lincoln Co. UW Extension
801 N Sales St, Ste 101
Merrill, WI 54452

John Hanz, Commissioner
Lincoln County Highway Dept
100 Cooper St
Merrill, WI 54452

Shannon Murray, Superintendent
Merrill Area Public Schools
1111 N Sales St
Merrill, WI 54452

Kelly Zagrzebski, Community Affairs
Wisconsin Public Service
1700 Sherman St.
Wausau, WI 54401

Matthew Stubbs
TransCanada Pipeline
W3925 Pipeline Ln
Eden, WI 53019

Lisa Freeman, Director
GSNWGL - Camp Birch Trails
4693 N Lynndale Dr
Appleton, WI 54913

Nursing Home Director
Tomahawk Health Services
720 E King Rd
Tomahawk, WI 54487

Sherry Hulett, Exec. Director
Tomahawk Chamber of Commerce
PO Box 412
Tomahawk, WI 54487

Woodland Court Elder Services
1102 S Center Ave
Merrill, WI 54452

Bell Tower Residence
1500 O'Day Street
Merrill, WI. 54452

Milestone Senior Living
314 E Lincoln Ave
Tomahawk, WI 54487

Artisan Assisted Living & Memory Care
1207 W Taylor Street
Merrill, WI 54452

Lincoln Hills/CopperLake Juvenile Facility
W4380 Copper Lake Ave.
Irma, WI. 54442

Travis Spoehr, Director
Lincoln Co. Information Tech.
801 N Sales St, Ste 206
Merrill WI 54452

Lincoln County All Hazards Mitigation Plan Update

City of Tomahawk Planning Meeting SIGN-IN

August 23, 2023 - 10:00 AM

	Name	Department/Agency	Position Title
1	TYLER VERHASSELT	LINCOLN CO. EM	DIRECTOR
2	Steven Taskay	City of Tomahawk	Mayor of Tomahawk
3	Nick Rosenmeier	City of Tomahawk	Street Dept. Leadperson
4	Paul Winter	City of Tomahawk	Fire Chief
5	Al Elvins	City of Tomahawk	Police Chief
6	Amanda L. Bartz	City of Tomahawk	Fire Chief
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Lincoln County All Hazards Mitigation Plan Update

City of Merrill Planning Meeting SIGN-IN

August 14, 2023 - 10:00 AM

	Name	Department/Agency	Position Title
1	Steve Hays	City of Merrill	Mayor
2	Dustin Bonack	Merrill Street Dept	Street Superintendent
3	Gabe Steinagel	Merrill Utility	Utility Manager
4	TYLER VERHASSELT	LINCOLN CO. EM DIR.	DIRECTOR OF EM
5	Coney Bennett	Merrill Police Chief	Police Chief
6	Josh Klug	Merrill FD	Fire Chief
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Lincoln County All Hazards Mitigation Plan Update

Oversight Committee Meeting SIGN-IN

August 16, 2022 - 2:00 PM

	Name	Title/Department	Email
1	Don Fiske	County Board Chair	
2	Sebastian Murphy	EM Director	_____
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Lincoln County All Hazards Mitigation Plan Update

Oversight Committee Meeting SIGN-IN

June 21, 2022 - 2:00 PM

	Name	Title/Department	Email
1	Cate Wylie	Administrator Board	cate.wylie@co.lincoln.wi.us
2	September Murphy	EM Director	September.Murphy@co.lincoln.wi.us
3	Don Friske (Virtual)	Co. Board Chair	Don.Friske@co.lincoln.wi.us
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5	Missing:		
6	Mike Loka	Oversight Committee Chair	
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Appendix B – Resolutions of Plan Adoption

RESOLUTION # _____

ADOPTING THE LINCOLN COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

WHEREAS, Lincoln County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save tax payer dollars; and

WHEREAS, an adopted All Hazards Mitigation Plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, Lincoln County adopted its last All Hazards Mitigation Plan Update on December 19, 2017; and

WHEREAS, an update of the All Hazards Mitigation Plan is required every five years; and

WHEREAS, Lincoln County participated jointly in the planning process with the other local units of government within the County to prepare an update to the existing multi-jurisdictional All Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Lincoln County Board of Supervisors, hereby adopts the Lincoln County All Hazards Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED, that the Lincoln County Emergency Management Department will submit, on behalf of the County and other participating municipalities, the adopted All Hazards Mitigation Plan Update for filing with Wisconsin Emergency Management and Federal Emergency Management Agency officials.

