Eau Claire County
Multi-Hazard Mitigation Plan
2025-2030







Draft – 8/19/25

Eau Claire COUNTY

Eau Claire County Emergency Management
Preparedness
Response
Recovery
Mitigation

WCWRPC
WEST CENTRAL WISCONSIN
REGIONAL PLANNING COMMISSION

EAU CLAIRE COUNTY
MULTI-HAZARD MITIGATION PLAN
2025-2030

PREPARED BY:

Eau Claire County Multi-Hazard Mitigation Plan Steering Committee
Eau Claire County Emergency Management
Eau Claire County communities

WITH ASSISTANCE BY:

West Central Wisconsin Regional Planning Commission

ADOPTED MONTH XX, 2025
BY THE EAU CLAIRE COUNTY BOARD OF SUPERVISORS

<INSERT FEMA acceptance letter(s) here once approved>

TABLE OF CONTENTS

SECTION I. INTRODUCTION 1
- A. Purpose of the Plan 1
- B. Planning Process 1
- C. Plan Participants 4
- D. Stakeholder and Public Involvement 5
- E. Incorporation of Related Plans, Studies, Reports, and Technical Data 6

SECTION II. COMMUNITY PROFILE – EAU CLAIRE COUNTY 9
- A. Geographic Location 9
- B. Natural Features and Environment 10
  - i. Watersheds 10
  - ii. Surface Waters, Floodplains, and Wetlands 10
  - iii. General Climate 13
  - iv. General Land Cover 13
- C. Demographic and Economic Profile 15
  - i. Population & Housing 15
  - ii. Economic Overview 20
  - iii. Agricultural Overview 24
  - iv. Development Trends 27
  - v. Underserved Communities & Socially Vulnerable Populations 28
- D. Community Lifelines 33
- E. Transportation Systems 38
- F. Historical Resources 40

SECTION III. ASSESSMENT OF HAZARD CONDITIONS 43
- A. Hazard Identification 43
  - i. Disaster & Emergency Declarations 43
  - ii. Eau Claire County Hazard Overall Risk Assessment & Priorities 45
  - iii. Natural Hazards of No Significant Risk 48
- B. Hazards of Concern Addressed in Other Plans 51
  - i. Communicable Disease 51
  - ii. Invasive Species 61
  - iii. Nuclear Power Plant Accident 62
- C. Changing Weather Patterns and Natural Hazard Risk 64
- D. Risk Assessment 72
  - i. Flooding 73
  - ii. Winter Storms and Extreme Cold 101
  - iii. Tornadoes and High Winds 113
  - iv. Thunderstorms, Lightning, and Hail 127
  - v. Wildfire 137
  - vi. Extreme Heat 159
  - vii. Drought 168
  - viii. Long-Term Power Loss 178
  - ix. Active Threats 189
  - x. Cyberattack 202
  - xi. Hazardous Materials Spills 218

SECTION IV. CAPABILITY ASSESSMENT 238

SECTION V. PROGRESS ON 2019 MITIGATION PLAN STRATEGIES 255

SECTION VI. MITIGATION GOALS AND STRATEGIES 258
A. MITIGATION GOALS 258
B. EVALUATING MITIGATION ALTERNATIVES 258
C. RECOMMENDED MITIGATION ACTIONS 260
D. RECOMMENDED PREPAREDNESS ACTIONS 274
E. CITY, VILLAGE, AND EDUCATIONAL INSTITUTION SUB-PLANS 279
F. PLAN IMPLEMENTATION 280
G. PLAN COORDINATION AND INTEGRATION 281

SECTION VII. PLAN ADOPTION AND MAINTENANCE PROCESS 283
A. PLAN ADOPTION 283
B. PLAN MAINTENANCE AND CONTINUED PUBLIC PARTICIPATION 283
i. Plan Monitoring & Evaluation 283
ii. Special Plan Review 284
iii. Plan Updates 284
iv. Evaluating Plan Effectiveness 284

LIST OF APPENDICES

Highlighted appendices are not complete. Appendices will be numbered in final version once adopting resolutions inserted in Appendix A.

APPENDIX A. Adopting Resolutions and Letter of Support .....
APPENDIX B. Stakeholder Interviews and Meetings .....
APPENDIX C. Public Informational Press Release .....
APPENDIX D. Distribution of Community Lifelines .....
APPENDIX E. Natural Hazard Event History .....
APPENDIX F. Hazard Vulnerability Assessment .....
APPENDIX G. Flood Assessment Methodology .....
APPENDIX H. Eau Claire County Dam Inventory .....
APPENDIX I. Potential State and Federal Grant Programs for Mitigations Projects .....
APPENDIX J. Summary of Plan Changes since the 2019 Plan .....
APPENDIX K1. City of Eau Claire Sub-Plan .....
APPENDIX K2. Other City & Village Hazard Mitigation Sub-Plans .....
APPENDIX L. Participating School & College Hazard Mitigation Sub-Plans .....

SECTION I. INTRODUCTION

A. PURPOSE OF THE PLAN

The *Eau Claire County Multi-Hazard Mitigation Plan* has been prepared with financial support due to the County's application for, and award of, Building Resilient Infrastructure & Communities (BRIC) mitigation planning funds (Project #EMC-2022-BR-008-0021). These funds are disbursed by the Federal Emergency Management Agency (FEMA) through Wisconsin Emergency Management (WEM).

Mitigation is a long-term action that minimizes or prevents losses or damage due to a significant risk. The primary purpose of this plan is to evaluate the County's risks, vulnerabilities, and capabilities related to natural disasters and identify appropriate mitigation strategies. After evaluating the disaster threats facing Eau Claire County, the Steering Committee for this plan update determined that the plan update should continue to include some select non-natural hazards. This plan also includes some discussion of preparedness capabilities and recommendations.

> The Code of Federal Regulations states...
>
> "The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards."
>
> (44 CFR Part 201.6, pp 8851)

Completion and approval of this plan will continue to make Eau Claire County and participating jurisdictions eligible to apply for future FEMA hazard mitigation project funds for a five-year period until the next full hazard mitigation plan update.

The Eau Claire County Emergency Management Coordinator is the primary contact regarding this mitigation plan.

B. PLANNING PROCESS

Eau Claire County contracted with West Central Wisconsin Regional Planning Commission (WCWRPC) to facilitate this update to the County's hazards mitigation plan previously approved by FEMA in July 2019 and adopted by the County Board in February 2019. This previous plan will be referred to as the **2019 Plan** in this update, while the update will be referred to as the **2025 Plan**.

Update of the *Eau Claire County Multi-Hazard Mitigation Plan* (the "2025 Plan") meets the planning requirements and guidance provided by the Federal Emergency Management Agency (FEMA)[1] and the Wisconsin Department of Military Affairs, Wisconsin Emergency Management.[2] As such, the 2025 Plan meets the requirements of the Disaster Mitigation Act of 2000. The 2025 Plan's scope is inclusive

[1] Federal Emergency Management Agency, Local Mitigation Planning Policy Guide. FP 206-21-0002, April 19, 2022.

[2] Wisconsin Emergency Management, Resource Guide to All Hazards Mitigation Planning in Wisconsin. April 2003. and WEM Local Mitigation Planning Handbook. February 7, 2023.

of all of Eau Claire County and is considered a multi-jurisdictional plan under Federal guidelines. This plan encompasses all of the City of Eau Claire, which includes a smaller portion of the City within Chippewa County to the north. For this plan update, public educational institutions with facilities within Eau Claire County were also invited to be full participants, which is discussed in Section I.C.

To guide the plan's update, Eau Claire County created an ad hoc Mitigation Plan Steering Committee representing a broad range of public, private, and non-profit stakeholder organizations shown **in Table 1**. In addition to bringing insight into their respective roles, the Committee members also are very knowledgeable of the issues and concerns of the County's residents, vulnerable populations, community lifelines, industry, and response agencies. The Committee provided input on the planning process, reviewed information and materials, discussed capabilities and related plans, set plan goals, and prioritized hazard risks and mitigation strategies.

Table 1. Eau Claire County Hazard Mitigation Plan Steering Committee

Name	Representative of:
Tyler Esh	County Emergency Management Manager
Valerie Desio	County Emergency Management Specialist
Jasmine Dutton	City of Eau Claire Risk Management
Bob Haller	City of Eau Claire Fire Department
Marisa Stanley	Eau Claire City-County Health Department Assistant Director
Joe Kalscheur	Eau Claire City-County Health Department Emergency Preparedness
Rod Eslinger	County Planning & Development Director
Peter Strand	County Planning & Development G.I.S. Program
Ben Bublitz	County Planning & Development Land Use Manager
Matt Michaels	County Planning & Development Sr. Planner
Regan Watts	County Recycling & Sustainability Coordinator
Olive Ellinger	County Recycling LTE
Josh Peterson	County Parks & Forest Director
Jon Johnson	County Highway Department
Kerry Parker	Township Fire Department Chief
Jed Kaurich	WDNR-Division of Forestry, Augusta Forest Ranger

Update of the plan began, in earnest, in early 2024 following the general stages of plan development shown in **Figure 1** at the end of this section. Primary local engagement activities during the planning process are discussed in Section I.C. and I.D. A summary of plan changes since the 2019 Plan is provided in **Appendix J**, and includes a brief synopsis of how the Steering Committee reviewed and analyzed each section of the plan.

With consideration of National Weather Service historical data, recent hazard events, and the scope of the 2019 Plan, the Steering Committee agreed that the 2025 Plan should continue to focus on the same hazard threats, except:

- The risk assessment for wind storms was combined with tornados due to the very similar vulnerabilities and the frequent inability to distinguish between the two event types at the local level (e.g., local debate on whether a passing storm was a tornado vs. straight-line wind).

In addition to the Steering Committee meetings, community input during the planning process was gathered through meetings, interviews, surveys, and the review of other pertinent plans as will be discussed later in this section. In July 2025, the draft plan was released for public review. Copies of adopting resolutions/letters for all plan participants are included in **Appendix A**.

C. PLAN PARTICIPANTS

The *Eau Claire County Multi-Hazard Mitigation Plan* is a multi-jurisdictional plan and encompasses all incorporated and unincorporated jurisdictions within Eau Claire County, including the entirety of the City of Eau Claire. All municipalities in Eau Claire County with 100-year floodplains identified on Flood Insurance Rate Maps (FIRMs) are participants in good standing in the National Flood Insurance Program (NFIP), with the exception of the Village of Fairchild, which is discussed further in the flood assessment section.

Full plan participants are the following local entities that actively participated in the plan update and have adopted or approved the 2025 Plan:

County Government
Eau Claire County
Cities & Villages (incorporated municipalities)
Village of Fairchild
Village of Fall Creek
City of Altoona
City of Augusta
City of Eau Claire (including part in Chippewa Co.)
Public Educational Institutions
School District of Altoona
Fall Creek School District
University of Wisconsin-Eau Claire

For the 2025 Plan update, all public educational institutions serving Eau Claire County were invited to be full participants for the first time, though only three fully participated. Eau Claire Energy Cooperative is the primary non-profit electric cooperative serving the County and also actively participated, though other electric cooperatives do provide some service within the County.

All participating jurisdictions in Eau Claire County were actively involved in the planning process through the following means:

- The Steering Committee included representation from different areas in the County and some of the jurisdictions previously discussed. The Committee, supplemented by the stakeholder interviews/meetings listed in **Appendix B**, was largely responsible for providing the county-level input into the 2025 Plan update.
- An introductory letter and plan update brochure was sent to each city and village to set-up an interview date. WCWRPC, often accompanied by the County Emergency Manager, then conducted an interview meeting with each participating village and city on the planning effort,

and input was obtained on changes since the 2019 Plan, including hazard issues/trends, vulnerable populations, community lifelines, progress on 2019 strategies, barriers to implementation, updated plan recommendations, and community engagement. Each city and village were then requested to complete a web-based capabilities assessment survey. This individualized approach allows for unique hazard-related issues or strategies for each community to be identified, while recognizing that each local municipality has the authority to regulate and plan for the development of their community.

- An introductory mailing with a project brochure was sent to each public educational institution. This was followed by a web-based mitigation planning presentation in September 2024 by WCWRPC for interested schools, including an overview of related mitigation grants and potential grant projects. The educational institutions were then invited to complete a web-based mitigation planning survey that assesses risk and capabilities, then identifies mitigation strategies.
- WCWRPC used the city, village, and educational institution input to create draft "sub-plans" for each participant, which are included in Appendices K & L. The draft sub-plans were then distributed to each community for review and input. As discussed in Appendix J, these sub-plans are a new approach to the 2025 Plan update.

Adopting resolutions or approving letters for all of the above jurisdictions are in **Appendix A**.

D. STAKEHOLDER & PUBLIC INVOLVEMENT

The planning process included the following activities to encourage community input and stakeholder involvement:

- **Steering Committee Meetings.** The Steering Committee meetings were open to the public. Agendas and sign-in sheets for the Steering Committee meetings are included in **Appendix B**.
- **Key Stakeholder Interviews.** The key stakeholder interviews obtained input from many local public and private stakeholders who are also community members. A series of key stakeholder interviews, including both public and private sectors, were performed by West Central Wisconsin Regional Planning Commission (WCWRPC) staff to further complement the issue and strategy identification process. This included inviting input from emergency managers from adjacent counties and WEM regional emergency management staff and an April 2024 meeting with the Eau Claire City-County Public Health Emergency Preparedness Committee. In addition, a presentation on the 2025 Plan update was given to the Eau Claire County Fire Chief's Association and a brief survey distributed to encourage additional input. Additional supporting data and information were provided by: Wisconsin Department of Natural Resources (WDNR) forestry staff and the regional Dam Safety Engineer; Eau Claire Energy Cooperative; and various county and municipal departments. The list of these interviews is included in Appendix B.
- **City, Village, & Educational Institution Participation.** The engagement of the other (non-County) plan participants was discussed previously in Section I.C. It should be stressed that these municipal and school/university officials are community representatives who are well informed of local hazard

risks and probabilities, and are well positioned to determine what mitigation actions are most appropriate and feasible for their respective communities and facilities.

- **Unincorporated Town Government Meeting and Input.** On April 29, 2024, a presentation on the planning effort was made to the Eau Claire County Towns Association, which yielded good discussion and questions regarding mitigation grant funding. This was followed by a brief, customized survey to each town to obtain local input on hazard "hotspots," vulnerabilities, and potential mitigation strategies.
- **Underserved Communities & Vulnerable Populations.** As discussed in Section II.C., four communities in Eau Claire County are economically vulnerable rural communities and municipal officials from all four were actively involved during the project through surveys and/or meetings. For the 2025 Plan update, participation and consideration of underserved communities and vulnerable populations were largely obtained through:
    - City & Village meetings and Town surveys, which represent the underserved communities.
    - Stakeholder interviews with agencies that provide services to and plans for the vulnerable populations, such as Eau Claire County Public Health, the Aging & Disability Resource Center, participating school districts, and the American Red Cross.

  Compared to the 2019 Plan, the 2025 Plan update placed greater emphasis on identifying and considering underserved and vulnerable populations throughout the planning process. This is reflected by the multiple mitigation and preparedness strategies targeting seniors, oxygen-dependent individuals, and the homeless population.
- **Review of Local Plans.** Local comprehensive plans, ordinances, and other documents were reviewed, discussed, and considered when available and pertinent, keeping in mind that such planning mechanisms were created with public participation. When appropriate, guidance and clarification from these other documents and plans were integrated into this document.
- **Request for Public and Community Comments**. During previous mitigation planning efforts in Eau Claire County, fewer than ten individuals attended the public informational meetings on the draft plan; the costs of conducting these meetings greatly outweighed the benefits. For this plan update, a public informational press release was issued to newspapers and other media in Eau Claire County announcing the purpose of the plan, the availability of a web-based version of the draft plan for download, and inviting comments. Copies of the press release were also sent to all cities, villages, and towns. Comments on the draft plan were also invited through County social media accounts. A copy of the public informational press release is included in **Appendix C**.
- **Plan Adoption.** Following conditional approval of the plan by Wisconsin Emergency Management, this multi-hazard mitigation plan was adopted via resolution by the Eau Claire County Board and participating communities in duly called and noticed public meetings.

E. INCORPORATION OF RELATED PLANS, STUDIES, REPORTS, AND DATA

This subsection is a companion of Section VI.G., which discusses plan coordination. The 2025 Plan update includes information and incorporates recommendations from a wide variety of sources, not limited to the following primary sources:

- Section II includes statistics from the U.S. Census Bureau, U.S. Department of Agriculture's Agricultural Census, Wisconsin Department of Revenue tax assessment data, Wisconsin Department of Administration population estimates and projections, and economic data from Lightcast (formerly EMSI). The community profile contains a mix of 2020 and more recent American Community Survey (ACS) U.S. Census data. Though slightly outdated, the 2020 data is often used since the margins of error for ACS sampling can be sizable in less populated rural areas. West Central Wisconsin Regional Planning Commission (WCWRPC) also used EMSI Community Analyst and Lightcast subscription data services for some information in this section.
- The 2025 Plan update considered and incorporated a variety of new or updated State and Federal data tools, including but not limited to:
    - FEMA Social Vulnerability Index: https://hazards.fema.gov/nri/social-vulnerability
    - CDC Social Vulnerability Index: https://www.atsdr.cdc.gov/placeandhealth/svi/interactive_map.html
    - University of Wisconsin Area Deprivation Index: https://www.neighborhoodatlas.medicine.wisc.edu/
    - National Economic Resilience Data Explorer: https://www.anl.gov/dis/nerde-economic-development-district-dashboard
    - Wisconsin Initiative on Climate Change Impacts: https://wicci.wisc.edu/
    - NOAA Climate Mapping for Resilience and Adaptation: https://resilience.climate.gov/
    - WI DHS Climate Vulnerability Indices: https://www.dhs.wisconsin.gov/climate/wihvi.htm
    - FEMA National Risk Index: https://hazards.fema.gov/nri/
- Section III relies heavily on NOAA National Climatic Data Center storm event data supplemented by interviews and local newspapers. This section also includes data and maps from the *State of Wisconsin Hazard Mitigation Plan* and the *State of Wisconsin Homeland Security Council THIRA & SPR* produced by Wisconsin Emergency Management.
- Section III includes references to specific studies for various hazard types. For example, the hazardous materials spills subsection included BRRTS data from Wisconsin Department of Natural Resources and references the Multi-County Commodity Flow Study. The cyber-attack and active threats sections rely heavily on FBI and other federal-level data sources. For this plan update, the Wisconsin Department of Natural Resources provided updated wildfire data, most notably a county-level summary report with probability and potential impact data prepared using the NortheastMidwestWildfireRisk.com tool.
- The GIS maps and GIS-based analysis found in Sections II and III were largely produced by WCWRPC with geo-referenced data primarily from County and Wisconsin Department of

Natural Resources. The mapping work as part of the community profile (Section II) and assessment of hazard conditions (Section III) was performed using ESRI-based Geographic Information Systems, allowing greater manipulation and analysis from the use of a consistent base map. Maps included in this plan are for general planning purposes only and do not constitute legal documents or formal surveys. The County-level flood assessment methodology, completed by the Eau Claire County GIS program, is further detailed in Appendix G. City of Eau Claire Engineering staff completed the City-level flood assessment, which is detailed in their sub-plan.

- Appendix B includes the list of meetings and stakeholder interviews completed during the process. These interviews frequently yielded reports and additional data that were incorporated into this Plan. Eau Claire-Burnett Electric Cooperative provided updated outage data; Public Health provided information regarding contagious disease.
- Sections III and IV incorporate or reference municipal & County Emergency Operations Plans, the County Climate Action & Resilience Plan, County Land & Water Conservation Plan, and the County Public Health Emergency Preparedness Plan as well as various annexes, mutual aid agreements, and partnerships. Threat-specific plans are frequently referenced where applicable, such as Dam Flood Emergency Action Plans, Regional Cyber-Attack Response Teams, and ALICE training in schools. Comprehensive plans and local regulatory policies are also referenced (e.g., floodplain zoning, stormwater management, driveway regulations). Section III.D. iv. provides NFIP program participation information. The city and village sub-plans in **Appendix K** provide similar references to community-specific planning mechanisms, including NFIP program and floodplain management status.

Figure 1. Eau Claire County Multi-Hazard Mitigation Planning Process Diagram

Plan Initiation
scope: local decision to proceed, contract w/ WCWRPC
County roles: mandate to proceed, establish Steering Committee
RPC roles: facilitate process and pre-planning
Cmte roles: initial meeting; discuss process, scope, & new plan reqmts

Community Profiling
scope: data-collection phase (inventory, stats, uses, trends)
local roles: assist w/ data collection, including existing plans
RPC roles: data collection, analysis, & compilation
Cmte roles: review and discuss findings; additional direction if needed
other issues: identification of critical facilities; initial contacts

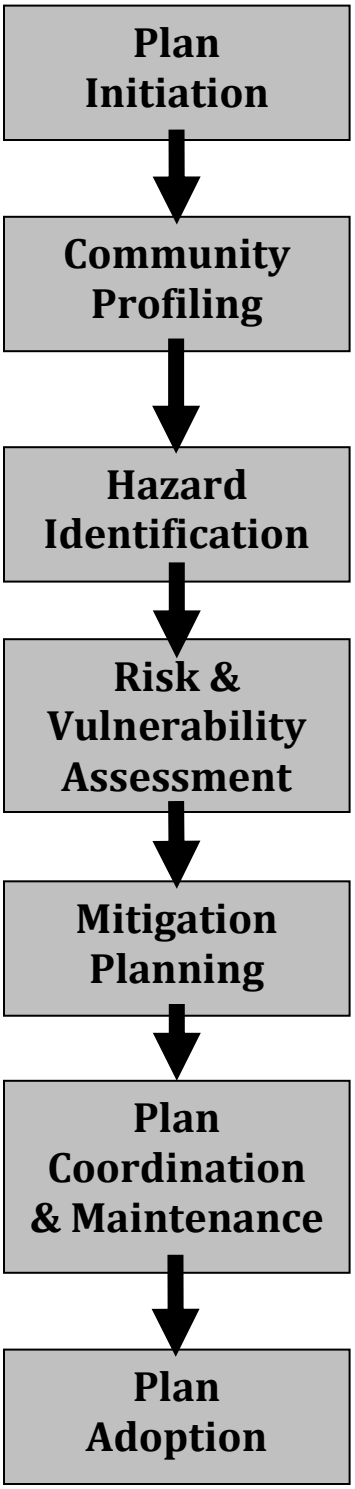
Hazard Identification
scope: update data and re-confirm key hazards
local roles: assist w/ data collection (historical records on events)
RPC roles: data collection (w/ NOAA data) & facilitation
Cmte roles: review and confirm key hazards

Risk & Vulnerability Assessment
scope: identify risks (full history & trends), and vulnerabilities (estimate potential losses to assets)
local roles: identify issues, concerns, and "hotspots; capacity assessment
RPC roles: data collection, analysis, & facilitation; interview/meetings
Cmte roles: review and discuss findings; provide addition insights

Mitigation Planning
scope: goals, objectives, strategies, & action plan
local roles: identify current activities and progress on 2019 Plan
RPC roles: facilitation, analysis & guidance on strategies
Cmte roles: update goals; review and prioritize strategies
other issues: cost-benefits analysis; resource/action plan

Plan Coordination & Maintenance
scope: relationship to other plans & future plan review/updates
local roles: help identify links to other plans; vision for reviews
RPC roles: facilitation & suggestions
Cmte roles: review & modify/amend recommendations
other issues: re-assess evaluation process

Plan Adoption
scope: Cmte/local agency review -> public comment period -> Cmte re-consideration if needed ->State pre-review -> County & local adoption-> formal State & FEMA approval
local roles: facilitate public meetings, notifications, & adoption
RPC roles: assist with any questions and modifications to plan
Cmte roles: consider public input & approve draft plan
other issues: special mailings; media



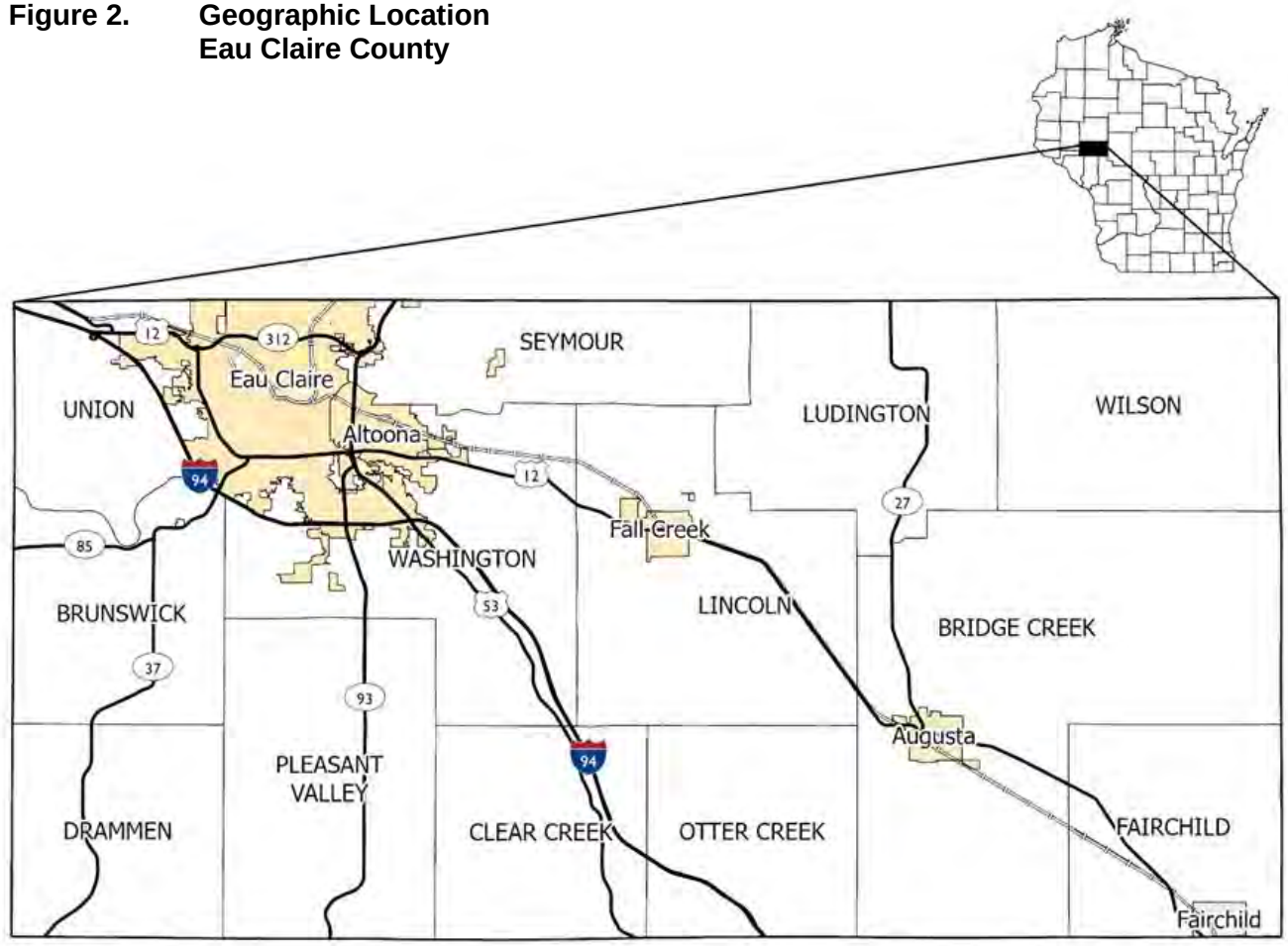
SECTION II.
COMMUNITY PROFILE – EAU CLAIRE COUNTY

A. GEOGRAPHIC LOCATION

Eau Claire County is located in west-central Wisconsin (see **Figure 2** below). The County has a total surface area of approximately 655 square miles of combined land and water area. It is bordered by Chippewa County to the north, Clark County to the east, Jackson, Trempealeau, and Buffalo counties to the south, and both Pepin and Dunn counties to the west. Interstate 94, which bisects the County, is the primary transportation arterial between Minneapolis-St Paul and cities to the south and east, such as Madison, Milwaukee, Rockford, and Chicago.

The County is comprised of 18 minor civil divisions, which include 13 towns, 2 villages, and 3 cities. The County seat is in the City of Eau Claire, which is in both Eau Claire and Chippewa counties.

Figure 2. Geographic Location
Eau Claire County



B. NATURAL FEATURES AND ENVIRONMENT

The ecological landscape of Eau Claire County is primarily western coulees and ridges with central sand plains to the west. According to the Wisconsin DNR, the County is part of the "Driftless" region, and the western areas were unglaciated. The climate is more consistent with southern Wisconsin than neighboring counties and, with exception to the areas considered central sand plains, is considered a favorable climate for agricultural purposes. The DNR provides a full summary of the Western Coulees and Ridges and Central Sand Plains, including their topographic and climatic features, in a report titled "Ecological Landscapes of Wisconsin".

i. Watersheds

A watershed is an area of land that drains or "sheds" its water to a lake, river, stream, or wetland. Some watersheds encompass several hundred square miles and multiple counties, while others may be small, covering only a few square miles that drain into a lake. This is important to understand since the effects of natural and man-made activities in one area can have a direct impact on other areas. For example, run-off from heavy rainfall upstream in a watershed will eventually reach the downstream part of the watershed.

Most surface waters of Eau Claire County fall within two major drainage systems. Surface waters in the western third of the County, including the waters of Elk Creek, Lowes Creek, and the Chippewa River, fall within the Lower Chippewa River subbasin. The eastern two-thirds of the County, which include Otter Creek, Hay Creek, and the Eau Claire River, are part of the Eau Claire River subbasin. A narrow portion along the southern boundary of the county falls within the Buffalo-Whitewater Rivers subbasin. **Figure 3** shows the locations of the watersheds within Eau Claire County at the ten-digit hydrologic unit code (HUC).

ii. Surface Waters, Floodplains, and Wetlands

Figure 4 delineates the County's surface waters, floodplains, and wetlands. The surface waters in Eau Claire County have a total surface area of approximately 5,600 acres or 8.75 square miles. Eau Claire Lake in the Town of Bridge Creek is the largest waterbody in the County at 870 acres. Other water bodies of considerable size include Lake Altoona (720 acres), Dells Pond (622 acres), and Half Moon Lake (135 acres. A number of dams in along the Chippewa River maintain reservoirs for hydro-electric power generation. These reservoirs, lakes, and the rivers themselves are recreational resources for Eau Claire County.

Wetland areas within the watersheds can affect the water levels of rivers and creeks flowing through Eau Claire County. Wetlands are defined by the State Statute as "an area where water is at, near, or above the land surface long enough to be capable of supporting aquatic or hydrophytic (water-loving) vegetation and which has soils indicative of wet conditions." Wetlands may be seasonal or permanent and are commonly referred to as swamps, marshes, or bogs. Wetland areas can have an important nature-based mitigation role given their capacity to store and filter pollutants, replenish groundwater supplies, store floodwaters, and maintain stream flows.

Figure 3. Eau Claire County Watersheds

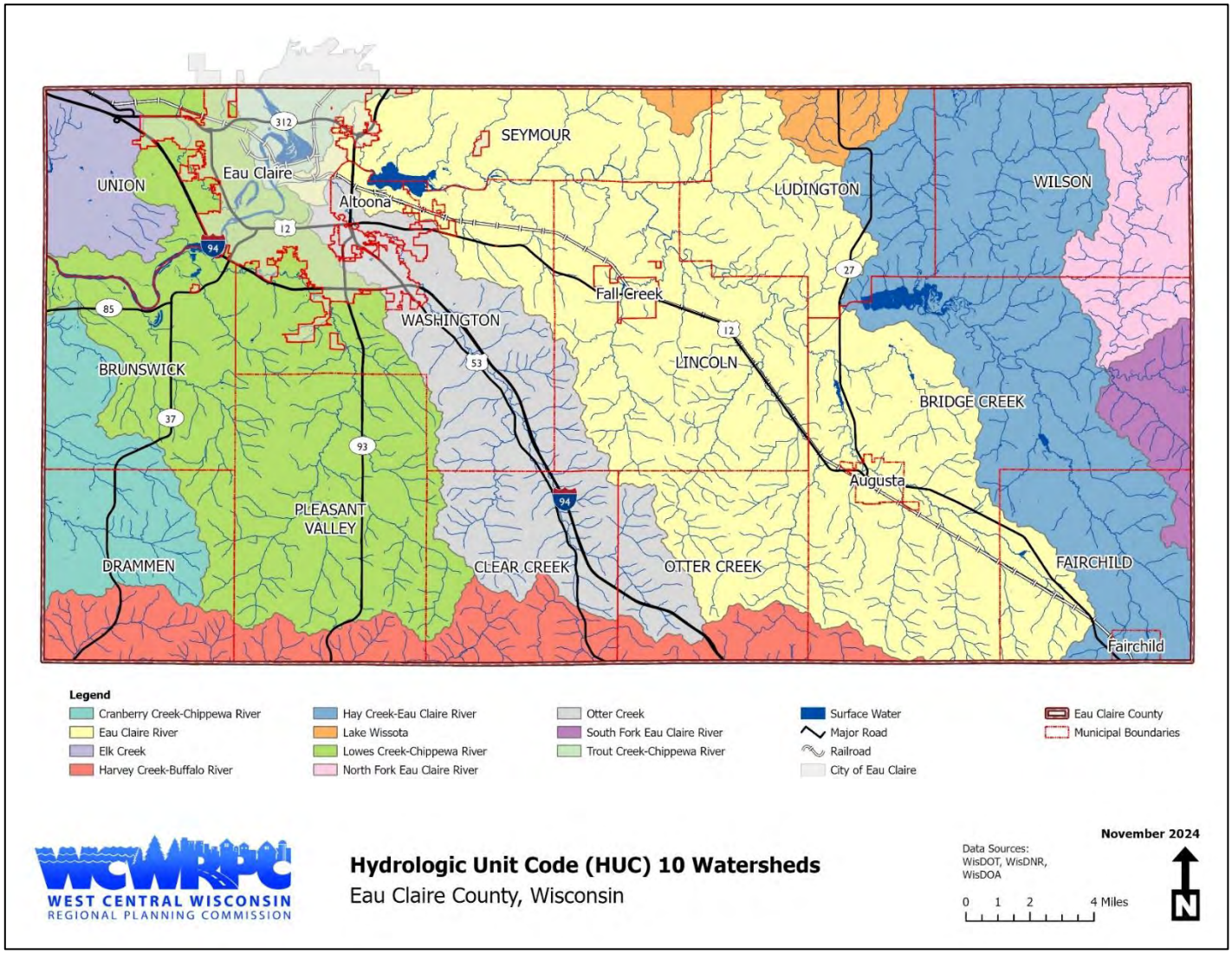
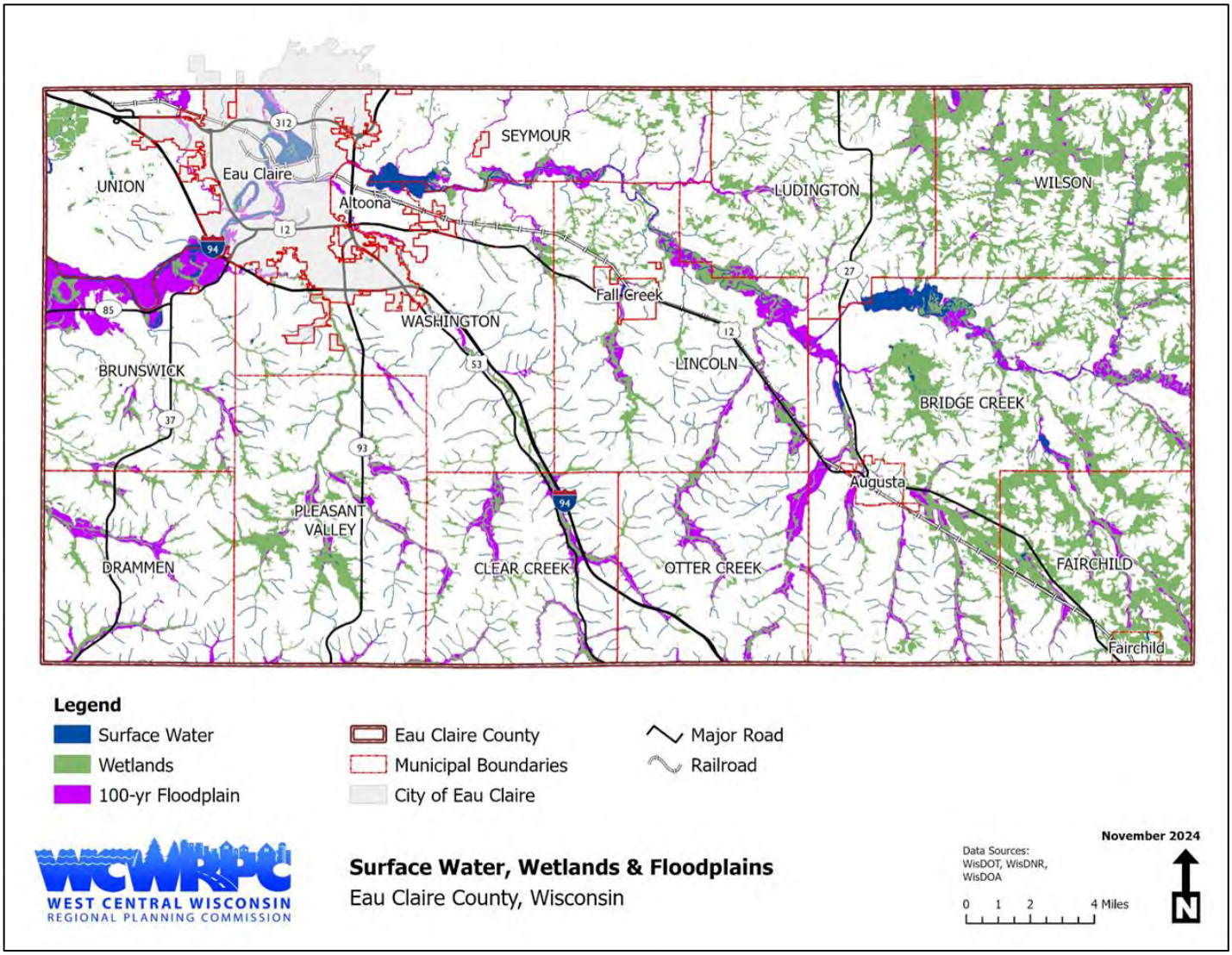


Figure 4. Eau Claire County Floodplains & Wetlands



One sensitive land feature that most residents are aware of is the floodplain, which is the flood-prone land adjacent to water bodies. Floodplains can be desirable development areas due to the proximity to lakes, rivers, and streams, but pose problems by possibly putting residents and property at risk. Altering the floodplain landscape by filling or building levees, structures, or other hardscape (e.g., parking lots) can exacerbate flooding conditions. The filling of wetlands in flood prone areas has also been proven to increase the likelihood of flooding. Development in floodplains can also affect the environmental quality of the waterway.

To better protect the residents throughout the state, and to minimize the loss of property, the State of Wisconsin, under Wisconsin Statute 87.30(1), requires counties, cities, and villages to adopt and enforce floodplain zoning. In addition, Wisconsin Administrative Code NR116, Floodplain Management Program, has been promulgated for the protection of property and public investments from the effects of

flooding. The floodplain and flood-hazard areas within the County associated with these water bodies are discussed in greater detail within Section III. Assessment of Hazard Conditions of this report.

iii. General Climate

The National Oceanic and Atmospheric Administration (NOAA) classifies Eau Claire County as having a warm summer humid continental climate. Warm to cool summers and cold winters are the main characteristics. The average monthly temperature ranges from 13 degrees Fahrenheit in January to 71 degrees Fahrenheit in July. Annual precipitation averages 36 inches, with the majority falling in May-August. Seasonal snowfall ranges from 30 to 98 inches (2013-2022). Eau Claire County is susceptible to a range of natural hazards, including flooding. A description of these natural hazards, along with historical trends and current risks, is included in Section III.D. of this report.

iv. General Land Cover

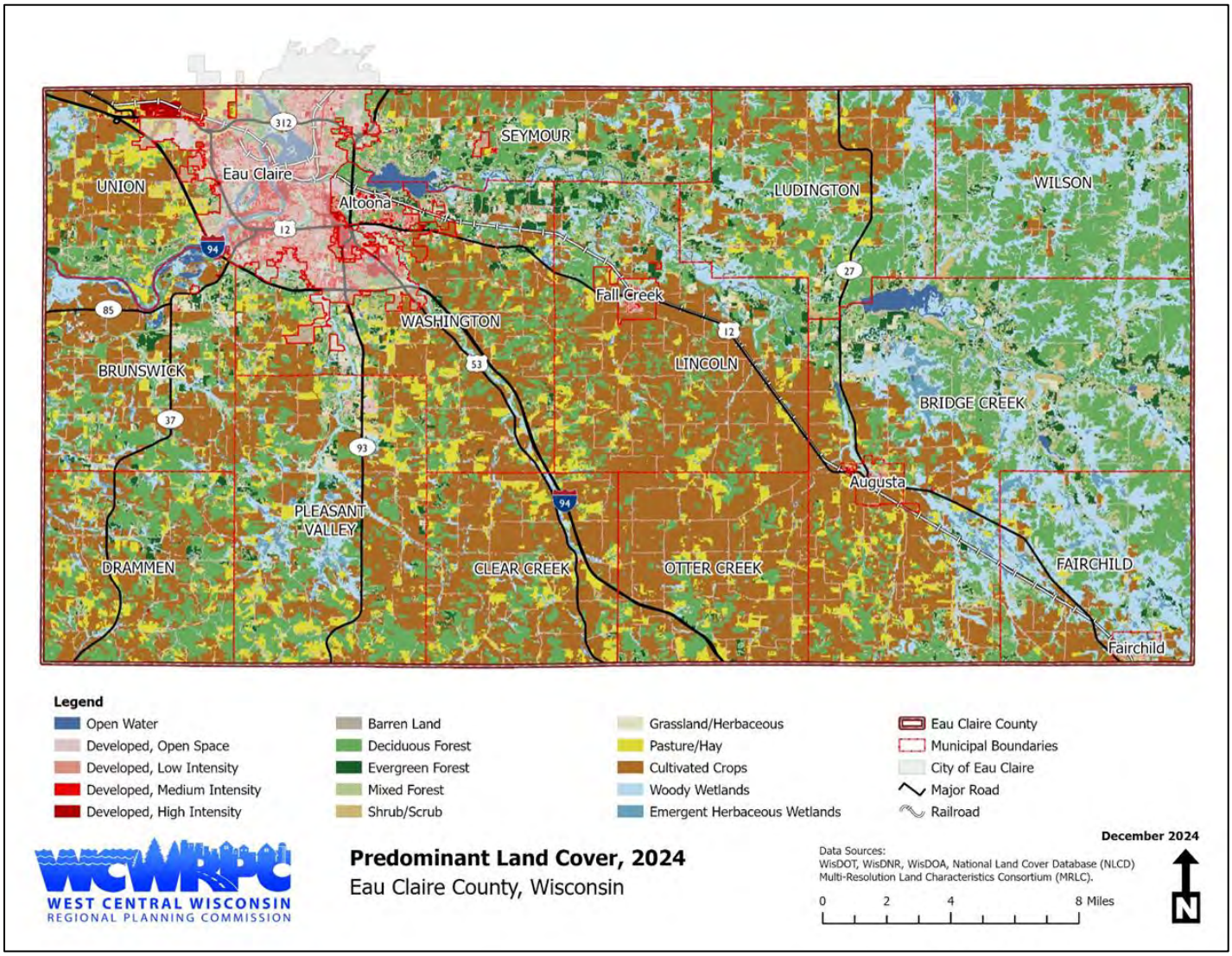
Historically, Eau Claire County's landscape was primarily forests, which spurred the development of lumberyards in the area. The resulting deforestation allowed for development of settlements and farmland. **Figure 5** shows that the landscape of Eau Claire County today is dominated by agriculture and deciduous forests. Almost half (44.2 percent) of the County's total assessed acreage in 2023 was agricultural. An additional 11.5 percent was assessed forest lands, primarily of mixed deciduous forest species with a further 10.1 percent classified as agricultural forests. Section II.C.vi. discusses the general development and land use patterns of Eau Claire County in greater detail.

USGS Land Cover data from 2024 can be used to generally classify vegetative land cover. **Table 2** provides the acreage and percentage of each land cover type. In 2024, approximately 7.8% of the County was forest or forested wetlands. Agricultural land cover as the predominate cover type, encompassing just under one-third of land in the County. Developed areas comprise just under 10% of land area. This reflects a semi-urban character within Eau Claire County, where the highly developed areas within and around the City of Eau Claire are contrasted by agricultural areas throughout the remainder of Eau Claire County.

Table 2. Eau Claire County Land Cover

Land Cover Type	Acres	Percent
Open Water	4,972	1.20%
Developed, Open Space	17,882	4.33%
Developed, Low Intensity	10,883	2.63%
Developed, Medium Intensity	4,436	1.07%
Developed, High Intensity	1,840	0.45%
Barren Land	87	0.02%
Deciduous Forest	104,889	25.40%
Evergreen Forest	12,559	3.04%
Mixed Forest	22,919	5.55%
Shrub/Scrub	5,067	1.23%
Herbaceous	6,948	1.68%
Hay/Pasture	30,076	7.28%
Cultivated Crops	134,859	32.65%
Woody Wetlands	47,309	11.45%
Emergent Herbaceous Wetlands	8,294	2.01%

Figure 5. Eau Claire County Predominant Land Cover



C. DEMOGRAPHIC AND ECONOMIC PROFILE

i. Population and Housing

Tables 3 through 6 provide an overview of the demographic and housing conditions in Eau Claire County and its communities. This data provides important insights into the existing and changing community vulnerabilities to disaster events. Highlights from these tables include:

- After seeing double-digit growth for three decades, housing unit growth slowed by almost 50% between 2010 and 2020. This decrease is consistent with trends throughout the region.
- Growth in housing units outpaced population growth until 2020. The average population per housing unit decreased from 2.72 in 1980 to 2.35 in 2020.
- While growth has occurred at all municipal levels, towns have seen the highest rate of growth over the past 10 years.
- **Figure 6** shows the change in population by Census tract. The west side of Eau Claire County has seen higher rates of growth, though there are a few pockets that experienced losses.
- Four communities are considered economically rural disadvantaged communities.
- Single-family detached housing is the most prevalent housing unit throughout the County, comprising more than 60% of all housing units. The percentages are higher in towns (83.9%) than in cities (54.1%).
- The potential vulnerability to hazardous events increases along with residential development and population growth. The steady increase of both housing and residents over the past 40 years presents a significant concern throughout the mitigation process, as each new unit and resident must be considered when determining vulnerability and projected losses during hazardous events.
- While the County is generally younger and wealthier than the State averages, there are age and income discrepancies between older, more affluent towns and younger, less affluent cities and villages. As the elderly and economically disadvantaged populations are both groups of concern, these discrepancies present unique challenges and vulnerabilities for each community type.
- **Figure 7** shows Eau Claire County's projected population by age group, reflecting changes in labor force and the baby boomer generation becoming a larger proportion of the County's population. Between 2020 to 2040, the number of residents ages 65 and over is projected to increase to over 20% of the total population while all other age groups remain static or decrease. However, these projections were completed by the State in 2013 and have not yet been updated based on the 2020 Census.

For some residents, language and cultural barriers can pose challenges to education and outreach on weather awareness, available centers/shelters, best practices, regulations, etc. Eau Claire County is continuing to become more racially diverse with about 88% of its population being "White Alone". The City of Eau Claire area has a significant Hmong population (about 3,000 residents), and its post-secondary educational institutions further contribute to the community's diversity.

Table 3. Eau Claire County Housing Unit & Population Change • 1980 to 2020

Year	Number of Housing Units	Numerical Change	Percent Change	Population	Numerical Change	Percent Change
1980	28,973	-	-	78,805	-	-
1990	32,741	+3,768	+13.0	85,183	6,378	+8.1
2000	37,474	+4,733	+14.5	93,142	7,959	+9.3
2010	42,151	+4,677	+12.5	97,138	3,996	+4.3
2020	44,966	+2,815	+6.7	105,710	7,005	+7.2

Source: 1980, 1990, 2000, 2010, & 2020 Census

Table 4. Eau Claire County Demographics

Municipality	Census 2010	Census 2020	% Change 2010-2020	Proj. 2029	Per Capita Income	% Persons Below Poverty Line	Median Age	*Economic Disadvantaged Rural Cmty
Towns								
Bridge Creek	1,900	2,214	16.5	2,227	34,128	8.0	30.3	Yes
Brunswick	1,624	1,958	20.6	1,936	43,358	3.2	49.4	
Clear Creek	821	778	-5.2	755	49,254	4	44.5	
Drammen	783	792	1.1	769	43,851	5.6	49.5	
Fairchild	343	450	31.2	431	27,408	19.2	25.4	Yes
Lincoln	1,096	1,125	2.6	1,085	47,291	6.8	36.8	
Ludington	1,063	1,067	0.4	1,048	40,307	8.3	48.3	
Otter Creek	500	427	-14.6	416	41,753	10.5	52.2	
Pleasant Valley	3,044	3,791	24.5	4,175	62,715	1.8	41.3	
Seymour	3,209	3,352	4.5	3,295	51,011	3.9	47.5	
Union	2,663	2,696	1.2	2,678	42,881	6.8	44.1	
Washington	7,134	7,662	7.4	8,178	57,608	4.3	41.8	
Wilson	485	427	-12.0	496	35,471	10.6	39.3	
Subtotal:	**24,665**	**26,739**	**8.4**	**27,489**				
Villages								
Fairchild	550	451	-18.0	450	27,784	16.4	48.8	Yes
Fall Creek	1,315	1,422	8.1	1,395	39,042	6.1	35.2	
Subtotal:	**1,865**	**1,873**	**0.4**	**1,845**				
Cities								
Altoona	6,706	8,293	23.7	9,904	39,968	10.9	36.4	
Augusta	1,550	1,567	1.1	1,566	27,331	19.4	37.3	Yes
Eau Claire*	63,902	67,238	5.2	70,548	37,691	14.2	32.9	
Subtotal:	**72,158**	**77,098**	**6.8**	**82,018**				
Eau Claire County	**98,688**	**105,710**	**7.1**	**111,352**	**40,845**	**11.5**	**35.8**	

Sources: 2010 & 2020 US Census, 2019-2023 American Community Surveys (5-year estimates). Projections by ESRI.
**Economic disadvantaged rural community is defined by population 3,000 or less and average per capita income no more than 80% of national per capita income ($34,631) based on US Census Data.*

The City of Eau Claire's low median age is largely due to the student populations at UW-Eau Claire (about 9,500 students) and Chippewa Valley Technical College (about 7,600 students at all campuses, including outside Eau Claire County).

Rural Eau Claire County also has one of the largest Amish communities in Wisconsin (around 1,600 residents) and a sizable number of Mennonite residents. The County's Plain Community is largely concentrated in the Augusta and Fairchild area with their own schools and businesses. Recently, a Mennonite group acquired the former Fairchild Elementary School and is operating it as a private school. The relatively low median age and recent population growth in the towns of Fairchild and Bridge Creek are a reflection of their sizable Plain Community residents.

Table 5. Eau Claire County Housing Conditions

Municipality	1 Unit Detached	1 Unit Attached	2 Units	3 to 9	10 to 19	20 or more	Mobile Home	Seasonal, Occasional, Rec Use
Towns								
Bridge Creek	838	73	42	27	-	-	56	265
Brunswick	595	15	17	-	-	-	70	10
Clear Creek	361	-	-	-	-	-	18	6
Drammen	252	2	10	2	-	-	37	4
Fairchild	183	1	-	-	-	2	27	36
Lincoln	415	-	-	7	-	-	40	19
Ludington	401	-	2	-	-	-	32	13
Otter Creek	154	-	-	-	-	-	2	13
Pleasant Valley	1,348	-	-	-	-	-	-	35
Seymour	1,156	-	12	8	-	-	57	11
Union	965	28	27	24	-	-	12	-
Washington	2,516	53	65	201	18	144	108	17
Wilson	233	1	5	-	-	-	24	103
Subtotal:	**9,417**	**173**	**180**	**269**	**18**	**146**	**483**	**532**
Villages								
Fairchild	160	-	-	11	21	24	26	31
Fall Creek	414	27	17	29	20	9	-	-
Subtotal:	**574**	**27**	**17**	**40**	**41**	**33**	**26**	**31**
Cities								
Altoona	1,706	302	92	652	239	445	398	-
Augusta	451	18	5	71	20	-	21	2
Eau Claire	16,467	2,277	2,278	5,159	1,084	2,307	378	54
Subtotal:	**18,624**	**2,597**	**2,375**	**5,882**	**1,343**	**2,752**	**797**	**56**
Eau Claire County	**28,615**	**2,797**	**2,572**	**6,191**	**1,402**	**2,931**	**1,306**	**619**

Sources: 2019-2023 American Community Survey (5-year estimates).

Table 6. Eau Claire County Assisted Living and Nursing Home Facilities

Municipality	Assisted Living Facilities						Licensed Nursing Homes	
	Adult Family Home Care		Community-Based Residential		Residential Care Apartment Complex			
	Facilities	Capacity	Facilities	Capacity	Facilities	Capacity	Facilities	Capacity
TOWNS								
Bridge Creek	-	-	-	-	-	-	-	-
Brunswick	1	4	-	-	-	-	-	-
Clear Creek	-	-	-	-	-	-	-	-
Drammen	-	-	1	5	-	-	-	-
Fairchild	-	-	-	-	-	-	-	-
Lincoln	-	-	-	-	-	-	-	-
Ludington	-	-	-	-	-	-	-	-
Otter Creek	-	-	-	-	-	-	-	-
Pleasant Valley	1	4	1	6	-	-	-	-
Seymour	2	7	-	-	-	-	-	-
Union	4	16	3	22	-	-	-	-
Washington	5	19	2	44	-	-	-	-
Wilson	1	3	-	-	-	-	-	-
Subtotal:	**14**	**53**	**7**	**77**	-	-	-	-
VILLAGES								
Fairchild	-	-	-	-	-	-	-	-
Fall Creek	5	20	-	-	-	-	-	-
Subtotal:	**5**	**20**	-	-	-	-	-	-
CITIES								
Altoona	4	16	5	180	2	103	2	130
Augusta	2	8	1	12	-	-	1	50
Eau Claire	42	164	20	494	5	187	2	124
Subtotal:	**48**	**188**	**26**	**686**	**7**	**290**	**5**	**304**
Eau Claire County	**67**	**261**	**33**	**763**	**7**	**290**	**5**	**304**

Source: Assisted Living and Licensed Nursing Home data is from directories provided by the Wisconsin Department of Health Services.

Figure 6. Eau Claire County Population Change by Census Tract

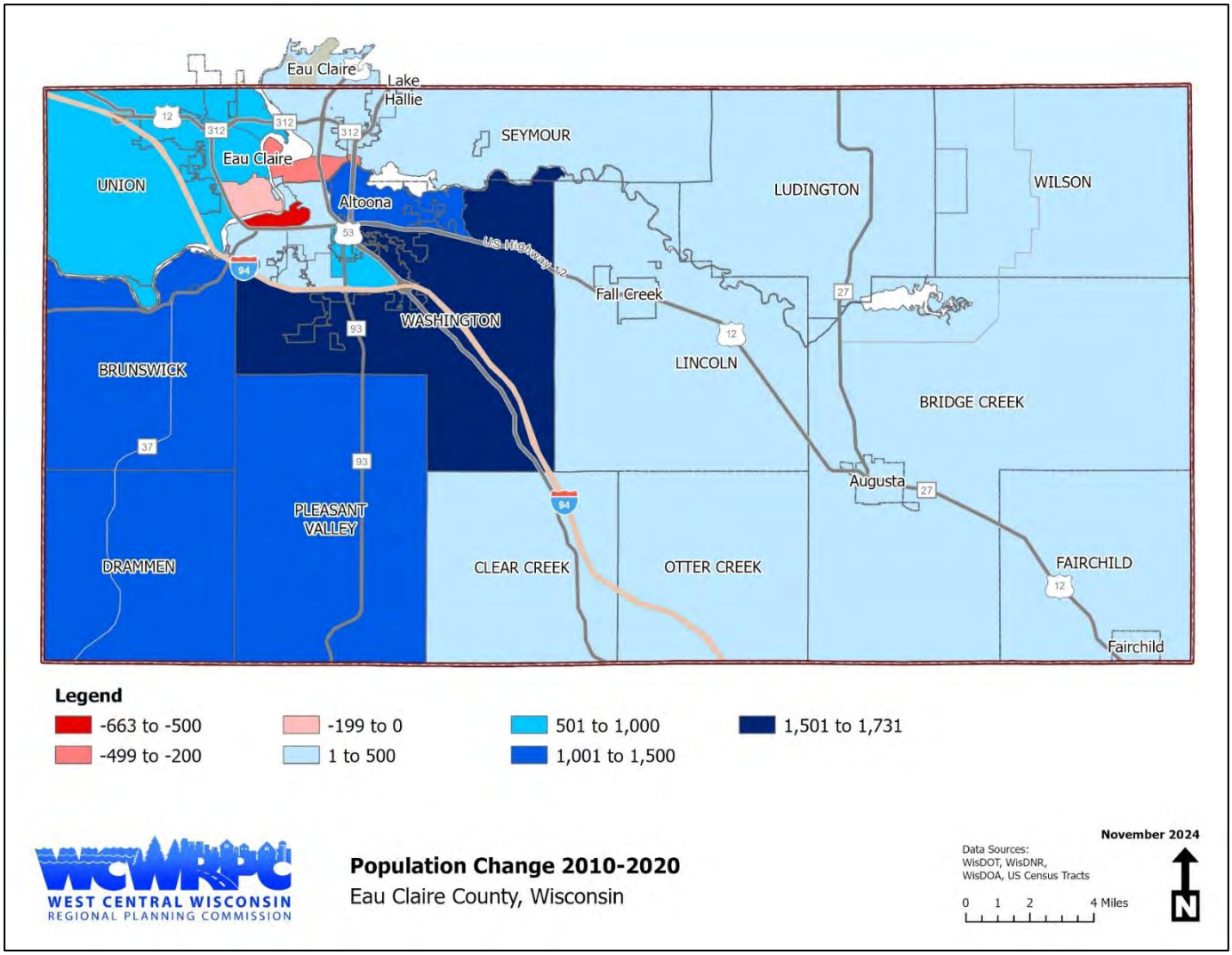
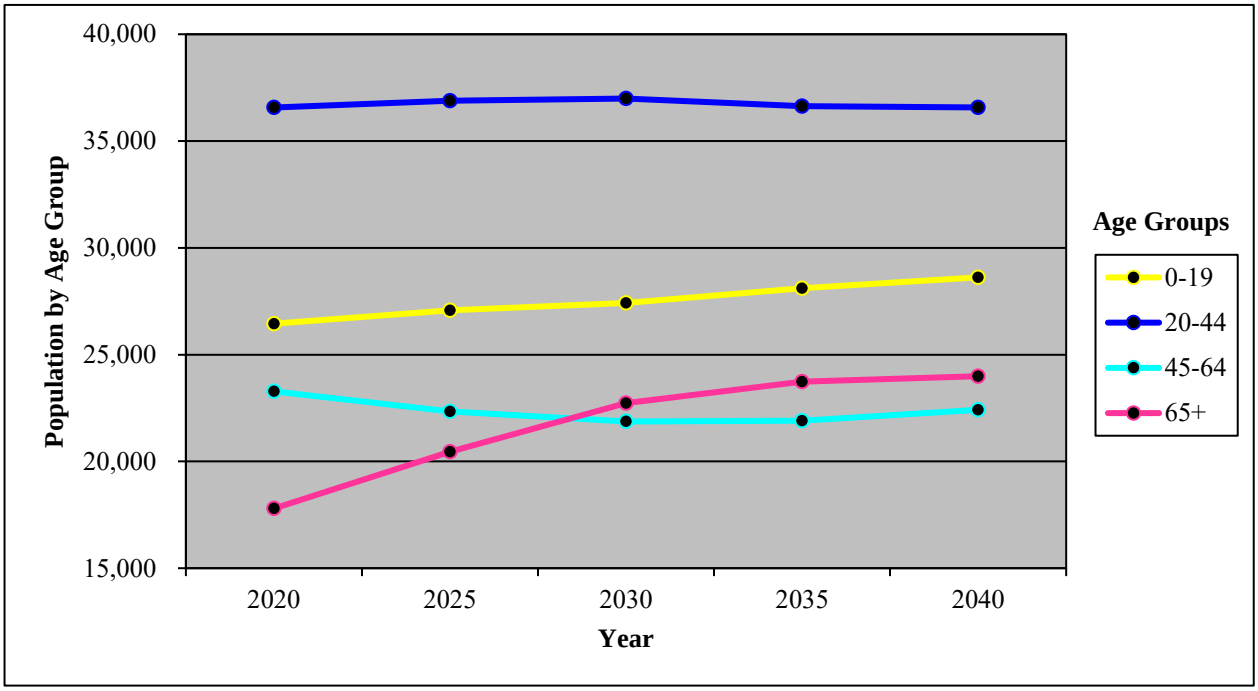


Figure 7. Eau Claire County Age Group Projections • 2020 to 2040



Source: Wisconsin Department of Administration, Population Projections (2013)
Note these projections are based on 2010 Census data and are slightly outdated but remain the most current data available at the time of writing.

ii. Economic Overview

The economy of a county is an important determining factor driving land use and development as well as hazard vulnerabilities and community resiliency.

- The infographic on the following page provides an overview of Eau Claire County's economy. The County has low unemployment and strong trade and manufacturing sectors.
- Educational attainment is high, with over 70% having at least some college education.
- Employment in the County is predominantly white-collar jobs. Overall, net worth and household income is high and well above national averages ($205,695 and $74,436 respectively).
- **Table 7** summarizes Eau Claire County's employment by primary industry sector. In 2024, the County had over 3,100 payrolled business locations and almost 65,000 jobs.
- Health Care and Social Assistance is the County's largest employment sector with 13,478 jobs (20% of all jobs) reflecting the strong healthcare network within the County. Government is the second highest employment sector (13%). *Note: these numbers may not reflect the recent closure of the HSHS hospital in the City of Eau Claire.*
- The Utility, Finance and Insurance, Agriculture, and Administrative and Support sectors all saw decreases exceeding 25% of their 2014 employment numbers. Despite these losses, the County increased its employment by over 3,000 jobs between 2014 and 2024. Agriculture in Eau Claire County contributes to other sectors, including the County's large food services sub-sector.

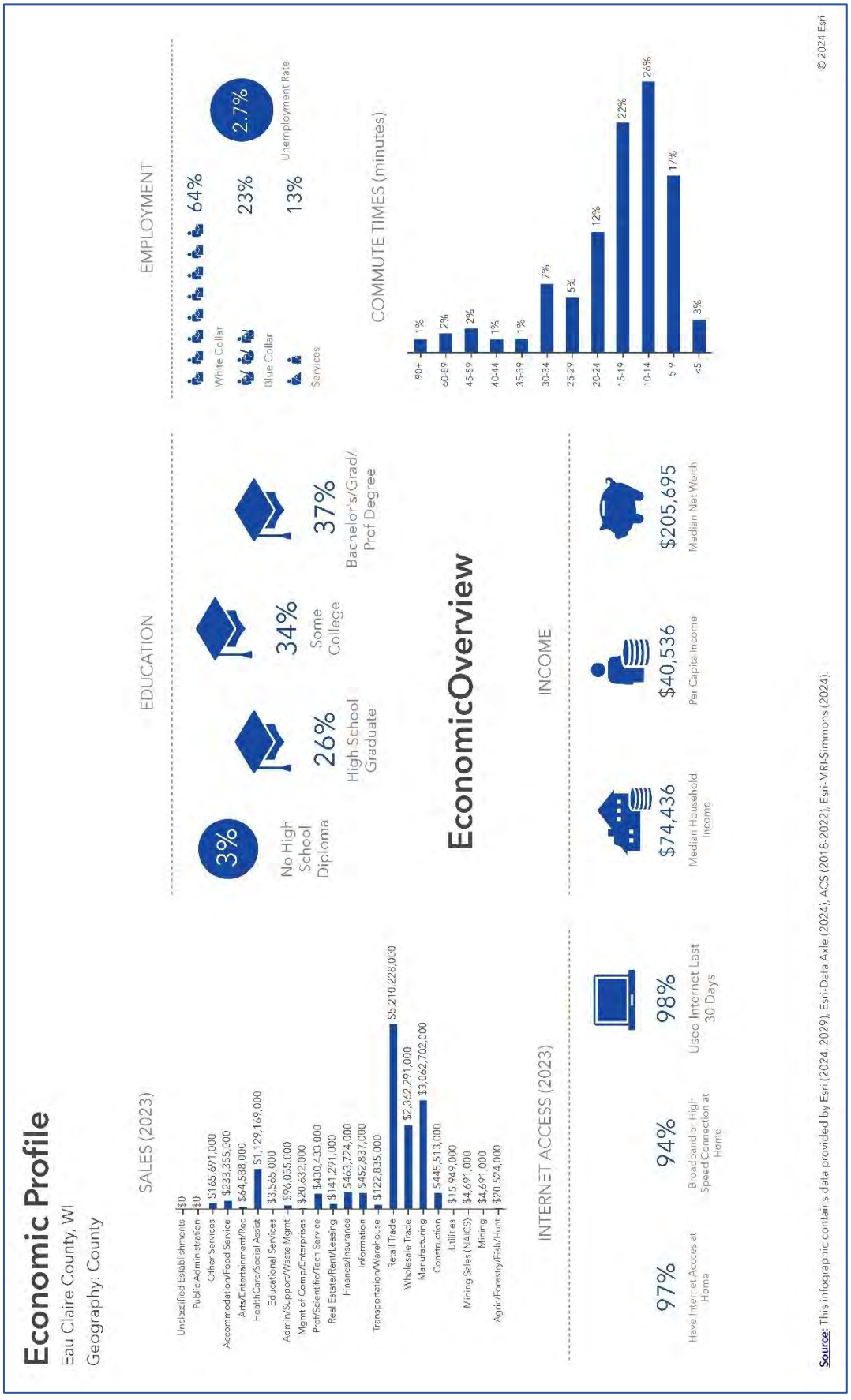

Economic Profile
Eau Claire County, WI
Geography: County
SALES (2023)
Unclassified Establishments $0
Public Administration $0
Other Services $165,691,000
Accommodation/Food Service $233,355,000
Arts/Entertainment/Rec $64,588,000
HealthCare/Social Assist $1,129,169,000
Educational Services $3,565,000
Admin/Support/Waste Mgmt $96,035,000
Mgmt of Comp/Enterprises $20,632,000
Prof/Scientific/Tech Service $430,433,000
Real Estate/Rent/Leasing $141,291,000
Finance/Insurance $463,724,000
Information $452,837,000
Transportation/Warehouse $122,835,000
Retail Trade $5,210,228,000
Wholesale Trade $2,362,291,000
Manufacturing $3,062,702,000
Construction $445,513,000
Utilities $15,949,000
Mining Sales (NAICS) $4,691,000
Mining $4,691,000
Agric/Forestry/Fish/Hunt $20,524,000
EDUCATION
3%
No High School Diploma
26%
High School Graduate
34%
Some College
37%
Bachelor's/Grad/ Prof Degree
EconomicOverview
EMPLOYMENT
64%
White Collar
23%
Blue Collar
13%
Services
2.7%
Unemployment Rate
COMMUTE TIMES (minutes)
90+ 1%
60-89 2%
45-59 2%
40-44 1%
35-39 1%
30-34 7%
25-29 5%
20-24 12%
15-19 22%
10-14 26%
5-9 17%
<5 3%
INCOME
$74,436
Median Household Income
$40,536
Per Capita Income
$205,695
Median Net Worth
INTERNET ACCESS (2023)
97%
Have Internet Access at Home
94%
Broadband or High Speed Connection at Home
98%
Used Internet Last 30 Days
Source: This infographic contains data provided by Esri (2024, 2029), Esri-Data Axle (2024), ACS (2018-2022), Esri-MRI-Simmons (2024).
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Table 7. Eau Claire County Establishments & Employment By Industry Sector

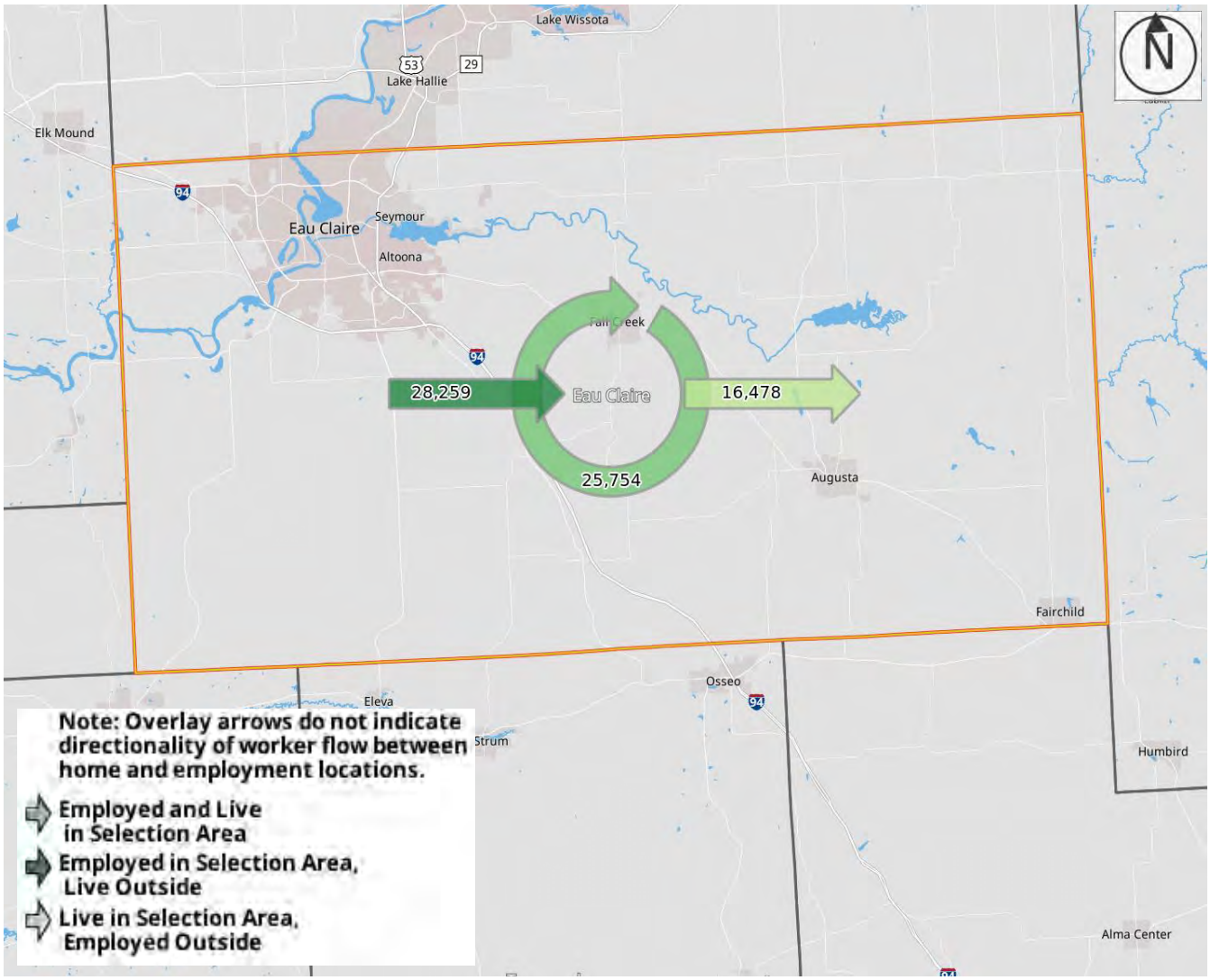
Industry Sector (2-digit NAICS)	2023 Payrolled Business Locations	2014 Jobs	2024 Jobs	2014 - 2024 % Change	Competitive Effect
Health Care and Social Assistance	756	11,936	13,283	11%	(1,167)
Government	73	8,476	8,139	(4%)	(621)
Retail Trade	377	7,335	7,826	7%	364
Accommodation and Food Services	281	5,270	5,669	8%	(343)
Manufacturing	97	5,405	5,426	0%	(413)
Other Services (except Public Administration)	266	2,868	3,063	7%	178
Transportation and Warehousing	78	2,135	2,994	40%	(206)
Management of Companies and Enterprises	42	2,090	2,761	32%	218
Construction	192	2,165	2,695	24%	(54)
Professional, Scientific, and Technical Services	236	2,255	2,595	15%	(331)
Wholesale Trade	141	2,112	2,479	17%	249
Administrative and Support and Waste Management and Remediation Services	147	3,484	2,473	(29%)	(1,368)
Finance and Insurance	182	2,868	1,780	(38%)	(1,538)
Arts, Entertainment, and Recreation	48	683	1,191	75%	374
Real Estate and Rental and Leasing	119	652	841	29%	43
Educational Services	34	743	745	0%	(97)
Information	45	673	629	(6%)	(128)
Agriculture, Forestry, Fishing and Hunting	22	377	235	(38%)	(148)
Utilities	7	301	133	(56%)	(190)
Mining, Quarrying, and Oil and Gas Extraction	1	15	18	21%	7
Unclassified Industry	0	0	0	0%	0
Totals	3,142	61,842	64,974	5%	(5,169)

Source: Lightcast, largely based on Bureau of Labor Statistics data

Generally, the data above represents payrolled businesses paying Federal unemployment insurance. Smaller businesses and sole proprietor enterprises, including many smaller farms, are underestimated in such data.

As shown in **Figure 8**, Eau Claire County's workforce is very mobile, often with significant commuting distances that can be impacted by severe weather or the disruption of community lifelines. According to the U.S. Census Bureau, 25,754 County residents had their primary job within Eau Claire County in 2021, while 16,478 residents commuted outside the County. An additional 28,259 workers lived outside Eau Claire County but commuted in for their primary job.

Figure 8. Eau Claire County Worker Commuting Patterns



Source: U.S. Census Bureau. OnTheMap.

iii. Agricultural Overview

The hazard threats discussed later in this plan can impact parts or all of Eau Claire County's agricultural base and economy. In 2022, Eau Claire County had 1,006 farms and over 168,000 acres used for farm-based activities. While these totals are a decline from 2017 numbers, Eau Claire County has not experienced the farm losses compared to some other areas in the State in large part due to its sizable Plain Community (Amish & Mennonite populations).

The County continues to be the leading producer of horseradish in the world, and the County is diversifying its agricultural output as the population increases along with demand for local food sources. On the following two pages is the Eau Claire County summary from the 2022 U.S. Census of Agriculture, which provides an overview of agriculture in the County.

While agricultural sales are a small percentage of the County's economy, the indirect impact of agriculture in Eau Claire County is significant. According to UW-Extension's *Agriculture Impact Report for Eau Claire County* (2019), the County has the 8th largest nursery industry in the state, with annual production exceeding $11.2 million dollars. Grains, milk, and cattle account for another $66.4 million. In addition to direct outputs, farming in the County has several indirect and induced impacts:

- Agricultural helps support 6,253 jobs.
- The overall economic impact of agricultural production and processing in the County exceeds $1.5 billion.
- Farms pay $36.2 million in sales, property, and income taxes annually. This figure does not include all property taxes paid to local schools.

It is very unlikely that any single hazard would endanger all livestock or crops, though large proportions could be at-risk from a prolonged, severe drought or the introduction of a new a pest or disease (e.g., Bovine Spongiform Encephalopathy, or "mad cow disease"). Large-scale impacts to crops or livestock from a hazard can also have devastating impacts on the local economy, related industries (e.g., food processing), and local service providers. The state of the agricultural economy is tenuous for the local farmer, and a hazard event may result in farmers making fewer purchases or getting out of the business altogether. In short, an agricultural and farming sector that is less vulnerable to the impacts of disaster events will greatly contribute to Eau Claire County's resiliency overall.

2022 CENSUS OF AGRICULTURE *County Profile*





Eau Claire County
Wisconsin

Total and Per Farm Overview, 2022 and change since 2017

	2022	% change since 2017
Number of farms	1,006	-6
Land in farms (acres)	168,016	-2
Average size of farm (acres)	167	+4
Total	($)	
Market value of products sold	142,969,000	+59
Government payments	1,573,000	-30
Farm-related income	5,563,000	-20
Total farm production expenses	112,324,000	+47
Net cash farm income	37,780,000	+66
Per farm average	($)	
Market value of products sold	142,116	+69
Government payments [a]	5,277	+14
Farm-related income [a]	11,192	+4
Total farm production expenses	111,654	+56
Net cash farm income	37,554	+76

1 Percent of state agriculture sales

Share of Sales by Type (%)

Crops	40
Livestock, poultry, and products	60

Land in Farms by Use (acres)

Cropland	113,591
Pastureland	9,717
Woodland	32,472
Other	12,236

Acres irrigated: 2,142
1% of land in farms

Land Use Practices (% of farms)

No till	32
Reduced till	21
Intensive till	17
Cover crop	14

Farms by Value of Sales

	Number	Percent of Total [b]
Less than $2,500	366	36
$2,500 to $4,999	66	7
$5,000 to $9,999	86	9
$10,000 to $24,999	128	13
$25,000 to $49,999	80	8
$50,000 to $99,999	91	9
$100,000 or more	189	19

Farms by Size

	Number	Percent of Total [b]
1 to 9 acres	73	7
10 to 49 acres	307	31
50 to 179 acres	359	36
180 to 499 acres	204	20
500 to 999 acres	38	4
1,000+ acres	25	2

USDA United States Department of Agriculture
National Agricultural Statistics Service
www.nass.usda.gov/AgCensus

Eau Claire County
Wisconsin, 2022
Page 2

2022 CENSUS OF AGRICULTURE *County Profile*

Market Value of Agricultural Products Sold

	Sales ($1,000)	Rank in State [c]	Counties Producing Item	Rank in U.S. [c]	Counties Producing Item
Total	**142,969**	**47**	**72**	**1,106**	**3,078**
Crops	**57,825**	**47**	**72**	**1,201**	**3,074**
Grains, oilseeds, dry beans, dry peas	49,705	38	72	926	2,917
Tobacco	-	-	5	-	267
Cotton and cottonseed	-	-	-	-	647
Vegetables, melons, potatoes, sweet potatoes	736	52	72	961	2,831
Fruits, tree nuts, berries	1,913	19	71	413	2,711
Nursery, greenhouse, floriculture, sod	1,713	35	71	770	2,660
Cultivated Christmas trees, short rotation woody crops	257	15	67	183	1,274
Other crops and hay	3,501	43	71	947	3,035
Livestock, poultry, and products	**85,144**	**42**	**72**	**759**	**3,076**
Poultry and eggs	12,652	11	71	574	3,027
Cattle and calves	24,287	27	71	716	3,047
Milk from cows	44,675	50	66	235	1,770
Hogs and pigs	1,594	13	68	562	2,814
Sheep, goats, wool, mohair, milk	1,272	8	68	149	2,967
Horses, ponies, mules, burros, donkeys	460	12	65	623	2,907
Aquaculture	-	-	53	-	1,190
Other animals and animal products	203	28	71	707	2,909

Producers [d]	1,775
Sex	
Male	1,095
Female	680
Age	
<35	176
35 – 64	924
65 and older	675
Race	
American Indian/Alaska Native	-
Asian	25
Black or African American	-
Native Hawaiian/Pacific Islander	5
White	1,745
More than one race	-
Other characteristics	
Hispanic, Latino, Spanish origin	12
With military service	158
New and beginning farmers	498

Percent of farms that:

Have internet access	73
Farm organically	3
Sell directly to consumers	9
Hire farm labor	20
Are family farms	97

Top Crops in Acres [e]

Corn for grain	39,424
Soybeans for beans	26,178
Forage (hay/haylage), all	24,784
Corn for silage/greenchop	4,314
Oats for grain	651

Livestock Inventory (Dec 31, 2022)

Broilers and other meat-type chickens	513,123
Cattle and calves	28,673
Goats	2,502
Hogs and pigs	1,512
Horses and ponies	1,968
Layers	6,713
Pullets	76
Sheep and lambs	1,515
Turkeys	(D)

[a] Average per farm receiving. [b] May not add to 100% due to rounding. [c] Among counties whose rank can be displayed. [d] Data collected for a maximum of four producers per farm. [e] Crop commodity names may be shortened; see full names at www.nass.usda.gov/go/cropnames.pdf. [f] Position below the line does not indicate rank. (D) Withheld to avoid disclosing data for individual operations. (NA) Not available. (Z) Less than half of the unit shown. (-) Represents zero.

USDA is an equal opportunity provider, employer, and lender.

iv. Development Trends

Disaster events can have many impacts, including damage to buildings and building contents. This sub-section provides insight into the taxable improvements and growth patterns within Eau Claire County, which will be important when considering hazard vulnerabilities in Section III.D.

According to the Wisconsin Department of Revenue, the aggregated assessed value for Eau Claire County was over $11 billion.[3] **Table 6** summarizes the 2023 Statement of Assessments for the County. This reflects the overall rural nature of Eau Claire County, with a relatively high proportion of the aggregate value in land and a much lower proportion in personal property when compared to urban areas.

Table 6. Eau Claire County 2022 Assessed Total Values *(not equalized)*

Land	$ 2,199,182,700
Improvements	$ 9,106,712,400
Real Estate	$ 11,305,895,100
Personal Prop.	$ 189,534,813
Aggregate	$ 11,495,429,913

From 2018 to 2023, the County's total assessed value of improvements grew by over $3 billion (37.0% increase or +7.4% per year). **Table 8** further breaks down the 2023 assessed values by primary land uses. The largest percentage of improvement value is residential, while the prominence of commercial development reflects the semi-urban character of Eau Claire County.

Table 8. Eau Claire County Assessed Value by Land Use • 2023

Use	Number of Parcels	Land Value	Number of Parcels Improved	Improvements	Total
Residential	35,812	$1,251,983,250	32,540	$6,367,266,800	$7,619,250,050
Commercial	3,347	$682,837,700	2,881	$2,368,220,100	$3,051,057,800
Manufacturing	114	$28,137,300	83	$210,291,400	$238,428,700
Agricultural	7,285	$26,057,600	-	-	$26,057,600
Undeveloped	4,731	$26,047,800	-	-	$26,047,800
Forest	3,382	$63,104,750	-	-	$63,104,750
Ag Forest	2,244	$102,871,100	-	-	$102,871,100
Other	1,142	$18,143,200	1,138	$160,934,100	$179,077,300
Totals	**58,057**	**$2,199,182,700**	**36,642**	**$9,106,712,400**	**$11,305,895,100**

Source: Wisconsin Department of Revenue. 2023 Statement of Assessment.

Not included in the above values are tax-exempt properties. Eau Claire County has over 12,000 acres of public resource lands, mostly forested and wetlands, which are tax exempt. Governmental properties and schools constitute the largest portion of those existing improvements and structures not included in Tables 6 and 7, though other facilities on tax-exempt lands owned by non-profit institutions (e.g., churches, scouting camps, housing authority structures) are also not included.

[3] Wisconsin Department of Revenue, Bureau of Equalization. 2023 Statement of Assessments, Unequalized assessed values are used to best represent the actual value of improvements. Not all assessed values were available for all categories.

The land cover map (**Figure 5)** showed the generalized development pattern in Eau Claire County. Cultivated crops dominate most of the County with more urban development in the northwest. In 2020, the County had an overall population density of 161.4 persons per square mile, which is higher than the State of Wisconsin's density of 108.8 persons per square mile. Based on State official population projections, the County's density is projected to increase to 170.4 persons per square mile by 2040. Population growth and development has mostly occurred in the west, due in part to the City of Eau Claire.

Between 2018 and 2023, Eau Claire County experienced an increase of 1,539 improved, assessed parcels, or an average increase of 307 parcels per year. Over 90% of these improvements occurred on residential parcels. Over 70 percent of all improved, residential parcels are in cities and villages, yet 38 percent of all residential assessed acreage in Eau Claire County is in the towns. Residential development in unincorporated areas is typically at low densities within Eau Claire County. In general, most commercial and industrial uses tend to be located within incorporated areas or within highway corridors.

Most of the commercial development (59%) is located within cities while most manufacturing development (58%) is in towns in the County. The per-acre combined assessed value of commercial land and improvements are over five and a half times higher in cities compared to towns and almost four times higher for manufacturing assessments. This indicates that commercial activity in cities is more intensive, concentrated, and includes commercial uses much larger in scale than in the towns.

The most prevalent land uses in Eau Claire County are agriculture and residential. Agriculture accounts for 44 percent of the assessed land in the County and 22 percent is considered residential. Land assessed as "undeveloped" accounts for another 9 percent of the assessed land in the County. In total, 75 percent of the County's assessed acreage is agricultural, residential, or otherwise undeveloped.

v. Underserved Communities & Socially Vulnerable Populations

Social Vulnerability is defined as 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. **Underserved Communities** are defined as populations sharing a particular characteristic, as well as geographic communities, that have been systematically denied a full opportunity to participate in aspects of economic, social, and civic life.

During the planning process, the Plan Steering Committee and communities identified the following primary socially vulnerable populations and underserved communities:

- Seniors (and an aging population) and residents of long-term care and assisted living facilities.
- Homeless. While the greatest concern was for the large, "traditional" homeless population within the cities of Eau Claire and Altoona, a less visible rural homeless population also exists.
- Persons living in manufactured/mobile homes due to high winds, tornado, & extreme temperature risks

- The eastern and southeastern parts of the County generally have lower-incomes. These residents also have greatest distances to travel to supportive services and community lifeline facilities. And, as later discussed, this area is also home to significant Amish and Mennonite populations.
- K-12 students are often mentioned as having unique vulnerabilities due to their exposure to a variety of threats and value that society places on their protection. In the case of Eau Claire County, this can be extended to university/college students residing within the City of Eau Claire.

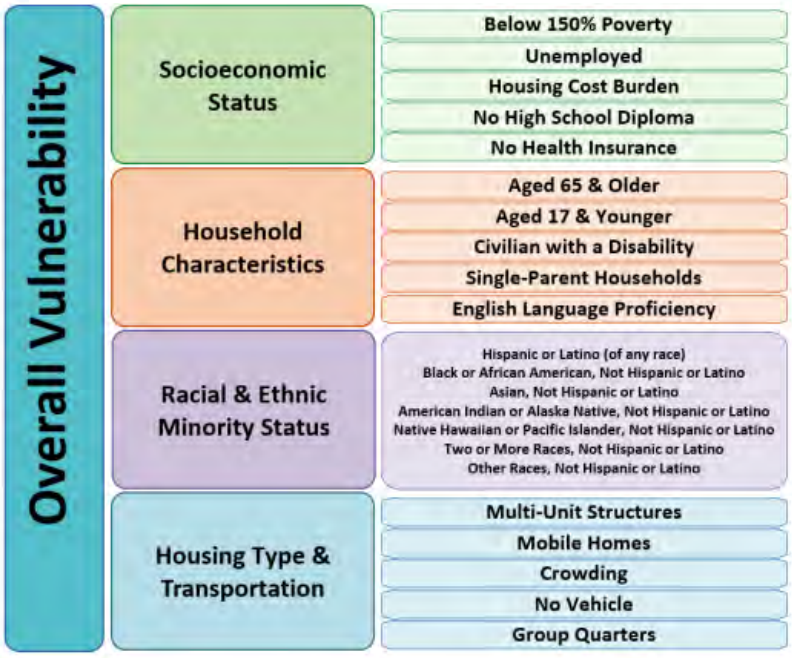
To further analyze the County's vulnerabilities to hazard events in the context of underserved communities and socially vulnerable populations, this plan considered two indices: the CDC's Social Vulnerability Index (SVI).) and University of Wisconsin's Area Deprivation Index (ADI).

CDC Social Vulnerability Index

The US Department of Health, through its Centers for Disease Control and Agency for Toxic Substances and Disease Registry, developed a Social Vulnerability Index that identifies areas of concern across the country. **Figure 9** identifies the themes and factors used to identify the overall vulnerability of an area. Vulnerabilities are assessed at the census tract level. Percentiles and rankings are provided at the national level only.

Figure 10 shows the overall vulnerability rankings for each of the census tracts in the County as well as the vulnerability rankings within different socio-economic factors.

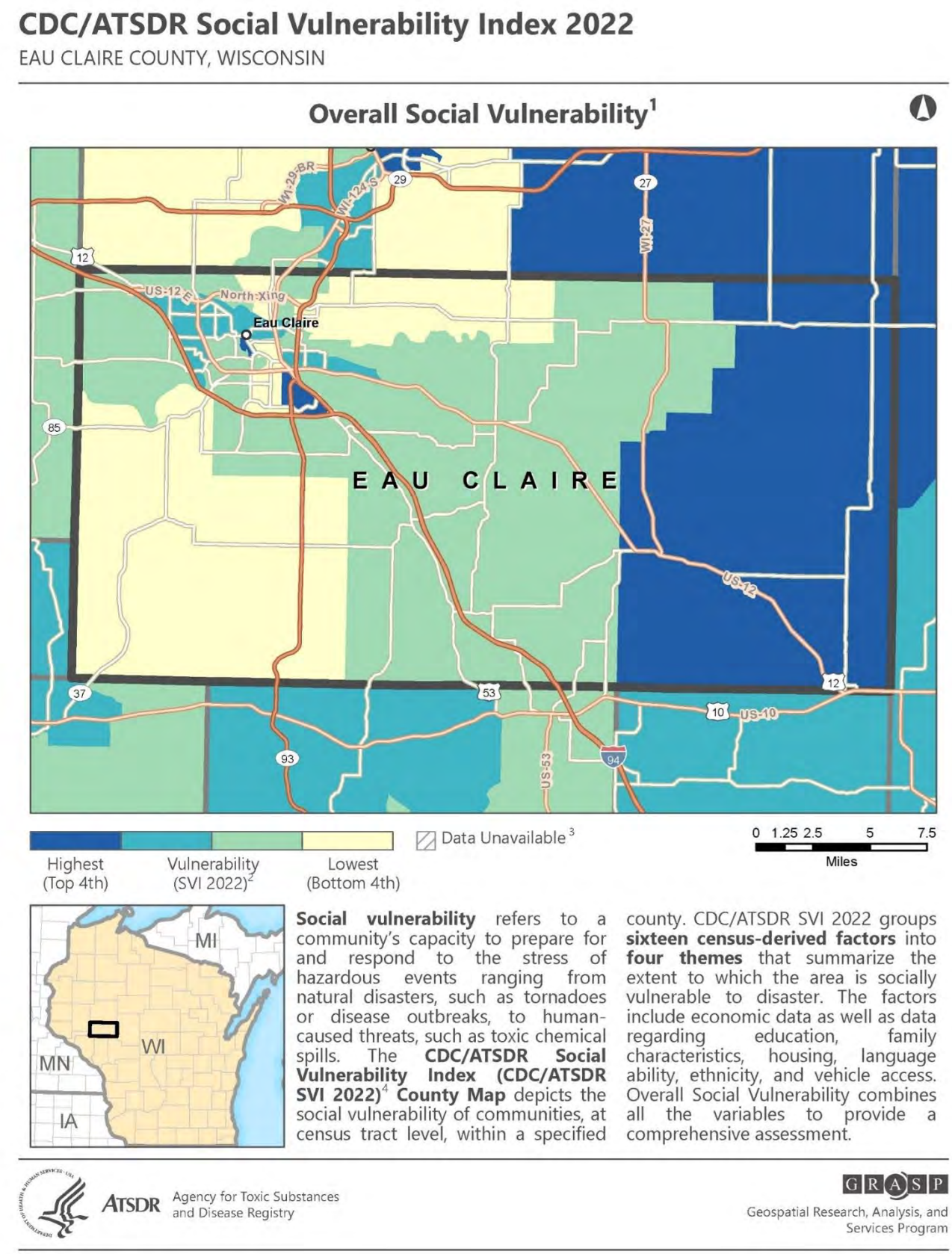
Figure 9. CDC Social Vulnerability Index Factors



Generally, Eau Claire County has a "Mid-Low" social vulnerability with an average of 44% in overall risk. But between tracts, the County varies dramatically. Overall, 3 tracts rank in the "High" risk category, 5 rank in the "Mid-High" category, 8 rank in the "Mid-Low" category, and 6 rank in the "Low" risk category. Census tracts in the County's east side and in the northwest urban area had the highest vulnerabilities overall.