PASSED: _____.

Certifying Official

RESOLUTION # _____

ADOPTING THE LINCOLN COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

WHEREAS, the City of Merrill recognizes the threat that natural hazards pose to people and property; and

WHEREAS, under taking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save tax payer dollars; and

WHEREAS, an adopted All Hazards Mitigation Plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, the City of Merrill adopted the initial All Hazards Mitigation Plan on March 13, 2018; and

WHEREAS, an update of the All Hazards Mitigation Plan is required every five years; and

WHEREAS, City of Merrill participated jointly in the planning process with Lincoln County and the other local units of government within the County to prepare an update to the existing multi-jurisdictional All Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Merrill, hereby adopts the Lincoln County All Hazards Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED, that the Lincoln County Emergency Management Department will submit, on behalf of the City, a signed copy of this resolution adopting the All Hazards Mitigation Plan Update for filing with Wisconsin Emergency Management and Federal Emergency Management Agency officials..

PASSED:_____.

Certifying Official

RESOLUTION # _____

ADOPTING THE LINCOLN COUNTY ALL HAZARDS MITIGATION PLAN UPDATE

WHEREAS, the City of Tomahawk recognizes the threat that natural hazards pose to people and property; and

WHEREAS, under taking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save tax payer dollars; and

WHEREAS, an adopted All Hazards Mitigation Plan is required as a condition of future grant funding for mitigation projects; and

WHEREAS, an update of the All Hazards Mitigation Plan is required every five years; and

WHEREAS, the City of Tomahawk participated jointly in the planning process with Lincoln County and the other local units of government within the County to prepare an update to the existing multi-jurisdictional All Hazards Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City Council of the City of Tomahawk, hereby adopts the Lincoln County All Hazards Mitigation Plan Update as an official plan; and

BE IT FURTHER RESOLVED, that the Lincoln County Emergency Management Department will submit, on behalf of the City, a signed copy of this resolution adopting the All Hazards Mitigation Plan Update for filing with Wisconsin Emergency Management and Federal Emergency Management Agency officials..

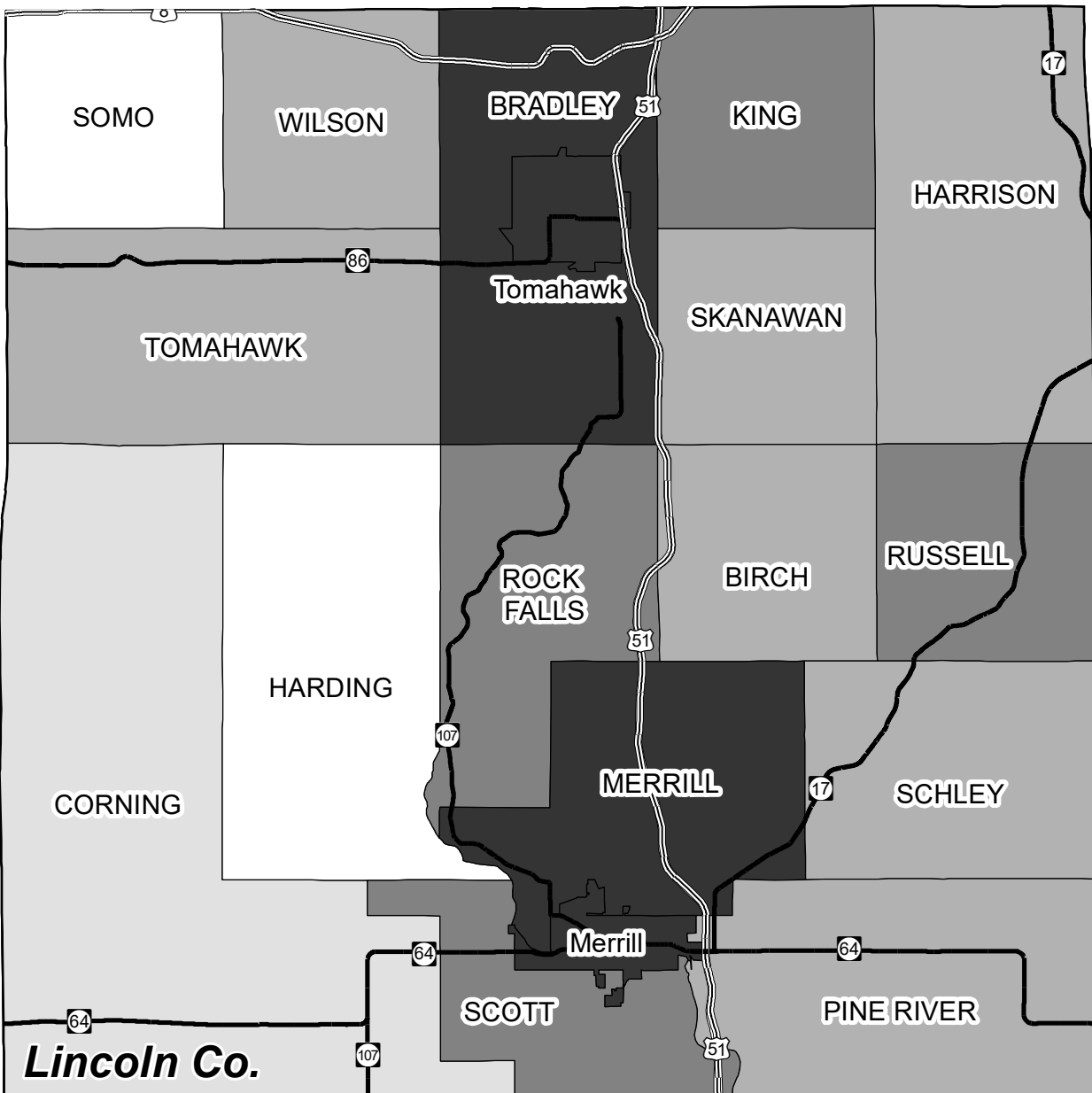
PASSED:_____.

Certifying Official

Appendix C – Underserved/Vulnerable Populations

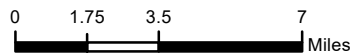
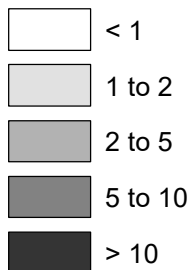
Population Density of Persons over 65 / By MCD

Lincoln County



Legend

POP65 / Sq. Mi



Source: WI DNR, NCWRPC, US Census ACS 2017-21

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.