Overall, the highest vulnerability across the County was in the Housing Type and Transportation theme. Ten census tracts (45%) ranked above the 60th percentile for the percentage of housing units that are mobile homes. Half of all tracts ranked in the 60th percentile or above for housing structures with 10 or more units (higher-density housing). Eight or more tracts ranked in the 60th percentile for the Socioeconomic Status theme, which includes factors such as poverty, unemployment, cost-burdened housing, and uninsured.

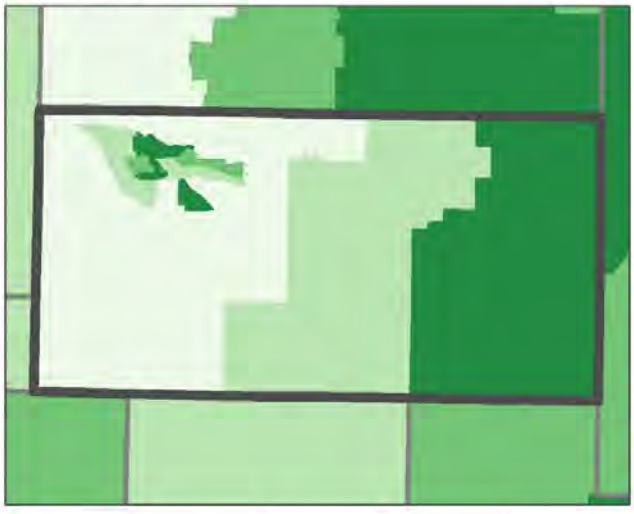
Figure 10. CDC Social Vulnerability by Census Tract for Eau Claire County



CDC/ATSDR SVI 2022 – EAU CLAIRE COUNTY, WISCONSIN

CDC/ATSDR SVI Themes

Socioeconomic Status[5]



Highest (Top 4th) — Vulnerability (SVI 2022)[2] — Lowest (Bottom 4th)

Household Characteristics[6]



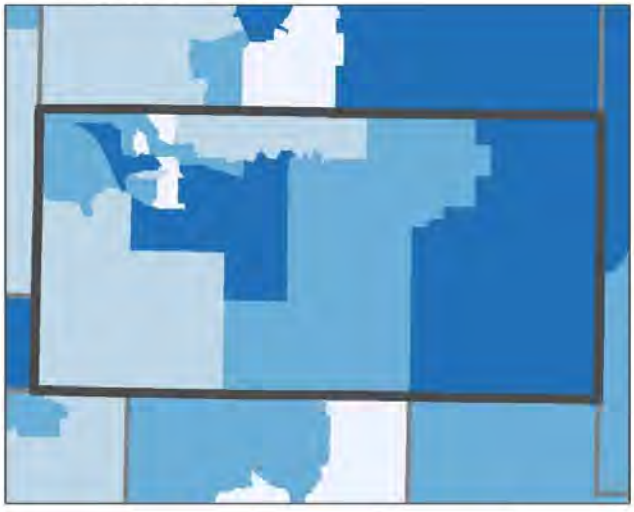
Highest (Top 4th) — Vulnerability (SVI 2022)[2] — Lowest (Bottom 4th)

Racial and Ethnic Minority Status[7]



Highest (Top 4th) — Vulnerability (SVI 2022)[2] — Lowest (Bottom 4th)

Housing Type/Transportation[8]



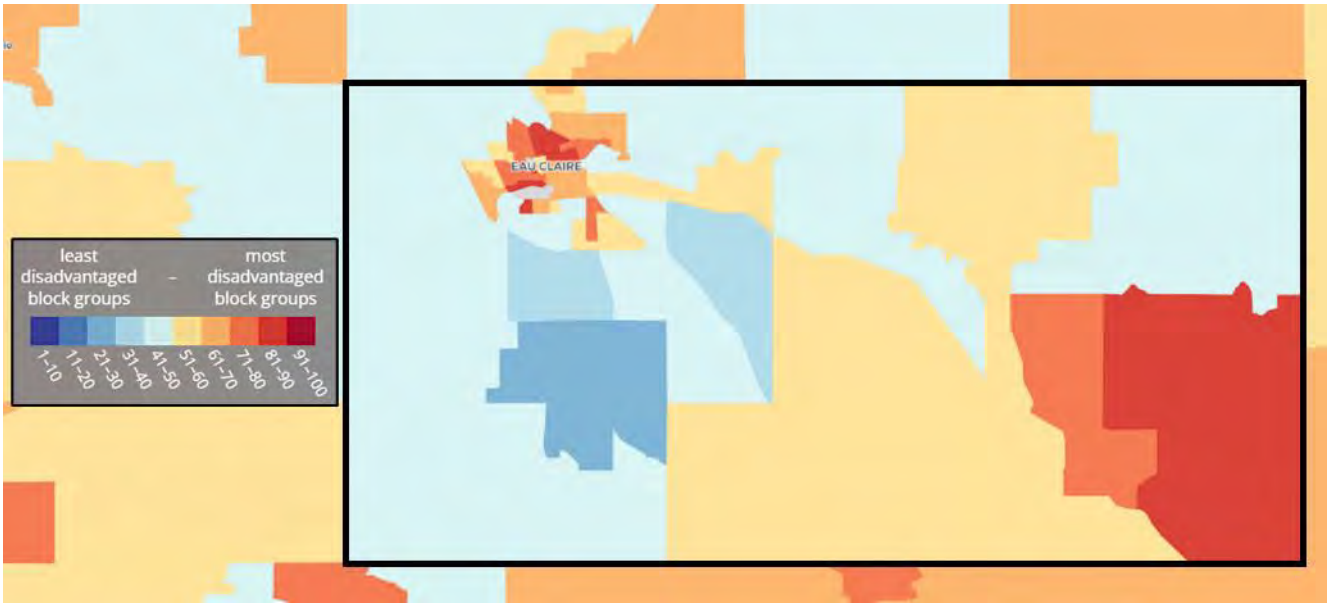
Highest (Top 4th) — Vulnerability (SVI 2022)[2] — Lowest (Bottom 4th)

Data Sources: [2]CDC/ATSDR/GRASP, U.S. Census Bureau, ArcGIS StreetMap Premium.
Notes: [1]Overall Social Vulnerability: All 16 variables. [3]One or more variables unavailable at census tract level. [4]The CDC/ATSDR SVI combines percentile rankings of U.S. Census American Community Survey (ACS) 2018-2022 variables, for the state, at the census tract level. [5]Socioeconomic Status: Below 150% Poverty, Unemployed, Housing Costs Burden, No High School Diploma, No Health Insurance. [6]Household Characteristics: Aged 65 and Older, Aged 17 and Younger, Civilian with a Disability, Single Parent Household, English Language Proficiency. [7]Race/Ethnicity: Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino. [8]Housing Type/Transportation: Multi-Unit Structures, Mobile Homes, Crowding, No Vehicle, Group Quarters.
Projection: NAD 1983 Wisconsin TM US Ft.
References: Flanagan, B.E., et al., A Social Vulnerability Index for Disaster Management. *Journal of Homeland Security and Emergency Management*, 2011. 8(1).
CDC/ATSDR SVI web page: https://www.atsdr.cdc.gov/placeandhealth/svi/index.html.

UW Center for Health Disparities Research Area Deprivation Index

The Area Deprivation Index (ADI) utilized American Community Survey Census data from a 5-year average sample to identify socioeconomic disadvantaged Census block groups in terms of income, education, employment, and housing quality. **Figure 11** below shows the ADI results for Eau Claire County. Similar to the SVI map, the results reiterate the highest vulnerabilities are in the City of Eau Claire and in the southeast part of the County.

Figure 11. Area Deprivation Index for Eau Claire County



During Plan Update Steering Committee meetings, it was noted that the large Amish population in the Fairchild and Augusta area are one of the reasons why the southeast part of the County has higher vulnerability scores (e.g., lack of indoor plumbing, no motorized vehicles, lower educational attainment). It was also noted that the Census tract-level data does not provide a full picture of circumstances. For example, rural, lower-income households also exist in the southeast and northwest parts of the County.

Another tool, which incorporates some of the same data within this section, is the National Fire Protection Association's Community Risk Assessment (CRA) Tool. The CRA Tool provides Census tract level data social vulnerabilities and the built environment as well as fire and emergency services incident data.

D. COMMUNITY LIFELINES

Community lifelines are services and facilities that are fundamental to all aspects of society. FEMA encourages communities to mitigate the potential hazard impacts to community lifelines and give priority to stabilizing community lifelines during initial response. Eau Claire County's principal community lifelines are summarized in **Table 9** on the following page. The fifth column identifies the data source(s) for each lifeline:

HAZUS	FEMA Hazard Program
WDPI	Wisconsin Department of Public Instruction
WCWRPC	West Central Wisconsin Regional Planning Commission
WDNR	Wisconsin Department of Natural Resources
WDHS	Wisconsin Department of Health Services
HIFLD	Homeland Infrastructure Foundation-Level Data
WPSC	Wisconsin Public Service Commission
FCC	Federal Communications Commission
WISLR	Wisconsin Information System for Local Roads

During the planning process, it was noted that:

- The data for some lifelines is incomplete and some subcomponents have not been locally confirmed or mapped. Table 9 should be considered a starting point that can be built upon and improved for future mitigation plan updates.
- A complete breakdown of spill response resources was not available. A Type I Team is available in Eau Claire/Chippewa Falls, so this lifeline is largely covered.
- The County has been considering the different lifelines as a way to organize branches within the Emergency Operations Center (EOC).

Appendix D includes a series of heat maps showing the distribution of most of the community lifelines in Eau Claire County; the lifelines are not individually listed or mapped for security reasons. Those lifelines that are included in the heat maps are indicated in the final column of Table 9. Accurate location data for some lifelines is not yet available, while some other lifelines are not included in the heat maps since they are linear features, such as highways and utility lines.

Unsurprisingly, the heat maps in Appendix D show that Eau Claire County's community lifelines are concentrated in the cities and villages, especially within the Eau Claire urban area.

Appendix F evaluates the potential vulnerabilities for each category of community lifeline in Eau Claire County for those hazards of significant risk, as will be further discussed in Section III.D. Cities and villages, as part of their sub-plans in **Appendix K**, also frequently identify vulnerabilities, partnerships, or strategies related to these lifelines. For reference, **Figures 12 & 13** provide the service areas for two safety lifelines—Fire Districts and Emergency Medical Service (EMS)/First Responder service areas. The fire departments in particular are important to the wildfire risk assessment and strategies.

Table 9. Summary of Eau Claire County Community Lifelines

Lifeline	Component	Subcomponent	Count	Source/Date	Mapped
SAFETY & SECURITY					
Safety and Security	*Law Enforcement/Security*	Police Stations & Law Enforcement Agencies	8	FEMA 2024	Y
		Correctional Facilities	1	FEMA 2024	Y
	Fire & EMS Service	Fire/EMS Stations	14	FEMA 2024	Y
		Other Firefighting Resources	WNDR Station in Augusta		N
	Search & Rescue	Local Search & Rescue, if separate than above	*none identified*		
	Government Service	Government Centers & Municipal Buildings (essential services)	98	HAZUS 2023	Y
		Emergency Operations Centers (may also be within the above)	1	FEMA 2024	Y
		Public K-12 Schools	35	WDPI 2024	Y
		Private K-12 Schools	14	WDPI 2024	Y
		Colleges & Post-Secondary Educational Institutions	4	FEMA 2024	Y
		Public Libraries	6	FEMA 2024	Y
	Community Safety	All Dams	22	WDNR 2024	Y
		Dams (significant to high hazard potential)	2	WDNR 2024	Y
		Emergency Shelters, Heating/Cooling Shelters, & Safe Rooms	59	FEMA 2024	Y
		VOADS & Other Community Support Agencies	*4+; not fully inventoried*		N
FOOD, HYDRATION, SHELTER					
Food, Hydration, Shelter	*Food*	Commercial Food Distribution (e.g., retail, market, school)	666	HAZUS 2023	Y
		Commercial Food Supply Chain	*multiple; not inventoried*		
		Food Distribution Programs (i.e., food banks)	11	WCWRPC 2024	Y
	Hydration	Bottled water distribution	*not inventoried*		
		see Water Systems lifeline for potable water systems			
	Shelter	Assisted Living Facilities & Nursing Homes	113	WDHS 2024	Y
		Homeless Shelters & Other Group Homes	40	WCWRPC 2024, WDHS 2024	Y
		Adult Day Care, Alcohol, Drug, Mental Health Treatment Centers	36	WDHS 2024	Y
		Hotels or Other Commercial Housing Facilities	203	HAZUS 2023	Y
		see Section II.C.iv.			
	Agriculture				
HEALTH & MEDICAL					
Health and Medical	*Medical Care*	Hospitals	3	HAZUS 2023	Y
		Dialysis Clinics	3	WDHS 2023	Y
		Pharmacies	13	Google Maps	Y
		Veteran's Affairs Health System	*none identified*		
		Veterinary Services	7	USACE-NSI 2024	Y
	Public Health	Public Health Office or Department	1	WDHS 2024	Y
		Other Health Clinics or Treatment Centers	194	HAZUS 2023	Y
		Clinical Laboratories	152	WDHS 2024	Y
	Patient Movement	Ambulance Service Districts	7	EAU CLAIRE COUNTY 2024	Y
		Air Ambulance/Heli-Pad	2	WISDOT 2024	Y
	Fatality Management	Funeral Homes/Morgue Spaces/Crematories			

ENERGY					
	*Electrical Power Grid*	Power Plants & Generation Systems, incl. hydroelectric & natural gas	4	HIFLD 2024, WPSC 2011	Y
		Electric Transmission Systems	261 miles	HIFLD 2024	Y
		Distribution Systems	*not inventoried*		
	Natural Gas, LP, & Other Fuels	Refineries/Fuel Processing	*none identified*		
	(some also qualify as HazMat lifelines)	Fuel Storage Facilities & "Tank Farms"	1	HIFLD 2024	Y
		Natural Gas Pipelines	28 miles	WPSC 2011	Y
COMMUNICATIONS					
	*Infrastructure*	Towers & Fixed Wireless	7	HIFLD 2024	Y
		Cable Systems & Wireline	*not inventoried*		
		Broadcast Facilities (TV & Radio)	10	HIFLD 2024	Y
		Data Centers	*not inventoried*		
	Responder Communications	ARES/RACES Base or Infrastructure	Active Group		N
	Alerts, Warnings & Messages	Emergency/Storm Sirens	42	EAU CLAIRE COUNTY 2024	Y
		Siren Types: *37 weather, 2 fire, 3 dam failure*			
	Finance	FDIC Insured Banks & Credit Unions	25	HIFLD 2024	Y
	911 & Dispatch	Dispatch & Public Safety Answering Points (PSAP)	1	FCC 2024	Y
TRANSPORTATION					
	Highway/Roadway/Motor Vehicle	Roads	1,445 miles	WISLR 2024	Y
		Bridges	232	HIFLD 2023	Y
	Mass Transit	Bus	1	WCWRPC 2024	Y
		Rail	*none identified*	HIFLD 2023	
	Railway	Freight	56 miles	NARN 2024	Y
		Passenger	*none identified*		
		Bridges	66	HIFLD 2023	Y
	Aviation	Commercial (cargo/passenger)	*none in the County*		
		General	3	WISDOT 2024	Y
HAZARDOUS MATERIAL					
	Facilities	HAZMAT-EPCRA Tier 1 EHS Planning Facilities	24	EC CO EMGY MGMT	Y
		HAZMAT-EPCRA Tier 2 Reporting Facilities	33	EC CO EMGY MGMT	Y
		EPA Active Hazardous Waste Facilities	278	HIFLD 2024	Y
		EPA Hazardous Waste Treatment, Storage and Disposal Facilities	1	HIFLD 2024	Y
	Spill Response	Spill Response Agencies or Resources, excluding fire depts	Type 1 Team		Y
WATER SYSTEMS					
	Potable Water Infrastructure	Wellhead Protection Areas	88	WDNR 2024	Y
		Community Wells, Towers, & Distribition Systems	39	WDNR 2024	Y
		Private High Capacity Wells	88	WDNR 2024	Y
		Water Bottling Facilities	*none identified*		
	Wastewater Management	Community Wastewater Treatment Plants & Systems	3	HIFLD 2024	Y

Figure 12. Eau Claire County Fire Districts

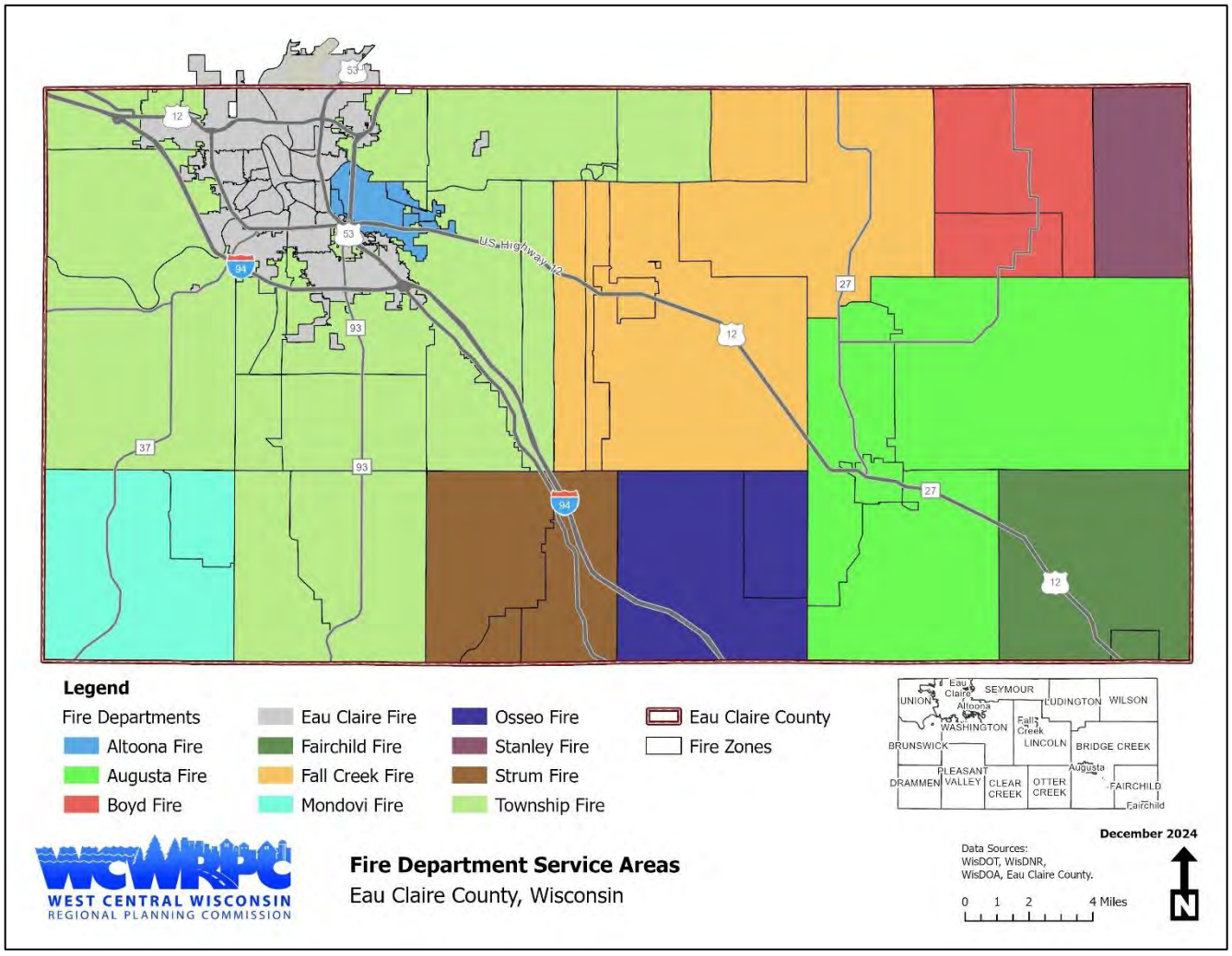
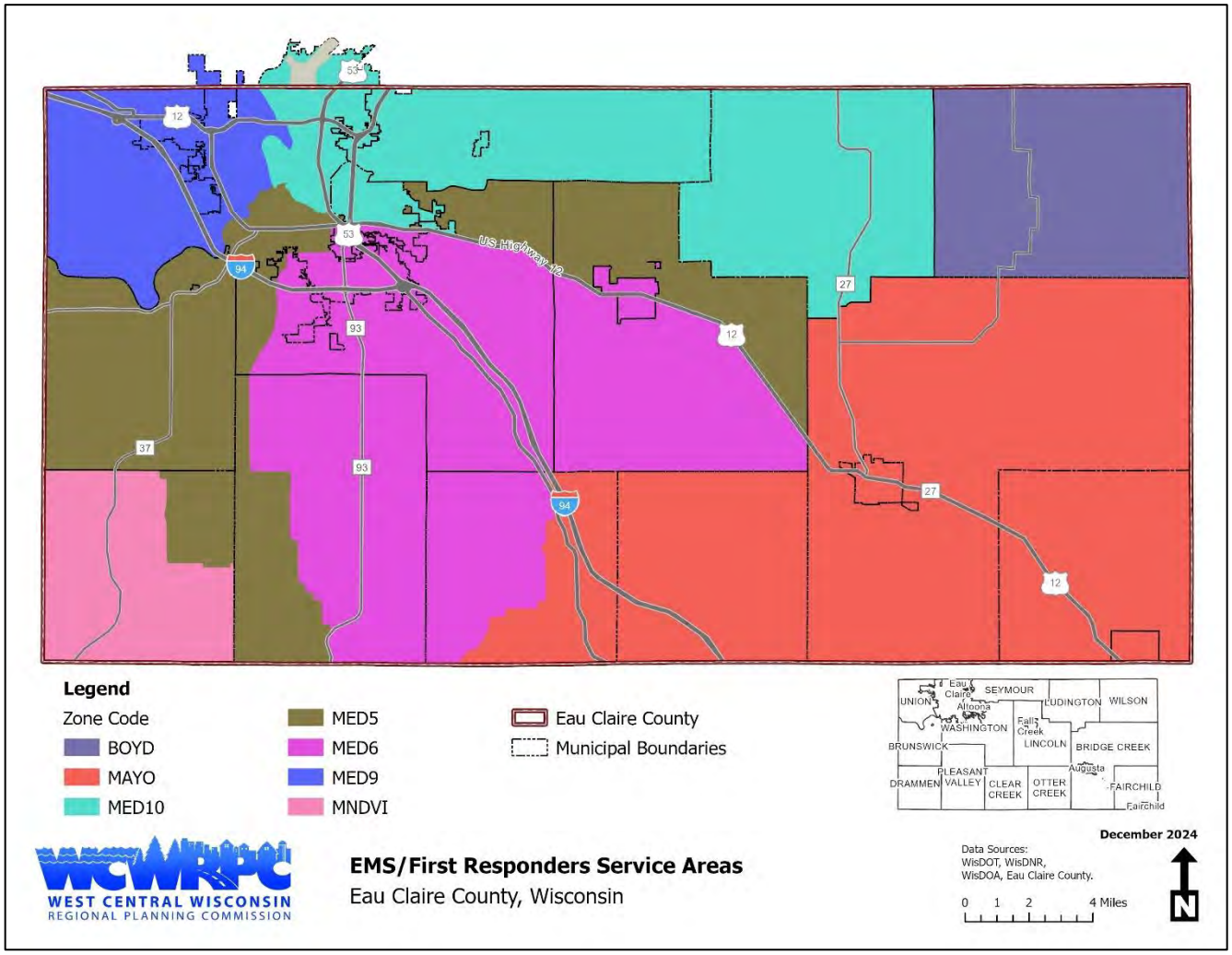


Figure 14. Eau Claire County EMS/First Responder Service Areas



E. TRANSPORTATION SYSTEMS

Transportation is one of the community lifelines, and roads and rail lines are frequently mentioned in later sections of this plan due to related vulnerabilities (e.g., winter storms, HazMat spills). Providing an uninterrupted transportation network is critical to Eau Claire County. As **Figure 15** shows, residents and goods often travel significant distances for services, critical facilities, and employment.

The County's size and road miles can be a challenge for road crews and emergency personnel during and after a hazard event (e.g., snow removal, downed trees, culvert washouts). Eau Claire County maintains over 420 miles of county trunk highway (see Figure 12), reflecting the largely rural nature of much of the County. The 150 miles of highways with State jurisdiction reflect Eau Claire County's location as an important transportation crossroads in west central Wisconsin. The remaining 995 miles of roads in the County are owned by the towns, cities, and villages. The County has a relatively high number of bridges (235), of which 72 are owned by the County and 111 owned by the State of Wisconsin.

Interstate 94, U.S. Highway 12, U.S. Highway 53 (north of I-94), and five State highways, or portions thereof, in Eau Claire County are designated as long-truck routes, in addition to portions of County Highway "R". Traffic volumes on the Interstate system average between 22,000 to 28,000 daily trips in the urban area. On the USH 53 bypass, traffic volumes exceed 45,000 daily trips in some areas.

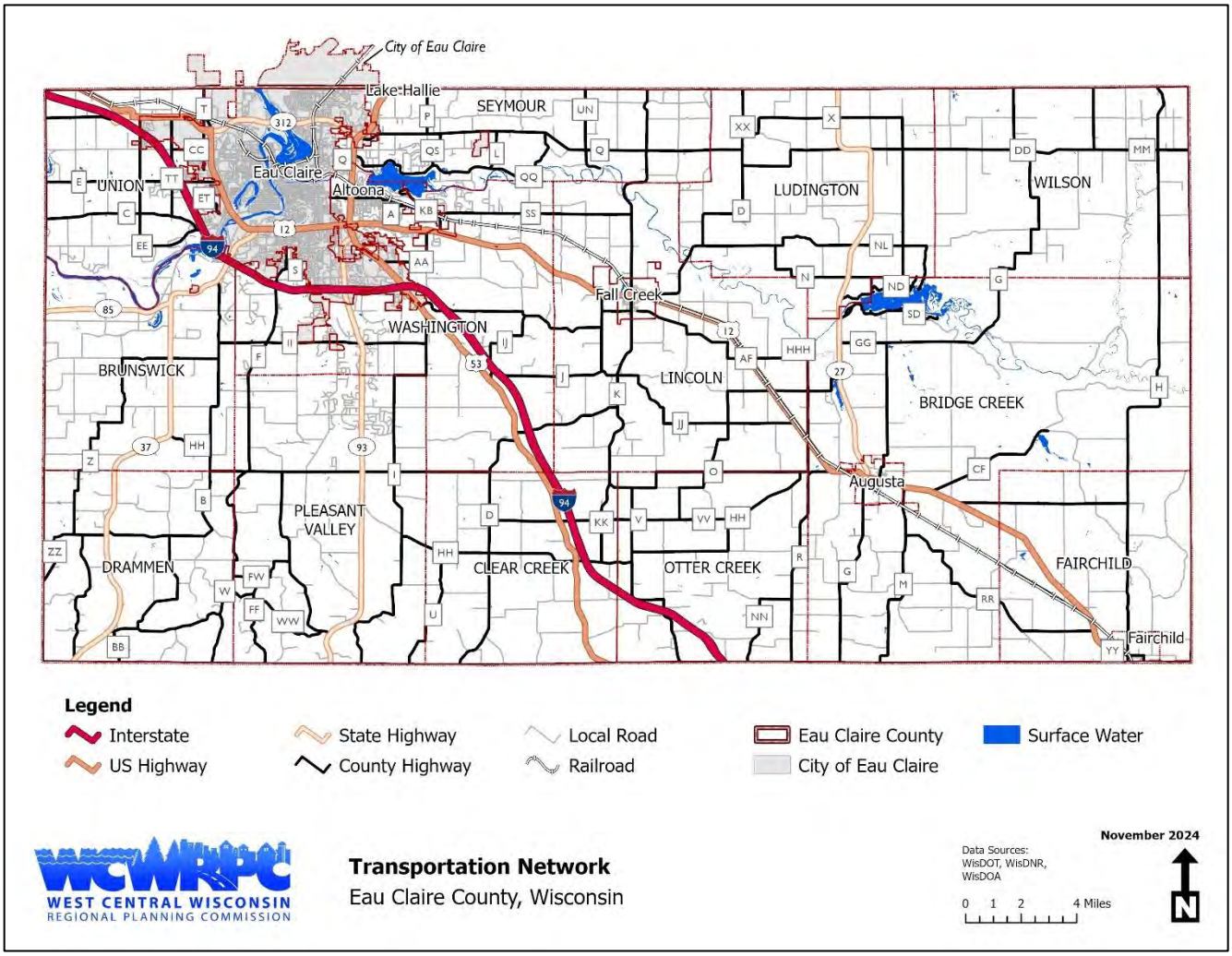
Rail service in the County is operated by Union Pacific, with the rail line more or less paralleling USH 12 for much of the County until the urban area. Interest in a passenger rail service to the Twin Cities continues to grow.

The Chippewa Valley Airport is located in the City of Eau Claire (in Chippewa County) and is an air carrier/cargo facility with commercial passenger flights.

Recreational transportation systems in the County have been increasing, and include the Chippewa River Trail, bicycle trails and routes within Eau Claire and Altoona, and ATV trails and routes in rural areas.

Public transit service in the County includes Eau Claire Transit which serves Eau Claire and Altoona, a regional intercity bus service, and specialized transit services for adults with disabilities and those over the age of 60 without access to other alternatives.

Figure 15. Eau Claire County Transportation System



F. HISTORICAL RESOURCES

Historic structures, sites, and districts are sometimes targeted for hazard mitigation strategies due to their unique, often irreplaceable, social value. According to the National Register of Historic Places[4], Eau Claire County has a total of 57 historic properties and seven historic districts, which have received Federal or State historic landmark designation. All but two historic structures and districts are located within the City of Eau Claire. **Table 10** lists the formally recognized locations of the places of historic significance within Eau Claire County.

Table 10. Eau Claire County Historic Properties

#	Historic Site	Address	City	Listed
1	Anderson, Brady and Waldermar Ager House	514 W. Madison St.	Eau Claire	2000
2	Barber, James, House	132 Marston Ave.	Eau Claire	1983
3	Barnes Block	15-21 S. Barstow St.	Eau Claire	1982
4	Barron, Martin Van Buren, House	221 Washington St.	Eau Claire	1983
5	Borton, Einar and Alice, House	1819 Lyndale Ave.	Eau Claire	2013
6	Brice, Orlando, House	120 Marston Ave.	Eau Claire	1983
7	California Wine and Liquor Store	201 Farmers St.	Fairchild	1982
8	Carson Park Baseball Stadium	Carson Park Dr., Carson Park	Eau Claire	2003
9	Chamberlin, Clarence, House	322 W. Grand Ave.	Eau Claire	2000
10	Chambers, Pearl and Eva, House	1615 State St.	Eau Claire	2012
11	Chicago, St. Paul, Minneapolis & Omaha Railroad Depot	324 Putnam Ave.	Eau Claire	1985
12	Christ Church Cathedral and Parish House	510 S. Farwell St.	Eau Claire	1983
13	City Hall	203 S. Farwell St.	Eau Claire	1983
14	Cobblestone House	1011 State St.	Eau Claire	1974
15	Community House, First Congregational Church	310 Broadway	Eau Claire	1974
16	Confluence Commercial Historic District	2-28 S Barstow; 206-316 Eau Claire & 8 S Farwell Sts.	Eau Claire	2007
17	Dells Mill	About 3 mi. NNW of Augusta off WI 27	Augusta	1974
18	Drummond Business Block	409-417 Galloway St.	Eau Claire	2007
19	Drummond, David, House	1310 State St.	Eau Claire	1974
20	Eau Claire High School	314 Doty St.	Eau Claire	1983

[4] National Register of Historic Places database. December 26, 2024.

21	Eau Claire Masonic Temple	317--319 S Barstow & 306 Main Sts.	Eau Claire	2007
22	Eau Claire Park Company Addition Historic District	Roosevelt, McKinley, and Garfield bet. park Ave. and State St.	Eau Claire	2004
23	Eau Claire Public Library	217 S. Farwell St.	Eau Claire	1983
24	Eau Claire Vocational School	1300 1st Ave.	Eau Claire	2014
25	Eichert, Christine, House	527 N. Barstow St.	Eau Claire	1983
26	Emery Street Bungalow District	Emery St. between Chauncey and Agnes Sts.	Eau Claire	1983
27	First Methodist Episcopal Church	421 S. Farwell St.	Eau Claire	1999
28	Gikling, Gilbert, House	421 Talmadge St.	Eau Claire	2001
29	Hoover, James Stephen and Borland, Elizabeth, Memorial Chapel	Lakeview Cemetery, Buffington Dr.	Eau Claire	2000
30	Johnson, John, Saloon	216 Fifth Ave.	Eau Claire	1983
31	Kaiser Lumber Company Office	1004 Menomonie St.	Eau Claire	1983
32	Kenyon, A. L., House	333 Garfield Ave.	Eau Claire	1983
33	Kline's Department Store	6-10 S. Barstow St.	Eau Claire	1984
34	Merrill, Levi, House	120 Ferry St.	Eau Claire	1985
35	Oatman Filling Station	102 Ferry St.	Eau Claire	2001
36	Ottawa House	602 Water St.	Eau Claire	1983
37	Owen Park Bandshell	First Ave., Owen Park	Eau Claire	2003
38	Owen, John S., House	907 Porter Ave.	Eau Claire	1983
39	Pioneer Block	401-409 Water St.	Eau Claire	1980
40	Putnam, Jane E., Memorial Chapel	Forest Hill Cemetery, Emery St.	Eau Claire	2000
41	Randall Park Historic District	Roughly bounded by Lake and Niagara Sts., 3rd and 5th Aves.	Eau Claire	1983
42	Randall, Adin, House	526 Menomonie St.	Eau Claire	1983
43	Roosevelt Avenue Historic District	415,419,429,443,449 & 455 Roosevelt Ave.	Eau Claire	2009
44	Sacred Heart Church	418 N. Dewey St.	Eau Claire	1983
45	Saint Edward's Chapel	1129 Bellevue Ave.	Eau Claire	2000
46	Salsbury Row House	302-310 W. Grand Ave.	Eau Claire	2009
47	Schofield Hall	105 Garfield Ave.	Eau Claire	1983
48	Schwahn, William and Tilla, House	447 McKinley Ave.	Eau Claire	2001
49	Second Ward School	1105 Main St.	Eau Claire	2000
50	Soo Line Locomotive 2719	Carson Park	Eau Claire	1994
51	Soo Line Railroad Bridge	Spans the Eau Claire R. between Galloway and Gibson Sts.	Eau Claire	2022

52	St. Joseph's Chapel	Sacred Heart Cemetery, Omaha St.	Eau Claire	1988
53	St. Patrick's Church	322 Fulton St	Eau Claire	1983
54	Steven House	606 Second Ave.	Eau Claire	1982
55	Temple of Free Masonry	616 Graham Ave.	Eau Claire	1988
56	Third Ward Historic District	Roughly bounded by Chippewa River, Park Pl., Gilbert Ave., and Farwell St.	Eau Claire	1983
57	Third Ward Historic District (Boundary Increase)	Approx. seven blks in the Third Ward bounded by St. St., Summit Ave., Farwell St. and Garfield Ave.	Eau Claire	2004
58	Union Auto Company	505 S. Barstow St.	Eau Claire	2007
59	Union National Bank	131 S. Barstow St.	Eau Claire	1983
60	US Post Office and Courthouse	500 S. Barstow Commons	Eau Claire	1991
61	Walter-Heins House	605 N. Barstow St.	Eau Claire	1982
62	Water Street Historic District	402-436 & 401-421 Water St.	Eau Claire	2007
63	Werner, Dr. Nels, House	443 Roosevelt Ave.	Eau Claire	2001
64	Wilcox, Roy, House	104 Wilcox St	Eau Claire	1983
65	Winslow, George F., House	210 Oakwood Pl.	Eau Claire	1978

The above list includes seven historic districts (with one listed twice due to a boundary increase), all within the City of Eau Claire, which encompass numerous buildings. Travel on the Soo Line Railroad Bridge is limited to pedestrian and bicycle traffic. Floods and ice dams will likely continue to threaten the historic bridge.

The list above is not inclusive of all sites of historic and cultural significance, however. Additional structures undoubtedly qualify as National Register candidates. As previously mentioned, the Wisconsin Architecture & History Inventory (AHI) identifies over 1,500 buildings, structures, or objects in Eau Claire County which illustrate Wisconsin's unique history. A detailed assessment of the vulnerability of each of these sites to hazard events is not currently available. Such sites are quite varied and include churches, cemeteries, homes, and barns, as well as archeological sites.

Most of these historic buildings are very well constructed, and they continue to serve as an important role in recognizing Eau Claire County's past. As will be discussed later in the hazard vulnerability assessment of this Plan, these structures are generally not any more vulnerable to hazard risks (e.g., tornado, winter storms) than more recent construction. The historic properties of Eau Claire County will be further considered during the vulnerability assessment of critical facilities as each hazard type is analyzed, but no unique vulnerability or specific mitigation action for a historic structure was identified during the planning effort.

SECTION III.
ASSESSMENT OF HAZARD CONDITIONS

In order to more effectively evaluate potential hazard mitigation alternatives and develop feasible strategies to address the risks associated with the identified hazards, the County must:

- identify the hazards that pose a significant risk to Eau Claire County;
- profile the extent and severity of past hazard events that have affected the County and the probability of recurrence; and
- assess the vulnerability of the community to the threat of future hazard events.

A. HAZARD IDENTIFICATION

Although Eau Claire County could potentially be at risk from a variety of hazards, this plan will attempt to narrow the scope of the hazards that will be addressed to those hazards that pose a significant risk.

i. Disaster and Emergency Declarations

Since 1953, there have been six Presidential Declarations for a Major Disaster for which Eau Claire County was a primary county impacted:

Month & Year	Federal Disaster Declarations	Public Assistance	Individual Assistance
May 1969	Tornados, severe storms, and flooding resulted in a declaration of twenty Wisconsin counties.	x	x
April 1973	Severe storms & flooding.	x	x
July 1980	Severe storms & flooding. "The Big Wind."	x	x
Summer 1993	Flooding and severe storms in Summer of 1993 resulted in a declaration for 47 Wisconsin counties. Statewide damage exceeded $740 million.	x	x
May-July 2004	Severe Storms & flooding		x
April 2020	COVID-19 was declared a nationwide disaster on April 4, 2020.	x	x

While the above catastrophic events were of sufficient severity to warrant major Federal assistance, there have been at least 10 additional State or Federal Emergency Declarations involving Eau Claire County:

Month & Year	State or Federal	State or Federal Emergency Declarations
June 1976	Federal	Drought
Aug 2003	State	Drought
July 2005	State	Drought
Sept 2005	Federal	Hurricane Katrina Evacuation
July 2006	State	Drought
Aug 2007	State/USDA	Drought/Agricultural Drought
Aug 2009	State	Drought
July 2012	State	Drought
Mar 2020	State	Public Health Emergency for COVID-19
Mar 2020	Federal	COVID-19

During an emergency or major disaster declaration, Federal assistance will supplement State and local efforts. A State Emergency Declaration is declared by the Governor and puts into motion State assistance programs. Emergency declarations are typically more limited in scope and without long-term federal assistance.

Relying on Federal emergency and disaster declarations as a measure of risk can be misleading. While significant damage occurs during a declared disaster or emergency, the declaration area typically involves multiple counties, and a sizable percentage of the damage can also be limited to a certain area. Further, disaster events do occur that can be deadly and cause severe damage; but the total damage does not rise to the thresholds to qualify for Federal funding. The Winter 2014 Polar Vortex is one such event that caused major damage to water lines for many communities in the region, but this disaster was not declared. Such events can be especially hard on small communities when Federal assistance is not available.

To assist in determining what hazards should be evaluated in the plan, National Climatic Data Center (NCDC) information from the National Weather Service (NWS) was used. This data describes past, reported weather events and the resulting deaths, injuries, and damages associated with each of these events. Data for a wide variety of events has been maintained, while some older data is only available for tornado and thunderstorm-related events.

During the period from January 1, 1993, through December 31, 2023, there were 339 extreme weather hazard events reported to the National Climatic Data Center for Eau Claire County on 221 different dates as discussed in **Appendix E**. These events included:

- Two deaths and 12 injuries are in the database, with 7 of the injuries associated with a single, multiple-vehicle accident on I-94 during a winter storm.
- Over $11.5 million in property damage was reported (unadjusted for inflation). The two largest

damage-causing events were flash flooding in 2000 and a 2011 winter storm.

- Hail and Thunderstorm Wind/High Winds were the most frequently reported natural hazard events.

While being the best, accessible source of historical storm data, the NCDC database is far from complete. For instance, flood data prior to 1997 is not in the database, so the devastating 1993 flooding event is not included in the database. And while the NCDC database includes tornado events since the 1950s, it is missing the F3 tornado that struck the Foster area in August 1994, which resulted in two deaths in the County. Damages in the NCDC database are frequently under-reported and some damage estimates represent a single event impacting multiple counties.

ii. Eau Claire County Overall Risk Assessment

During the update of the 2025 *Eau Claire County Multi-Hazard Mitigation Plan*, Steering Committee members discussed natural hazard trends and concerns. This included reviewing the National Risk Index data for Eau Claire County, the 2024 Health Vulnerability Assessment results (HVA) completed by the Northwest Wisconsin Healthcare Emergency Readiness Coalition and the Eau Claire Public Health Emergency Preparedness Committee, and the hazards included in the 2019 Plan.

Based on this discussion and each member's personal experiences, each Committee member rated the probability of a natural hazard event occurring and the vulnerability or impacts if such an event should occur. Identification of the hazards for inclusion in this risk and vulnerabilities survey was based on the hazards identified in the *Resource Guide to All Hazards Mitigation Planning in Wisconsin* prepared by Wisconsin Emergency Management.

PROBABILITY VS. VULNERABILITY

For purposes of this plan, the following definitions are used:

PROBABILITY:	*Likelihood and frequency of occurrence in the future.*
VULNERABILITY:	*If the event occurs, what are the impacts?*

For each hazard type, each Committee member was asked to assign ratings of 0 to 5 (0-no probability or vulnerability, 1-low, 3-moderate, 5-high) to reflect their opinion of which hazards pose the greatest concerns for Eau Claire County. A composite overall average risk rating for each hazard was then calculated by totaling the average risk rating from each respondent and divided by the total number of respondents. The compiled results of the updated survey are shown in **Table 11.** An additional column is included in Table 11 identifying those hazards that the Committee recommended should be addressed as part of the 2025 Plan update and how best to organize those hazards in Section III.D.

Table 11. Eau Claire County Hazards Probability & Vulnerabilities Survey Results (Spring 2024)

0 -- none; extremely low	3 – moderate; substantial
1 -- low; minimal	4 -- high; serious
2 – some; of concern	5 -- very high; extreme

Hazard	Probability	Vulnerability	Ntnl Risk Index	HVA		in 2019 Plan?	section of 2024 plan
				NWHERC	EC City-County		
Natural Hazards							
Riverine or Overbank Flooding	3.8	3.4	Low	59-61%	35%	x	flooding
Overland or Stormwater Flooding	3.0	2.8			39%	x	flooding
Heavy Snow Storm and Blizzards	3.6	3.0	Mod	33-55%	42%	x	winter storms & extreme cold
Ice Storms and Sleet	3.8	3.6	High	50-53%	59%	x	winter storms & extreme cold
Lack of Snow Cover During Cold	2.4	1.8				x	winter storms & extreme cold
Extreme Cold/Cold Wave	3.0	2.6	High	68%	58%	x	winter storms & extreme cold
Forest or Wild Fire	2.8	3.2	V. Low	59%	34%		wildfire
Tornados	2.4	4.0	Mod	48%	48%	x	tornados
High Winds	2.8	3.0	Mod			x	thunderstorms & high winds
Thunderstorms, Lightning, Hail, etc.	2.8	2.4	V. Low-Low	35%	38%	x	thunderstorms & high winds
Extreme Heat/Heat Wave	3.0	3.0	Mod	67%	58%	x	extreme heat
Drought	2.4	2.6	V. Low	48%	36%	x	drought
Landslides or Sinkholes	0.8	1.2	Mod	37%			
Earthquakes	0.2	2.0	V. Low	24%			
Fog	1.6	1.4					
Technological Hazards							
Haz Mat Incident - Fixed	2.0	2.8		36%	26%	x	hazardous materials spills
Haz Mat Incident - Transportation	2.0	3.2		55%	52%	x	brief groundwater contamination section references non-point sources & other plans
Groundwater Contamination	2.4	3.6		38-40%	39%		
Animal Waste Management	1.8	2.2					
Long-Term Power Outage	2.6	4.0		43-65%	59%	x	long-term power outage
Nuclear Power Plant Incident	0.4	3.0		22%	11%		
Dam Failure Flooding	1.0	4.2				x	flooding
Airline Accident	1.0	3.0		37%	24%		partially in haz mat spills, but no passenger or mass casualty section
Railroad Accident	1.4	3.6					
Other Hazards							
Pandemics/Biological Disease	2.4	3.6		65%	50-59%		brief communicable disease section referencing PH plans
Livestock Flu and Diseases	2.2	2.6					no, unless zoonotic
Invasive Species & Diseases	1.6	1.8					reference to other plans
Active Shooter/Active Threats	2.6	4.0		67%	52%	x	active threats & workplace violence
Terrorism, Domestic (all)	1.8	3.8		29%			partially covered as part of active threats and cybersecurity sections
Terrorism, International (all)	1.2	3.2					
Terrorism, Critical Infrastructure	1.6	3.8					
Cyber Attacks	3.0	3.4		71-74%	64%	x	cyber attacks
Civil Unrest or Institutional Riot	1.4	3.2		58%	11%	x	partially covered under active threats & workplace violence

The **National Risk Index** compares Eau Claire County to rest of U.S. based on expected annual losses, social vulnerability, and community resilience for each hazard. The **NWHERC Hazard Vulnerability Assessment** is the relative risk and vulnerability for each threat in the region from a public health perspective.