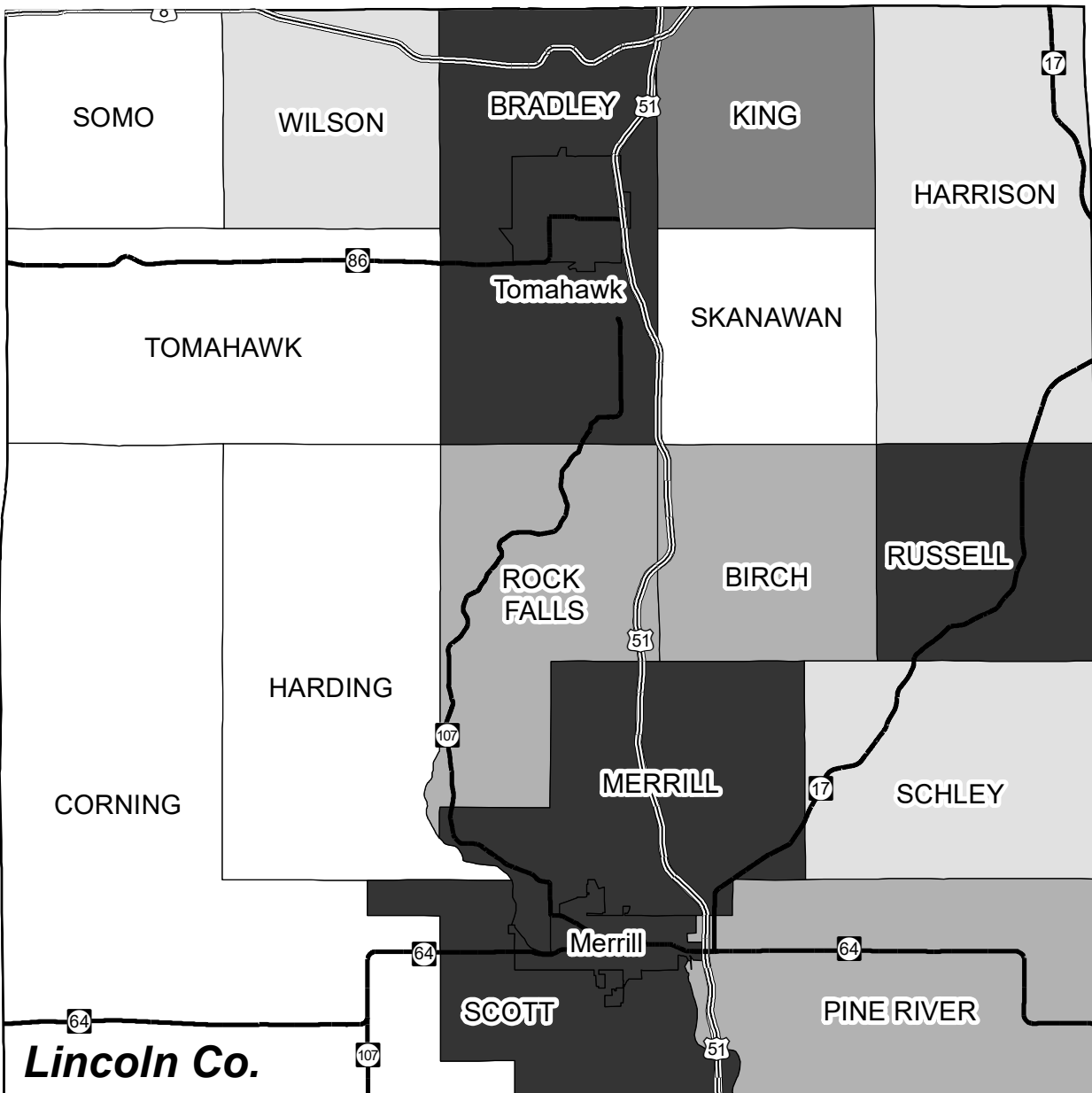
Prepared By:

**North Central
Wisconsin Regional
Planning Commission**

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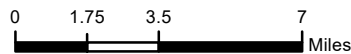
Population Density of Persons with Disabilities / By MCD