As reflected in Table 11, the Steering Committee felt that the scope of the 2025 hazard mitigation plan update should be modified in one primary way when compared to the previous 2019 Plan:

- High winds are discussed with tornados due to similar vulnerabilities and impacts.

The Steering Committee discussed how best to approach zoonotic and communicable disease in light of the COVID-19 pandemic, and agreed that the 2025 Plan update should refer to and support, but not duplicate or supplant, the Public Health Emergency Preparedness Plan. As such, pandemics/zoonotic disease is included in Section III.B., with other hazards of concern addressed in other plans.

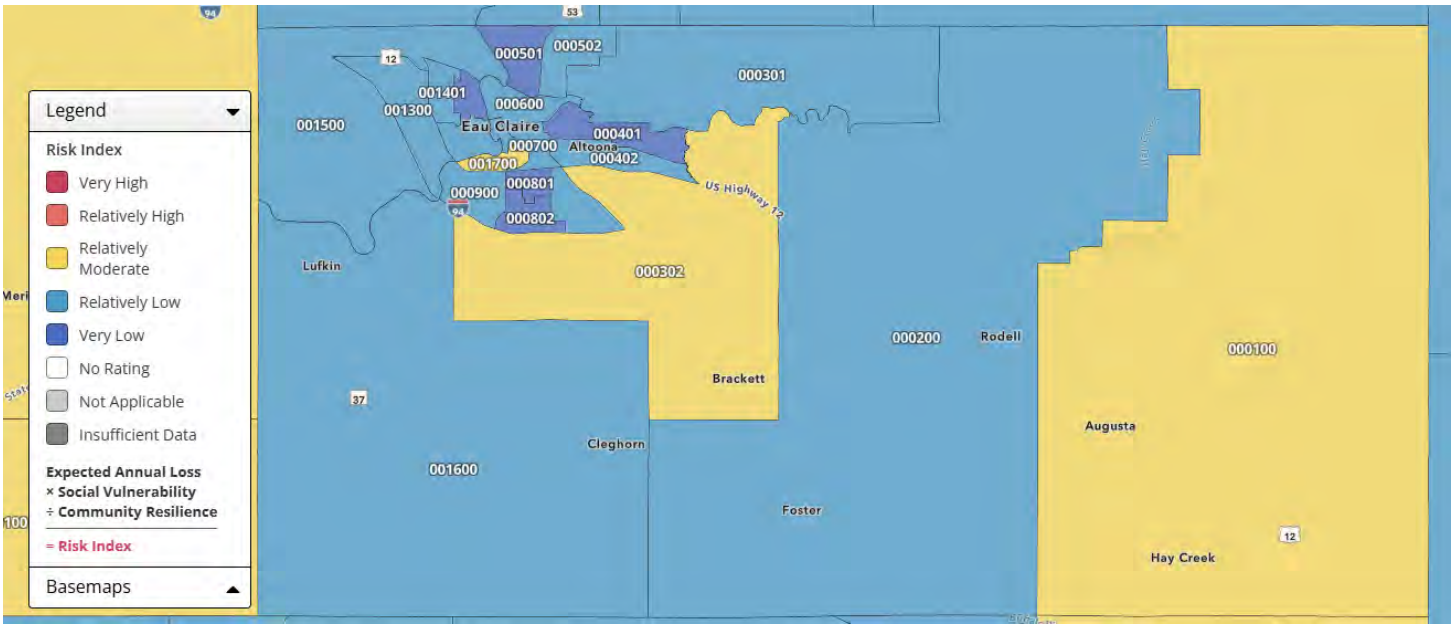
Of the above hazards, only flooding, wildfire, and, to a less extent, long-term power loss and hazardous materials spills, have geographic areas or locations of higher risk, as will be identified later in Section III.D.

FEMA National Risk Index

FEMA utilizes the CDC's Social Vulnerability Index, forecasted annual losses, and community resilience factors to produce their National Risk Index (NRI). NRI rankings are available at the state and national level. Some key findings from the NRI data are:

- Eau Claire County ranks in the 65th percentile for Nationally for risks and 72nd percentile within the State, suggesting it has a relatively lower hazard risks overall in comparison to the rest of the State and Nation.
- **Figure 16** shows the risk index classification for each census tract. Three census tracks have a slightly elevated risks. The eastern part of the County has an elevated risk due to a relatively higher socio-economic vulnerability, which is consistent with the previous discussion in Section II.C.v. of this plan. The other two tracts have a slightly elevated risk due to expected annual losses (potential vulnerabilities).

Figure 16. National Risk Index Scores for Eau Claire County Census Tracts



- Overall, all census tracts are classified as having a very high community resiliency.
- Relative to other counties nationally, Eau Claire County had high hazard risk ratings for Ice Storms (95.3 out of 100) and Cold Waves (89.8).
- Expected Annual Losses for the County were the highest for Tornado, Riverine Flooding, Ice Storm, and Strong Wind events.
- Surprisingly, the County had a relatively moderate rating for Landslides, which appears to be related to two stormwater flooding events that washed-out hillsides along U.S. Highway 53 and Interstate 94. In comparison, the Plan Update Steering Committee did not believe that landslides were a significant risk for the County as reflected in the previous table. This is a good example of how a hazard may have a relatively higher risk when compared nationally versus how the threat is perceived or experienced locally.

iii. Natural Hazards of No Significant Risk

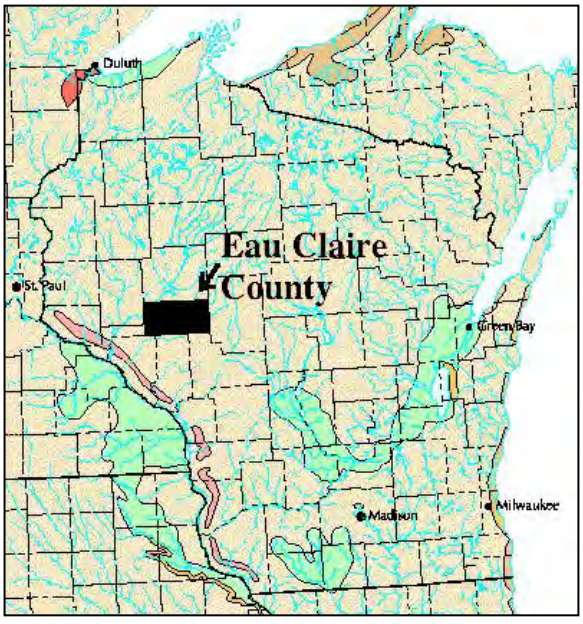
There are very few or no NOAA records of the following natural hazard events occurring in Eau Claire County, or the local impacts were very low when events have occurred. In order to meet the comprehensive requirements for developing an all hazards mitigation plan, these other hazards are identified and described below. It is important to note that these hazard events may still pose some threat to the community, but they were considered by the Steering Committee to either have a minimal chance of occurring, pose a minimal widespread vulnerability to residents or communities, or offer very limited mitigation options.

Landslides & Land Subsidence

The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on a steep slope is the primary reason for a landslide, there can be other contributing factors. Erosion by surface waters or excess weight from rain, snow or man-made structures may stress weak slopes to failure. Slope material that becomes saturated with water may develop a debris flow or mudflow.

The USGS *Landslide Overview Map of the Conterminous United States*[5] (excerpt for Wisconsin in **Figure 17**) identifies no large-scale landslide risks for the Eau Claire County area.

Figure 17. Landslide Hazards in Wisconsin



source: U.S. Geologic Service. Landslide Overview Map of the Conterminous United States. <http://landslides.usgs.gov/html_files/landslides/nationalmap/national.html>.

[5] U.S. Geological Survey. Landslide Overview Map of the Conterminous United States. <http://landslides.usgs.gov/html_files/landslides/nationalmap/national.html>

Areas of steep slopes do exist in Eau Claire County. Definitions of steep slopes can vary, though slopes of 12% and greater are generally considered to be steep. Based on the National Resources Conservation Service (NRCS) Soil Survey for Eau Claire County, there are 144,728 acres that potentially have a slope of 13 percent or greater, representing 35.1 percent of the total land base. Of this, 90,327 acres (21.8 percent) have slopes of 21 percent or greater, and nine percent have a slope of 25 percent or greater. The portion of the County east of STH 27 is relatively devoid of steep slopes, except along rivers and creeks. The highest concentrations of steep slopes can be found in the southern portions of the County and the area lying between Altoona and Fall Creek to the south of USH 12. Additional localized and site-specific variations in topography and slope exist. Past glacial activity has created some topography in Eau Claire County that is scenic, but may also be sensitive to development in some areas.

While steeper areas exist, the area's soils pose more of a gradual erosion risk, rather than the sudden, large-scale movement of ground associated with landslide hazards. Stormwater runoff can result in serious riverbank erosion and washouts concerns for some locations, which will be discussed in the flooding assessment. Wildfire events in areas of steep slope or along waters can also create landslide risks. Other man-made land disturbances can also increase the risk of landslides.

As noted on the previous page, Eau Claire County has experienced hillside washouts along major highways suggesting the County has some landslide risk, but at a very localized scale. In the context of all hazards facing Eau Claire County and the potential for losses, the probability of a serious landslide event was rating by the Steering Committee as extremely low.

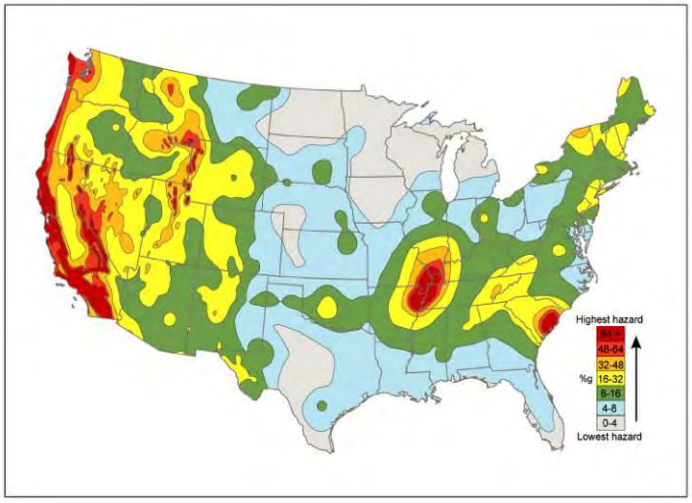
Land subsidence is an event in which a portion of the land surface collapses or settles. Common locations of subsidence are in areas having karst topography or in areas in which large quantities of groundwater have been withdrawn. Eau Claire County is not an area of significant karst topography which could contribute to land subsidence. There are no records of substantial damage or injury from large landslides or land subsidence within Eau Claire County.

Earthquakes

According to the U.S. Geological Survey, there have been 19 earthquake events in Wisconsin, with none noted for west-central Wisconsin. Where readings are available, these events were relatively small, most being 3.0-3.8 on the Richter Scale in size and the largest being an intensity of 5, which may be strong enough to crack some plaster, but not cause serious damage. Due to the lack of recent events, some geologists question whether many of these events were true earthquakes, but rather quarry collapses, blasts, etc.

The nearest active earthquake fault outside of Wisconsin is the New Madrid Fault which has a seismic zone that stretches from northeast Arkansas to southern Illinois.

Figure 18. U.S. Geological Survey Earthquake Hazard-Shaking Map



source: U.S. Geological Survey. Earthquake Hazard in the Heart of the Homeland. <http://pubs.usgs.gov/fs/fs-131-02/CUShazard.html>.

As **Figure 18** shows, the Eau Claire County area falls within the lowest earthquake hazard-shaking area, with the different colors representing the levels of horizontal shaking that have a 1-in-50 chance of being exceeded in a 50-year period. Similarly, Eau Claire County falls within a 0%g peak ground acceleration (PGA) zone as shown on the USGS PGA values map for the United States with a 10 percent chance of being exceeded over 50 years; Eau Claire County is a non-affected area.[6] The earthquake threat to Eau Claire County is considered very low.

Fog

Fog is low-level moisture that can reduce visibility. It can occur in isolated low-lying areas or be a widespread event that can cover several counties. In general, fog is often hazardous when the visibility is reduced to 1/4 mile or less. Thick fog reduces visibility, creating a hazard to motorists as well as to air traffic. Airports may close because of heavy fog. The intensity and duration of fog varies with the location and type of fog. Generally, strong winds tend to prevent fog formation. In Eau Claire County, dense fog occurs infrequently and is typically a short-term weather event lasting only for portions of a day. The NCDC database only includes one dense fog record from November 19-20, 2007, which included much of west-central Wisconsin.

Coastal Hazards (Hurricanes, Tsunamis, Tidalwaves, Waterspouts, etc.)

Coastal hazards can cause increases in tidal elevations (storm surges), high winds, and erosion caused by tropical cyclones (such as hurricanes) or the sudden displacement of water (such as tsunamis from earthquakes). Eau Claire County is located in the upper Midwest, approximately 1,000 miles from the Atlantic Ocean, 1,200 miles from the Gulf to the south and 2,000 miles from the Pacific Ocean. Eau Claire County also has no large inland lakes within its boundaries. Such coastal hazards have no direct impact on Eau Claire County, and only occasionally indirectly impact the county in the form of thunderstorms, which are discussed separately.

[6] U.S. Geologic Service. Peak Acceleration (%g) with 10% Probability of Exceedance in 50 Years. map. <http://geohazards.cr.usgs.gov/eq/pubmaps/US.pga.050.map.gif> November 1996.

B. HAZARDS OF CONCERN ADDRESSED IN OTHER PLANS

The three hazards briefly described in this sub-section pose a risk for Eau Claire County. The Steering Committee desired to bring attention to these hazards by their inclusion here, but decided to not include a full risk and vulnerability assessment within this plan update for one or more of the following reasons:

- They are not typically considered to be natural hazards (i.e., a disaster isn't declared) and are not typically included in a county-level mitigation plan.
- Most are largely addressed through other intensive planning and preparedness efforts for which Eau Claire County Emergency Management does not have a lead role. Instead of duplicating and repeating these planning activities within this Mitigation Plan, this sub-section recognizes that these risks exist and refers to other existing plans and programming to mitigate these risks.
- For nuclear plant accident, the probability and likely impacts for Eau Claire County are low.

This approach does not diminish the importance or the efforts to prepare for these other risks.

i. COMMUNICABLE DISEASE

Definitions

For purposes of this sub-section, the focus is on biological diseases that are a potential threat to humans and are infectious and communicable. **Infectious diseases** are illnesses caused by germs (such as bacteria, viruses, and fungi) that enter the body, multiply, and can cause an infection, though not all infectious diseases are contagious (or communicable). According to the Federal Center for Disease Control, a **communicable disease** is an illness caused by an infectious agent or its toxins that occurs through the direct or indirect transmission of the infectious agent or its products from an infected individual or via an animal, vector or the inanimate environment to a susceptible animal or human host. A **novel disease, virus, or virus strain** is a disease that hasn't been found in humans or a geographic region in the past. **Zoonotic diseases** are diseases that are spread between people and animals. An **epidemic** occurs when a disease affects a greater number of people than usual. A **pandemic** is a global disease epidemic.

Infectious Disease Probability, Vulnerability, and Capabilities

The 2025 Hazard Vulnerability Assessment (HVA) completed by the Northwest Wisconsin Healthcare Emergency Readiness Coalition (NWW-HERC) and the 2024 Eau Claire City-County Health Department's Emergency Preparedness (PHEP) Committee HVA provides valuable regional expert insights into infectious disease risks for Eau Claire County and the larger area:

	Emerging Global Infectious Disease (2025 NWW-HERC HVA)	Novel/Emerging Biological Disease Outbreak (2024 E.C. PHEP Cmte HVA)
Probability of Future Occurrence		
Probability	High; 4+ events/30years	High; 4+ events/30years
Potential Impacts/Vulnerabilities		
Human/Population	High; >10% pop injured or dead	Moderate; 1-10% pop injured or dead
Healthcare Services	High; >10% of services impacted	High; >10% of services impacted
Community Impact	High; >10% affected	Moderate; 1-10% affected

Public Health Services	High; >10% of services impacted	High; >10% of services impacted
Property	not applicable	not applicable
Business	High; >10% affected	Moderate; 1-10% affected
Capabilities/Capacity of Region/State to Manage the Events *(Note: Respondents generally felt that they were locally better prepared to manage vs. region/state).*		
Mitigation	Moderate	Moderate
Preparedness	Moderate	Moderate
Response	Limited or None	Substantial
Recovery	Moderate	Moderate

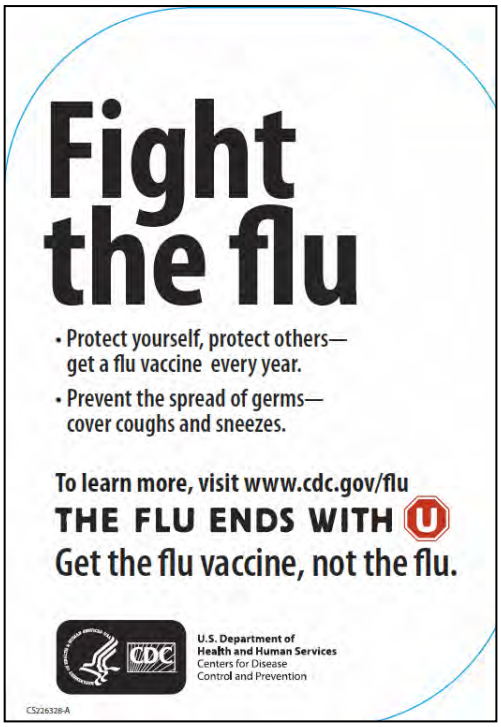
Overall, the 2025 NWW-HERC HVA assessed global and local/regional outbreaks nearly equal in terms of probability, potential impacts, and mitigation. Of the 51 different hazard types in the HVA, the NWW-HERC-participating public health officials rated global infectious disease outbreaks as the fourth highest hazard threat facing our region, tied with extreme cold. The 2024 Eau Claire Public Health Emergency Preparedness Committee's ranked biological disease outbreaks (novel) as second highest among the 40 different hazard types in their HVA only behind cyberattack.

Notable Events

An **influenza pandemic (or pandemic flu)** occurs when a new influenza virus emerges for which there is little or no immunity in the human population, begins to cause serious illness, and then easily spreads person-to-person worldwide. The potential risk of transmission, vulnerabilities, and impacts can vary widely by type of virus and availability of vaccines. Viruses can also mutate and increase in deadliness and spread more easily.

Historically, the 20th century saw three large pandemics of influenza impacting the United States:

- 1918 influenza pandemic caused at least 675,000 U.S. deaths and up to 50 million deaths worldwide.
- 1957 influenza pandemic caused at least 70,000 U.S. deaths and 1-2 million deaths worldwide.
- 1968 influenza pandemic caused about 34,000 U.S. deaths and 700,000 deaths worldwide.



Beginning in 2009, there was significantly increased attention to pandemic flu at the state and regional level due to **zoonotic diseases** capable of being transmitted between animals and humans. **Swine Flu (H1N1)** was declared a pandemic by the World Health Organization (WHO) in June 2009 and resulted in about 17,000 deaths worldwide before the pandemic was declared over in August 2010. During the H1N1 outbreak from April 2009 through March 2010, an estimated 43-88 million H1N1 cases and 192,000-398,000 H1N1-related hospitalizations were estimated to have occurred in the United

States according to the Centers for Disease Control & Prevention (CDC).[7] The CDC further estimated that 8,720 to 18,050 H1N1-related deaths occurred during the same timeframe. H1N1 continues to spread and there is some concern about the long-term effectiveness of current vaccines. During the 2010-2011 influenza season, five cases of Novel Influenza A viruses were reported in the United States, including one in Wisconsin and two in Minnesota; all patients fully recovered from their illness.

More recently, a **highly pathogenic avian influenza outbreak (H5N2)** struck the United States in April 2015. In nearby Barron County, 650,000 turkeys were euthanized as a result. A milder, low pathogenic strain of H5N2 would occur in March 2017 requiring quarantine and monitoring of poultry operations in the region. An outbreak of a different highly pathogenic strain called EA H5N1 would hit domestic flocks and wild birds throughout much of North America in 2021-2022, including poultry in the region. The outbreak would lull for about a year before hitting the region's poultry producers especially hard; the seasonal re-emergence was partially attributed to migrating waterfowl. Barron County again was hit especially hard. As of December 2023, over 70,000 turkeys in Barron County were depopulated and strong biosecurity measures were advised. Producers in other counties in the region were also impacted. The U.S. Department of Agriculture reported a decline in avian flu cases among wild birds in 2023, offering a glimmer of hope to the poultry industry which has lost 76.9 million birds since 2022.[8] For Eau Claire County, the relative threat is lower than some other counties in the region with larger numbers of poultry producers.



In March 2024, avian flu was confirmed as spreading to dairy cattle and several human cases have been reported. And in January 2025, the first H5N1-related human death was reported in Louisiana due to a non-commercial poultry exposure. According to the CDC, since 2022 through Fall 2024 in the United States:

- H5 Avian Flu has been detected in 9,725 wild birds and is believed to be in wild birds worldwide.
- 100,712,371 poultry have been affected in 48 states.

[7] U.S. Centers for Disease Control & Prevention. CDC Estimates of 2009 H1N1 Influence Cases, Hospitalizations, and Deaths in the United States, April 2009-March 13, 2010. http://www.cdc.gov/h1n1flu/estimates/April_March_13.htm

[8] https://www.poultryproducer.com/u-s-sees-diminishing-avian-flu-cases-in-wild-birds-a-potential-silver-lining-for-poultry-sector/

- 191 dairy herd have been affected in 13 states. including the surrounding states of Minnesota, Iowa, and Michigan; no cases have yet been reported in Wisconsin.
- 14 Avian Flu (H5) human cases have been reported among dairy and poultry workers for which 9 have been confirmed as H5N1.

As of August 2024, the CDC considered Avian Flu to be a low public health risk but is actively monitoring individuals with animal exposure. The H5N1 virus usually does not infect people, though there is no human immunity, and no commercial vaccine is available. One study showed that it is possible for avian flu viruses (and bacteria like Salmonella) to enter groundwater from a large source of poultry fecal waste, though the risk of virus transmission from groundwater to people is not known.[9] And some avian flu variants have undergone mutations, which could impact the vulnerability to humans.

As of August 2019, the CDC stated that it is impossible to predict when the next pandemic will occur or how bad a future pandemic will be, so advanced planning is needed. A great variety of mitigation and planning measures for pandemics has been undertaken over past two decades since the SARS epidemic in 2002-2003. The Avian Flu (H5N1, H5N2) and Swine Flu (H1N1) outbreaks have further increased awareness, cooperation, monitoring, and planning for large-scale disease or viral outbreak. But it would be less than a year later when these preparedness efforts would be truly tested.



The **coronavirus disease 2019 (COVID-19)** pandemic is a global outbreak of coronavirus – an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Cases of novel coronavirus (nCoV) were first detected in China in December 2019, with the virus spreading rapidly to other countries across the world. Since January 1, 2020, there have been nearly 1.1 million deaths in the United States attributed to COVID-19. As of 3/10/23, there were over 15,100 confirmed COVID-19 cases in Eau Claire County and 132 deaths. In addition, according to the CDC website, up to 41% of non-hospitalized adults in the United States who have had COVID-19 also experience a wide range of ongoing respiratory, neurologic, cardiovascular, and other symptoms that can last for weeks, months, or years (a/k/a Long Covid).[10]

The COVID-19 Federal Public Health Emergency expired on May 11, 2023. And while it may seem that the pandemic has passed, the threat still exists. As of February 3, 2025, statewide average SARS-COV-2 levels in municipal wastewater sampling were very high or high among 59% of the 44 locations being monitored and Wisconsin experienced over 250 new hospitalizations during the past seven days due to COVID-19 related illness.

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[9] Borchardt, Mark A. et. al. *Avian Influenza Virus RNA in Groundwater Wells Supplying Poultry Farms Affected by the 2015 Influenza Outbreak.* Environmental Science & Technology Letters. 2017, 4, p268-272.

[10] https://www.cdc.gov/mmwr/volumes/72/wr/mm7232a3.htm#:~:text=Long%20COVID%20includes%20a%20wide%20range%20of%20ongoing%20respiratory%2C%20neurologic,to%2041%25%20(1).

The COVID-19 pandemic had great (and often long-lasting) impacts on the economy, health care services, educational systems, and governmental services. During the 2025 mitigation plan update, local officials and stakeholders were asked about their experiences and lessons learned during the pandemic. Some highlights were:

- Most cities and villages stated that their operations did not significantly change, though they did temporarily practice social distancing and most did require masks during meetings for a time.
- Multiple communities found that the practice of remote or virtual meetings to be useful, once the initial technological logistics were overcome. Some communities are continuing with this option for some meetings. However, for some rural areas, poor broadband connectivity was a barrier, though this has improved considerably over the past decade.
- More than one community mentioned how hard the pandemic was on older residents, nursing homes, and assisted living facilities, including staff and family members.
- There was some confusion among the public and mixed messages from the Federal government, contributing to some residents and entities not taking recommended precautions. This misinformation also contributed to a deterioration of trust with public health officials and lower immunization rates.

The Centers for Disease Control & Prevention continues to monitor other communicable disease threats and issues travel-related health notices. Mosquito-borne illnesses, such as Yellow Fever, Malaria, and the Zika virus are among the most common concerns over the past decade. **Zika virus** in particular has received increased attention due to the risk of severe birth defects and the potential to transmit the disease through sex. Mosquitoes carrying the Zika virus have been reported in a large portion of the world, including most of Mexico, Central America, South America, the Caribbean, and large parts of Africa and Southeast Asia. Cases of Zika spread by local mosquitoes were reported in Florida and Texas in 2015-2016, but there have been no reports of locally acquired Zika cases in the U.S. since 2017.

In 2018, the Eastern Democratic Republic of the Congo experienced an outbreak of **Ebola Virus Disease** (EVD), which is the second largest outbreak since the virus was discovered in 1976. According to the CDC, 3,470 cases were confirmed with a 66% fatality rate.[11] Additional cases were reported in the Congo Republic, Uganda, and Guinea in 2020-2022, but none since then. EVD is a rare, but often fatal, zoonotic disease that can be spread through contact with an infected fruit bat or nonhuman primate, but can also spread from person to person through direct contact with bodily fluids. There have been no reported Ebola cases in the United States since 2014. Diagnosing EVD is difficult since symptoms may require 8-10 days on average to manifest, but a vaccine is now available.

In August 2024, the World Health Organization (WHO) declared a public health emergency of international concern due to an outbreak of **mpox**. Mpox (previously called monkeypox) is a viral, zoonotic disease in the same family as smallpox. Mpox can cause scarring, blindness, and other infections, but rarely leads to death. An mpox vaccine is used to help prevent infection. Mpox was first detected in humans in 1970 and is endemic to parts of Africa. There was a worldwide outbreak of mpox

[11] https://www.cdc.gov/ebola/outbreaks/index.html

in 2022 with 122 counties reporting nearly 100,000 cases and 207 deaths.[12] The United States had the highest number of reported cases and death with 33,435 cases and 60 deaths. While mpox cases went down in 2023, a mpox variant is now surging in Africa; the Democratic Republic of Congo reporting more than 14,000 cases and 524 deaths since the start of 2024, which has triggered the WHO declaration.



April 2025 Wisconsin Dept of Health Services Facebook post

Immunizations (or vaccinations) for more common or preventable viruses and diseases, such as **Whooping Cough (Pertussis), Polio, Diphtheria, Measles, and Mumps**, have been in the news in recent years. **Measles** was nearly eliminated in the United States in 2000, but there were 284 reported cases during 2024 with less than 10 cases reported in Wisconsin; a highly effective vaccine exists for Measles.

Some members of the public choose to delay, skip, or reject vaccinations for themselves and/or their family. But avoiding vaccinations puts family members, friends, and the community at risk. From January-July 2019, over 1,150 individual cases of measles were confirmed in the United States, with 3 out of 5 infected persons needing hospitalization. Most cases were among persons who were not vaccinated, though a highly effective vaccine exist.

According to the Wisconsin Environmental Public Health Tracking Program, 72.9% of two-year old residents in Eau Claire County in 2021 were immunized, which hasn't changes significantly since 2013.[13] This percentage is relatively high compared to many neighboring counties and above the 2021 statewide average of 68.9%. Vaccination rates within the Amish community are estimated to be very low (<10%).

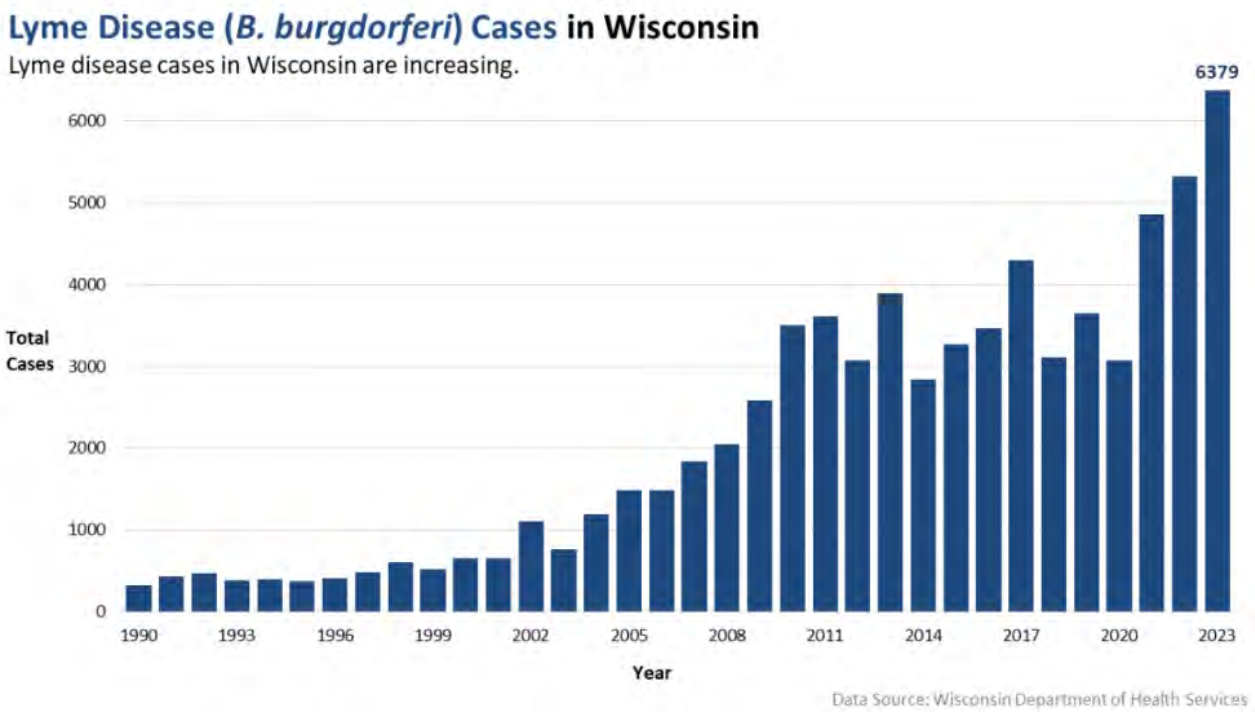
Some Public Health offices in the region have also been seeing increased cases of **Tuberculosis (TB)**, **Hepatitis B & C,** and **Sexually Transmitted Diseases (STDs)**; there is currently no vaccine for Hep C and many of the most common STDs.

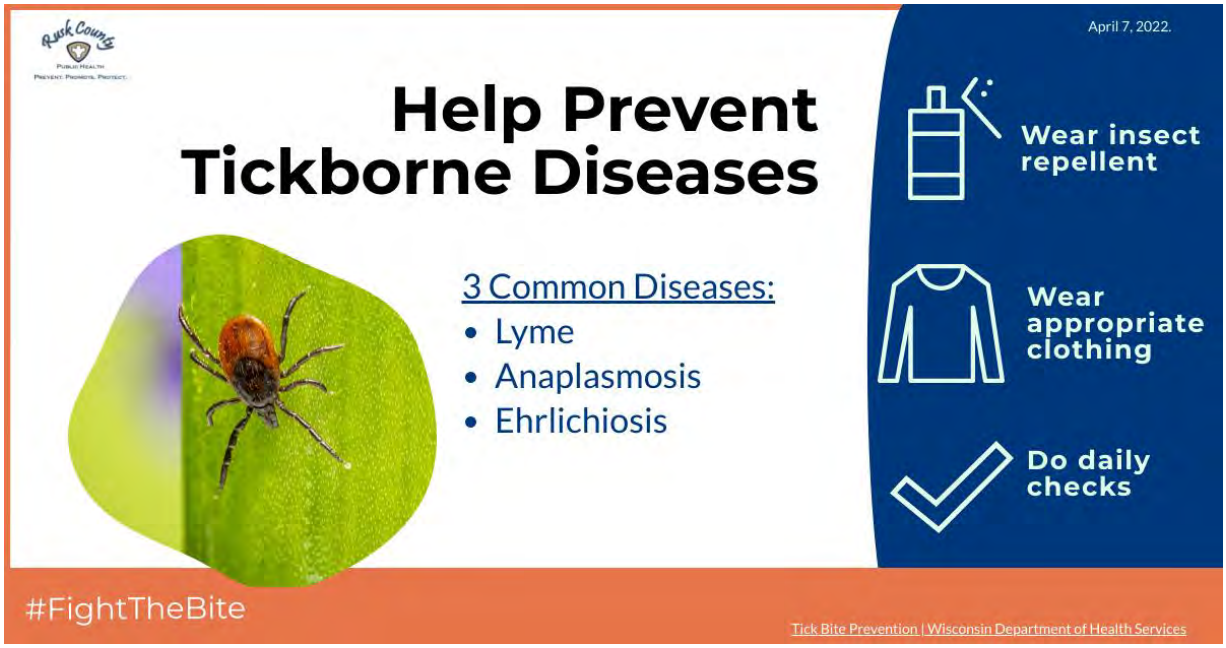
Overall, local public health agencies and medical providers have been able to handle smaller (less than four month) disease outbreaks well. COVID-19 was a greater challenge due to the length of the "severe phase" of the outbreak and changing information during the early phases of the outbreak. Incident Command System (ICS) approaches are not well suited for lengthy, multi-year disease outbreaks.

[12] https://www.cdc.gov/poxvirus/mpox/response/2022/index.html

[13] https://dhsgis.wi.gov/DHS/EPHTracker/#/map

Concerns related to **tick-borne diseases**, such as **Lyme (Borrelia), Anaplasmosis,** and **Babesiosis**, were also mentioned a number of times during the planning process. Though Lyme disease is native to Wisconsin, the number of reported cases have increased dramatically over the past three decades, with over 6,300 cases reported in Wisconsin in 2023. In 2023, there were 242 cases reported for Eau Claire County, which is one of the highest concentration of reports in the State. It is believed that many cases of Lyme Disease are not reported. Ticks have been expanding their ranges northward as average temperatures have been increasing long-term.





Communicable Disease Prevention and Control

Within Eau Claire County, the Eau Claire City-County Public Health Department has been the primary coordinating entity on communicable disease and pandemic flu, working in conjunction with the local Public Health Emergency Preparedness Committee, which is a strong private-public coordinating entity. The following are some key points and activities:

- Eau Claire County Public Health maintains a Public Health Emergency Preparedness Plan (PHEPPlan) specific to the County, which covers 15 public health preparedness capabilities identified in the quick reference guide at the end of this sub-section.
- The County is currently updating and restructuring its PHEPPlan and incorporating lessons learned from the COVID-19 experience. COVID-19 demonstrated that it is important that the PHEPPlan be flexible to accommodate different challenges and opportunities.
- The PHEPPlan serves as a core resource among local health departments and is a focal point within the NWW-HERC, which can provide mutual aid if needed. The PHEPPlan includes situational-specific components (e.g., Mass Clinic Plan, Pandemic Flu Plan) as well as general education, monitoring, and response procedures under an "all hazards approach" not specific to pandemic flu or other specific threat. Review and update of these sub-plans is an ongoing process.
- The County's PHEPPlan includes a communications plan as well as an educational component with emphasis on prevention and control (e.g., recognizing symptoms, vaccinations, and personal preparedness).
- The PHEPPlan also includes an At-Risk Populations component, including exploring strategies related to identifying and serving persons who are at greater risk during times of emergencies. At-risk populations include seniors and any person with a disability, especially when living alone without a caregiver. Emergency contacts are obtained by County Public Health during client intake and Public Health will often check-on at risk clients during or following an emergency or disaster event, such as during extreme heat.
- The PHEPPlan is periodically tested, in cooperation with partners, through drills and exercises. There is a high degree of necessary coordination between the County's Emergency Operations Plan maintained by Emergency Management and the PHEPPlan.
- County and local agencies and health care facilities have a very strong partnership as reflected by the local Public Health Emergency Preparedness Committee. The Public Health Department also coordinates its efforts with additional partners, including County Emergency Management, the County Medical Reserve Corps, the regional Healthcare Emergency Readiness Coalition, area health care providers, and State agencies. These partners continue to share information, plans, resources, and policies. Many key staff and partners have ICS/NIMS training and are informed of emerging trends. However, it may be beneficial to strengthen ICS familiarity among partners, create contingency plans, and integrate ICS forms/approaches into the PHEPPlan.
- Public Health has a good volunteer pool through the Medical Reserve Corps. Strengthening partnerships with other organizations continues to be a goal. However, some volunteer organizations active in disasters (VOADs) and other partners, including some local fire and EMS departments, are struggling to attract volunteers. This includes partnering with organizations

such as Disaster Ready Chippewa Valley for preparedness-related educational outreach to businesses and organizations.

- In collaboration with partners such as the Red Cross and area educational institutions, Public Health is always working to develop, maintain, and exercise with a network for heating/cooling centers/longer-term emergency shelters and medical/vaccination points of distribution (PODs). Efforts are also underway to identify sites that can be used for Family Assistance Centers/Reception Centers/MARCs. Liability issues for such locations can be a barrier.
- Public panic could ensue should a public health emergency occur, such as a pandemic flu outbreak. Getting the word out quickly and providing accurate information from a trusted source is critical. Security and related enforcement could become a major issue at pharmaceutical distribution sites, area hospitals, and at other such locations.
- In addition to monitoring and preparing for communicable diseases, the Eau Claire City-County Health Department continues to work cooperatively with County Emergency Management on general public emergency and disaster preparedness education and can be a vital partner during any such educational initiatives recommended in this Mitigation Plan update. Public Health resources and additional educational materials are available at their webpage and at their offices.

It was noted during the plan update that the area lacks a hospital capable of treating Category 2 high-consequence communicable diseases, so such cases would need to be triaged and stabilized if possible until access to a Cat 1 facility was available. Hospitals are also now required to have a high-consequence disease protocol, but most do not include all disease types.

As referenced in the tick-borne disease discussion, long-term weather patterns suggest that the area's climate is becoming warmer, which could change the seasonality of diseases as well as introduce new vectors. With warmer weather, diseases may be more abundant, and some outbreaks may last longer.

Quick Reference

PHEP Capabilities

Community Preparedness

- Identify risks to health
- Strengthen partnerships
- Share info via community networks
- Coordinate training/guidance

Community Recovery

- Community needs
- Recovery operations
- Implement corrective actions

Emergency Operations Coordination

- Determine activation need
- Activate operations
- Incident response strategy
- Manage/sustain response
- Demobilize/evaluate operations

Emergency Public Information & Warning

- Activate sharing system
- Need for JIS
- Information operations
- Avenues for exchange
- Issue alerts, warnings, notifications

Fatality Management

- Determine PH role
- PH operation resources
- Antemortem data
- Survivor mental/BH
- Processing and storage operations

Information Sharing

- Identify stakeholders & sharing needs
- Ways information is exchanged
- Common operating picture

Mass Care

- Determine PH role
- Determine pop needs
- Coordinate services
- Monitor mass care pop health

Medical Countermeasure Dispensing & Administration

- Determine strategies
- Receive countermeasures
- Activate operations
- Dispense/administer
- Report adverse events

Medical Materiel Management & Distribution

- Direct and activate
- Acquire supplies
- Distribute
- Monitor operations
- Recover & demobilize

Medical Surge

- Assess incident
- Support activation
- Support operations
- Demobilize

Nonpharmaceutical Interventions

- Engage partners and identify factors that impact NPI
- Determine interventions
- Implement interventions
- Monitor interventions

PH Lab Testing

- Conduct testing & report results
- Communication & coordination
- Training & outreach

PH Surveillance & Epi Investigation

- Conduct/support surveillance
- Conduct investigations
- Recommend, monitor, & analyze actions
- Improve systems

Responder Safety & Health

- Identify risks
- Monitor RSH during and after response
- Identify & support training

Volunteer Management

- Recruit, coordinate, & train
- Notify, organize, assemble, & deploy
- Health & safety monitoring
- Demboilize

Updated February 2025 CDC CPG

ii. INVASIVE SPECIES

Most invasive species are spread due to the introduction and actions of humans, and this threat is growing. Invasive species disrupt natural communities and ecological processes. They can destroy habitat, drive out/kill native species, and be vectors for the introduction of diseases. Over 40 percent of the species on the Federal Threatened or Endangered species lists are at risk primarily because of invasive species. Many invasives lack a native predator, which allows them to aggressively invade, spread, and dominate natural areas and waterways. And some invasives can cause health problems, such as Wild Parsnip that burns skin or animal species that spread disease.

Historically, Aquatic Invasive Species (AIS) have received the greatest attention in Eau Claire County due to the many lakes. Various AIS have been documented in the waters the County, including Chinese Mystery Snail, Curly-Leaf Pondweed, Eurasian Water-Milfoil, Purple Loosestrife, and Rusty Crayfish.

There is growing attention in the region to the terrestrial invasive species threats. Buckthorn is very serious threat to the forests of Eau Claire County due to its ability to outcompete native tree growth and form large, dense thickets with little habitat, recreational, or timber value. Japanese and Spotted Knotweed are other growing threats and can decrease forage and reduce native plant diversity. Wild Parsnip has become widespread along highway corridors, choking out native plants and having the potential to cause serious burns/boils to exposed skin. These are just four of a growing list of such threats, which also includes: Exotic Bush Honeysuckle, Spotted Knapweed, Oriental Bittersweet, Leafy Spurge, Purple Loosestrife, Wild Chervil, and Garlic Mustard.

Eau Claire County Land & Water Resources, in partnership with Beaver Creek Reserve, has been very active to help mitigate the impacts and spread of invasives, such as:

- Invasives are addressed as part of the *Eau Claire County Land & Water Resources Management Plan* and the *Eau Claire County Outdoor Recreation Plan.*
- Maintaining an educational web page with AIS information and prevention recommendations.
- Offering technical assistance to landowners for control.
- Providing training and support to lake groups and shoreland owners to pursue and implement Clean Boats, Clean Waters projects and gathering data through the Citizen Lake Monitoring Network.



Support is also available through the Lower Chippewa Invasives Partnership, which is working to control invasive plants by fostering partner cooperation and community action. The Partnership is currently implementing its 2022-2025 Strategic Plan and offers sprayers, herbicide, and training to landowners looking to control invasive plants on their properties, including the use of an equipment tailer.

There are many public and non-profit partners collaborating to address these threats and according to the Wisconsin Sea Grant Program, over $5 million is spent annually in Wisconsin on AIS management alone. The WDNR requires that any person seeking to bring a non-native fish or wild animal for introduction into Wisconsin obtain a permit. Local communities can help combat exotic plant species by educating residents about non-native species, encouraging residents to use native plants in landscaping, discouraging the transport of firewood from outside the area, and reporting such species like Purple Loosestrife or Buckthorn to the WDNR.

iii. NUCLEAR POWER PLANT ACCIDENT

A nuclear accident (or radiological hazard) is the uncontrolled release of a radioactive material from a fixed nuclear facility that can harm people or damage the environment.

Eau Claire County has no fixed nuclear power generating or nuclear-related storage facilities within its boundaries. There is no known regular transport of nuclear materials or waste through the County.

However, a vey small portion of Eau Claire County is within the Ingestion Pathway Zone (IPZ) for the Prairie Island Nuclear Generating Plan near Red Wing, MN (see **Figure 19**). The ***Ingestion Pathway Zone*** (IPZ) (or *ingestion exposure pathway*) is the potential pathway of radioactive materials to the public through consumption of radiologically contaminated water, food crops, or dairy products. This is also known as the area within a 50-mile radius of a nuclear power plant in which people may be indirectly exposed to radiation by eating or drinking contaminated food, milk and water.

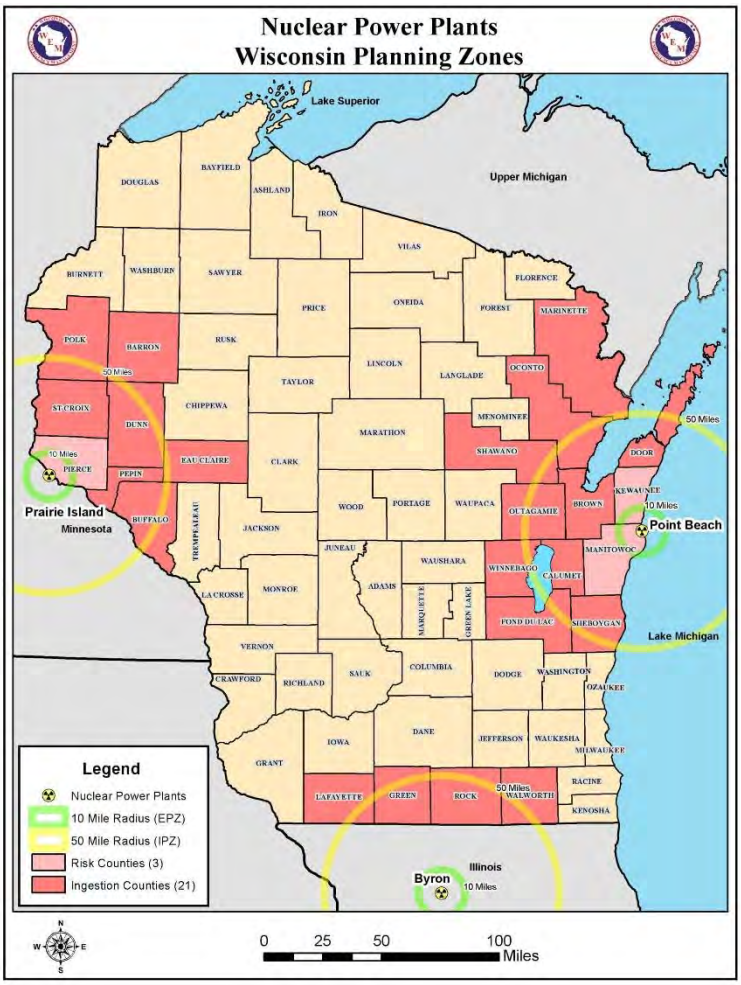


Should an accidental release occur, direct radiation exposure or inhalation for persons in Eau Claire County is very unlikely; such exposure would largely be limited to a 10-mile radius of the facility under most, if not all, circumstances. The primary and most likely vulnerability would be the transport of radioactively contaminated crops or dairy products from areas closer to the facility to processing facilities within the IPZ.