Lincoln County



Legend

DISABLED / Per Sq. Mi



Source: WI DNR, NCWRPC, US Census ACS 2017-21

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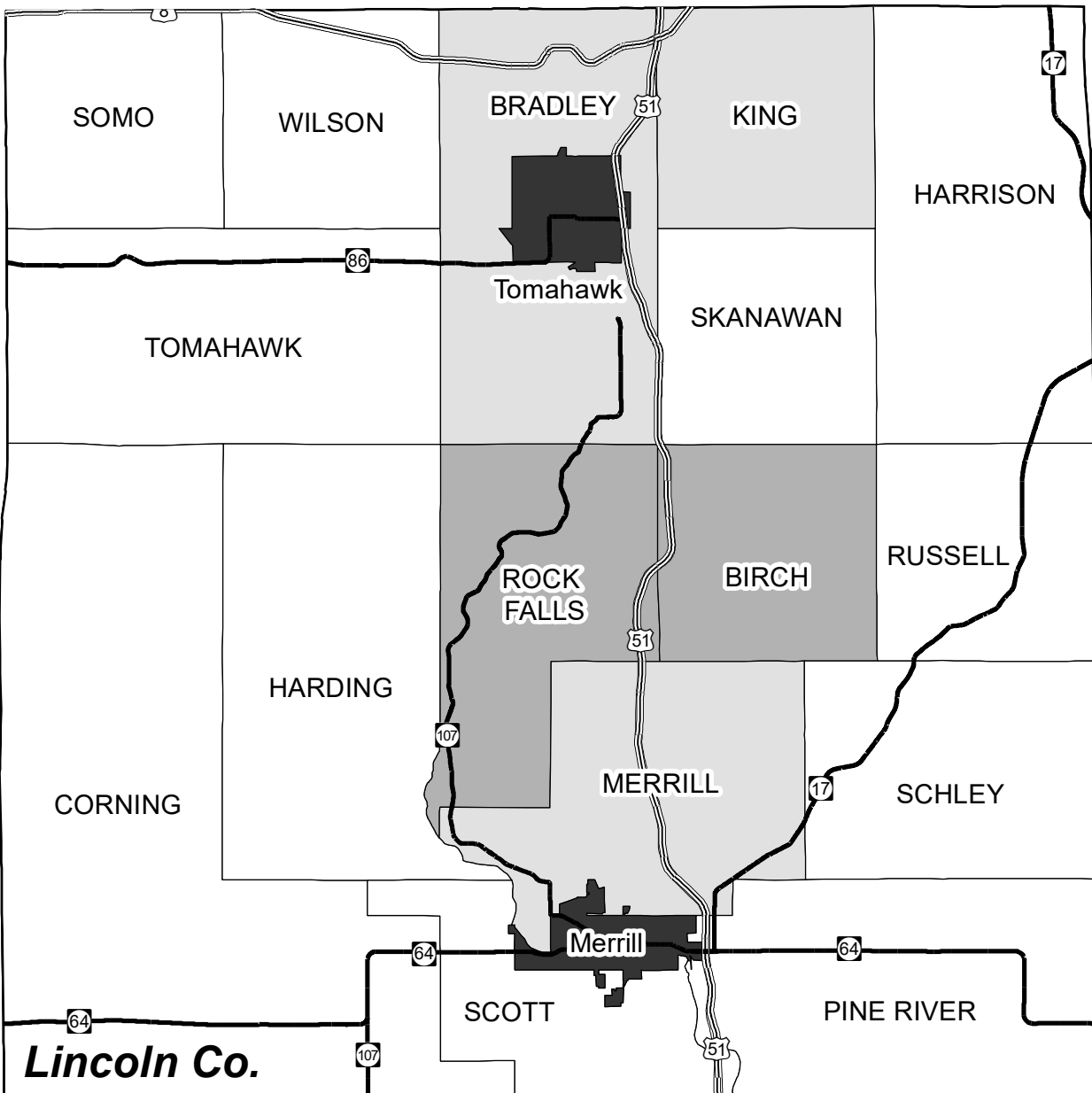
Prepared By:

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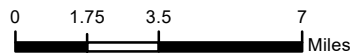
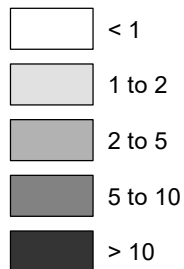
Population Density of Persons of Minority Status / By MCD