A much less likely scenario is for the airborne contamination of soils and vegetation in Eau Claire County, if weather and other conditions allow. Under such circumstances, a general health advisory could be issued regarding food preparation practices or, in a worse case, a temporary agricultural hold may be placed on producers and/or processors of certain agricultural and/or food products.

If an event should occur, even if it is a site emergency not anticipated to directly impact Eau Claire County, misinformation and panic could ensue among the general public. In such a case, Eau Claire County may experience an influx of relocated residents from areas closer to the facility (e.g., St. Croix County) as well as the regional economic repercussions, especially to the agricultural sector.

Figure 19. Wisconsin Nuclear Plant Planning Zones



A release of radiological materials from a nuclear power plant has never occurred in Wisconsin or the region. The Prairie Island Plant is highly regulated and is designed with a series of barriers and safety systems.

As shown in the previous Hazard Probability & Vulnerability Survey results (Table 11), the plan update Steering Committee believes that nuclear accident and earthquakes have the lowest probabilities of any of the listed threats for Eau Claire County.

As an IPZ county, Eau Claire County Emergency Management participates in required exercises conducted for a possible nuclear accident at Prairie Island. County Public Health may benefit from periodically participating in exercises or related training to gain insights into likely implications and how testing from fallout will be performed.

C. CHANGING WEATHER PATTERNS & NATURAL HAZARD RISK

Projecting future hazard risks and vulnerabilities is subject to the influence of possible large-scale, longer-term changes in weather.

How the Region's Weather Patterns are Changing

There is ongoing debate over the existence, causes, severity, and impacts of global climatic changes, such as global warming. According to the U.S. Environmental Protection Agency:

> "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 new and stronger evidence that most of the warming over the last 50 years is attributable to human activities.... Rising global temperatures are expected to raise sea level, and change precipitation and other local climate conditions. 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." [14]

Regardless of the debate over the causes of such changes, there is clear evidence that Wisconsin's weather patterns are 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, and by 2100 the summers will generally resemble that of current-day Arkansas, and the winter will feel much like current-day Iowa. And a University of Maryland model suggests that by 2080, the climate of Eau Claire will be similar to that of northern Oklahoma.[15]

To further document these changes in weather patterns 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 key takeaways from the WICCI 2021 Assessment Report:

- Wisconsin's average daily temperature has become three degrees Fahrenheit warmer since the 1950's.
- The last two decades have been the warmest on record, and the past decade has been the wettest.
- Wisconsin has become wetter – average precipitation has increased 17 percent (about 5 inches) since 1950.
- Warming is happening fastest in the winter and at night.
- Southern Wisconsin has experienced the highest increase in precipitation.
- Very extreme precipitation events will increase in the future.

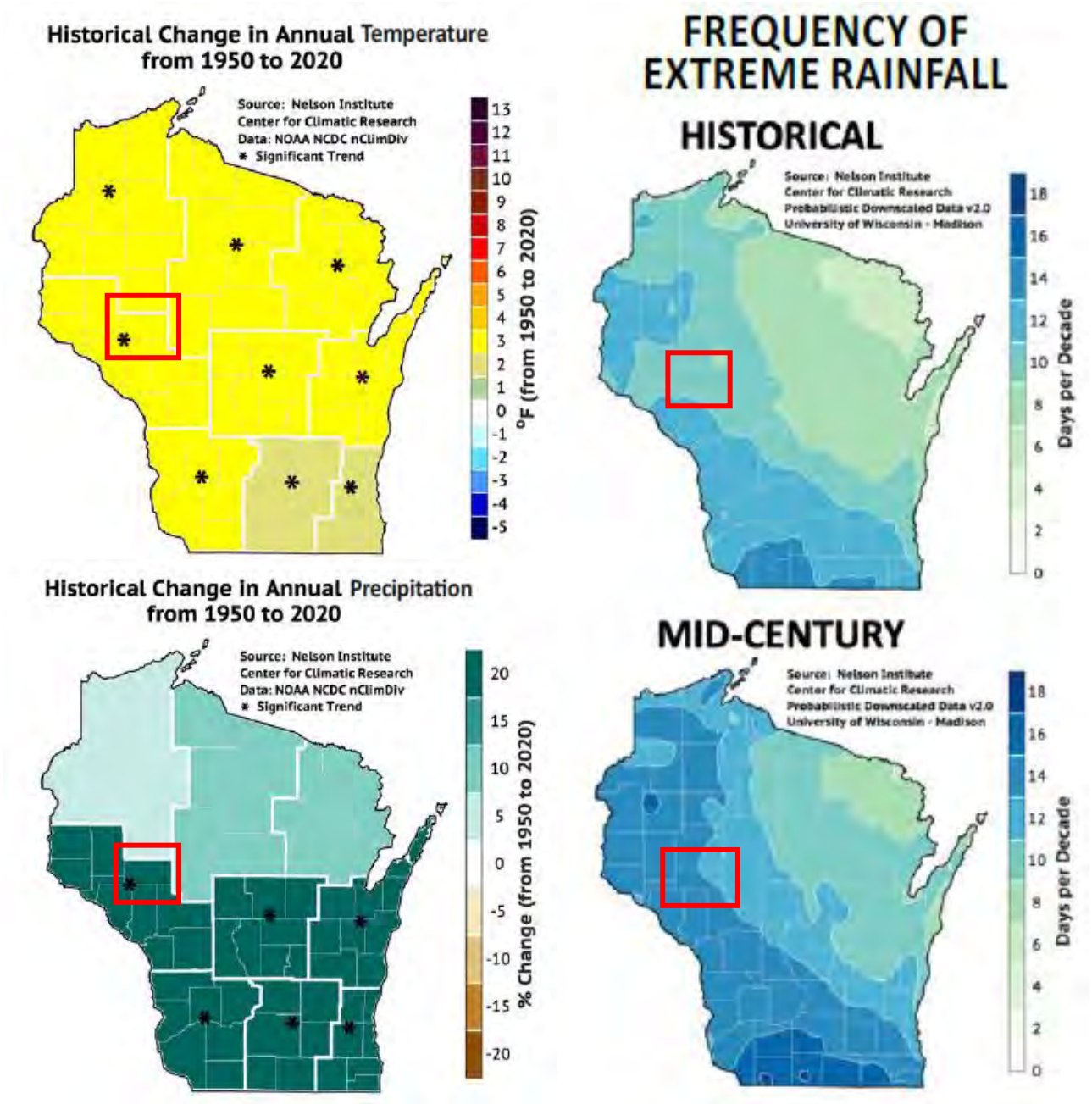
[14] U.S. Environmental Protection Agency. http://yosemite.epa.gov/oar/globalwarming.nsf/content/impacts.html

[15] https://www.umces.edu/futureurbanclimates

- Extreme events are already causing immense impacts across Wisconsin, and the frequency of those events will generally increase.

These findings are consistent with data for Eau Claire County. Figure 21 below includes maps from the 2021 Assessment Report indicating State longer-term weather trends for Wisconsin with Eau Claire County outlined. Temperatures and annual precipitation have increased at a rate higher than the State average. As a result, the County must anticipate increased extreme precipitation events annually, as well as greater severity within individual events. The County should make use of new tools and resources as they become available to plan for and mitigate the impacts of such changes.

Figure 21. Selected Maps from the 2021 WICCI Report



Potential Long-Term Weather Pattern Impacts on Natural Hazard Risk

The following summarizes the primary, potential impacts of long-term shifts in weather patterns for those natural hazards of significant risk to Eau Claire County.

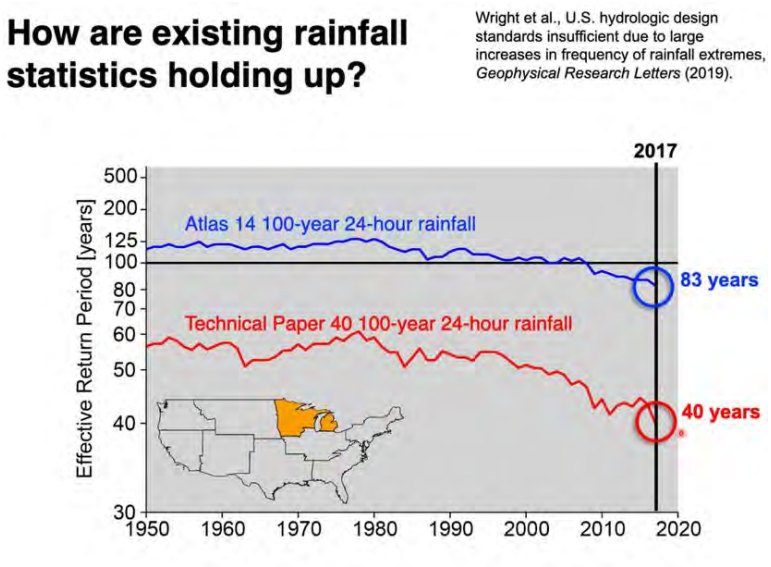
Tornados, Thunderstorms, and High Winds

The link between long-term changes in weather and tornadoes, high winds, and thunderstorms is unclear. While extreme storm events are increasing, scientists are uncertain what role such long-term shifts in weather have, if any.[16] However, warmer temperatures will increase the number of weeks that Eau Claire County experiences severe thunderstorms and tornadoes. And during the 2025 Plan update process, some local officials expressed concern with a perceived increase in the frequency of high wind events over the past decade. The County needs to be prepared for an increase in tornados, severe thunderstorms, and episodes of high winds that are associated with strong storms.

Flooding

From 1958-2012, extreme rainfall events increased 37% in the Midwest.[17] The WICCI report projects that the frequency of extreme rainfall events (2+" within 24 hours) will increase from about 10 per decade to 16-18 per decade. The report details that Eau Claire County is already experiencing an increase in 100-year rainfall events, with such events ranging from 6" to 6.25" in magnitude.

Increased precipitation and heavy precipitation events is resulting in more flooding. Extreme rainfall events in particular have the potential to increase overland (stormwater) and flash flooding with severe consequences (e.g., road/culvert/bridge washouts, building damages, bank erosion, habitat destruction) if infrastructure is not able to manage such increased flows.



These increasing heavy rainfall and flooding events are not reflected in current floodplain maps and stormwater management models. For example, most stormwater modeling and design standards for Wisconsin municipalities use the precipitation frequency data from NOAA's Atlas 14 (based on 1900-2010 trends) and the older Technical Paper 40 (published in 1961). A 2019 study summarized by the graphic to the right shows that a 100-year rainfall event in based on Atlas 14 was occurring every 83 years by 2017 in the upper Midwest, and the frequency of such events has been increasing significantly since 2010. A separate National Weather Service-funded study from 2019 suggests that today's 100-year rainfall event will be a 20-year storm by the late 21st century. Atlas 15

[16] http://blogs.ei.columbia.edu/2016/12/01/increasing-tornado-outbreaks-is-climate-change-responsible/
[17] https://nca2014.globalchange.gov/highlights/regions/midwest#statement-16934

reflecting more recent trends is not expected to be released before 2027. In the interim, some Wisconsin municipalities are already considering these trends. As an example, Dane County continues to use Atlas 14 data, but in 2021 it updated its erosion control and stormwater management ordinance to require peak rate control based on 200-year storms, instead of 100-year storms.

An increase in flooding will not only impact the built environment, but it will also impact the natural environment. Riparian areas will be more vulnerable to damage with increases of flooding intensity. In addition, more opportunities will exist for debris to enter water bodies. This is consistent with the comments of many local officials during the plan update process, who felt that there has been an increase in heavy rainfall events, which have been contributing to localized flash or stormwater flooding.

Winter Storms, Ice Storms, and Extreme Cold

Per the WICCI report, winter precipitation has increased more than 20% and winter nights have been 6º F warmer in Eau Claire County since 1950, and these trends are projected to continue. By 2050, Eau Claire County will experience 10% more winter and spring precipitation and a 5% increase in summer and fall. More precipitation during the winter months increases the potential for heavy snow and ice storms and possibly flooding due to a large snow melt. Since winters may be warmer overall, ice storms could be a greater concern. Some scientists suggest that longer-term weather pattern changes may contribute to an increase in extreme temperature events (both hot and cold).[18] However, the WICCI report suggests that extreme cold reports should decrease in frequency. Such long-term changes in weather could have some positive natural hazard impacts. For instance, the winter season would be shorter overall with fewer days of sub-freezing temperatures. But other problems may also be exacerbated, such as plant and animal diseases and infestations, Lyme's disease, air quality changes, change/impact natural habitats, and impacts to water quantity. During the 2025 Plan update, the plan update steering committee discussed the potential for increased ice storm events with high winds, which exacerbates the potential for power loss during periods of low temperatures or extreme cold. The need for warming centers with emergency power received significantly greater attention during this plan update.

Extreme Heat

The number of extreme heat event days is projected to continue to increase. By 2050, the WICCI report projects that the number of extreme heat days in Eau Claire County will grow from about 10 to 25 per year. An increase in extreme heat occurrences and higher summer temperatures will have a significant impact on the elderly and other vulnerable populations. The majority of deaths and emergency room visits during heat waves are from persons over 65 years old. As Eau Claire County continues to experience warmer temperatures and the number of individuals over 65 years old continues to increase, additional attention may be needed to address extreme heat and vulnerable populations.

High temperatures will result in increased evapotranspiration and longer growing seasons. Over time, these trends have the potential to impact surface and groundwater as well as increase the risks of drought and wildfire. In addition, hotter temperatures and longer extreme heat episodes will increase stress on public infrastructure like road surfaces. During the 2025 Plan update, concern was expressed over recent

[18] https://www.climaterealityproject.org/blog/perfect-storm-extreme-winter-weather-bitter-cold-and-climate-change

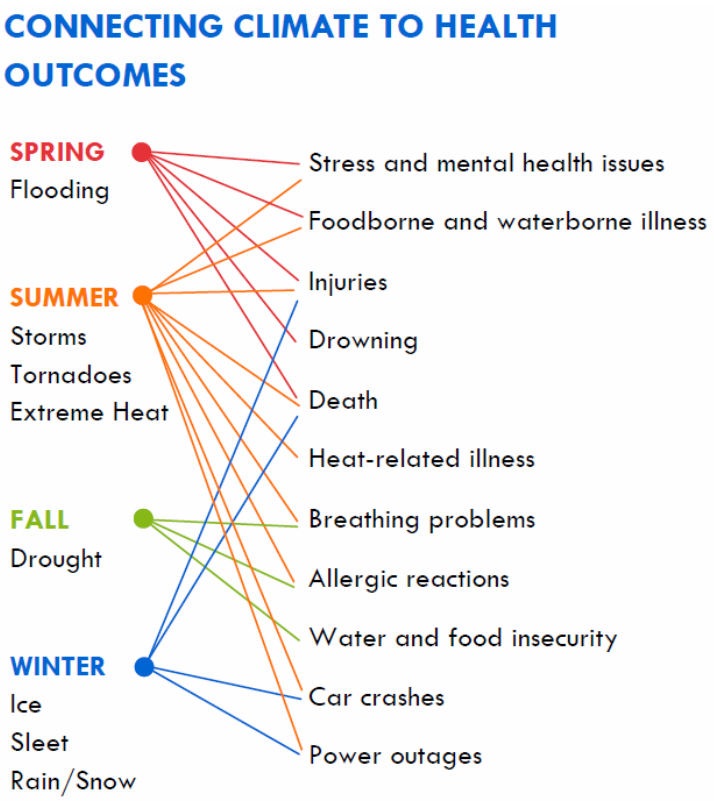
increases in extreme heat events, which contributed to greater attention regarding the need for designated cooling centers with emergency power.

Drought, Wildfire. and Forest Resilience

Projecting the impact of weather pattern changes on drought and wildfire is complicated. While precipitation is projected to increase, this will be offset by higher evapotranspiration and longer growing seasons. When and how this precipitation occurs is also important. Heavy rainfall events and fast snow melts can result in increased runoff and less soil infiltration, especially if the ground is frozen. Weather patterns can also influence wildfire potential and forest health.

Human Health

According to the Wisconsin Department of Health Services—Climate & Health Program[19], it is also important that we keep in mind the potential impacts of long-term weather changes on human health as summarized by the graphic to the right and list below:



- **flooding risks** – stress & mental health disorders, flood-related food and waterborne illnesses, injuries, and drowning.
- **extreme heat risks** – increased loss of life, especially among elderly and socially isolated individuals, air quality degradation and increases in pollen resulting in respiratory distress and allergic reactions
- **drought risks** – reduced drinking water, food insecurity, and respiratory distress from dust, pollen, and airborne particulates
- **winter weather risks** – traffic accidents, injuries, and deaths, power loss that place chronically ill patients on medical devices at higher risk
- **disease vectors** – wetter, warmer weather could be more favorable to mosquito- and tick-borne diseases (e.g., West Nile, Lyme)
- **surface water risks** – see flooding risks, contamination of water supplies, toxic algae blooms
- **groundwater risks** – reduced availability, contamination of water supplies

[19] https://www.dhs.wisconsin.gov/climate/index.htm

Everyone reacts differently to a disaster. The stress and losses from any disaster can cause serious mental or emotional distress not only to those living through the event, but also emergency responders and those from other supporting agencies. These individuals may develop or experience exacerbation of existing mental health or substance use problems, including for example, post-traumatic stress disorder. It is important that local disaster recovery integrate public health principals, including providing mental health support and treatment when needed.

Adaptation as a Natural Hazard Mitigation Strategy

Weather pattern changes can have serious natural hazard implications. Most of our existing best practices and infrastructure are based on historic events and do not fully accommodate these longer-term patterns. Below are examples of what some other communities are doing to address such trends. and will be considered as Eau Claire County and other participating jurisdictions identify and prioritize their mitigation strategy recommendations. Many of these adaptation strategies are not new mitigation tools (e.g., safe rooms, burying power lines, cooling centers), but with weather changes there may be an increasing need to expand the use of these tools and best practices. Some of these strategies may be more applicable to urban areas and not the rural, less developed areas of Eau Claire County.

Tornados, Thunderstorms, and High Winds

- Construct community safe rooms in developments that do not have basements.
- Work with electric utilities to make sure that powerlines do not have the ability to be impacted by fallen trees and branches through selective cutting/trimming, burying power lines.
- Make sure that electrical grids are resilient to power loss.
- Invest in generators, solar-powered battery systems, and micro-grids for backup power, specifically at critical facilities (e.g., city buildings/facilities, hospitals, nursing homes).

Flooding

- Map areas where flooding is predicted to happen in the future and use those maps for land use decisions. Utilize updated stormwater modeling that considers the increasing frequency of heavy rainfall events.
- Create outreach programs to educate the public on the need for flood insurance.
- Implement land-use policies that prohibit building in areas that are predicted to be susceptible to future flooding, including beyond the current 100-year floodplain.
- Acquire property that is in future flood prone areas. Complete riparian/stream restoration plans and projects.
- Reevaluate all water-related infrastructure (e.g., bridges, levees, dams, culverts, stormwater system) for structural integrity.
- Promote nature-based solutions and low impact development policies to reduce stormwater runoff and encourage flood/stormwater storage. Incorporate permeable surfaces in new and existing development, including pavement systems and green roofs. Encourage rain barrels, bioswales, and rain gardens. Install, preserve, and maintain wetlands, natural flood retention areas, and stormwater basins.

- Increase focus and effort on eliminating debris from entering the water bodies (e.g., increase street cleaning operations, expand promotion of Rain-To-Rivers programming, provide community lawn waste pickup).

Winter Storms, Ice Storms, and Extreme Cold

- Research best management practices to deal with the potential increasing frequency of ice storms.
- Designate community warming centers with emergency power.
- Implement smart salting/sanding best management practices.

Extreme Heat

- Create programs to check on and communicate with vulnerable populations during extreme heat occurrences.
- Start a public outreach program to educate the public how to deal with extreme heat
- Designate community cooling centers with emergency power.
- Implement smart-grid technologies that allow electric providers to access real-time data during high electric use times.
- Incorporate energy conservation techniques (e.g., technology, urban form, landscape, trees) to help reduce energy use.
- Implement repaving strategies (e.g., material, color) that reduce heat-related damage to streets.
- Shade asphalt and tops of buildings to reduce the urban heat island effect, which is most apparent in larger urban areas.
- Incorporate policy that reduces street pavement widths.

Drought, Wildfire, and Water Conservation

- Implement good forest and soil health best management practices and drought-tolerant plant varieties or types of crops that help offset some impacts from changes in weather.
- Encourage rural and urban water conservation.
- Promote integrated water management by planning water use in a manner that: (i.) considers natural systems (e.g., watersheds, the entire water cycle) as well as site-specific vulnerabilities; (ii.) are based on long-term projections of supply and demand that reflect recent trends; and (iii.) by tying water use, management, and related policy to land use and economic growth forecasts.
- Incorporate new best management practices for forested areas and developed lots in close proximity to areas that will be susceptible to wildfires in the future. This includes forest management practices to eliminate dead bio-fuel that adds to the intensity of wildfires, eliminate vegetation that will succumb to invasive insects, and increase wildfire buffer areas for developed areas.
- Create a comprehensive tree inventory in urban areas and public forests and parks to identify trees that are vulnerable to invasive insects. Increase awareness of forest and tree best management practices and encourage plantings that are native, diverse, and resilient.

Conclusion

Given the ongoing debate in the scientific community, this plan does not debate the causes of these longer-term weather patterns. Regardless of the cause, it is important that local officials and residents remain aware that the hazard trends presented in this report will mostly likely change in the future; and, in some cases, the frequency and magnitudes of disaster events will most likely intensify. Many of these changes will increase the chance of loss of life and damage to infrastructure.

Eau Claire County has created a *Climate Action and Resiliency Plan*, which emphasizes collaboration to achieve sustainability goals. While this Plan focuses on energy and sustainable practices, it could be expanded in the future to include additional adaptation strategies, such as those identified previously, to increase community resiliency in the face of these weather trends. In light of such weather trends, the City of Eau Claire has included a chapter on sustainability within its Comprehensive Plan, which includes a wide range of recommended policies; this plan could also be expanded in the future to give additional attention to adaptation.

It is also important that communities and residents keep informed of these changes in weather patterns use their best judgment as to the most appropriate action and response. The WICCI webpage www.wicci.wisc.edu(www.wicci.wisc.edu) includes suggestions on how communities may prepare for and adapt to such changes. The Wisconsin Department of Health Services has additional materials on the relationship between climate and health at their webpage, including a community engagement toolkit: https://www.dhs.wisconsin.gov/climate/index.htm

D. RISK AND VULNERABILITY ASSESSMENT

This section is organized by those hazards identified previously as having the highest overall disaster threat to Eau Claire County. The assessment for each hazard is generally structured into the following sections, which are consistent with FEMA planning guidance, though there are some differences for the non-natural hazards:

Defining the Hazard – Describes the hazard, including related definitions.

Hazard Location – Describes the geographic extent or unique boundaries that may be affected by the hazard type. This may include or reference county, state, or other maps illustrating the geographic extent of any hazard areas. For most hazards in Section III.D., there is no geographic area uniquely at risk; most hazard events facing County residents often affect large areas, or are even county-wide, such as a drought, active shooter, cyber-attack, or an ice storm.

Hazard Extent (Potential Intensities) – Identifies the range of anticipated intensities that can occur within Eau Claire County (e.g., how "bad" can it get). This is often expressed through a relative scale based on the intensity of hazard (e.g., wind speed, hail size) and/or the hazard's potential impacts (e.g., damage to property, potential for injury). A commonly accepted hazard extent or scientific scale is not available for all hazard types.

Event History –The organization of this section may differ, but for most natural hazards includes:

- **National Climate Data Center Event Summary** – This is a summary table of the available NCDC data provided in **Appendix E** for certain natural hazards.
- **Significant Eau Claire County (or Regional) Events** – Highlights any significant or notable events that are particularly important for assessing capabilities or exploring mitigation alternatives. There may be some redundancy with Appendix E for natural hazard events.

Hazard Probability – Discusses and, if possible, estimates the probability of the hazard occurring or reoccurring in the future. FEMA guidelines require that probability must consider the impacts of long-term weather changes.

Vulnerability Assessment – Summarizes the highest vulnerabilities identified in **Appendix F** for the hazard type, though the format of this section may vary significantly for some hazards.

- **Potential Loss Estimates** – When possible, potential loss estimates are quantified.
- **Other Factors Influencing Losses** – Briefly describes and considers other factors that may influence hazard probability and impacts, such as development trends and weather patterns.

Risk for Individual Plan Participants – The event history, probability, vulnerability, capability, and mitigation strategies for each participating city, village, and public educational institution is included in **Appendices K & L**. This section summarizes any key or commonly shared findings from these two appendices for the other plan participants.

i. FLOODING (including dam failure, riverine, & overland flooding)

This section is organized differently than the previous natural hazard assessments with the flooding assessment followed by a brief analysis of Eau Claire County's dams.

Defining the Hazard – Flooding

Flooding is defined as a general condition of partial or complete inundation of normally dry land from the overflow of inland waters, or the unusual and rapid accumulation or runoff of surface waters from any source. Often, the amount of damage from flooding is directly related to land use. If the ground is saturated, stripped of vegetation, or paved, the amount of runoff increases and contributes to flooding. Additionally, debris carried by the flood can damage improvements and infrastructure, or can obstruct the flow of water and further add to flooding.

For Eau Claire County, flooding can be further subdivided into three primary types: (1) stormwater or overland flooding, (2) lake or riverine flooding, and (3) flooding resulting from dam failure.

Stormwater Flooding (Overland) and Flash Flooding (Overbank or Overland) - The type of flooding which occurs primarily from surface runoff as a result of intense rainfall is referred to as stormwater flooding or overland flooding. These flooding events tend to strike quickly and end swiftly. If 6" of rain falls on 2,000 square feet of roof and concrete (about the size of a typical roof, driveway, and garage), 1,000 square feet of stormwater will runoff from that single home.

Lake or Riverine Flooding (Overbank) - Major floods in Wisconsin have, for the most part, been confined either to specific streams or to locations which receive intense rainfall in a short period of time. Flooding which occurs in the spring due to snow melt and/or a prolonged period of heavy rain is characterized by a slow buildup of flow and velocity in rivers, streams, or lakes over more than six hours and often over a period of days. This buildup continues until the river, stream, or lake overflows its banks for as long as a week or two, then slowly recedes. Generally, the timing and location of this type of flooding is fairly predictable and allows ample time for evacuation of people and property.

For regulatory purposes, the terms "100-year flood" and "floodplain" are commonly used. A **100-year flood**, often referred to as a **regional flood, special flood hazard area,** or **base flood**, is a flood that has a one percent chance of being equaled or exceeded in any given year. This can be misleading as a 100-year flood is not a flood that will occur once every 100 years. The 100-year flood, which is the standard used by most Federal and State agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management and to determine the need for flood insurance.

Key Definition

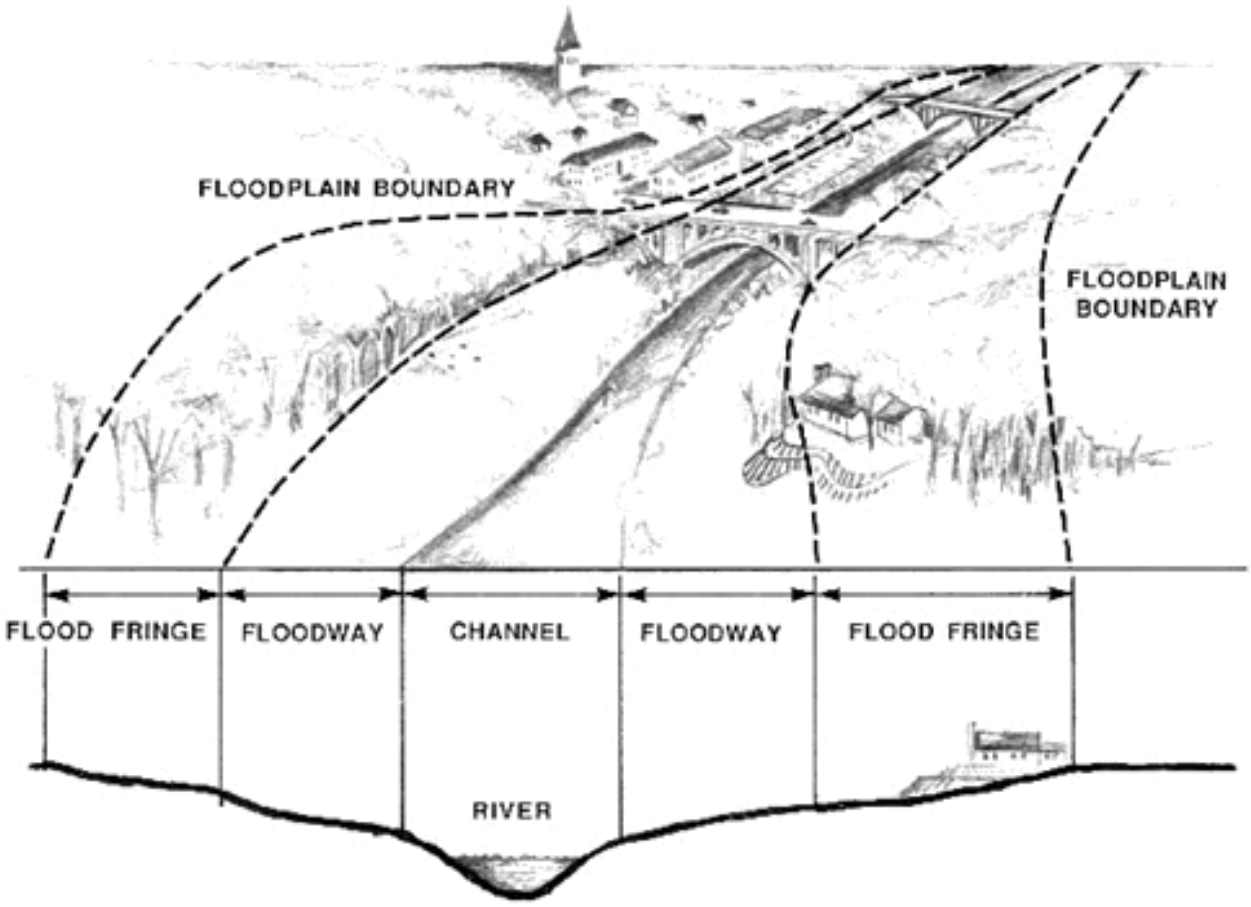
A 100-year flood has a 1% chance of being equaled or exceeded in any given year.

A **floodplain** is land which has been or may be covered by floodwater during a flood event and includes the floodway and flood fringe areas (see **Figure 23**). Often, the term "floodplain" is used inappropriately by assuming that floodplains are limited to the 100-year floodplain boundary that is used for regulatory and insurance purposes. This is not the case, and a floodplain can be identified for a 200-year flood,

500-year flood, or other such level of risk. Floods greater than a 100-year regional flood event can and do occur. Nationwide, approximately 25 percent of all National Flood Insurance Program (NFIP) claims are for structures outside the 100-year floodplain. This is a surprisingly high number, since many homes or structures outside the 100-year floodplain do not have flood insurance; and flood insurance is typically not required by lending institutions for mortgages on structures not within the 100-year floodplain. But this demonstrates that most properties are at risk of flooding to some degree.

Figure 23. Elements of a Floodplain

Source: Minnesota Department of Natural Resources.



The **floodway** is the channel of a river or stream and those portions of the floodplain adjoining the channel required to carry the regional flood discharge. Since it is associated with moving water, the floodway is the most dangerous part of the floodplain. The **floodfringe** is the portion of the floodplain outside of the floodway, which is covered by flood water during the regional flood and is generally associated with the storage of water rather than flowing water. The floodfringe is also that part of the floodplain in which development may be allowed in some communities, subject to floodplain development standards.

The **regional flood elevation** is the elevation determined to be representative of large floods known to have occurred in Wisconsin or which may be expected to occur on a particular lake, river, or stream at a frequency of one percent during any given year. The **flood protection elevation** is an elevation which is 2 feet above the regional flood elevation as defined by the Wisconsin Department of Natural Resources. Development is sometimes allowed within the floodfringe if the structure is raised above the flood protection elevation. However, development in the flood fringe can decrease important floodwater storage; hydraulic analysis is often needed to ensure that the development will not result in increased flooding in adjacent areas or farther downstream.

Flash flooding is more difficult to distinguish and can, in fact, be either riverine (overbank) or stormwater (overland) flooding. In this plan, flash flooding has been grouped with stormwater flooding due to its often unpredictable nature and the intense, rapid rise and velocity of the water levels. For prediction and warning purposes, floods are classified by the National Weather Service into two types: those that develop and crest over a period of approximately six hours or more, and those that crest more quickly. The former are referred to as "floods" and the latter as "flash floods." Like stormwater flooding, flash flooding is typically the result of intense rainfalls possibly in conjunction with already saturated soils, though very sudden snow melts can also contribute to stormwater or flash flooding.

Flooding from Groundwater Fluctuations - Unique to some areas of Eau Claire County has been repetitive flooding from groundwater fluctuations. These groundwater fluctuations can vary significantly, causing surface water levels at seepage lakes or ponds to increase or decrease 10-15+ feet over a period of 10-20 years. Such fluctuations can also contribute to both overbank or overland flooding, as well as underground seepage into basements. And unique to this phenomena, these fluctuations in water levels often rise or fall very slowly, resulting in flooding or near-flood conditions for years at a time.

Hazard Location

Overbank and overland flooding occur throughout many parts of Eau Claire County. Areas located in a Special Flood Hazard Area (SFHA), also known as '100-year floodplain', are most likely to experience riverine or overbank flooding, while areas prone to overland or stormwater flooding are influenced by a variety of factors (e.g., topography, high water table, stormwater system capacity, land use).

In Eau Claire County, about one-third of floodplain area is assessed as agricultural lands. Flooding of agricultural lands can cause long-term impacts throughout the local economy. Since many floodplains are used for forage, the loss of these crops (e.g. alfalfa) may require farmers to supplement feed for livestock. Due to the low value of forage and high insurance costs, most farmers do not have multi-peril crop insurance for forage crops. Additionally, flooding of agricultural areas can contribute to the failure of older or improperly maintained manure storage facilities. Depending on agricultural practices, heavy rains, flooding, and unexpected snow melt can also result in nutrient run-off into surface waters, resulting in high levels of contaminants and fish kills.

Eau Claire County Flood Insurance Rate Map (100-Year Floodplain Map)

Figure 4 in Section II.B.ii previously showed the locations identified as the 100-year floodplain in Eau Claire County; the floodplain areas will also be shown on maps later within this subsection. While these

areas are most likely to experience overbank flooding, it is important to note that the geographic delineation of floodplain areas are estimated based on various data inputs, which may include topography, hydrology, climatology, and historic records, and that flood inundation can occur in areas not mapped as flood hazard areas

The 100-year floodplain should be considered as Eau Claire County's high flood-hazard risk area. The 100-year floodplains are shown as the "A" zones on the FEMA Flood Insurance Rate Maps (FIRMs). Nationwide, 26 percent of the 100-year floodplains experience or exceed a 100-year flood event within a typical 30-year mortgage period. The 500-year floodplains (the shaded "X" zones on the FIRM maps) are the medium-risk flood-hazard areas. The remaining unshaded "X" zones on the FIRM maps should be considered the low-risk flood-hazard areas.

Additional high-hazard flood areas can exist that are not shown on the Flood Insurance Rate Maps; other areas prone to flooding are discussed later in this section and in the city/village subplans in **Appendix K**. New and changing floodplains and flood-prone areas can occur with changes in land cover, development, and climate. Municipalities can take the initiative to have new flood risks added to the FIRM maps as a Letter Of Map Change (LOMC) or otherwise consider them during their planning and regulatory processes.

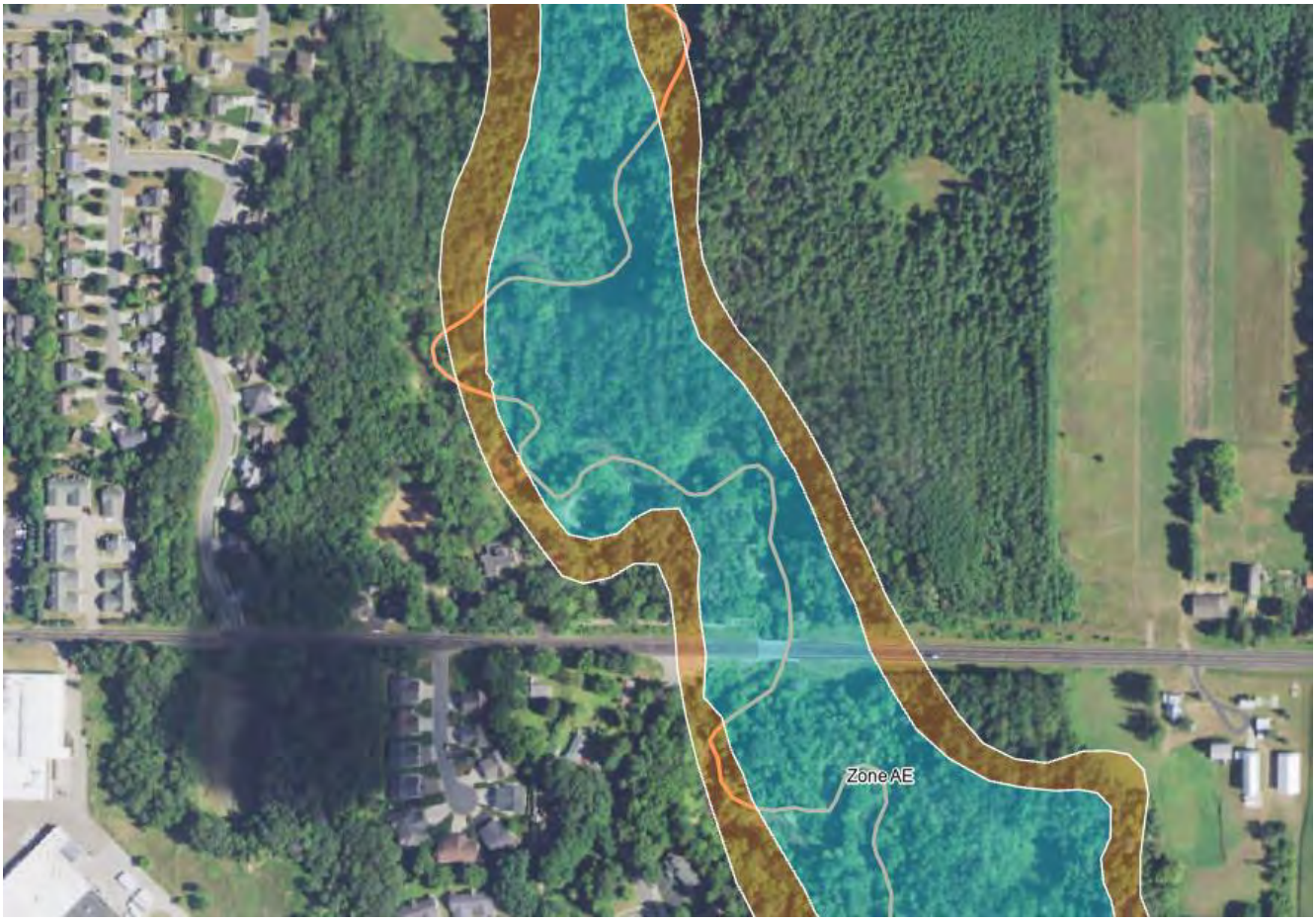
The current Flood Insurance Rate Maps (FIRMs) for Eau Claire County were made effective on February 18, 2009 and April 16, 2014, and are available in a digital format (D-FIRMs). The County's Floodplain Zoning Ordinance was updated in October 2023 and is consistent with the most recent State model.

Eau Claire **County National Flood Insurance Program & Flood Mapping Status**	
Initial Flood Hazard Boundary Map:	Unknown
Date Community First Joined NFIP (Reg-Emer)	01/12/73
Initial Flood Insurance Rate Map (FIRM) Identified:	01/12/73
Current Effective FIRM Date:	2/18/2009 & 4/16/2014
NFIP Participation Status (and reason if not participating):	Participant in good standing
Floodplain Regulations w/ NFIP standards:	Adopted
Designated position or committee for floodplain management, floodplain zoning, & NFIP compliance:	County Zoning Administrator

The D-FIRMs were largely created by overlaying the older FIRM maps onto aerial folders. Without accurate, digital topographic data at that time, there were very few adjustments or corrections made. County staff and community officials report that the inaccuracy with the D-FIRMs have been a significant problem for floodplain zoning administration and an update is greatly needed for large areas of Eau Claire County. This can lead to frustration among the public and local officials, while undermining public trust.

The small map below is one example of the level of D-FIRM inaccuracies near a residential and retail commercial area in Eau Claire, Wisconsin. As can be seen, the stream (Otter Creek) meanders outside the mapped 100-year floodplain boundary north of the street. In 2009, as part of the map modernization project, this inaccuracy was brought to the attention of FEMA representatives by Eau Claire County

Planning and Development staff but was not addressed in the final D-FIRMs provided by FEMA. This inaccuracy is particularly notable since it is within an engineered Zone AE area.



Since 2014, Eau Claire County has obtained LiDAR (Light Detection & Ranging technology) topographic data that meets PM-61 FEMA standards, which can be used to greatly improve the accuracy of D-FIRM mapping. Recognizing the accuracy concerns with Eau Claire County's D-FIRMs, Wisconsin DNR has been actively working to secure FEMA grant funding to conduct a countywide update of the FEMA floodplain maps, including new engineering & delineations for all Zone A, and new delineations for Zone AE using the most recent terrain data.

County staff also noted that more public awareness is needed on floodplain mapping and insurance, and that the meaning of D-FIRM floodplain boundaries is frequently misunderstood. It is expected that many landowners also believe that they have no flood risk, and have no flood insurance, if their home or business is located outside the 100-year floodplain. However, given the inaccuracies in the D-FIRMs, related outreach and educational activities at this time would be counter-productive, especially within the outengineered Zone A areas.

Hazard Extent (Potential Intensities)

The National Flood Insurance Program (NFIP) classifies floods through the use of recurrence intervals.

Table 17. NFIP Flood Recurrence Intervals

Flood Recurrence Interval	Chance of occurrence during any given year
5-year	20%
10-year	10%
50-year	2%
100-year	1%
500-year	.20%

The federal standard for floodplain management under the National Flood Insurance Program (NFIP) is the "100-year floodplain." This area is chosen using historical data such that in any given year there is a 1% chance of a 'base flood' (also known as "100-year flood" or "regulatory flood"). A base flood is one that covers or exceeds the 100-year floodplain.

Event History – Flooding

Regional flooding trends are summarized in **Appendix E**, which notes:

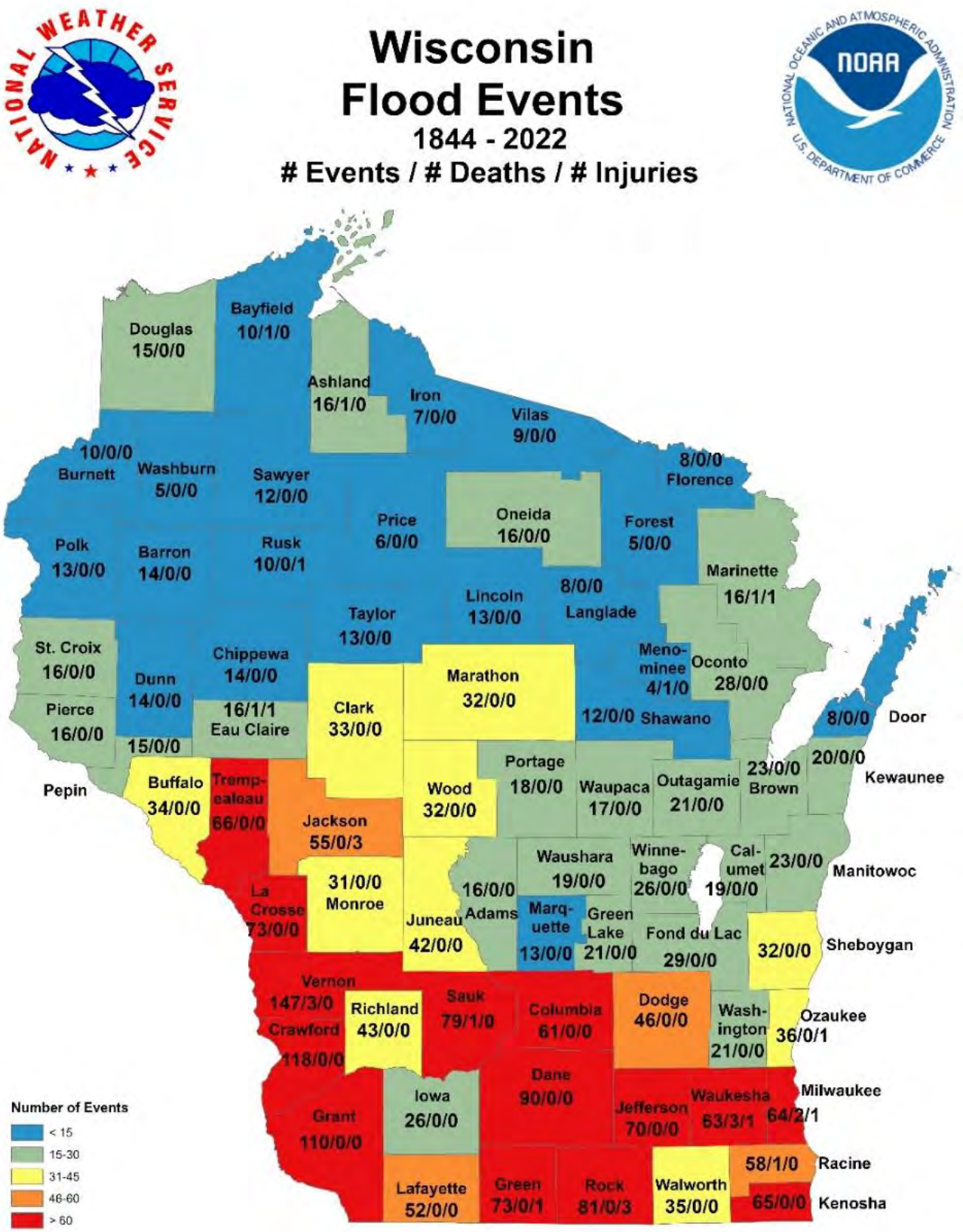
- Wisconsin has experienced a significant flooding event at least once every decade since 1880.
- Flood events tend to cause the most widespread damage of all Wisconsin's natural hazards. Since 1992, flood damages from major events in Wisconsin have exceeded $2.3 trillion.
- There have been very few dam failures resulting in major damage or loss of life in Wisconsin. In June 2008, the Lake Delton Dam broke which resulted in mudslides which washed out a number of homes. Closer to home in 2002, a small privately owned dam in Osceola (Polk County) washed out and caused significant damage to a mobile home park.

Figure 24 shows the county-by-county distribution of flood events across Wisconsin for the period of 1844 to 2022. Compared to southern Wisconsin, Eau Claire County has had a relatively low number of severe flooding events. Hilly terrain in the Driftless Area of southwestern Wisconsin and the built-up urban areas in the south-southeast are factors that increase the chances of flooding. Even so, very few flood-related injuries and deaths have occurred.

Significant Eau Claire County Events

Serious flooding in Eau Claire County has historically been primarily limited to floodplain areas along the Chippewa River, especially in the City of Eau Claire and the Town of Brunswick. Heavy rains in late April and early May of 1954 resulted in the closing of State Highway 85 between State Highway 37 and Rock Falls in eastern Dunn County. The Chippewa River is one of the largest rivers within Wisconsin and the largest river in Eau Claire County. The County lies within the Lower Chippewa River Basin, but upstream lays the Upper Chippewa River Basin which drains surface waters from 4,680 square miles, nearly the size of the State of Connecticut.

Figure 24. Reported Flooding Events in Wisconsin by County, 1844 to 2022



Many of the most significant flooding problems since 1990 have occurred when natural or man- made drainage and stormwater systems have been unable to handle heavy rain events, especially in low-lying areas or when the ground is already saturated. A closer review of some of the recent flood events in Eau Claire County provides a better understanding of the frequency, characteristics, and damages related to flooding in the County.

June 1993 — Heavy rains in June 1993 caused extensive infrastructure damage (i.e., roads, road shoulders, culverts, bridge abutments) and flooded structures in many areas of the region. Agricultural crops were most severely impacted by flooding combined with continued wet weather. In the area, this event is best known for the extensive flooding on the Black River, including a dam failure which flooded 90 structures in the City of Black River Falls in Jackson County to the south. Eau Claire County would later undertake flood mitigation efforts, including the buy-out of some floodprone structures, as a result of this event. Due to the magnitude of this event, additional details on the June 1993 flooding are provided in a special subsection within **Appendix E.**

September 2000 — On September 10-11, 2000, nearly 8" of rainfall fell in the Eau Claire area within a 24-hour period, with 6" falling within a 4-hour period. Within the City of Eau Claire, more than 50 locations experienced significant damage as discussed in Appendix k. Some residential areas outside the City also experienced stormwater flooding. A death occurred within the City of Eau Claire when a motorist drove around a barricade and into a hole. An injury was also reported as part of this flood event. The 2000 storm resulted in increased awareness of the risks and vulnerabilities associated with stormwater flooding in Eau Claire County and related planning and mitigation efforts were underta ken as a result. In 2002, the City of Eau Claire and Eau Claire County used Flood Mitigation Program funding to complete their own flood mitigation plans then proceeded to acquire key properties and perform of significantly prone to repetitive stormwater flooding damage and perform other mitigation actions.

September 2010 — This event was also the result of heavy rainfall in the Eau Claire River basin. About twelve properties were significantly impacted, mostly along Lake Altoona area and immediately upstream. Ten homes were sandbagged with a total of 2,600 bags used. A state of emergency was not declared. Comparisons to the 1993 flooding have been made, but most of the landowners impacted were not living in the area in 1993. Sedimentation on the Eau Claire River is also changing potential flood risks over time. On February 24, 2011, a special multi-agency meeting was conducted by Eau Claire County and WCWRPC to discuss the lessons learned and recommendations from the September 2010 event. These lessons and recommendations included improved communications and call lists, resident role in monitoring, acquisition of equipment for filling of sandbags, improved mapping of inundation areas based on different flood levels, identification of sand drop sites, volunteer management policies, and promotion of flood insurance.


2016 flood damage

September 2016 — Thunderstorms produced very heavy rainfall (5" to 8" in areas) resulting in flash flooding across the region. The Canadian National Railroad had 50 feet of track wash out in Stanley and near Wheaton. Several roads were closed in Eau Claire County including County Highways DD, Q, XX, and G. A mudslide also occurred near Highway 53 on the north side of Eau Claire. According to Eau

Claire County Emergency Management records, 45 private properties reported flood damage, with 5-6 being classified as major damage. The Red Cross assisted those displaced in the City of Eau Claire and surrounding communities.

Financial assistance through the Wisconsin Disaster Fund was received to assist with some of the September 2016 damages. County municipalities and agencies reported nearly $357,000 in public costs and damages to Eau Claire County Emergency Management as a result of the September 2016 flooding including:

Town of Bridge Creek ($21,355) and Bridge Creek Fire Department ($14,429)
Washout of roads and/or culverts along Channey Road (2 locations), Kelly Road (2 locations), and Horse Creek Road (2 locations). These roads would be closed 5-8 days. The Fire Department incurred costs assisting with response and rescue.

Town of Ludington ($20,463.95)
Washout of roads, culvert, shoulders, and/or ditches along Woodland Valley Road (3 locations, Town Shop Road (3 locations), Grandview Drive, 10th Avenue Dead End, Jiglum Road, Swamp Road, Scenic Drive, Rockie Road, and Oak Dale Road.

Town of Seymour ($56,567)
Washout of roads, culvert, shoulders, and/or ditches along Town Drive (6600 block), Burnell Drive, 84th Avenue, St. Bridget Drive (10300 & 11000 blocks), N. 120th Avenue, and N. 150th Avenue (2400 block).

Town of Wilson ($28,590)
Washout of road surface, culverts, and shoulders along Tower Road, Gravel Pit Road, and Hamilton Falls Road, with some roads closed for about one week.

City of Eau Claire ($30,534.19)
Damages within the City of Eau Claire were more diverse compared to the towns. Most costly was heavy erosion and washout of a bank along the Eau Claire River along S. Dewey Street. Street flooding occurred on Hastings Way and Horlacher Lane. A mudslide over along Old Wells Road requiring barricades and clean-up. A washout occurred at Phoenix Park Point. And a lightning strike at 1101 West Hamilton damaged city equipment.

County Highway Department ($43,186.10)
Washouts and culvert failures on county highways necessitated $90,153.80 in emergency repairs and $38,620.60 in permanent repairs. Highways impacted were: CTH Q (2 locations), CTH DD, CTH G, CTH H, CTH UN, CTH P, CTH XX, CTH QQ, CTH G located in the towns of Bridge Creek (2) Ludington (2), Seymour (4), and Wilson (2).

County Parks and Forest Department ($136,840.20)
Culvert washouts (2 full, 3 partial) occurred along the Hamilton Falls River ATV trail. and the road at the Pea Creek Sedge Meadow Dike washed out. The Sandusky Drive Bridge abutment washed out with loss of rip rap and some scouring. The Brown Hut snowmobile bridge was ripped from its piers and washed downstream.

It is believed that not all communities experiencing damage in September 2016 reported their damage to Eau Claire County Emergency Management, which impacted their eligibility for Wisconsin Disaster Fund assistance.

March 2019 — Unlike the other recent flooding described above, this event was the result of rapid spring melt of an above average snowpack during unseasonably warm temperatures, which overloaded stormwater systems and caused ice jams on area rivers and backed-up floodwaters on smaller creeks. Several roads throughout the County were closed due to flooding and many homes and businesses reported flooding, including sewer backups within the City of Eau Claire.

Some additional localized flooding occurred in **June 2020** and **August 2021** that resulted in road closures and basement flooding in different parts of the County.

National Climate Data Center (NCDC) Summary Table

Appendix E includes NCDC flooding reports impacting Eau Claire County. Data from the National Climactic Data Center for flood events is not available prior to 1993.

Flooding Events Summary *(1/1/1993 to 12/31/2023)*			
Total Events:	25	Number of Events Per Year:	0.83
Total Event Days:	19	Number of Event Days Per Year:	0.63
Total Injuries:	1	Total Deaths:	1
Total Event Days with Property Damage:	9		
Property Damage (from NCDC):	$ 4.8M		
Property Damage (adjusted for inflation):	$ 7.8M		

16 of the 25 reported events from 1993 to 2023 were flash flooding events – nine of which occurred in the City of Eau Claire. No recent history of dam breaks with significant impacts in Eau Claire County were identified during the planning effort.

National Flood Insurance Program (NFIP) Claims

As of December 31, 2023, there were a total of 103 active National Flood Insurance Program (NFIP) flood insurance policies in Eau Claire County:

Community	# of Policies	Total Coverage	Total Premium + Federal Policy Fee
Eau Claire Co. - unincorporated towns	38	$8,344,000	$34,542
City of Altoona	1	$42,000	$292
City of Augusta	2	$346,000	$1,026
City of Eau Claire	60	$13,846,000	$70,616
Village of Fairchild	None. Village is not a NFIP participant.		
Village of Fall Creek	2	$378,000	$970
Totals	103	$22,956,000	$107,446

This is a decrease in 138 policies since March 2012, though the overall coverage is slightly higher. Continued local enforcement of floodplain zoning and stormwater management regulations, which reduces the number of floodprone structures, may also be influencing NFIP participation.

According to FEMA NFIP redacted claims data through 2023, there have been 13 NFIP claims for Eau Claire County with 9 claims paid totaling $206,353.16 in building damages and no paid content damages. These numbers include any claims within the City of Eau Claire within Chippewa County. Six of the 13 claims were within City of Eau Claire with one claim in Altoona and six claims from unincorporated towns; nine of the claims were from the 54703 zip code. Four of the claims were for damages outside the 100-year floodplain (Zone X). The claims were distributed for flooding in six different years: 1993 (1 claim), 2010 (1), 2011 (1), 2016 (3), 2019 (4), and 2023 (3). Eight of the claims were due to the

overflow of lakes or rivers, while two were caused by the accumulation of rainfall or snowmelt; causes for the other claims were not provided.[20]

Repetitive loss properties (RLPs) are those properties participating in the National Flood Insurance Program (NFIP) for which two or more claims of $1,000 or more in a 10-year period have been paid. This list is regularly compiled by FEMA and made available to the Wisconsin Division of Emergency Management. There are no RLPs for Eau Claire County.[21]

Areas Prone to Flooding

Riverine and lake flooding in unincorporated Eau Claire County had historically been most frequent and severe along the Chippewa River, but in recent decades the related vulnerabilities along the Chippewa have decreased due to County and local mitigation efforts, buy-out programs, and ordinance enforcement. In contrast, there appears to be an increasing frequency of riverine and flash flooding along the Eau Claire River and its tributaries with the most frequent impacts on roads, culverts, and bridge abutments.

Overland floodwater entering the basements of older homes, especially in low-lying areas, is not uncommon within rural Eau Claire County. However, most homeowners have taken action to mitigate the impacts; and serious damage is rare. Many driveway culverts of private homes are aging or are undersized and need replacement, but often fall into neglect and are not replaced due to costs to the landowner.

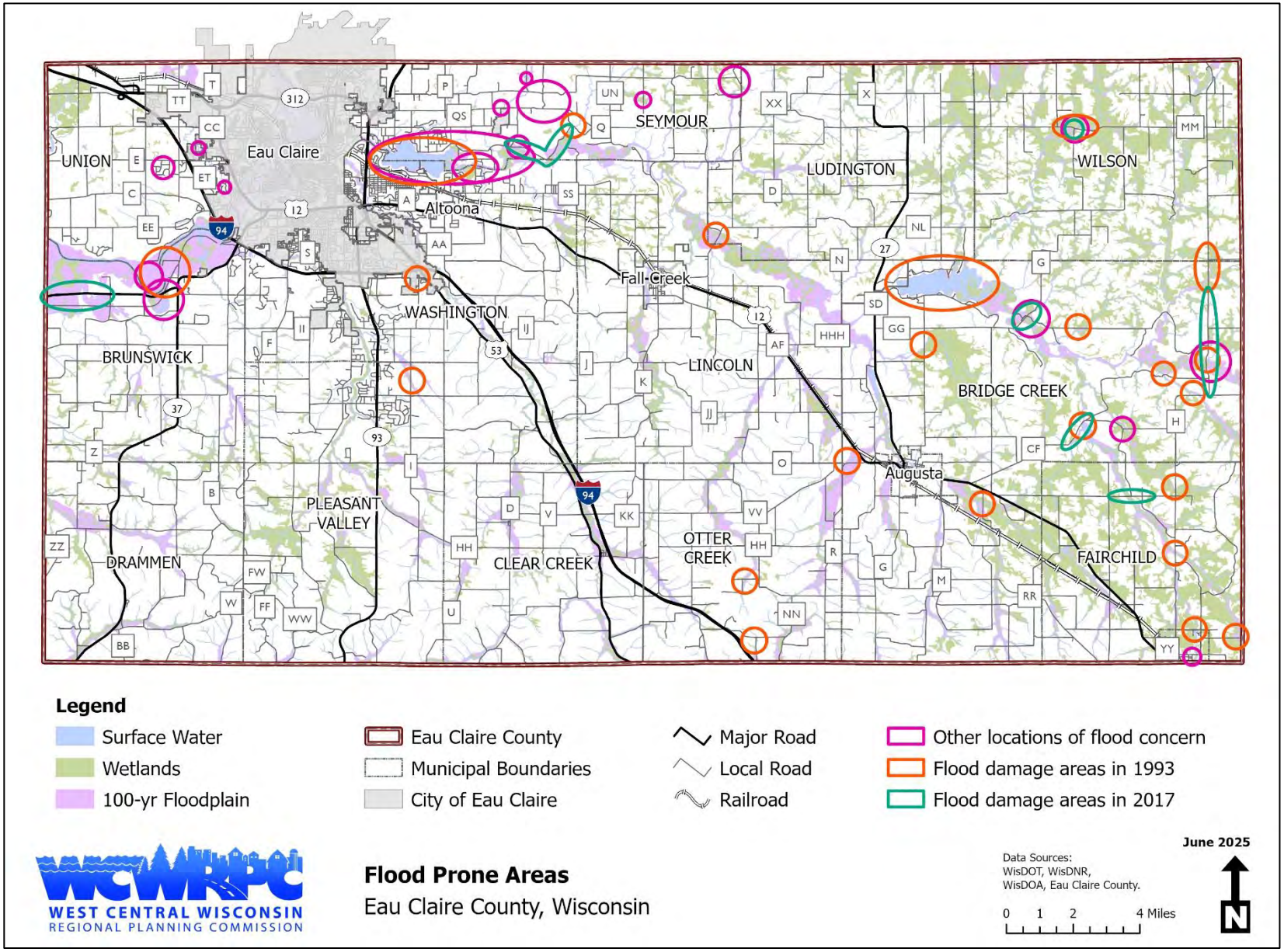
Overland flooding has also been a problem for some residential subdivision developments, in particular older ones located south of the City of Eau Claire during times of early snow melt. Some older subdivisions did not fully consider natural water drainageways during planning or grades were changed during development or subsequent landscaping which contributed to stormwater flooding problems. During the past decade, more attention has been given to stormwater management during the planning and site plan review process by both local governments and builders to address this.

During past mitigation plans and this plan update, County staff and local officials identified a number of areas in unincorporated Eau Claire County that are particularly prone to flooding shown in **Figure 29**. Floodprone areas within the villages and cities are individually discussed in the community mitigation subplans in **Appendix K**.

[20] The County's 2013 mitigation plan states that there were 41 NFIP claims for Eau Claire County between 1978 to November 2010. The reason for this discrepancy with current claims data is not known.

[21] NFIP data suggests that there are two RLPs in Eau Claire County. However, upon investigation, these locations are located in Dunn County, but may have Eau Claire mailing addresses.

Figure 25. Unincorporated Areas Prone to Flooding



Some of the common characteristics of the flooding shown in **Figure 25** are further described below:

- **Town of Union** identified four flood risk areas - Homes along Silver Mine Drive are in or near the floodplain. Sherman Creek Park and West Vine Street have experienced past flood damage. The hillside at West View Acres subdivision has been eroded during flooding, damaging a home and culverts. And stormwater drainage from development in the Skyline Drive area has damaged property on Menomonie Street.
- **Towns of Washington and Seymour** - Lower-lying areas along Lake Altoona and immediately upstream (especially to the north) appear to be the largest concentration of structures that are most vulnerable to flooding. This area includes the majority of the County NFIP claims and the twelve homes that were most impacted by the September 2010 flooding. Flooding of some nearby roads occurs almost annually. One recent home buyout. Annual spring melt and heavy rainfall events (6"+) result in over-the-road flooding in the County Highways "QQ" and "L" areas; plans are to relocate part of Highway "L" as part of a flood restoration/stormwater management project.
- **Towns of Wilson, Bridge Creek, and Fairchild** - Numerous locations in eastern part of Eau Claire County were identified which frequently experience over-the-road flooding or road flood damage over the past decade. High water tables, numerous streams, and poor overall drainage systems are common in this area. Some areas experience flooding nearly annually. One heavy rain event washed-out a bridge in the Village of Fairchild. Two structures (a home and cabin) along Chaney Road have been landlocked during past flooding and could be considered future mitigation (acquisition) opportunities with landowner consent. Damage to the home and an emergency response vehicle occurred during 2016 flooding.
- **Town of Bridge Creek** – County Highway "R" west of U.S. Highway 12 where the county road crosses Thompson Valley Creek received road damage as a result of the 1993 storm and is prone to stormwater flooding during heavy rain events. Highway 85 near Cemetery Road has also been closed due to flooding with some basement flooding of a nearby home. A number of locations on County Highway "H" have been closed in the past due to flooding; Mead Lake Dam operators (in Clark County) now notify Eau Claire County if the gates are opened, which allows time for the placement of water-over-the-road signage on CTH "H".

Some of the worst spots for roadway flooding, such as those shown in the 1993 flood-damaged areas map in Appendix E, have since been remedied and the vulnerability has decreased considerably. In 1990, the Highway Department raised a portion of County Highway "Q" which is associated with the only Eau Claire County flood-related death. Similar improvements have been made along Sherman Creek and on County Highway "D" where it crosses the Eau Claire River to help prevent roadway flooding. A floodprone section of County Highway "I" in an area of high groundwater was raised in 2018. The County Highway Department has also conducted meetings with towns on culvert design, sizing, and materials to help mitigate flooding as well as encouraging communication between towns so that culvert planning considers the larger drainage areas. A GIS-based culvert/bridge inventory and assessment is being completed.

It is important to note that many of the cities and villages have experienced significant flooding that are not included in the previous map. The flood history and concerns for the unincorporated cities and villages are described in their respective sub-plans in **Appendix K**.

Most County camping areas are on higher ground out of floodplains, and emergency plans are in place to warn campers of potential hazard threats. However, swimmers can be exposed to the hazard of shifting sand bottoms in local rivers. After a heavy rain or flood event when large discharges of water take place, the localized depths of some rivers can change as sand is deposited or displaced. This can change the extent of the floodplain over time, and make structures vulnerable which may not have experienced flooding in the past. This has become an increasing problem on the Eau Claire River.

Changing water depths can also contribute to the injury of residents or tourists might while swimming or diving off of adjacent river banks or rock features. Fatalities have occurred. These injuries and fatalities have been occurring in areas not designated for swimming, where signs have been placed to warn swimmers of this potential hazard. Placement of warning signage along the entire length of the river at all such places where swimming takes place is likely not feasible.

Agricultural Flooding

Approximately 42 percent of reported damages from Wisconsin floods between 1993 and 2000 were from crop losses. Flooding can have additional agricultural impacts as well. Since many floodplains are used for forage, the loss of these crops (e.g. alfalfa) may require farmers to supplement feed for livestock. Due to the low value of forage and high insurance costs, most farmers do not have multi-peril crop insurance for forage crops. The remaining forage in flooded areas can be lower in quality, reducing milk production and complicating or reducing pregnancies and births. Feed and water quality problems which result in sick animals also increase veterinary costs. Agricultural flooding impacts can also be long-term and more difficult to quantify. The harvesting of crops in wet areas can compact soils, further reducing crop yields for years to come.

Over 13,000 acres of assessed agricultural land falls within the 100-year floodplains of Eau Claire County. While crop damage due to flooding is occasionally experienced in some areas, statistics regarding crop losses in the past or future vulnerability due to flooding are not readily available. These potential losses can vary depending on the type of crops planted, though it is common practice to often use such floodprone areas for hay, forestry, or pasture. And while prolonged flooded conditions are not common, periods of excessive soil wetness can delay spring planting and indirectly hinder yields by shortening the growing season. Standing water following heavy rains or prolonged wet periods is not limited to floodplains. Denitrification and oxygen depletion of crops can severely reduce yields or result in plant death after prolonged water-logging.

An additional agricultural flood-related threat is associated with non-point pollution, such as manure, nutrient, and pesticide run-off. Heavy rains, flooding, and unexpected snow melt can result in heavy run-off into surface waters, resulting in high levels of nutrient loading and contaminants. Heavy rains and ice damming can also result in the failure of improperly maintained or sited manure storage facilities. Some small fish kills due to run-off have occurred in Eau Claire County in the past. And such non-point pollution can create health concerns for swimming and fishing, thus impacting tourism. Issues related to animal waste and nutrient management are primarily monitored and addressed by local farmers and

the Eau Claire County Land and Water Resources Department with partnership support of the Eau Claire County UW-Extension Office and other State and Federal agencies (e.g., DATCP, WDNR, NRCS). However, it is very important to note that many sources of non-point pollution are not agricultural related, such as urban stormwater, road and parking lot run-off, and soil erosion from new development.

In addition, about 16,000 acres of lands assessed as forest. Compared to other agricultural croplands, forested areas are typically less impacted by and more resilient to flooding. The potential flood impacts to these forest lands are considered minimal, overall, though river or lake flooding can cause some trees to topple, especially in areas of steep slopes or within the floodway. New plantings, if covered by floodwaters for an extended time, would be most vulnerable.

Overall, riverine or lake flooding of agricultural and forest lands is largely addressed by the individual landowner with a relatively low vulnerability. Local farmers are very aware of the flood risks and vulnerabilities on their lands and, if needed, most obtain crop insurance to mitigate the impacts of flooding on their farm businesses. But with appropriate nutrient management practices and care in application, the hazard threats to water quality from agricultural practices can be mitigated.

Agricultural flooding does not require additional mitigation action by Eau Claire County or its municipalities within the scope of this plan at this time. County officials note that prevention and best practices are the best way to avoid additional scrutiny and rules which can pose additional hardships to the farmer. Emptying storage facilities on schedule, avoiding spreading prior to rain or heavy snow melt, planting fall cover crops, crop insurance, and following a nutrient management plan are all important steps to mitigating flooding and runoff.

Hazard Probability – Flooding

The Plan Steering Committee rated riverine or overbank flooding as being moderate to high probability, higher than overland flooding. Riverine or overbank flooding tied with ice storms and sleet as having the highest probability. Vulnerability or impacts were rated similarly. Flooding in Eau Claire County will continue to be a significant risk for residents and improvements. The drought during the previous decade contributed to a reduction of recent, more widespread flood events.

Based recent trends, it is likely that Eau Claire County will continue to experience one serious, damage-causing flood event every 2 to 3 years on average, with some localized flooding and stormwater ponding occurring annually or even more frequently after heavy rain events. Riverine and spring snow-melt flooding of some croplands is an annual event in some locations and this is anticipated to continue in the future. Flooding on seepage lakes is very difficult to predict due to the cyclical nature of the groundwater levels and droughts.

Flash flooding due to heavy rains will be the most frequent cause of flood damage in the County and can occur at any time of the year. The increasing frequency of heavy rain events, plus warmer, wetter winters, is anticipated to increase the flooding probability over time; this is consistent with longer-term flood event trends. Those areas most prone to the typical annual riverine flooding associated with snow melt are well known and potential damages have been largely mitigated. Appendix K addresses localized variance in flood frequency within the cities and villages.

Vulnerability Assessment

Appendix G provides the following regarding the potential impacts of flooding events for Eau Claire County as a whole:

- A description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable; and
- A description of the vulnerability of each community lifeline for this hazard.

In summary, Eau Claire County populations located in or near the 100-year floodplain or near a high-hazard dam, are most vulnerable to flooding events. During the planning process, the following assets were identified as having the greatest vulnerability:

- **Roads and culverts** are often washed out or damaged during flash flooding events, representing the County's largest portion of flood-related damages in recent decades. Traveling on flooded roadways or unexpectedly encountering a washed-out culvert/shoulder poses the highest risk of injury or death. As noted previously, there have been a death and injury to **travelers on flooded roadways** in Eau Claire County.
- **Populations and structures in low lying areas or near water bodies are more vulnerable than those in higher elevations or outside the 100-year floodplain.** Unanchored homes (e.g. mobile homes) and outbuildings are more at risk of being swept away during flood events.
- **Croplands, livestock, and farm facilities within floodplain or stormwater drainage areas** can be lost or damaged due to riverine or overland flooding, though the County's farmers are generally aware of the floodprone areas and associated risks on their properties and rented lands. Cropland practices, drain tiling, etc., have the potential to exacerbate runoff, resulting in flooding down-gradient. Further, heavy rain events can result in runoff from feedlots and manure storage facilities and impact surface water quality.
- **Developed areas with large areas of impervious surfaces, heavier soils, and hardscape** are more prone to stormwater or flash flooding or the flooding of nearby areas. Such flooding can also infiltrate or overwhelm municipal sanitary or storm sewer systems. Generally, these areas are located within the incorporated cities and villages, and are addressed in Appendix K.
- After a flood event, it is important that the public understands that **private wells** may be contaminated and testing is strongly encouraged. The County's Environmental Health Office has testing kits and other infrastructure in place. Sewer systems can also back-up in flooding resulting in public health concerns.

Of the community lifeline facilities listed as mapped in Section III.D., fourteen were identified as potentially being located, in whole or part, within the 100-year floodplain, not including roads, bridges, dams, and warning sirens. Of these, fourteen are located in the City of Eau Claire and two located near Foster, including:

- Eau Claire County Government Center & Jail & Eau Claire County Highway Department in Foster
- UW-Eau Claire Davies Center, Sonnentag Center, Student Housing Apartments, & College of Nursing
- 1 clinic laboratory & 4 private businesses with hazardous materials
- Eau Claire Post Office on Madison Street in Eau Claire

- 1 food bank and 1 electric substation on Madison Street in Eau Claire

2018-2019 flooding did come near the jail but no significant flood-related damages or additional mitigation actions recommended for any of the above lifeline facilities have been identified.

Projected Loss Estimates

Through the use of current D-FIRM maps and G.I.S. parcel data, those principal structures potentially located within a 100-year floodplain were identified by the Eau Claire County GIS staff. This information is further supplemented through the previously discussed floodprone areas map to guide the development and prioritization of flood-related mitigation strategies. A full description of the flood assessment methodology and related data challenges is included in **Appendix G.**

Figure 30 identifies the 100-year floodplains within Eau Claire County along with the location of all principal structures located partially or wholly within the 100-year floodplains, excluding the City of Eau Claire. Principal structures are those buildings located on a parcel within which the main use of the parcel takes place; when distinguishable, out-buildings or accessory structures within the 100-year floodplains are not included. Figure 30 is followed by **Table 19**, which provides a synopsis of those potentially floodprone principal structures by municipality. The assessed use and estimated value of improvements is based on 2024 tax data for those parcels associated with each of the principal structures identified in Figure 30.

In total there are an estimated 437 parcels in Eau Claire County with one or more principal structures potentially being located within the 100-year floodplain. Of these parcels, 78% are residential constituting 59% of the total assessed improvements possibly located in the floodplain. Over half of the parcels are located within the Towns of Clear Creek, Bridge Creek, and Seymour. The 64 "Other" parcels (15% of all parcels) identified in the table are mostly farm-related structures.

It must be noted that the structures identified in Figure 30 and in Table 19 may not have had flooding problems in the past. To the contrary, the majority of these properties have no history of flooding and may not be vulnerable to flooding in the future. Data for individual structures is not currently available (e.g., number of stories, existence of basements, individual building values, building elevation), so we are unable to confirm if a specific building is elevated above (or below) the base flood elevation, nor can we estimate potential flood damage by individual structure. In some cases, due to topography at the building site or construction methods, the structure may actually be elevated higher than the adjacent 100-year floodplain.

Further, as discussed in Appendix G, for properties with multiple buildings and ancillary structures, the exact use and nature of each structure within the floodplain is not known and tax assessment data is only available at the full parcel level, not for specific structures. And in some cases, an ancillary structure (e.g., barn, shed, boathouse) is located in the floodplain but is not reflected in Figure 30 or Table 19 since the principal structure on that parcel was located outside the delineated floodplain.

Figure 26. Eau Claire County Floodplains & Potential Structures in Floodplain, excluding the City of Eau Claire

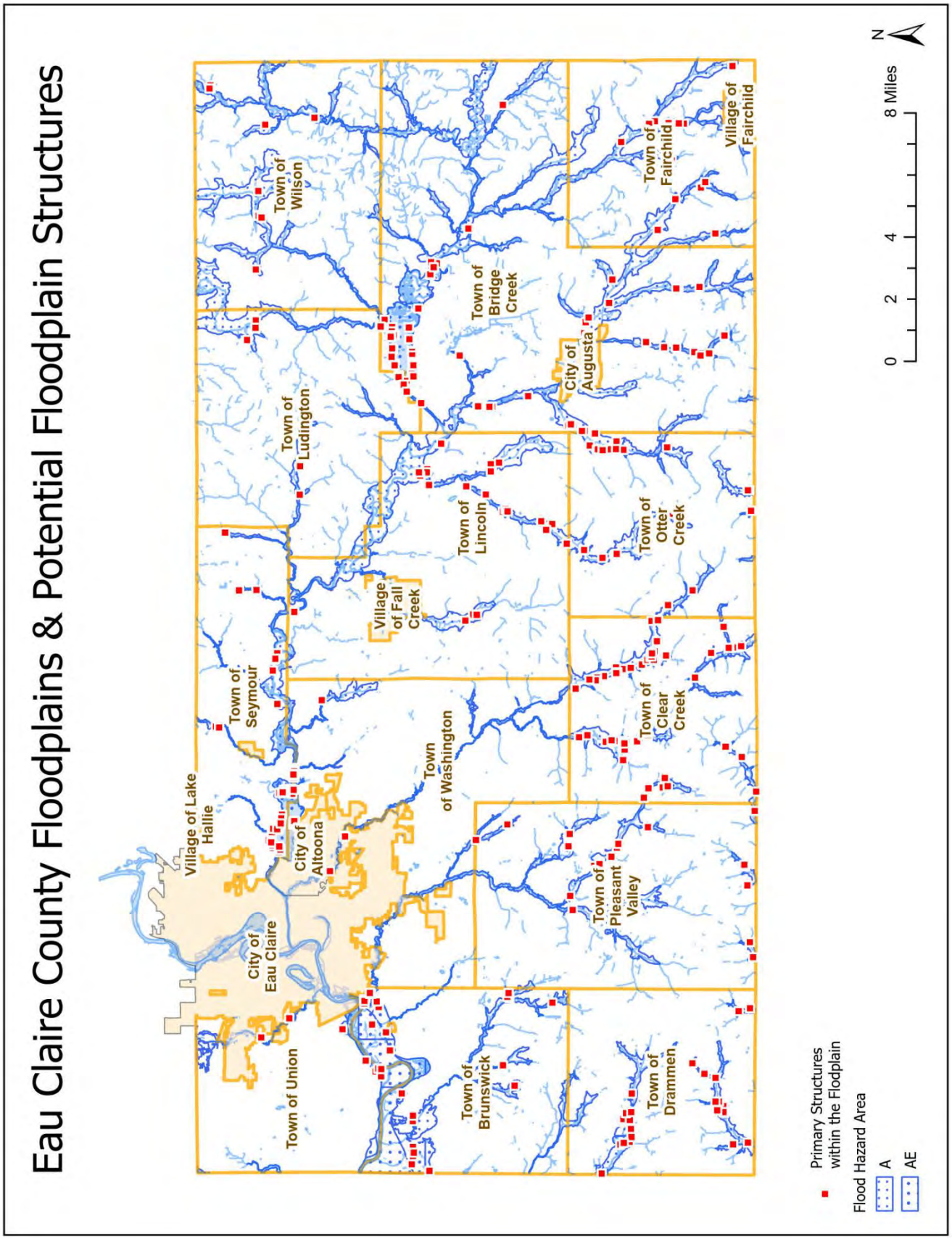


Table 18. Principal Structures potentially in 100-Year Floodplain—2024

Municipality	# of Parcels w/ Prinipal Buildings	# of Residential Parcels	Residential Imp Value	# of Commercial Parcels	Commercial Imp Value	# of Other Parcels	Other Imp value	# of Tax-Exempt Parcels	Total Assessed Improv
Cities									
Altoona	14	12	$ 3,158,700	0	$ -	0	$ -	2	$ 3,158,700
Augusta	5	4	$ 357,400	1	$ 855,800	0	$ -	0	$ 1,213,200
City Sub-Total:	**19**	**16**	**$ 3,516,100**	**1**	**$ 855,800**	**0**	**$ -**	**2**	**$ 4,371,900**
Villages									
Fairchild	0	0	$ -	0	$ -	0	$ -	0	$ -
Fall Creek	5	3	$ 1,086,600	0	$ -	0	$ -	2	$ 1,086,600
Village Sub-Total:	**5**	**3**	**$ 1,086,600**	**0**	**$ -**	**0**	**$ -**	**2**	**$ 1,086,600**
Towns									
Bridge Creek	82	68	$ 7,617,700	5	$ 828,200	9	$ 1,006,800	1	$ 9,452,700
Brunswick	27	14	$ 2,841,100	4	$ 1,386,700	9	$ 1,650,300	0	$ 5,878,100
Clear Creek	86	64	$ 7,353,500	7	$ 868,700	12	2657100	4	$ 10,879,300
Drammen	29	21	$ 3,470,900	0	$ -	7	5314200	1	$ 8,785,100
Fairchild	15	13	$ 1,644,600	0	$ -	2	$ 214,100	0	$ 1,858,700
Lincoln	25	17	$ 2,653,400	0	$ -	8	10842500	0	$ 13,495,900
Ludington	10	10	$ 1,662,000	0	$ -	0	$ -	0	$ 1,662,000
Otter Creek	21	9	$ 816,500	0	$ -	12	$ 1,264,800	0	$ 2,081,300
Pleasant Valley	27	21	$ 2,876,300	2	$ 357,400	4	12321400	0	$ 15,555,100
Seymour	56	54	$ 15,771,800	0	$ -	0	$ -	2	$ 15,771,800
Union	9	7	$ 1,571,500	1	$ 25,000	0		1	$ 1,596,500
Washington	16	15	$ 3,666,000	0	$ -	0	$ -	1	$ 3,666,000
Wilson	10	9	$ 758,100	0	$ -	1	$ 97,700	0	$ 855,800
Town Sub-Total:	**413**	**322**	**$ 52,703,400**	**19**	**$3,466,000**	**64**	**$35,368,900**	**10**	**$ 91,538,300**
Total	**437**	**341**	**$ 57,306,100**	**20**	**$4,321,800**	**64**	**$35,368,900**	**14**	**$ 96,996,800**

Further, as discussed in Appendix G, for properties with multiple buildings and ancillary structures, the exact use and nature of each structure within the floodplain is not known and tax assessment data is only available at the full parcel level, not for specific structures. And in some cases, an ancillary structure (e.g., barn, shed, boathouse) is located in the floodplain but is not reflected in Figure 26 or Table 18 since the principal structure on that parcel was located outside the delineated floodplain.

The City of Eau Claire sub-plan in Appendix K includes the flood assessment for the City. The City has more detailed structural data than the remainder of the County, which allows for a more rigorous flood assessment. For this reason, Eau Claire's potentially floodplain properties are not included in Figure 30 and Table 19.

FEMA National Risk Index (NRI) Estimated Annual Losses
FEMA's NRI provides the following estimated annual losses (EALs) for Eau Claire County.

Risk Factor	Riverine Flooding
EAL Rate – Population	1 per 2.66m
EAL Rate – Buildings	$1 per $28.70k
EAL Rate – Agriculture	$1 per $2.22k
Total EAL	$1,357,659
Exposure	$29.8 billion
Events per year	0.7
Historic loss ratio	Relatively Low
Overall Loss Score	76.7 (Relatively Moderate)

Based on $9.1 billion in assessed improvements, annual riverine flooding damage to Eau Claire County's buildings alone would be close to $317,300 each year using NRI's estimated annual losses, not including tax-exempt structures. The NRI estimates that Eau Claire County has $6.9 million in agricultural value exposure to riverine flooding, which would equate to around $3,000 in agricultural losses per year.

Other Factors Influencing Future Losses

Three primary factors are key to projecting future flood vulnerabilities:

1) **Changes in Precipitation** – **The increasing frequency of heavy rainfall events was the most frequently noted flood-related concern during the plan update.** Section III.C. previously discussed long-term changes in weather patterns for the region, including more precipitation during the winter months and more frequent heavy rainfall events. The projected 36 percent increase in 2" rainfall events per decade would likewise increase flooding potential and may result in additional areas being considered 100-year floodplains in the future. However, with a projected increase in summer drought conditions, surface water levels would likely be lower overall. No detailed modeling on the full impacts of such longer-term weather pattern changes on Eau Claire County surface waters has been performed.

2) **Changes in Flood Storage** – Overall, the floodplains and wetlands of Eau Claire County are well protected. Encroachment of wetlands and new development often require the creation of new flood storage areas. Instead, the loss of flood storage will primarily be the accumulated loss or disruption of smaller stormwater storage areas, natural infiltration systems, and natural drainage systems. Eau Claire County is experiencing relatively fast growth. Every hardscape that is created (e.g., buildings, roads, parking lots), results in a change in potential stormwater or flood storage. This factor can be mitigated through stormwater management planning and mechanisms such as rain gardens, natural swales, rain barrels, pervious surfaces, and the creation and maintenance of flood storage areas. As suggested in Section III.C., stormwater models, standards, and systems are typically based on older precipitation-frequency data (e.g., Atlas 14, Technical Paper 40) and are not designed to accommodate more recent precipitation trends and storm events.

3) **Floodplain Development** – While demand for shoreland living is high, new floodplain development is well regulated and rarely allowed. Very little new floodplain development is occurring, so the

number of structures in Table 18 should not significantly increase over time unless the physical extent of the 100-year floodplain grows. The overall vulnerability of floodplain development is expected to increase as the market value of these structures increases and some older, seasonal structures are renovated as year-round retirement homes.

In short, floodplain development vulnerabilities are projected to increase in the future not from new development within the floodplain, but rather from increasing precipitation (and runoff), the increasing market value of existing structures, and the improvement of existing structures. No significant floodplain development is currently planned. Instead, the increasing flood vulnerability in Eau Claire County will likely be from overland stormwater flooding as a result of additional heavy rainfall events and changes in natural stormwater storage and drainage patterns as new development occurs.

Risk for Individual Plan Participants - Flooding

The number and value of structures potentially within the high-hazard floodplains areas of each incorporated community was previously discussed (see Figure 26 and Table 18). **Appendix K** includes hazard mitigation sub-plans for each city and village within Eau Claire County. These sub-plans include for each community:

- a summary and map of current flood-related concerns and mitigation activities in each community
- NFIP participation and floodplain management status
- the status of municipal dams or any dam-related concerns.

For the cities and villages, stormwater or overland flooding is the primary concern, not river/lake flooding. Flooding concerns for participating educational institutions are included in **Appendix L**.

Eau Claire County Dam Assessment

Defining the Hazard

Dam Failure – According to the FEMA Federal Guidelines for Dam Safety, dam failure is defined as:

> "Catastrophic type of failure characterized by the sudden, rapid, and uncontrolled release of impounded water or the likelihood of such an uncontrolled release. It is recognized that there are lesser degrees of failure and that any malfunction or abnormality outside the design assumptions and parameters that adversely affect a dam's primary function of impounding water is properly considered a failure. These lesser degrees of failure can progressively lead to or heighten the risk of a catastrophic failure. They are, however, normally amenable to corrective action. (FEMA 148)."

Dam failure can occur from structural problems at the dam, hydrologic problems, malfunction of equipment, or human error in the monitoring or release of water. As such, dam failure can occur with little or no warning and on clear days with no rain, unlike the other types of flooding. Technically, dam failure could be considered a man-made hazard and, thus, outside the scope of this hazard mitigation

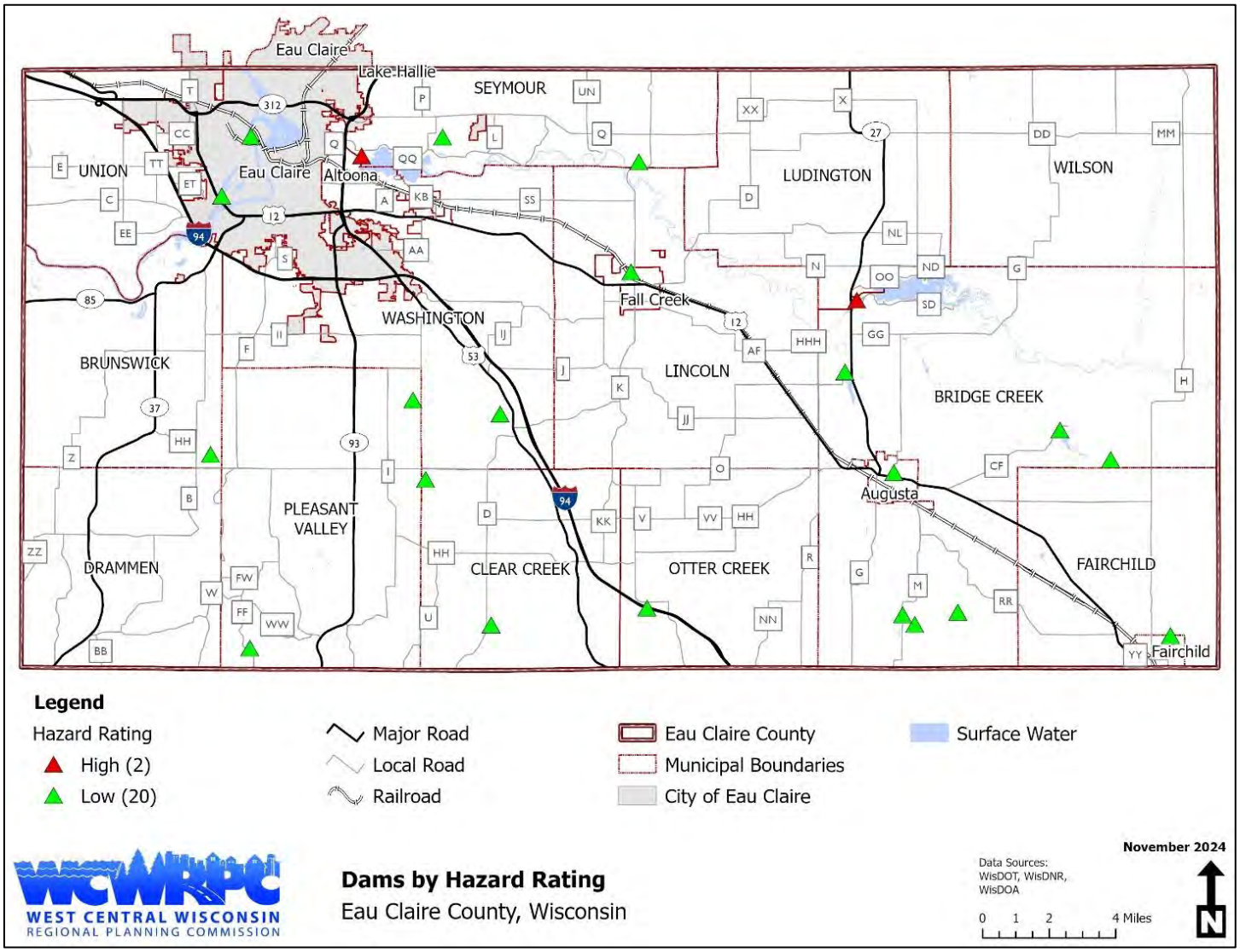
plan. However, given the County's ownership and management of a number of dams and the inherent relationship and similarities between dam failure and other types of flooding, a decision was made to include a discussion of this hazard as part of the flooding assessment.

Older dams which have been poorly maintained have a larger potential of dam failure. Hydrologic problems may occur when there is heavy precipitation or snow melt, resulting in more water being impounded than by design or more than the spillway can handle, resulting in adjacent flooding, overtopping, or structural failure. A partial or complete failure of a dam can release great amounts of water, leading to loss of life and substantial damage downstream. A dam failure may lead to additional failures of other downstream dams. And the sudden, prolonged disappearance of an impoundment due to dam failure can also have serious impacts on wildlife habitat, recreation, and tourism.

Hazard Location and Extent

There are 22 dams listed in the WDNR dam database as summarized in **Appendix H**. The dams of Eau Claire County are shown in **Figure 31**, along with their Wisconsin Department of Natural Resources hazard ratings.

Figure 27. Eau Claire County Dams by Hazard Rating



As listed in Appendix H, Eau Claire County has nine (9) large dams. Seven of these large dams are rated or estimated to be low hazard due to lack of vulnerabilities downstream while two (2) of the large dams have a high-hazard rating. There are no dams in the County with a significant-hazard rating. All five (5) small dams in the County have a low hazard rating. The Altoona Dam and the Eau Claire River (Augusta) Dam, the only two (2) high hazard rated dams in the County, are large dams that are owned by Eau Claire County.