Lincoln County



Legend

MINORITIES / SqMi



Source: WI DNR, NCWRPC, US Census ACS 2017-21

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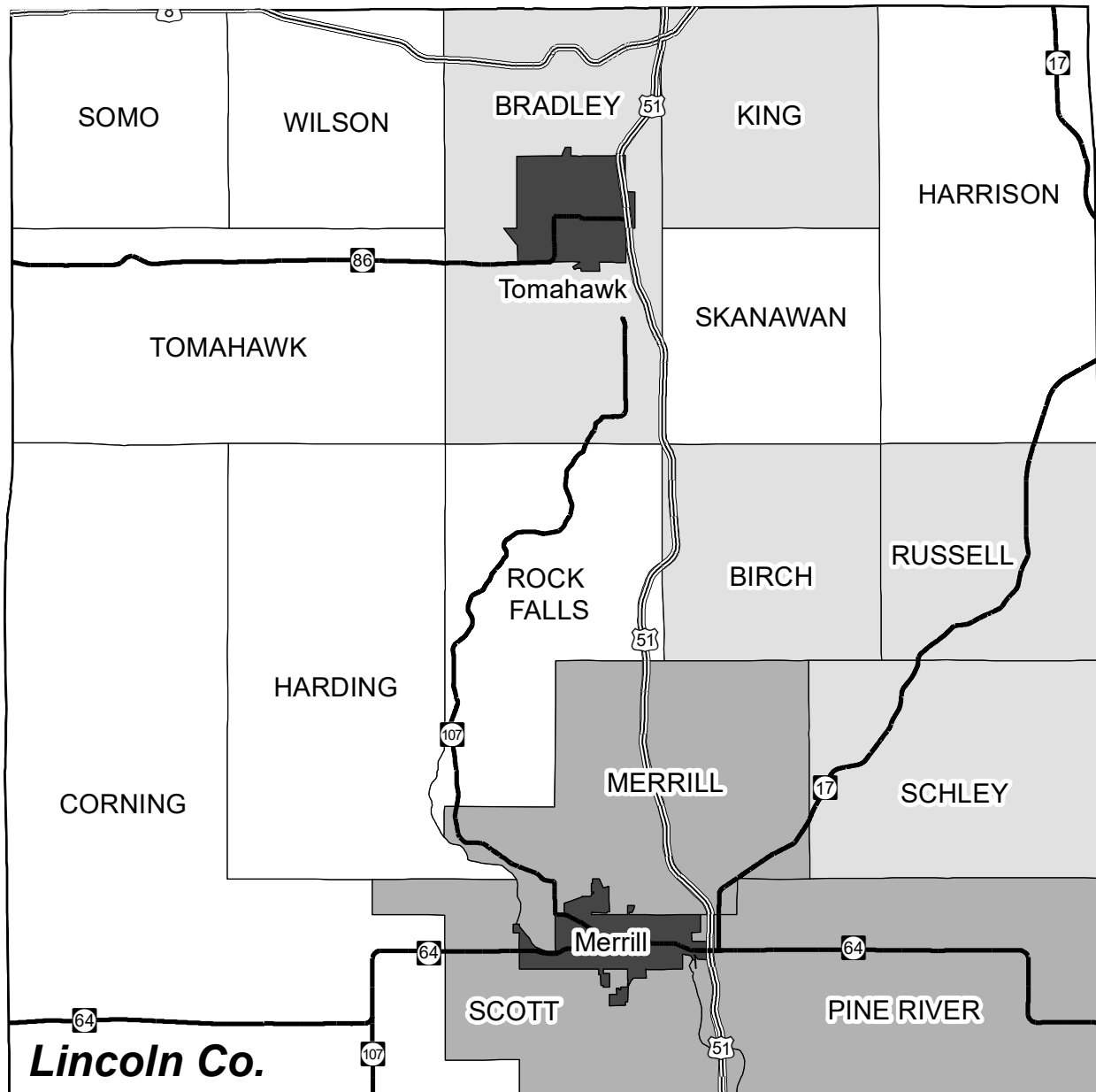
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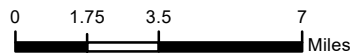
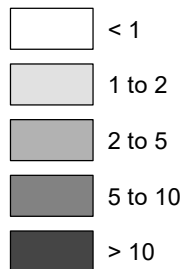
Population Density of Persons Living Below Poverty Level / By MCD

Lincoln County



Legend

POVERTY / SqMi



Source: WI DNR, NCWRPC, US Census ACS 2017-21

This map is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only. NCWRPC is not responsible for any inaccuracies herein contained.



Prepared By:

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