As noted, flooding can also occur as a result of dam failure. Hazard potential and estimated hazard ratings are assigned by the Wisconsin Department of Natural Resources based on the potential for loss of life or property damage should the dam fail. The dam hazard ratings are defined by FEMA as follows:

Low Hazard Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property. Large low-hazard dams are inspected every ten years by the Wisconsin DNR Dam Safety Engineer, and the spillway must be sized to accommodate a 100-year event.

Significant Hazard Dams assigned the significant-hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant-hazard dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure. Large significant-hazard dams must be inspected every five years (5th year private engineer; 10th year WDNR Dam Safety Engineer), and the spillway must be sized to accommodate a 500-year event.

High Hazard Dams assigned the high-hazard potential classification are those where failure or mis-operation will probably cause loss of human life. Large, high-hazard dams must be inspected every two years (2nd, 4th, 6th, 8th years private engineer; 10th year WDNR Dam Safety Engineer), and the spillway must be sized to accommodate a 1,000-year event.

Event History – Dam Failure

There have been very few dam failures in Wisconsin that resulted in major damage or loss of life. And many of Wisconsin's approximately 3,800 dams are small logging or milling dams built prior to 1900 and have little or no associated vulnerabilities. Between 1990 and 1995, more than 75 dam failures were documented in Wisconsin. And from 2000 to 2023, Wisconsin had 34 recorded dam failures, which is second highest in the United States. Several of these incidents resulted in injuries and serious property damage, but no loss of life.

A June 1993 flood event included the failure of an embankment associated with the Hatfield Dam on the Black River which contributed to flooding damage downstream in the City of Black River Falls. In June 2008, the Lake Delton Dam broke which resulted in mudslides which washed out a number of homes. Closer to home in 2002, a small privately owned dam in Osceola washed out and caused significant damage to a mobile home park. And in April 2019, the top portion of a small dam in

Chippewa County had a major failure that resulted in damage to a campground downstream and washed away a camper.

Eau Claire County has had no significant flooding due to dam failure since the mid-1960s.

Event Probability – Dam Failure

Overall, **the potential of dam failure in Eau Claire County is considered very low**, though the potential for damage and injury is high should failure of a larger dam occur. The Steering Committee rated the probability of a dam failure as low, with a high level of vulnerability if a failure should occur.

Eau Claire County and its municipalities continue to work with the Wisconsin Department of Natural Resources to ensure proper maintenance of the dam facilities in the County and to mitigate the potential vulnerabilities should failure occur. **If the dams within Eau Claire County continue to be well maintained, flooding related to dam failure should not occur and is not expected.** In fact, most of the smaller, privately owned dams would cause very minimal or no damage downstream if a failure occurs. The larger dams with significant- or high-hazard ratings were built to strict engineering standards, have related emergency plans, and are closely monitored.

Event Vulnerability – Dam Failure

The primary vulnerability from a dam failure is development downstream within the hydraulic shadow of the dam. The level of development within each dam shadow is reflected by the dam's hazard rating as previously discussed. A dam's hazard rating can also be reduced through repairs/improvements, updating dam failure analysis or emergency planning, or enacting dam shadow zoning to discourage development within the failure area. As shown on Figure 31, Eau Claire County has two (2) high-hazard dams. A G.I.S. analysis of the dam shadows was not completed as part of this mitigation plan. A future mitigation plan update should consider evaluating existing development in the shadows and comparing the mapped dam failure areas to the 100-year floodplain boundaries; it is suspected that the failure areas do not exceed the 100-year floodplain boundaries in most cases.

High-Hazard Dams (2)

Two (2) dams in Eau Claire County have been given HIGH hazard ratings and all both large dams.

- **Altoona Dam (owned by Eau Claire County)**
  The Altoona Dam is owned, maintained, and monitored by Eau Claire County. The dam was improved about 18 years ago to a 1,000-year even standard, and could theoretically be topped and not fail. An online/Wi-Fi water-height gauge system is monitored by an Eau Claire County Park Ranger/Dam Tender. There is very little floodplain development downstream of the Altoona Dam within the City of Eau Claire until near the confluence with the Chippewa River. The dam failure inundation area for the Altoona Dam does not extend into the City of Eau Claire. However, there are seven street crossings between Altoona Dam and the Chippewa River. In the case of a dam failure, three bridges are expected to be overtopped: Dewey Street (abt. 1 foot 0.85 hours after failure), Farwell Street (abt. 8' in 0.9 hrs) and Barstow Street (abt. 4' in 0.9 hrs). The dam is in good repair. However, the gates for this dam cannot be remotely operated and the walkway to the winch system can be dangerous under flood or winter/icy conditions.

- **Eau Claire River (Lake Eau Claire / Augusta) Dam (owned by Eau Claire County)** This dam was also improved to a 1,000-year event standard in about 2000 with improved anchoring using steel roads and raised walkways. Previously, the dam was almost lost in the 1993 flooding when water levels were within 4"-5" of the walkway. A fixed generator is available for both the Altoona and Lake Eau Claire Dam should power be lost. A camera system has now been installed at the dam which takes pictures of water levels and sends them to the homes of the dam tenders via e-mail whenever required; an online/Wi-Fi water height gauge is also monitored. The dam is in good repair, except the most recent inspection found that one of the gates was inoperable. The dam gates have experienced some freezing in the past, which has required the use of torches or Fire Dept. hose truck in the past to defrost; potential options to prevent freezing, such as a bubbler system, has been preliminarily discussed.

Lake Wissota Dam (Xcel Energy)

The greatest dam failure vulnerabilities for Eau Claire County would be from a failure of the Lake Wissota Dam further upstream on the Chippewa River in Chippewa County. With 92,000 acre-feet of normal storage and 155,000 acre-feet of maximum storage, the Wissota Dam is much larger than the Altoona Dam and has much more potential to cause destruction.

The Lake Wissota Dam is one of four electric-generating dams (Holcombe, Cornell, Jim Falls, Wissota) on the Chippewa River owned by Xcel Energy. These dams were constructed during the 20th Century. The Lake Wissota Dam, which was originally a hollow "Amberson" design, was filled with concrete around 1991. The Jim Falls Dam was refurbished and expanded in the late 1990s. All four dams are in good repair, with current emergency action plans and dam shadow studies on file with county emergency management offices.

These dams are managed primarily for electric generation. This is not a new policy and was noted by the U.S. Army Corps of Engineers in the 1970 Upper Mississippi River Comprehensive Basin Study:

> "*Some change in operation of the larger upstream power reservoirs by power companies to recognize flood control needs is another possible solution [to preventing flood damage].*"

Chippewa County has expressed in the past a desire to see improved flood control at the Wissota Dam through the installation of a system to allow for a mechanical opening of the flood gates. This is consistent with the 1970 report as well as concerns noted in a 1977 U.S. Army Corps of Engineer study:

> *"Frequently mentioned problems relating to flooding in the area include the influence of flood stages caused by the present method of regulation of the upstream Lake Wissota Dam. The method of operation currently used at the Lake Wissota Dam involves automatic opening of all tainter gates when a certain reservoir pool elevation is reached."*[22]

[22] U.S. Army Corp of Engineers, Preliminary Feasibility Report Improvement for Water & Related Land Resources—Chippewa River Basin, Wisconsin, March 1977.

All three of these dams are regulated by the Federal Energy Regulatory Commission (FERC) under the Federal Power Act, which is the primary agency responsible for issuing new licenses, monitoring compliance with existing licenses, and conducting dam safety inspections. In 1986, Congress passed the Electric Consumers Protection Act (ECPA) requiring that the FERC consider power and non-power values and interest equally, including flood management.

As of January 2025, Xcel Energy is compliant with their FERC licenses and dam safety standards. Based on past dam failure analysis, the following timelines are estimated for a failure at the Wissota Dam:

10 minutes	Flooding would begin in Chippewa Falls
1 hour 15 min	Flooding would begin at north end of Eau Claire Co on Chippewa R.
1 hour 20 min	Flooding would peak in Chippewa Falls
1 hour 35 min	Flooding would begin in the City of Eau Claire
3 hours	Projected time needed to fully evacuate Eau Claire's inundation area[16]
6 hours 35 min	Flooding would peak at north end of Eau Claire Co on Chippewa R.
8 hours 35 min	Flooding would peak in downtown Eau Claire

While there would be substantial time to evacuate before the flooding peaks, it is likely that not all residents would be evacuated before flooding would begin in the City. Regardless, significant flood damage is expected. Such flooding would likely impact some bridges and transportation within the City. It is possible that a portion of the County Government Center and Jail could be flooded due to a Lake Wissota Dam failure. The City-County Emergency Communications Center has a backup center with generator and portable work stations if access to the main "comm center" is not possible.

Other Dam Risks and Vulnerabilities

Some smaller, low-hazard dams within the County are in need of repairs and/or updated plans. Badly needed repairs at Augusta Dells Mill Pond dam were completed in Spring 2018. The City of Eau Claire has also identified the need for improvements at the Forest Street Levee.

As documented previously, development and population growth in Eau Claire County has been generally highest in those towns with significant surface waters. There continues to be development pressure along the shorelines of the County, including above and below dams. Overall, **the potential of damage-producing dam failure in Eau Claire County is considered quite low**, though the potential for damage and injury is high should failure of a larger dam occur. Eau Claire County and its municipalities continue to work with the Wisconsin Department of Natural Resources to ensure proper maintenance of the dam facilities in the County and mitigate the potential vulnerabilities should failure occur.

Dam Planning, Mitigation, and Response

For all large dams on navigable waters:

- Owners are required to ensure the safety of their dams by performing regular and frequent inspections. Chapter 31, Wis. Stats., requires owners of large dams to hire professional engineers with experience in dams to inspect their dams once every two to 10 years, depending on the hazard rating:
    - high–hazard large dams – every two years
    - significant hazard large dams – every three to four years
    - low-hazard large dams – every 10 years

  Following research and an inspection, the engineer will prepare a dam safety inspection report and supporting documentation will be prepared and sent to WDNR for review. The regional WDNR will then prepare their inspection report with findings and compliance actions with timelines. For private dams, emergency management and zoning staff from the County and/or local unit of government will work with the dam owner to obtain the dam failure analysis and take any needed action regarding dam failure zoning or emergency action planning.
- Must have a dam failure analysis that shows the hydraulic shadow and structures subject to potential flooding should a failure occur. The geographic scope of this analysis should extend downstream until the dam failure shadow converges with the 100-year floodplain. These analyses are used to determine the hazard rating largely based upon the level of development and regulatory protections in place within the dam shadow downstream. Floodplain zoning controls can then be put into place for the dam shadow; Eau Claire County regulates the dam shadows very similar to the 100-year floodplain. For dams without an analysis, an estimated hazard rating is given by the WDNR Dam Safety Engineer based on development and zoning controls downstream of the dam.

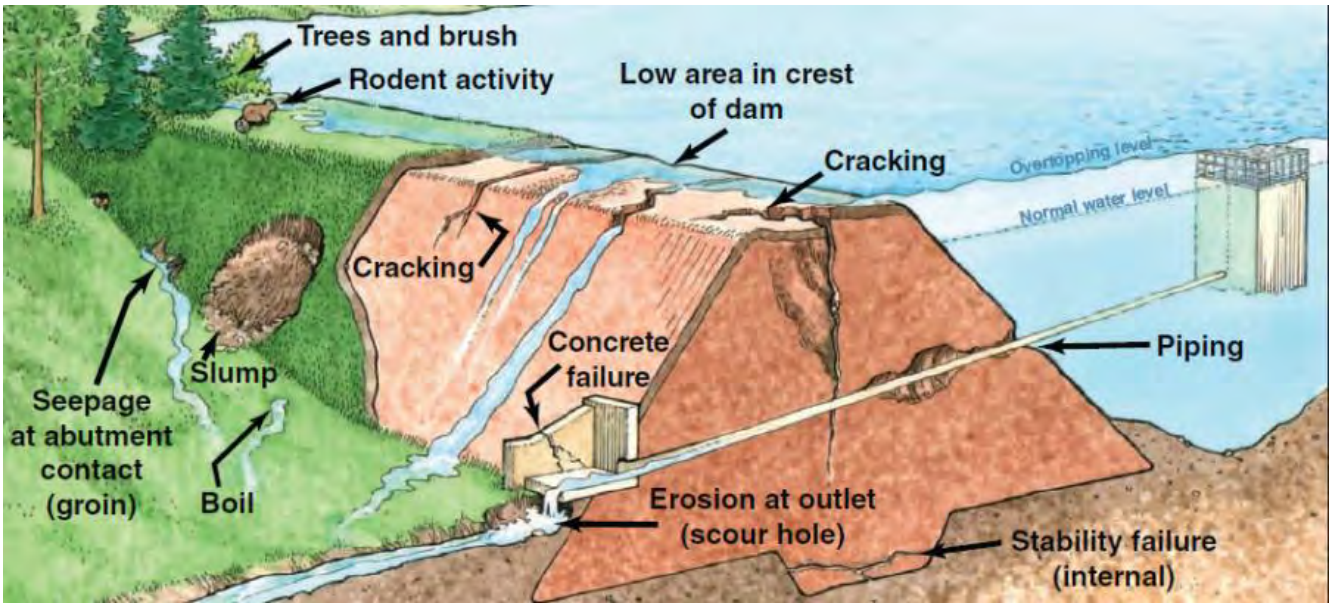


It is important to maintain up-to-date Emergency Action Plans (EAPs) and Inspection, Operations, & Maintenance (IOM) Plans for the large dams and the high- and significant-hazard dams. Emergency Action Plans with current contact information should be on file with County Emergency Management and the Communications Center. With the availability of LIDAR topographic data, mapping of dam shadows could be revisited for the high- and significant- hazard dams. This information can then be integrated into the County emergency notification systems and considered as part of floodplain zoning and comprehensive planning efforts. The County-owned high-hazard dams were inspected in 2022 and their EAPs need updating or are in the process of being updated.

Should a dam failure occur (or be imminent), law enforcement and fire department personnel would use public address systems and some door-to-door checks to evacuate persons. Local media, social media,

Wireless Emergency Alerts, and the City of Eau Claire's RAVE system. As part of its recent FERC re-licensing, Xcel Energy has installed nine warning sirens on the lower Chippewa River with voice capability, including one on the north end of the City of Eau Claire. Residents with weather radios would also be informed of the situation as asked to evacuate.

Common Types of Dam Failure Modes



source: Association of State Dam Safety Officials

ii. WINTER STORMS AND EXTREME COLD
(including blizzards and ice storms)

Defining the Hazard – Winter Storms & Extreme Cold

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.

Winter Storm - The occurrence of heavy snowfall accompanied by significant blowing snow, low wind chills, sleet, or freezing rain.

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 a warm and moist upper layer(s) of the atmosphere to colder and dryer layer(s) at or near the ground, freezes upon contact with the ground, and accumulates on exposed surfaces.

Freezing Drizzle/Rain – The effect of drizzle or rain freezing upon impact on objects that have a temperature of 32º Fahrenheit or below.

Snow Squall - An intense, short-lived burst of heavy snowfall that leads to quick reduction in visibilities and is often accompanied by gusty winds. This hazard is primarily a transportation-related concern; the combination of quick reductions in visibilities and sudden slick conditions on roadways can lead to high-speed collisions and pile-ups.

Extreme Cold - Temperatures lower than historical averages that create a dangerous environment for people, animals, and critical infrastructure or services.

Wind Chill - The apparent temperature that describes the combined effect of wind and air temperatures on exposed skin.

Hazard Location

There are no geographic boundaries or locations within Eau Claire County uniquely affected by winter storms or extreme cold events. These events can occur anywhere in Eau Claire County and such events often occur at a regional scale involving most or all Eau Claire County communities as well as neighboring counties or even states when they occur.

Hazard Extent (Potential Intensities)

Winter weather events are significant due to their scope and prolonged effects. Heavy snow, freezing temperatures, and ice can burst pipes, fell power lines, create dangerous travel conditions, and onset frostbite and/or hypothermia. Winter storm events and extreme cold can last for days as temperatures remain frigid. These events impact large contiguous areas, which limits the ability to seek emergency response or resources from nearby areas. **Figure 25** identifies the potential impacts of varying intensities of **winter storm events** on an area as they increase in severity.

NOAA's National Centers for Environmental Information (NCEI) has produced a **Regional Snowfall Index** (RSI) that is used to rank snowstorm impacts, similar to the EF scale for tornadoes:

Category	RSI Value	Description
1	1-3	Notable
2	3-6	Significant
3	6-10	Major
4	10-18	Crippling
5	18+	Extreme

The RSI includes population and considers societal impacts and allows for the description and comparison of historical snowfall events. As will be later discussed, RSI Category 5 events have occurred in the region.

The **Sperry-Piltz Ice Accumulation (SPIA) Index** in **Figure 26** provides five impact categories based on precipitation totals, temperature, wind speed and wind direction; wind is an included factor since ice accumulation on trees, utility lines, etc., is much more prone to causing damage due to the added stress of high winds. The SPIA index is used to predict and communicate the potential impacts of ice storm events, including the potential for long-term power loss.

Figure 25. Winter Storm Impact Scale

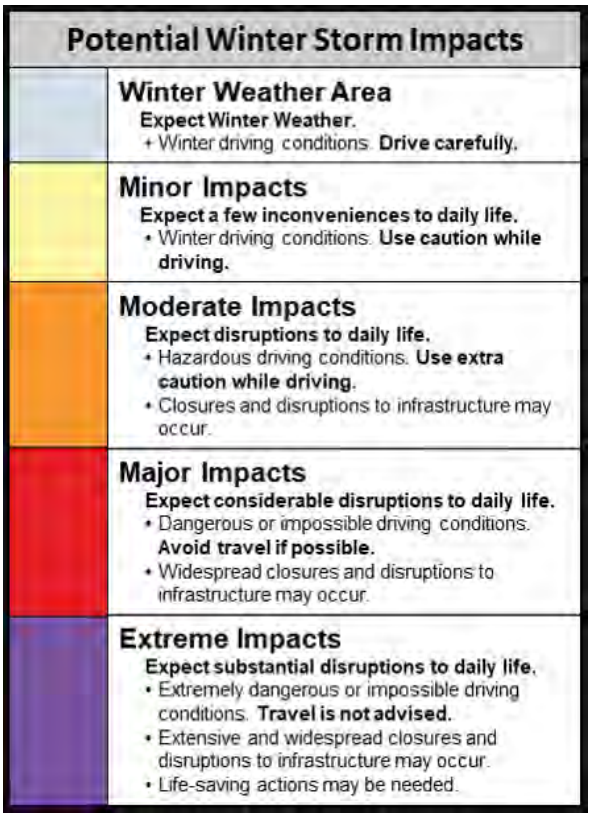


Figure 26. Ice Storm Damage Index

ICE DAMAGE INDEX	DAMAGE AND IMPACT DESCRIPTIONS
0	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
2	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
3	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
4	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
5	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.

Cold temperatures can be deadly, especially when accompanied by high winds. The combination of cold temperature and wind creates a perceived temperature known as "wind chill." When wind blows across the skin, it removes the insulating layer of warm air adjacent to the skin. When all factors are the same, greater heat loss and a colder feeling is experienced as wind speed increases. 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. Shown in **Table 12** are the calculated **wind chill temperatures** as a result of specified air temperatures and wind speed.

Table 12. Wind Chill Table (in Degrees Fahrenheit)

Temperature (°F)	Wind Speed (MPH)								
	5	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**
30	25	21	19	17	16	15	14	13	12
25	19	15	13	11	9	8	7	6	5
20	13	9	6	4	3	1	0	-1	-2
15	7	3	0	-2	-4	-5	-7	-8	-9
10	1	-4	-7	-9	-11	-12	-14	-15	-16
5	-5	-10	-13	-15	-17	-19	-21	-22	-23
0	-11	-16	-19	-22	-24	-26	-27	-29	-30
-5	-16	-22	-26	-29	-31	-33	-34	-36	-37
-10	-22	-28	-32	-35	-37	-39	-41	-43	-44
-15	-28	-35	-39	-42	-44	-46	-48	-50	-51
-20	-34	-41	-45	-48	-51	-53	-55	-57	-58

Source: National Weather Service

The potential and intensity of winter storms and extreme cold/wind chill events is publicly shared through NOAA's weather alert systems. The table below outlines NOAA's definitions and criteria for each of the primary winter weather-related alerts.

Watch - Generally issued in the 24 to 72 hour forecast time frame when the risk of a hazardous winter weather event has increased (50 to 80% certainty that warning thresholds will be met). It is intended to provide enough lead time so those who need to set their plans in motion can do so.	Winter Storm Watch	Conditions are favorable for a winter storm event (heavy sleet, heavy snow, ice storm, heavy snow and blowing snow or a combination of events) to meet or exceed local winter storm warning criteria in the next 24 to 72 hours. Criteria for snow is 7 inches or more in 12 hours or less; or 9 inches or more in 24 hours covering at least 50 percent of the zone or encompassing most of the population. Criteria for ice is 1/2 inch or more over at least 50 percent of the zone or encompassing most of the population.
	Extreme Cold Watch	Dangerously cold air, with or without wind, is possible. Prior to October 2024, was called a Wind Chill Watch when conditions are favorable for wind chill temperatures to meet or exceed local wind chill warning criteria in the next 24 to 72 hours. Wind chill temperatures may reach or exceed -25°F.
Warning - Issued when a hazardous winter weather event is occurring, is imminent, or has a very high probability of occurrence (generally greater than 80%). A warning is used for conditions posing a threat to life or property.	Blizzard Warning	Blizzard event is imminent or expected in the next 12 to 36 hours. Sustained wind or frequent gusts greater than or equal to 35 mph will accompany falling and/or blowing snow to frequently reduce visibility to less than 1/4 mile for three or more hours.

	Ice Storm Warning	An ice storm event is expected to meet or exceed local ice storm warning criteria in the next 12 to 36 hours. Criteria for ice is 1/2 inch or more over at least 50 percent of the zone or encompassing most of the population
	Winter Storm Warning	A winter storm event (heavy sleet, heavy snow, ice storm, heavy snow and blowing snow or a combination of events) is expected to meet or exceed local winter storm warning criteria in the next 12 to 36 hours.
	Extreme Cold Warning	Dangerously cold air, with or without wind, is expected. Prior to October 2024, was called a Wind Chill Watch when wind chill temperatures are expected to meet or exceed local wind chill warning criteria in the next 12 to 36 hours. Wind chill temperatures may reach or exceed -25°F.
Advisory - Issued when a hazardous winter weather event is occurring, is imminent, or has a very high probability of occurrence (generally greater than 80%). An advisory is for less serious conditions that cause significant inconvenience and, if caution is not exercised, could lead to situations that may threaten life and/or property. NOTE: The issuance of an "Advisory" is being phased out by the National Weather Service in the near future and will be replaced with a plain language description of the possible hazardous conditions.	Winter Weather Advisory	A winter storm event (sleet, snow, freezing rain, snow and blowing snow, or a combination of events) is expected to meet or exceed local winter weather advisory criteria in the next 12 to 36 hours but stay below warning criteria.
	Cold Weather Advisory	Cold air is expected. Prior to October 2024, was called a Wind Chill Advisory when wind chill temperatures are expected to meet or exceed local wind chill advisory criteria in the next 12 to 36 hours. Wind chill temperatures may reach or exceed -15°F.

Event History – Winter Storms & Extreme Cold

Appendix E includes regional and local winter storm and extreme cold event data, with highlights summarized in this subsection. These winter-season events are typically regional in nature and are not limited to a localized area or Eau Claire County. However, levels of snowfall or ice accumulation can vary significantly over relatively short distances. Much of the snowfall in Wisconsin occurs in small amounts of between one and three inches per occurrence.

National Climate Data Center (NCDC) Event Summary

Appendix E identifies recorded winter events from 1993-2023 for Eau Claire County, which are summarized below:

Winter Weather Event Summary			
Total Events:	92	Number of Events Per Year:	3.07
Total Event Days:	92	Number of Event Days Per Year:	3.07
Total Injuries:	8	Total Deaths:	1
Total Event Days with Property Damage:	3		
Property Damage (from NCDC):	$ 3,550,000		
Property Damage (adjusted for inflation):	$ 4,774,819		

From 1993-2023, Eau Claire County has experienced 92 winter storm event days or about 3 event days per year. These events were further characterized by 13 heavy snowfall events, 61 winter storm/winter weather events (mix of snow, ice, wind), 6 cold/wind chill events, 12 extreme wind chill or cold, and three ice storm/freezing rain events. Three blizzard days were reported—1/26/96, 1/29/96, and 2/24/19. All events occurred between November and April, except for winter weather in October 2009 and a May 2013 winter storm.

One death has been attributed to winter weather events in Eau Claire County; this death occurred during the Cold/Wind Chill event in February 1996. Additional deaths and injuries as a result of traffic accidents, frost bite, etc. associated with these events likely occurred, but were not reported to the National Weather Service.

The previous table denote winter/ice storm and exteme cold events; less intense and more localized snowfall and ice events were impacts are limited or not unique are not included. Salt, sand, and other de-icing and anti-icing agents are required much more frequently than the 2.97 winter event days per year. For example, the County Highway Department reported to the Wisconsin Department of Transportation that Eau Claire County experienced the following winter storm events during recent winters:

- Winter 2020-2021: 28 storms, including 6 freezing rain, 1 ice, & 0 drifting incidents
- Winter 2021-2022: 42 storms, including 7 freezing rain, 0 ice, & 0 drifting incidents
- Winter 2022-2023: 31 storms, including 5 freezing rain, 0 ice, & 0 drifting incidents

Significant Regional and Eau Claire County Events

Much of the snowfall in Wisconsin occurs in small amounts of between one and three inches per occurrence. While true blizzards are rare in Wisconsin, blizzard-like conditions can exist during heavy snowstorms when gusty winds cause the severe blowing and drifting of snow. Heavy snowfalls that produce at least six inches of accumulation occur on average about 10-12 times per winter statewide. Seasonal average snowfalls in Wisconsin vary between approximately 30 inches in extreme southern parts of the State to over 100 inches in the Lake Superior snowbelt. In a typical winter season, there are 3 to 5 freezing rain events; and a major ice storm occurs on a frequency of about once every other year. If a half-inch of rain freezes on trees and utility wires, extensive damage can occur, especially if accompanied by high winds that compound the effects of the added weight of the ice. There are also between three to five instances of glazing (less than 1/4 inch of ice) throughout the State during a normal winter.

According to the Midwest Regional Climate Center, the annual snowfall for Eau Claire County from 1991-2020 has been between 42 to 60 inches. Several of the most severe winter storms in recent decades were:

- **December 27-28, 1904** - Southern / Central - Heavy snow/ice. 26 inches of snow at Neillsville (Clark County).
- **January 30-February 1, 1915** - Southern / Central - Heavy snow / ice – severe glazing. 10 inches of snow in Milwaukee.
- **February 12-14, 1923** - Statewide - Blizzard - Heavy snow - severe drifting.
- **February 8-10, 1936** - Statewide - Blizzard - severe drifting.

- **November 6-8, 1943** - Statewide - Heavy snow / ice - 10 to 18 inches of snow. Roads blocked for several days.
- **January 28-30, 1947** - Southern / Central - Blizzard - 10 to 27 inches. Drifts to 15 feet. Roads blocked.
- **January 22-23, 1982** - North half - Blizzard - 10 to 20 inches. Superior had 19 inches.
- **November 30 - December 2, 1985** - Statewide (except southeast corner) - Widespread snows of 10 to 18 inches. Madison had about 10 inches.
- **October 31 - November 2, 1991** – This was an extreme (RSI Category 5) snow storm event, frequently referred to as the Halloween Blizzard. Snow totals ranged from 15 to 30 inches with 6 to 10 foot drifts. 30 inches in Burnett, Douglas, Polk, and St. Croix counties.
- **January 26-27, 1996** - Statewide - Heavy snow - 6 to 18 inches. Localized amounts of 16 to 18 inches fell along a line from La Crosse to Green Bay.
- **March 13-14, 1997** - West Central / Northeast - Snowstorm - 12 to 28 inches. 28 inches at Wautoma in Waushara County.
- **January 21-22, 2005** - Statewide - Blizzard (gusts to 50 mph) - 6 to 15 inches. Although winds gusted up to 50 mph in some areas and visibilities were reduced to less than 1/4 mile due to falling or blowing snow, many areas didn't experience these conditions for 3 hours or more to classify as a full blizzard. Nonetheless, heavy snow and very windy conditions created near white-out conditions especially in the south and east. The heaviest totals occurred near Lake Michigan due to additional lake effect, where some areas ended up near 15 inches.
- **March 18-19, 2005** – West-central – Winter Storm – 18 to 23 inches in a swath from southern Buffalo County to western Jackson County, with 12 to 15.6 inches in La Crosse County. The maximum of 23 inches occurred in northwestern Jackson County.
- **March 13-14, 2006** – West-central to North-central– Winter Storm – 17 to 32 inch swath from St. Croix County northeast to Iron County. Thundersnow enhanced the accumulations. Very poor visibility resulted from gusty winds around 30 mph and drifting resulted in hundreds of accidents. Locals said it was the worst storm since the 1980s.
- **February 23-26, 2007** – West-central (through southern and eastern Wisconsin) – Blizzard - Two-round storm, with one overnight the 23rd to 24th, and the second round overnight the 24th into the 25th. Leftover snow accumulations continued overnight the 25th into the 26th. In counties surrounding La Crosse, 8 to 15.6 inches (Galesville) fell in round one, while round two produced 6 to 12.5 inches (Sullivan NWS office) over the southern three-fourths of the State. The leftover snow added another 1 to 4 inches, except for 6 to 14 inches from New London into Door County. Many locations totaled 20 to 25 inches for this long-duration two- punch episode from around La Crosse to Port Washington and a small part of Door County. Gusty winds generated snow drifts up to 5 to 7 feet in height.
- **December 8-9, 2009** – Nearly statewide – Winter Storm – Large area of 12 inches or more.
- **December 10-12, 2010** – Nearly statewide – Winter Storm/Blizzard – Large area of 6 to 23 inches. In the Eau Claire area 18 to 22 inches fell. There were reports of thundersnow. Northwest to north winds gusted 30 to 50 mph with some whiteouts reported in exposed areas. Clean-up costs for the City of Eau Claire were between $350,000 to $400,000. At least 59 vehicle crashes and 98 stalled vehicles were reported during and following the storm. In the City of Eau Claire, a number of carbon monoxide poisonings occurred, which could have been fatal when heating vents were blocked by accumulating snow. The weight of the snow collapsed the Metrodome's roof in Minneapolis.

This event represents the heaviest Eau Claire area snowfall in recent history. With 22 inches falling within 24 hours, this event broke the previous 24-hour record of 18.0 inches which fell on February 27, 1893. Snow fell at rates of 1-to-2 inches per hour and some drifted of up to five feet were reported. In all, 30 inches of snowfall was reported for Eau Claire for the month of December 2010. Surprisingly, this event did not receive a Presidential Disaster Declaration, though the costs to area communities were tremendous.



- **March 22-23, 2011** – Northern and central portion of the State – This late season winter storm resulted from a strong area of low pressure interacting with a cold air mass in place across the upper Midwest. Moderate to heavy snow fell late the 22nd, continuing into much of the day on the 23rd, bringing 5-10" of snow to the northern half of the state. Thunderstorms developing in Iowa moved northeast into colder air, resulting in locally heavy snow with numerous reports of thunder and lightning. This resulted in higher totals across northeast parts of the state where 12-18 inches fell. Sleet and freezing rain mixed in for central parts of the state with some heavy ice accumulations. **Gusty easterly winds produced near blizzard conditions for northeast parts of the state and also helped to bring down a 2,000-foot media broadcast tower near Fairchild in combination with heavy ice accumulations.** Green Bay recorded a two-day storm total of 17.8 inches, the biggest snowstorm in over 120 years and the 3rd largest recorded snowstorm.
- **May 2013** – A late, heavy and wet snowfall resulted in heavy snow loads across the region, with severe damage to roofs and structures in some neighboring counties. Snowfall amounts in Eau Claire County ranged from 7 to 10 inches, which broke records. About 400 buildings impacted in nearby Barron County with many of the collapsed buildings being arm building or accessory structures; some animal deaths did occur. Roof collapses from heavy snow loads and ice damming would again cause damages to many buildings in the region in **February 2014**.
- **Winter 2014-2015 Polar Vortex** - In winter 2014-2015, Wisconsin experienced a polar vortex. That happens when the cold air cell that is usually centralized in the Arctic splits into smaller cells and those cells travel farther south, cooling the northern hemisphere continents more than normal and warming the Arctic. Statewide, it was the fifth coldest December through February stretch on record with fourteen locations in the state setting new record low average temperatures. Unfortunately, the record cold temperatures also coincided with a propane shortage throughout the Midwest. Many residences in the rural parts of the state rely on propane for heat. When the shortage hit, many people had to move to warming centers or stay with friends or relatives. Staying in other places was an option for some, but when home temperatures drop, permanent damage can occur when water pipes freeze and burst. Because of the shortage, propane prices soared; and those without standing contracts spent a lot more than they had planned on. Extremely low temperatures and lack of snow cover resulted in frost depths of up to 10 feet in the region and caused immense damage to infrastructure for many cities and villages with some water lines being frozen into May. The cities and villages of Eau Claire County did not experience the extensive damage and service disruptions from water utility freeze-ups than many of their neighboring communities in Clark and Barron counties.

- **Winter 2022-2023** – Northern Wisconsin experienced record-breaking snow accumulations during Winter 2022-2023. In mid-December 2022, an RSI Category 4 snow storm struck with snow totals of 5"-7" experienced over most of the region, with some localized higher amounts. This was immediately followed by ice-covered and severe drifting roadways as well as high winds with dangerous wind chills of -25º to -35ºF and white-out conditions. A number of snow events occurred in January and February, including multiple bands of heavy snow in late February producing over a foot of snow in about 48 hours; according to the Winter Storm Severity Index, considerable disruptions to daily life occurred. A late season RSI Category 1 snow storm in March brought additional snow, but less than what was experienced by counties to the north. The Eau County Highway Department reported 88.8 inches of snow during Winter 2022-2023, including 15 wet snow storms, 15 dry snow storms, and 5 freezing rain events that cost the County Highway Department over 7,318 worker hours (48% overtime) and over $1.9 million in material, equipment, and labor. The County used over 10,300 tons of salt for the 529 highway miles that it maintains.

Winter-Related Accidents & Drifting in Eau Claire County

Drifting of snow on many of the roads of Eau Claire County is common during winters when snow and high winds are present, though this has been less of a problem in recent years due to weather patterns, improved equipment, furrowing, and snow fencing.

According to Wisconsin DOT, winter crash rates on State and Federal highways under snow/slush/icy conditions in Eau Claire County are consistently among the highest in Wisconsin, with 199 crashes in winter 2022/2023. The most frequently winter-related concern mentioned during meetings and interviews was winter travel on the U.S. Highway 53 bypass, Interstate 94, and the North Crossing due to the speeds and traffic volumes involved. The multiple on-/off-ramps, bridge crossings, and speeds on U.S. Highway 53 in Eau Claire and Altoona can be especially dangerous under poor driving conditions and has resulted in numerous serious accidents. The hills northwest of Fall Creek on U.S. Highway 12 can also be particularly dangerous under icy or slippery conditions.

The snow drifting "hotspots" identified during the planning process, primarily by the Eau Claire County Highway Department, were:

Barka Road (Town of Otter Creek)
County M- Hwy 12 South to the County Line (Bridge Creek)
County G- Hwy 12 South to the County Line
County R- Hwy 12 South to the County Line
County 0- Smith Road to Nugget Road
County AF- Hwy 12 South to County O/HH
County NN- County R to the County Line
County UN- County Q North to the County Line
County P- County Q North to the County Line
County K- Fall Creek North to the County Line
County D- County G North to the County Line
County H- County MM North to the County Line
County G- County MM North to the County Line
County K/KK- Fall Creek South to the County Line
County D- County KK West to Brackett
County J/JJ- Just West of County K by the Church
County Z- Hwy 37 North to County ZZ
County ZZ- Pepin County to County Z

County T- Clairemont North to the County Line
County TT- Hwy 312 to County C
County EE- Hwy 312 to Crescent
Town of Union- Everything that is North and South
Hwy 37- South of Hwy 85 to the County Line
Hwy 93- on the Eleva Ridge
Hwy 53- Various spots South of the roundabout to the County Line
Hwy 27- North of the River Bridge to the County Line.
Hwy 12- Fall Creek to Augusta

Most of the above would only be closed for a partial day, four to five times during a ten-year period.

Hazard Probability – Winter Storm & Extreme Cold

As reflected previously in Table 11, the Plan Steering Committee rated heavy snow storms and blizzards and ice storms and sleet as two of the top highest natural hazard risks (probability) facing Eau Claire County. Extreme cold and ice storm are the only natural hazards for which Eau Claire County has a high National Risk Index score, reflecting that the region has a relatively higher threat to extreme cold events compared to the rest of the United States.

Based on reported severe winter weather events from 1993-2022, it is probable that Eau Claire County will continue to experience:

- **2 to 2.5 winter storm, winter weather, heavy snow, or ice storm events per year**
- **1 extreme cold or wind chill event every other year**
- **1 blizzard event every decade.**

As discussed previously, not all locally severe winter weather events are reported to the NCDC, so the above probabilities provide a range for event probability to consider these unreported events. Although the improvement of technology has enabled meteorologists to better identify and predict the conditions that are favorable for winter storm development, there is no precise way to predict the formation, location, and magnitude of future events over the long-term. As will be shown later in this section, the National Risk Index (NRI) reports a significantly higher annualized frequency for some of the above events; it is believed that the primary difference is due to the NCDC data being limited to severe storm events, while the NRI data may be including additional reported events regardless of intensity.

The above probabilities are for severe or extreme events; less severe winter-related events occur much more frequently as documented by the previous Highway Department/Wisconsin DOT data, but these events can still be very dangerous for drivers, pedestrians, etc. As discussed previously in Section III.C., Wisconsin and Eau Claire County are predicted to experience warmer, wetter winters. This climate trend and its related implications were discussed by the Steering Committee and other stakeholders during the Plan update. **It was speculated that while extreme cold events may decrease in frequency over time due to climate change, the potential for heavy snow and ice storm events (and related power outages) may increase**. The historic snowfall records of the 2022-2023 winter season, followed by the mild temperatures and low snowfall amounts of November-December 2023, are potential indications

that these climate trends are already occurring. But it was also noted by some plan update participants that weather patterns are at times very erratic making it difficult, if not impossible, to predict future annual probabilities for specific event types.

Vulnerability Assessment – Winter Storms & Extreme Cold

Appendix F provides the following regarding the potential impacts of winter weather events for Eau Claire County as a whole:

- a description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- a description of the vulnerability of each community lifeline for this hazard
- the potential consequences or impacts to the above assets and community lifelines.

In summary, all Eau Claire County populations and most structures and infrastructure are vulnerable to winter storms, ice, and extreme cold events to varying degrees. During the planning process, the following populations and assets were identified as having the greatest vulnerability:

- **Above-ground power lines**, especially in wooded areas, were the most frequently identified infrastructure vulnerability due to the potential damage from ice and falling tree limbs, especially during high winds. This vulnerability is further explored in the *Long-Term Power Outage* threat sub-section.
- **Road transportation** infrastructure and travelers. Hazardous road conditions and closures due to ice, snow pack, and drifting snow can result in accidents, injury, and death as well as disrupt a range of services, hinder emergency responders/law enforcement, require school closures, and temporarily interrupt shipping. Roads in shaded, wooded areas can be especially icy and hazardous. As noted previously, winter maintenance costs of roadways can be very expensive and burdensome.
- **Seniors and residents requiring medical assistance** were the most frequently identified at-risk populations for winter weather, ice, and cold. Severe winter weather can impact access to goods, services, needed treatments (e.g., dialysis), or needed medicines. Falling on ice or slippery steps and walkways can be life-threatening for the elderly. This vulnerability is also further explored in the *Long-Term Power Outage* threat sub-section. With the County's aging and growing population, this vulnerability will continue to grow.
- **Water and sanitary sewer lines** are vulnerable to freeze-up or breaking, especially when there are very cold temperatures and inadequate insulating snow cover.

The following additional vulnerabilities were also regularly mentioned during the planning process:

- **Buildings with large spans** (e.g., airport hangars, pole barns, factories) have a higher vulnerability to damage or collapse under heavy snow loads, unless reinforced.
- **Residents of poorly insulated or heated structures**, such as some mobile homes or lower-income residents who may have challenges with heating fuel costs.

- **Agricultural livestock and crops**, especially fruit crops from early or late freezes and winter alfalfa if there is inadequate insulating snow cover during low temperatures.
- **Stormwater systems and culverts** can be prone to ice-damming resulting in localized flooding, which will be further discussed in the *Flooding* threat sub-section.

Eau Claire County and the City of Eau Claire, along with various partners, maintains an *Extreme Cold Preparedness and Response Plan*, which was last updated in December 2024. This plan outlines activation levels and response procedures for extreme cold events, including before the event, as well as demobilization and resources.



Projected Loss Estimates

Overall, there is a low vulnerability to structures in Eau Claire County due to winter storms. Some occasional roof damage due to ice damming or bursting of inadequately buried water lines can be expected, but such damage is almost always isolated, not officially reported, and/or remedied by the homeowner with an insurance claim. It is unfeasible to maintain a database accurately detailing the structural condition of all assessed improvements in Eau Claire County to determine which structures may be more vulnerable to the impacts of future winter storm events. And no NCDC winter weather damages were reported on which to reliably project future winter weather loss estimates for severe winter storm events without a more intensive study.

As a substitute, the National Risk Index provides the following expected annual losses (EALs) for Eau Claire County and suggests that the County's largest winter-related loss expose is from ice storm events:

Risk Factor	Winter Weather	Ice Storm	Cold Wave
EAL Rate – Population	1 per 6.46m	1 per 999,410	1 per 1.82m
EAL Rate – Buildings	$1 per $335.59k	$1 per $979.64k	$1 per $4.38m
EAL Rate – Agriculture	$1 per $100.24k	--	$1 per $2.05k
Total EAL	$263,420	$1,250,749	$727,597
Exposure	$1.2 trillion	$1.2 trillion	$1.2 trillion
Events per year	5	0.5	1.3
Historic loss ratio	Relatively Low	Relatively Moderate	Very Low
Overall Loss Score	86.7 (Relatively High)	95.6 (Relatively High)	91.0 (Relatively High)

The above loss estimates further suggest that agriculture is the County largest winter-related vulnerability financially, though ice storm events poses a substantial risk to residents. Based on Eau Claire County's 2020 population of 105,710 and the above EAL rate, one County resident will be seriously injured by an ice storm event about once every 9 years.

The continuing changes in land-use and development patterns can influence the County's potential for future exposure to winter storms. As discussed in Section II.C., Eau Claire County is continuing to grow and develop. This creates an increasing exposure to the number of residents and properties that could be at risk from future winter storm or extreme cold events.

Risks for Individual Plan Participants—Winter Storms & Extreme Cold

Winter storms pose no risks or vulnerabilities unique to individual jurisdictions. Winter storms and extreme cold events are typically large-area or regional events, occurring countywide. The level of vulnerability increases in areas of higher population, development density, and supportive infrastructure and lifelines as described previously in *Section II. Community Profile*. Vulnerabilities can also differ based on factors such as socio-economic characteristics and existing mitigation actions (e.g., # of seniors, condition of housing stock, construction type).

Appendix K provides "sub-plans" for each city and village and **Appendix L** provides "sub-plans" for participating educational institutions. These sub-plans identify winter storm and extreme cold risks and vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County.

Overall, there were very few unique or unique winter-related concerns expressed by these other participating jurisdictions. Some differences are noted based on the freezing vulnerability of infrastructure (e.g., depth of water lines) and the potential for drifting or accidents on roadways. Compared to the 2019 Plan, there was growing interest in heating centers among some participants. But, overall, participants expressed that they have undertaken reasonable efforts to prepare for winter storm events while feasible opportunities to mitigate impacts are limited.

iii. TORNADOES & HIGH WINDS

Tornadoes are typically linked with severe thunderstorm events. It is sometimes difficult to determine the difference between the impacts of a tornado versus very high winds. This sub-section discusses both tornado-related information and the effects of winds during thunderstorm events.

Defining the Hazard —Tornadoes & High Winds

Tornados are relatively short-lived local storms 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; however, some tornados may have winds exceeding 300 miles per hour.

For reference, the following are the National Weather Service definitions of a tornado, funnel cloud, high winds/ thunderstorm winds, and downbursts (straight-line winds):

Tornado - A violently rotating column of air that is touching the ground.

Funnel Cloud - A rapidly rotating column of air that does not touch the ground.

High winds or Thunderstorm Winds – Winds of 58 miles per hour or greater.

Downbursts (straight-line winds) – A downburst is a strong, violent downdraft, initiated by rapidly descending rain and/or rain-cooled air beneath a thunderstorm.

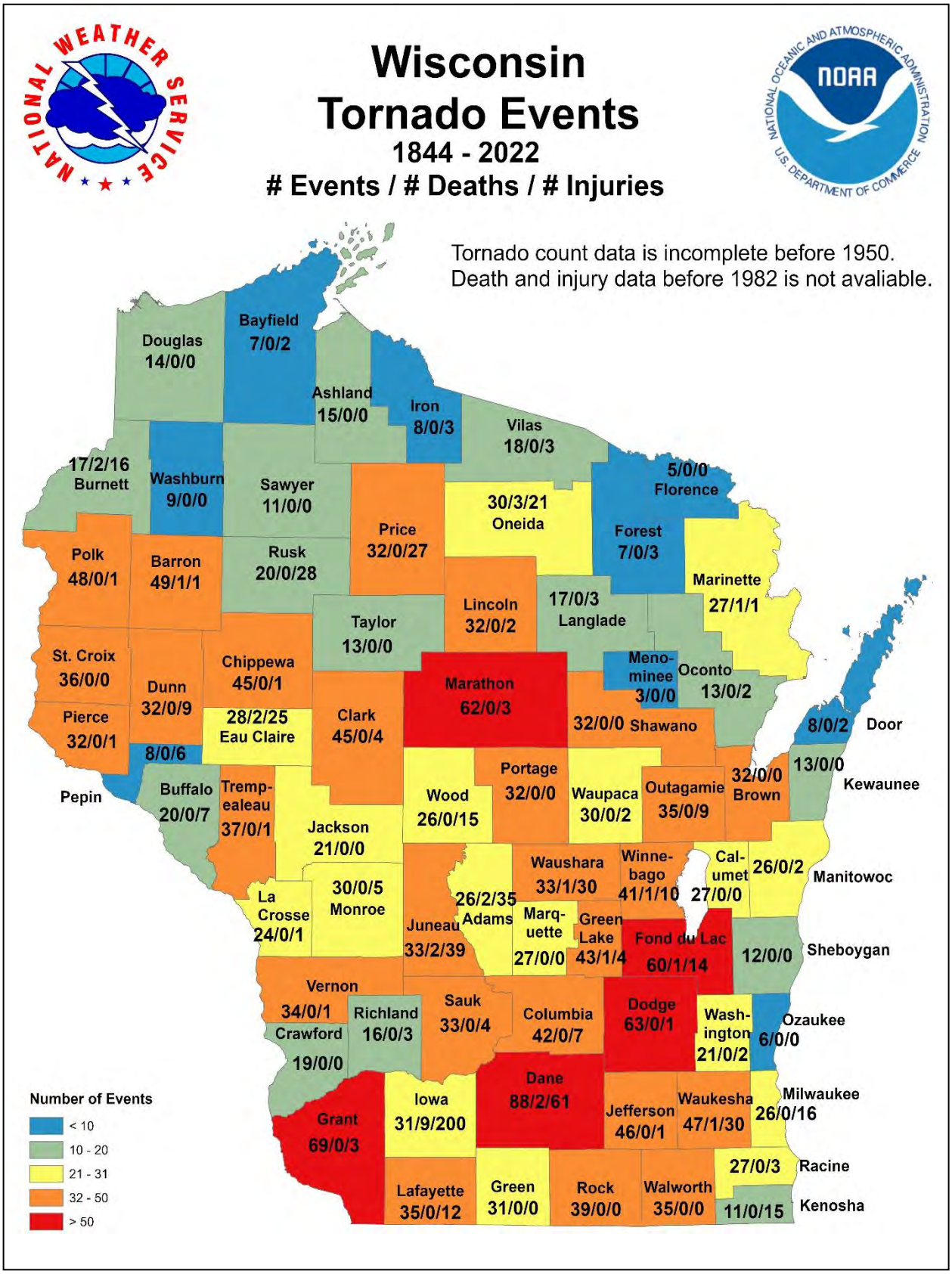
High winds can affect much larger areas than a tornado and occur for a longer period of time. More intense types of high winds are downbursts or straight-line winds. Straight-line winds are often responsible for most of the wind damage associated with a thunderstorm. These winds are often confused with tornadoes because of similar damage and wind speeds. However, the strong and gusty winds associated with straight-line winds blow roughly in a straight line unlike the rotating winds of a tornado.

Hazard Location

Tornadoes and high winds are capable of killing or injuring residents and damaging or destroying homes, businesses, public buildings, and infrastructure throughout Eau Claire County. There are no geographic boundaries or locations within Eau Claire County uniquely affected by tornadoes or high wind events. As shown in **Figure 26**, tornadoes and high winds occur throughout the State of Wisconsin and have no defined hazard area within Eau Claire County. All Eau Claire County jurisdictions are equally at risk of experiencing a tornado or high wind event.

Tornadoes and high winds can impact assets outside the area struck by the hazard, such as impacting the regional supply of electrical service or disrupting transportation networks. For example, these events can uproot trees and topple power lines, impacting the regional supply of electrical service to homes, businesses, and services. Roadways can also be blocked by debris, impacting regional transportation networks, and debris can accumulate in rivers or stormwater systems and contribute to washouts or flooding

Figure 26. Wisconsin Tornado Events • 1844 to 2022



Hazard Extent (Potential Intensities)

Tornadoes are generally associated with severe storm systems, which are often accompanied by high winds, hail, torrential rain, flooding, and intense lightning. High winds are discussed with tornadoes within this subsection given that high wind damage can be difficult to distinguish from tornado damage. It is not uncommon for local residents to debate whether the damage from an area storm event was the result of high, straight-line winds (as officially recorded) or a tornado. Further, tornado and thunderstorm / high wind events are very often part of the same storm cell.

Shown in **Table 15** is the Enhanced Fujita (EF) Scale, recognized as the accepted tornado magnitude measurement rating and is based on damage estimates for a 3-second wind gust. The EF scale replaced the original Fujita scale in 2006 and considers 28 different damage indicators for a more accurate indication of tornado strength.[23] The new EF scale does have higher wind speed thresholds, and a larger percentage of reported tornadoes will likely fall within the EF0 category. The destructive power of the tornado results primarily from its high wind velocities and sudden changes in pressure. Wind and pressure differentials probably account for 90 percent of tornado-caused damage.

Table 15. Tornado Magnitude Measurement Enhanced Fujita (EF) Scale

Operational EF-Scale	Wind Speed (miles per hour)	Character of Damage	Relative Frequency (percent)
EF0 (GALE)	65-85	Minor or No Damage	53.5
EF1 (WEAK)	86-110	Moderate Damage	31.6
EF2 (STRONG)	111-135	Considerable Damage	10.7
EF3 (SEVERE)	136-165	Severe Damage	3.4
EF4 (DEVASTATING)	166-200	Devastating damage	0.7
EF5 (INCREDIBLE)	Over 200	Extreme damage	<0.1

Source: National Oceanic Atmospheric Administration (NOAA)

The following types of damage could be expected for each EF-Scale tornado:

F0 Some damage to chimneys; breaks branches off trees; pushes over shallow-rooted trees.

F1 Peels surface off roofs; mobile homes badly damaged or overturned; moving autos pushed off roads; attached garages may be destroyed.

F2 Roofs torn off well-constructed homes; mobile homes demolished; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.

F3 Entire stories of well-constructed homes destroyed; trains overturned; trees debarked.

F4 Well-constructed houses leveled; cars thrown and large missiles generated.

F5 Strong frame houses lifted off foundations and carried considerable distances; automobile-sized missiles fly through the air in excess of 100 meters; trees debarked; steel reinforced concrete structures badly damaged.

[23] None of the tornadoes recorded on or before January 31, 2007, will be re-categorized from F to EF.

Table 10 provides a straight-line wind gust estimating guide with definitions that is frequently used by SkyWarn Weather Spotters, which shows the range of potential intensities of such events.

Table 10. Straight-Line Wind Gust Estimates

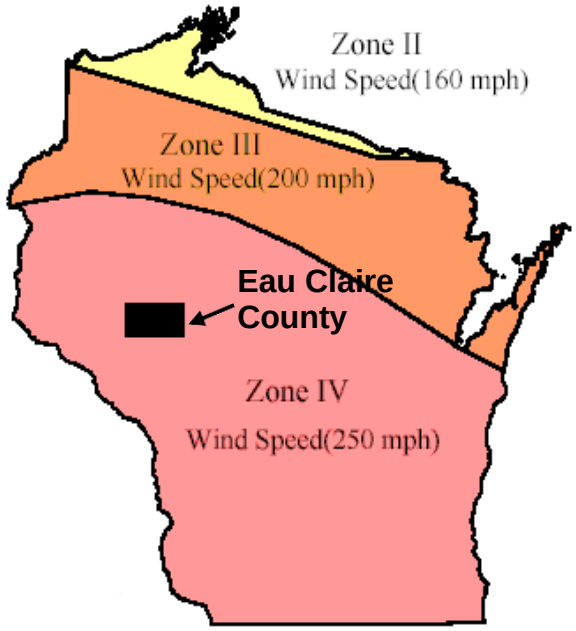
45-57 mph (39-49 kts)	**Non Severe** - Large trees bend; twigs, small limbs break, and a few larger dead or weak branches may break. Old/weak structures (e.g., sheds, barns) may sustain minor damage (roof, doors). Some loose shingles may be removed from houses.
58-75 mph (50-64 kts)	**Severe** - Large limbs break; shallow rooted trees pushed over. Semi-trucks overturned. More significant damage to old/weak structures. Shingles, awnings removed from houses; damage to chimneys and antennas; mobile homes, carports incur minor structural damage; large billboard signs may be toppled.
75-89 mph (65-77 kts)	**Hurricane Force** - Widespread tree damage (trees either broken or uprooted). Mobile homes may incur more significant structural damage; be pushed off foundations or overturned. Roofs may be partially peeled off industrial/commercial/warehouse buildings. Some minor roof damage to homes. Weak or open structures (e.g. farm buildings, airplane hangars) may be severely damaged.
90+ mph (78+ kts)	**Significant Severe** - Groves of trees flattened. Mobile homes severely damaged; moderate roof damage to homes. Roofs partially peeled off homes and buildings. Barns and sheds completely demolished.

The United States has been divided into four zones that geographically reflect the number and strength of extreme windstorms. Zone IV has experienced the most and the strongest tornado activity with wind speeds of up to 250 mph, and includes all of Eau Claire County (see **Figure 24**).

However, this design wind speed map may be outdated. While very rare, Wisconsin has one documented tornado with winds exceeding 250 mph. On July 18, 1996, the F5 Oakfield tornado was estimated to have had winds of 265 mph. Oakfield is located in the eastern part of the State near Fond du Lac; no documented tornado in west central Wisconsin has exceeded 250 mph.

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornados (known as "tornado alley") which extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. Generally, the frequency and severity of tornado events decreases as one travels north.

Figure 24. Design Wind Speed Map of Wisconsin



adapted from "Design Wind Speed" map from FEMA's "Taking Shelter from the Storms: Building a Saferoom in Your House"

Event History —Tornadoes & High Winds

Regional tornado trends are summarized in **Appendix E**, which notes:

- Tornadoes can occur in any month of the year though they are more frequent in the months of April through September.
- West central Wisconsin has experienced some of the most destructive tornadoes in state history including the 2001 F3 Siren tornado, 2002 F3 Ladysmith tornado, 1958 F5 Colfax tornado, and the 1899 F5 New Richmond tornado, which was the ninth deadliest in U.S. history.

National Climate Data Center (NCDC) Event Summary

Appendix E also includes NCDC severe storm reports for tornadoes and high winds impacting Eau Claire County. Tornadoes have been well documented since 1950, allowing for the review of a larger time horizon (73 years). Since high winds and thunderstorm winds have only been tracked regularly since 1993, the table below represents a shorter time horizon. All other hazards, other than tornadoes, will only represent data from 1993 to December of 2023.

Tornado Event Summary 1/1/1950 - 12/31/2023	
Total Events: 18	Number of Events Per Year: 0.25 (.1379/year from 1993-2022)
Total Event Days: 12	Number of Event Days Per Year: 0.17
Total Injuries: 20	Total Deaths: 6 (half of the injuries are from the 7/15/2980 event while 4 of the 6 deaths are from the 7/15/1980 event)
Total Event Days with Property Damage: 16	
Property Damage (from NCDC): $ 16,270,000 (6 events reported $2.5 million in damage)	
Property Damage (adjusted for inflation): $ 95,142,871	
Funnel Cloud Reports: 4 reports on 4 event days between 1993 - 2022	

Note: Tornadoes were reported less consistently prior to 1993. Since 1993, there were 4 tornado reports on 4 event days for an average of .1379 events per year. The NCDC tornado data included the 1980 derecho, but greatly under-reports damages. The 1994 Foster tornado is missing7 in the database.

High/Strong Wind & Thunderstorm Wind Event Summary 1/1/1993 - 12/31/2023	
Total Events: 100	Number of Events Per Year: 3.33
Total Event Days: 66	Number of Event Days Per Year: 2.20
Total Injuries: 2	Total Deaths: 0
Total Event Days with Property Damage: 25	
Property Damage (from NCDC): $ 2,542,100	
Property Damage (adjusted for inflation): $ 4,055,647	

All the tornados in Appendix E occurred during the months of April and September, with the exception of the December 15, 2021, Fairchild tornado. All but one of the events occurred between the hours of 3:00 PM and 11:30 PM, with just one event reported during the morning hours. Of the six deaths and twenty injuries, four of the deaths and three of the injuries were the result of a 1958 tornado event, which

resulted in over $26 million in reported property damages. The other deadly tornados occurred on July 18, 1971, and July 15, 1980. There have been no reported deaths or injuries from a tornado in Eau Claire County since 1980, though this data is missing the deadly 1994 Foster tornado.

But it is important to keep in mind that data reports can vary significantly. For instance, Wisconsin Historical Society information estimates only $45 million in property damage (*adjusted for inflation*) for the entire path of the June 1958 tornado, which has been estimated at 32 miles long and up to 800 feet wide. Other events can go unreported to the National Weather Service, such as the 1994 Foster tornado.

Since January 1993, there have been four tornado and four funnel cloud event reports for Eau Claire County. This is an average of one tornado or funnel cloud event report every 3.8 years, though one storm system can spawn multiple tornados or there can be multiple reports for a single tornado. There have been 4 tornados and two funnel clouds reported since 2010; this is significantly lower compared to the relatively large number of reports in the 1980s.

Recent Eau Claire County and Regional Events

The potential destructiveness of tornados remains fairly fresh in the minds of many Eau Claire area residents due to the following tornado events in the region:

- **July 15, 1980 –** Locally known as the "The Storm" or "The Big Wind" this 1980 derecho had winds exceeding 100 miles per hour and left a 40-mile long path of destruction, which included the Eau Claire urban area. The event spawned multiple tornados, which is why its impacts are reported with the tornado events rather than high winds.

  The event struck the Eau Claire area about 9:30 PM on July 15, 1980, with high winds causing great damage to property, trees, and power lines, as well as one death. Fewer than two dozen were injured during the event, though about 200 injuries were reported during the post- event clean-up which lasted several weeks. Winds out of the southwest were steady at 50-65 mph for about an hour with one gust measuring 112 mph. Street lights were knocked over and thousands of trees were uprooted. By the time the storm passed, only one local radio or television station remained on the air due to damage to towers or lack of generators. Power in some areas of Eau Claire would not be restored for 7-9 days with electric crews putting in 16-18 hours each day. A state of emergency was declared and lasted six days. The NCDC database reports 1 death, 10 injuries, and over $11.5 million in damage for the event, while other reports state that about $160 million in damage was experienced.[24]

  An excellent resource for more information on this event is the book entitled *Spearhead Echo: The Storm of 1980* by Lukas Hoffland, from which much of the information in this summary was taken. Mr. Hoffland reported that 52 homes, 85 mobile homes, and 19 apartment buildings were destroyed in Eau Claire, Dunn, Pierce, and Chippewa counties, with many more damaged. He reported total damages for Eau Claire County of nearly $61 million, which in today's dollars would be over $247 million.

- **August 27, 1994** (F3) – The 1994 Foster tornado (F3) which struck southern Eau Claire County is the most destructive and deadly tornado event in recent memory resulted in two deaths, 25 injuries, and nearly 1 million in damages.

- **June 18, 2001** – An F3 tornado with a 27-mile path hit the Village of Siren approximately 80 miles to the northwest, resulting in three deaths, 16 injuries, 167 destroyed homes, and 280 damaged homes.

[24] https://www.weau.com/2020/07/15/40th-anniversary-of-the-storm-in-eau-claire/

- **September 2, 2002** – About fifty miles north of the City of Eau Claire, an F3 tornado hit the City of Ladysmith, injuring 37 and resulting in over $20 million in damage.
- **May 24, 2012 High Straight-Line Wind** – During the afternoon of May 24th, winds estimated as high as 60 mph struck the Chippewa Valley with the greatest damages within the City of Eau Claire. West and north side neighborhoods were especially hit hard on a path from the southwest side of the City and northeast through the Chippewa Valley Regional Airport. No deaths or injuries were reported, but the damage was extensive. An estimated 7,250 Xcel Energy customers were left without power, of which about 5,200 were City residents. Xcel lost 23 power poles as a result of the storm. The Airport and City's wastewater treatment plant both needed to operate on emergency power generators. About 1,500 customers were without power for over 24 hours, mostly in the Shawtown neighborhood. One homeowner was without power for at least two weeks due to the inability to pay for the replacement of related equipment to meet current codes.

  About fifty streets in the City of Eau Claire were partially or entirely closed and several arterial streets were closed due to debris and falling trees. A 200-foot tall radio tower serving multiple stations was knocked down. Falling trees damaged many homes, structures, and vehicles. Significant damage occurred at Lakeview Cemetery and Carson Park, and a hangar collapsed on an airplane at the airport. An estimated 600 to 1,000 trees were toppled in the City's parks and cemeteries alone. Damage estimates from this very recent event were not available for inclusion in this plan update, but clean-up is continuing a week later.

- **May 16, 2017** –An EF3 tornado caused over $10.1 million in damages along an 83-mile track from southeastern Polk County then northeast into Price County. 160 homes were affected, including 40 destroyed; total residential damages exceeded $5.1 million. Six businesses were also impacted, including six turkey burns with a loss of about 25,000 birds; total damages to businesses exceeded $5 million. The tornado struck a mobile home park near Chetek resulting in one fatality and at least 25 injuries. Tornado warnings were issued with adequate time for most persons to seek shelter, though the mobile home park lacked a safe room. The devastation, limited access, number of responders, and darkness all contributed to significant challenges at the mobile home park for providing services to survivors, coordinating response efforts, and centralizing command. This event also demonstrated the importance of good volunteer and donation management and tracking.

Many long-time residents of the region also recall the devastating Colfax Tornado of 1958 which had a 32-mile path, caused at least 19 deaths, and resulted in severe damage. Farther back in time, the 1899 New Richmond tornado to the west remains one of the top 10 deadliest in United States history.

Hazard Probability – Tornadoes & High Winds

The Plan Steering Committee rated tornados and high winds as being of some threat to Eau Claire County, but less of a threat when compared to Extreme Cold, Heavy Storm, and Flooding (see Table 11). Tornados were rated as the highest natural hazard vulnerability (potential impacts) should an event occur, while high winds had a slightly lower vulnerability. Based on the number of reports since 1993, **it is probable that a tornado will continue to touch down and be reported for Eau Claire County once about every 4 years on average, with some years potentially having multiple tornado reports.** If only tornado event days are considered, then Eau Claire County would experience a tornado event day about once every 5-6 years. **High wind events will occur much more frequently, with about 3-4 events or 2-3 event days each year on average.**

Although the improvement of technology has enabled meteorologists to better identify and predict the conditions that are favorable for severe weather development, there is no precise way to predict the formation, location, and magnitude of a tornado or straight-line wind events. And, there is no predictable pattern that can be used to accurately predict future tornado events. However, the May 2017 Chetek tornado in Barron County suggests that sufficient time is often available for residents to find adequate safe shelter in order to mitigate deaths and injuries.

A recent study, published in January 2023, modeled several potential effects of climate change on the frequency, intensity, and location of supercell thunderstorms in the continental United States. It is these supercell thunderstorms that account for nearly all tornados. The models, based on emission scenarios and historical data, indicated that within the Midwest, the evening time would see an increase in supercell storms. While the areas within this plan were not specifically discussed, figures showing change from the historical data to the model indicate that the west central Wisconsin area is likely to see some of the largest increases in these severe events, outside the Southern Mississippi River Valley.

Vulnerability Assessment—Tornadoes & High Winds

Appendix F provides the following regarding the potential impacts of tornado and high wind events for Eau Claire County as a whole:

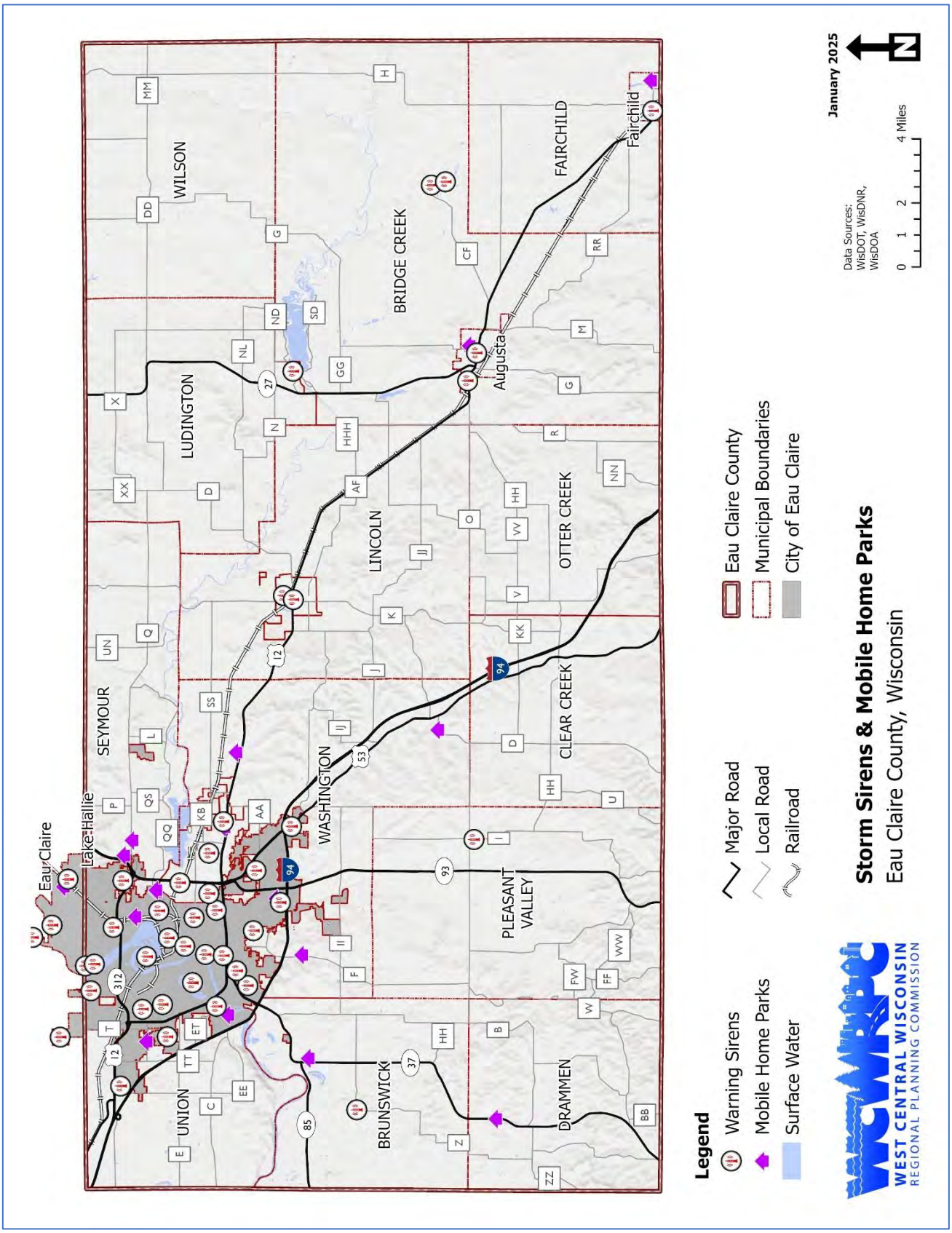
- a description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- a description of the vulnerability of each community lifeline for this hazard
- the potential consequences or impacts to the above assets and community lifelines.

In summary, all Eau Claire County populations and above-ground assets are vulnerable to tornado and high wind events. During the planning process, the following assets were identified as having the greatest vulnerability:

- **Residents in mobile homes or slab-on-grade structures** without access to a safe-room or storm shelter were the most frequently identified tornado/high wind vulnerability during the planning process. Eau Claire County has about 1,306 mobile homes and 14 licensed manufactured housing/mobile home parks. **Figure 27** shows the location of mobile home parks in Eau Claire County.

  During the plan update, stakeholders and local officials reported that the number of mobile homes is not increasing and there have been no new mobile home parks. Some parks have upgraded and more units are now believed to be anchored. Slab-on-grade residential development continues to grow. Some alternative housing styles, such as pole shed-type homes and tiny homes, have elevated risks due to the construction type as well as most being slab-on-grade.

Figure 27. Alert Warning Sirens and Licensed Mobile Home Communities



- **Visitors and staff of parks, campgrounds, festivals, and other large gatherings** were the second-most frequently identified vulnerability since most of these facilities lack safe rooms or storm shelters, and out of town visitors may not have access to an alternative.

  Tents and trailers at campgrounds are particularly vulnerable to tornado and high wind events as was experienced nearby in the City of Cumberland (Barron County) during a Summer 2010 wind storm where injuries occurred. Below is a list of the campgrounds in Eau Claire County:

Public Campgrounds (Eau Claire County-owned):	Number Of Sites (2022 est.)
1. Coon Fork County Park	108
2. Harstad County Park	27
3. Eau Claire County Exposition Center	45
Subtotal	**180**
Private Campgrounds:	
1. Woodland Campground, Rt. 1, Augusta	35
2. Sandy Hill Campground, E21100 County Road ND, Augusta	32
3. Trail's Edge Saloon and Campground, State Road 27, Augusta	50
4. Le Mere's Landing and Campground, S8095 Bartig Road, Augusta	35
5. The Longshot Campground, 644 E. Main, Fairchild	12
6. Little Creek Campground, 627 Tioga Road, Fairchild	55
7. Black Creek Lodge, S13231 County Road H, Fairchild	77 to 150
8. Eau Claire Rod & Gun Club, 801 Schoettl Avenue, Eau Claire	1-25
9. Halmar Lakeside Campground, E20345 Greens Landing, Augusta	1-25
10. Off Grid Inn, S1058 S. Woodland Valley Road, Fall Creek	1-25
11. Mike's Buckhorn Bar & Campground, S6604 Highway 27, Augusta	1-25
Subtotal	**300-469**
Total	**480-649**

None of the three County parks have storm shelters or a 24-hour caretaker, though staff are available at most times during the primary camping season. Coon Fork has a siren that can be activated manually; the other two campgrounds lack a siren. Weather is monitored online and County park staff use a P.A. system in park trucks to notify campers and visitors should a severe weather warning occur. Block restrooms with interior walls can offer some protection if needed, but have wooden roofs. No new private campground or resort development has occurred in recent years, though some expansion is being considered. Some camping and homelessness does occur in the County Forest.

The Town of Fairchild expressed interest in partnering with private campground owners to construct community safe rooms. Beaver Creek Reserve, north of Fall Creek, also offers cabin/lodge rentals and tent camping. While Little Creek Campground has a shelter, none of these campgrounds, to the County's knowledge, has a community safe room that was built to withstand the region's design wind load.

With the relocation of the Country Jam grounds to nearby Chippewa County, the festival-related vulnerabilities for Eau Claire County decreased significantly. The County is still host to many larger music events and festivals at the Pablo Center and Expo Center. The Blue Ox Music Festival is held at The Pines Music Park (formerly Whispering Pines Campground), which features 120

acres of mostly wooded camping and draws up to 5,000 attendees. Other large gatherings in Eau Claire County include: events at Phoenix Park (Eau Claire) and River Prairie (Altoona), Snow Biz (Cleghorn), WinterFest (Lake Altoona), sporting events at Carson Park (Eau Claire), and various smaller community festivals (e.g., Bean & Bacon Days in Augusta, events at local sportsmen's clubs & lakes). On-site storm shelters or safe rooms are not available at these locations. Emergency plans for these events are updated annually. In June 2016, high winds struck during the Blue Ox Festival where falling trees injured one person and damaged cars and camper trailers.

- **Senior living facilities and group homes** were identified by some communities as a vulnerability during the planning process. These are typically slab-on-grade structures serving a vulnerable population that may have mobility challenges. Eau Claire County has 113 nursing homes and licensed assisted living facilities concentrated in the urban area.
- **Above-ground power lines**, especially in wooded areas, were the most frequently identified infrastructure vulnerability. This vulnerability extends to facilities, services, and oxygen-dependent populations without access to emergency power generators. This vulnerability is further explored in the ***Long-Term Power Outage*** threat sub-section. And as will be discussed in the Winter Storm and Extreme Heat sub-sections, this lack of power can become deadly during periods of extreme temperatures. During the plan update, the need for warming and cooling centers with emergency power generators was expressed by multiple stakeholders and communities.
- **Schools and school gyms** were also a frequently mentioned vulnerability since these facilities serve a vulnerable population (children) and can host large events. Traditionally designed gyms can be especially vulnerable to high winds.

The following additional vulnerabilities were also noted during the planning process:

- Eau Claire County's three **hospitals** (serves a vulnerable population that may have mobility challenges).
- **Other buildings with large spans** (e.g., airport hangars, pole barns, factories).
- **Homes with crawlspaces** (elevated and more susceptible to lift).
- **Sites/buildings storing large quantities of hazardous materials** above ground.
- **Travelers on Interstate 94**
- **Other Vulnerable Populations** that may lack access to storm shelters or emergency warning systems that announce approaching severe weather, including homeless, seniors, and the Amish community.

Projected Loss Estimates

Table 17 provides tornado and high-wind loss estimates for Eau Claire County. The County has experienced some very devastating tornados, though such events have been relatively infrequent. Since 1950, the County has experienced over $248 million in tornado damages when adjusted for inflation. Using FEMA standards, the 45 injuries and 8 deaths from tornado events between 1950-2023 resulted in an additional $68,160,000 in total tornado losses (an average of $3,587,468 per tornado event). High wind losses for the County have been much lower with little or no damages reported for most of the 66

event days. No deaths and only two injuries have been reported for high wind events in Eau Claire County between 1993-2022 for an additional $576,000 in high wind losses (or $4,760 per reported event).

Table 17. Eau Claire County Tornado & High Wind Loss Estimates

Tornado Loss Estimates			
Avg. Damage per Tornado (1950-2023)	**Annual Probability**	**Estimated Future Annual Loss (property & crop)**	**Estimated Future Annual Loss (injury, death, & property)**
$13,077,841 (19 events)	0.26	$3,400,421	$4,333,137
Thunderstorm High Wind Loss Estimates			
Avg. Damage per T-Storm Wind (1993-2023)	**Annual Probability**	**Estimated Future Annual Loss (property & crop)**	**Estimated Future Annual Loss (injury, death, & property)**
$63,979 (66 event days)	2.2	$140,754	$159,953

Source: National Climatic Data Center (NCDC) and West Central Wisconsin Regional Planning Commission (WCWRPC).

The methodology used to develop the tornado and high wind loss estimates in the previous table is based on the approach described in the *State of Wisconsin THIRA & SPR.*[25] The number of events, property damage, event probability and past losses are all based on the NCDC storm event data previously summarizer, including inflation for damages. The tornado event data was adjusted to include the higher July 1980 tornado/derecho storm damages at $160 million and the August 1994 Foster tornado. On average, each injury was given a monetary value of $288,000 per injury, while deaths were given a monetary value of $6.9 million per death based on FEMA guidance for benefit-cost calculations.

There are some important limitations to the above numbers:

- The estimates in Table 17 are only based on those events reported to the NCDC during those time periods. Events and data prior to 1993 were not consistently reported, especially for minor damages and injuries. And, as previously noted, the damages from many events were greatly under-reported and some significant events not reported at all.
- On the flip side, the damages, injuries, and deaths reported for some earlier events in the NCDC database may have included impacts from outside the County.
- High winds can also occur as part of a tornado event but are often reported as part of the tornado. For example, the July 1980 derecho is primarily known locally for the straight-line wind damage, though the damages are reported with the tornado events due to the multiple tornados spawned by that storm system.

[25] State of Wisconsin Homeland Security Council THIRA & SPR, updated January 2017.

FEMA National Risk Index (NRI) Estimated Annual Losses

FEMA's NRI provides an alternative source of estimated annual losses (EALs), which yields significantly higher annual loss totals when compared to the previous estimates:

Risk Factor	Tornado	Strong Wind
EAL Rate – Population	1 per 772.02k	1 per 4.61m
EAL Rate – Buildings	$1 per $8.46k	$1 per $32.33k
EAL Rate – Agriculture	$1 per $47.02k	$1 per $3.95k
Total EAL	$4,477,396	$1,047,689
Exposure	$1.2 trillion	$1.2 trillion
Events per year	0.3	3
Historic loss ratio	Relatively Moderate	Relatively Low
Overall Loss Score	85.9 (Relatively Moderate)	83.7 (Relatively Moderate)

According to the NRI data, tornadoes have the highest estimated annual losses of any natural hazard event ($4.4 million), followed by riverine flooding ($1.4 million), ice storms ($1.2 million), and strong winds ($1 million). Compared to the loss estimates on the previous page, the NRI data has very comparable event probability and estimated annual losses for tornado events, though the strong wind loss estimates on the previous page are much lower.

Other Factors Influencing Future Losses

1. Population Growth & New Development. As noted previously, Eau Claire County is continuing to grow, which increases the exposure to tornado and high wind events.
2. Long-Term Changes in Weather. The annual probability of tornado and high wind events will likely increase due to climate change, but we are unable to confidently quantify the extent of this increase at this time. While initial studies suggest that climate changes may result in an increase in tornado and high wind events on a national level, it is not clear how the future probability of such events will change locally. See **Section III.C.** for additional discussion on the related effects of such changes in weather patterns.
3. Preparedness & Mitigation. Potential losses can be reduced through mitigation actions, such as the warning systems, use of safe rooms, anchoring of mobile homes and personal property, burying of overhead utilities, and public education initiatives.

Risks for Individual Plan Participants - Tornadoes & High Winds

All individual plan participants in Eau Claire County (i.e., villages, cities, educational institutions, electric cooperatives) are equally at risk of experiencing a tornado event. The potential impacts, in general, are also shared, though vulnerability increases with development density, population density, type of development, and value of improvements. Vulnerabilities can also differ based on factors such as socio-economic characteristics and existing mitigation actions (e.g., safe rooms, wind-resistant construction).

Appendix K provides "sub-plans" for each city and village and **Appendix L** provides "sub-plans" for participating educational institutions. These sub-plans identify tornado and high wind risks and vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County. For participating electrical cooperatives, event history and vulnerabilities have been integrated into the ***Long-Term Power Outage*** threat sub-section.

The sub-plans also assess each participant's capabilities to prepare for and mitigate hazards, including whether safe rooms, emergency/storm sirens, and emergency power generators are available. Electric cooperatives and municipal electric utilities are also continuing to explore opportunities to bury overhead electrical lines in areas prone to outages and for new development.

There is growing interest among many of the communities and some school districts in pursuing grant funding to construct storm shelters/community safe rooms or for the storm hardening of existing structures for the general public, for locations where people gather, or for vulnerable populations (e.g., mobile homes, slab-on-grade residential, campgrounds, County Expo Center. To this end, three significant changes to note since the 2019 Plan are:



- The City of Altoona has partnered with Hillcrest Estates, the largest manufactured home park in the region, to secure FEMA mitigation grant funding to construct a safe room. This long-envisioned project is scheduled to begin in 2025.
- The Fall Creek School District, in consultation with the Village of Fall Creek, pursued FEMA BRIC mitigation grant funding in early 2025 to construct a new community safe room that would be available to school staff, students, and visitors as well as the entire community. However, the FFY24 BRIC funding cycle was subsequently cancelled with no grants awarded.
- Within the City of Eau Claire, a private mobile home park owner and Immanuel Lutheran High School, College, & Seminary both expressed a strong need for safe rooms during the plan update process.

iii. THUNDERSTORMS, LIGHTNINGS, AND HAIL

For this plan, thunderstorms include lightning and hail, and are intricately linked with some of the other hazards, such as tornadoes and flooding. Due to the similarities in impacts, **thunderstorm high winds are discussed as part of the previous *Tornadoes & High Winds* sub-section** (III.D.ii.) and are not repeated here. **Flooding as a result of heavy rains is analyzed as part of the *Flooding* sub-section** (III.D.iv.).

Defining the Hazard – Thunderstorms, Lightning, & Hail

Thunderstorms are severe and violent forms of convection produced when warm, moist air is overrun by dry, cool air. As the warm air rises, thunderheads (cumuli-nimbus clouds) form which cause the strong winds, lightning, thunder, hail and rain associated with these storms. The National Weather Service definition of a severe thunderstorm is a thunderstorm event that produces any of the following: winds of 58 miles per hour or greater (often with gusts of 74 miles per hour or greater), hail 3/4 inch in diameter or greater, or a tornado.

The thunderheads formed may be a towering mass six miles or more across and 40,000 to 50,000 feet high. They may contain as much as 1.5 million tons of water and enormous amounts of energy that often are released in the form of high winds, excessive rains, and three violently destructive natural elements: lightning, hail, and tornadoes.[26]

A thunderstorm often lasts no more than 30 minutes, as an individual thunderstorm cell frequently moves between 30 to 50 miles per hour. Strong frontal systems, though, may spawn more than one squall line composed of many individual thunderstorm cells. These fronts can often be tracked from west to east. Because thunderstorms may occur singly, in clusters, or as a portion of large storm lines, it is possible that several thunderstorms may affect a single area in the course of a few hours.

Heavy Rain definitions can vary based on factors such as duration, intensity, and location. For purposes of this plan, a heavy rain event is a 100-year event. According to the *Rainfall Atlas of the United States*, a 100-year rainfall event in Eau Claire County would produce at a single location:

2.5” of rain in 1 hour or less,
3.5” of rain in 3 hours or less,
4” of rain in 6 hours or less
5” of rain in twelve hours or less, or
5” of rain in 24 hours or less.

However, the above Rainfall Atlas was completed by the U.S. Weather Bureau in May 1961 is very outdated and does not represent more recent climate trends that would likely result in an increase in the rainfall thresholds (i.e., more inches of rain in a given time period to qualify as a heavy rain event).

[26] Tornadoes and high wind vulnerabilities (potential impacts) are discussed separately in Section III.B.ii.

Lightning can strike anywhere. Lightning is formed from the build-up of an electrical charge in a cloud. When this charge is big enough, the air ionizes and a discharge occurs with another cloud, the ground, or the best conducting object. The resulting electric charge reaches temperatures higher than 50,000°F. This rapid heating and subsequent cooling cause the air to expand and contract, which results in thunder.

Hail is the accumulation of ice crystals due to warm, moist air rising rapidly into the freezing temperatures of the upper atmosphere. When frozen droplets accumulate enough weight, they fall as precipitation. Hail or sleet occurs when these frozen ice balls do not fully melt upon descent, and they can reach the size of softballs.

Thunderstorms can develop in a variety of ways, with the most common storm types are listed below:

Single-Cell Storm	Small, brief, weak storms that grow and die within an hour or so. They are typically driven by heating on a summer afternoon. Single-cell storms may produce brief heavy rain and lightning.
Multi-Cell Storm	A common, garden-variety thunderstorm in which new updrafts form along the leading edge of rain-cooled air (the gust front). Individual cells usually last 30 to 60 minutes, while the system as a whole may last for many hours. Multicell storms may produce hail, strong winds, brief tornadoes, and/or flooding.
Supercell	A long-lived (greater than 1 hour) and highly organized storm feeding off an updraft (a rising current of air) that is tilted and rotating. This rotating updraft can be present as much as 20 to 60 minutes before a tornado forms. The tornado is a very small extension of this larger rotation. Most large and violent tornadoes come from supercells.

Hazard Location

There are no geographic boundaries or locations within Eau Claire County uniquely affected by or from thunderstorm, heavy rain, lightning, or hail events; all Eau Claire County jurisdictions are equally at risk of experiencing these types of severe weather. The maps included later in this section show that lightning and hail events occur throughout the State of Wisconsin. It is notable that lightning strikes can occur up to 20 miles aways from the parent thunderstorm.

Hazard Extent (Potential Intensities)

Heavy rain intensities for 100-year rainfall events for Eau Claire County were previously identified in the definitions.

Lightning strike intensity can be measured in megajoules, length, or the density strikes per storm or over time. For purposes of this plan, exploring a scale for the voltage or heat of lightning strikes is largely irrelevant; any strike can cause serious damage, injury, or death. According to Vaisala's *2023 Annual Lightning Report*, Eau Claire County experienced 12-16 total lightning events per square kilometer per year from 2016-2022, though the density of cloud-to-ground flash is much lower at 1-2 strokes per square kilometer per year.[27]

The Tornado & Storm Research Organisation in the United Kingdom has developed the TORRO **Hailstorm Intensity Scale** in **Table 16** to evaluate and report hail storm intensity and typical damage, which is largely a function of hail diameter. The scale also considers the kinetic energy of the hail stones,

[27] https://www.xweather.com/annual-lightning-report

which is impacted by wind speed. As the TORRO webpage[28] explains, "a fall of walnut-sized hail with little or no wind may scar fruit and sever the stems of crops but would not break vertical glass and so would be ranked H2-3. However, if accompanied by strong winds, the same hail may smash many windows in a house and dent the bodywork of a car, and so be graded an intensity as high as H5."

Table 16. TORRO Hailstorm Intensity Scale

Scale	Intensity Category	Typical Hail Diameter (mm)*	Probable Kinetic Energy (J m^{-2})	Typical Damage Impacts
H0	Hard hail	5	0-20	No damage
H1	Potentially damaging	5-15	>20	Slight general damage to plants and crops
H2	Significant	10-20	>100	Significant damage to fruit, crops, vegetation
H3	Severe	20-30	>300	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
H4	Severe	25-40	>500	Widespread glass damage, vehicle bodywork damage
H5	Destructive	30-50	>800	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
H6	Destructive	40-60		Bodywork of grounded aircraft dented, brick walls pitted
H7	Destructive	50-75		Severe roof damage, risk of serious injuries
H8	Destructive	60-90		(Severest recorded in the British Isles) Severe damage to aircraft bodywork
H9	Super Hailstorms	75-100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
H10	Super Hailstorms	>100		Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

NOAA tracks and reports severe thunderstorms using watches and warnings:

Severe Thunderstorm Watch	Severe thunderstorms are possible in and near the watch area. Stay informed and be ready to act if a severe thunderstorm warning is issued. The watch area is typically large, covering numerous counties or even states.
Severe Thunderstorm Warning	Severe weather has been reported by spotters or indicated by radar. Warnings indicate imminent danger to life and property. Take shelter in a substantial building. Get out of mobile homes that can blow over in high winds. Warnings typically encompass a much smaller area (around the size of a city or small county) that may be impacted by a large hail or damaging wind identified by an NWS forecaster on radar or by a trained spotter/law enforcement who is watching the storm.

Event History – Thunderstorm, Lightning, & Hail

Figures 21 and 22 on the following pages show that lightning and hail events occur statewide. Since 1993, Eau Claire County has experienced a low number of reported lightning events (2). In comparison, Eau Claire County has been a hotspot for hail events (103).

[28] https://www.torro.org.uk/research/hail/hscale

Figure 21. Wisconsin Lightning Events, 1982-2022

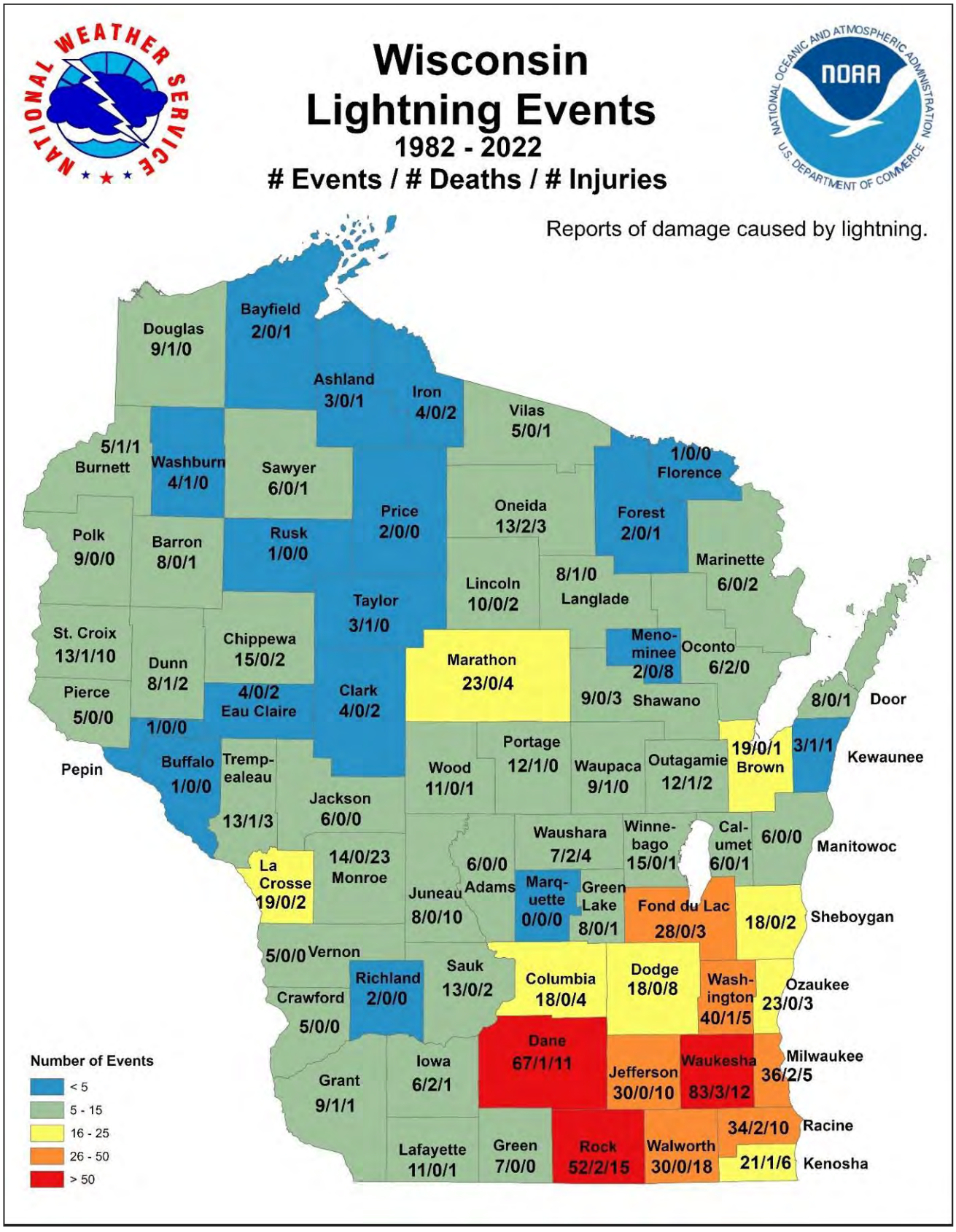
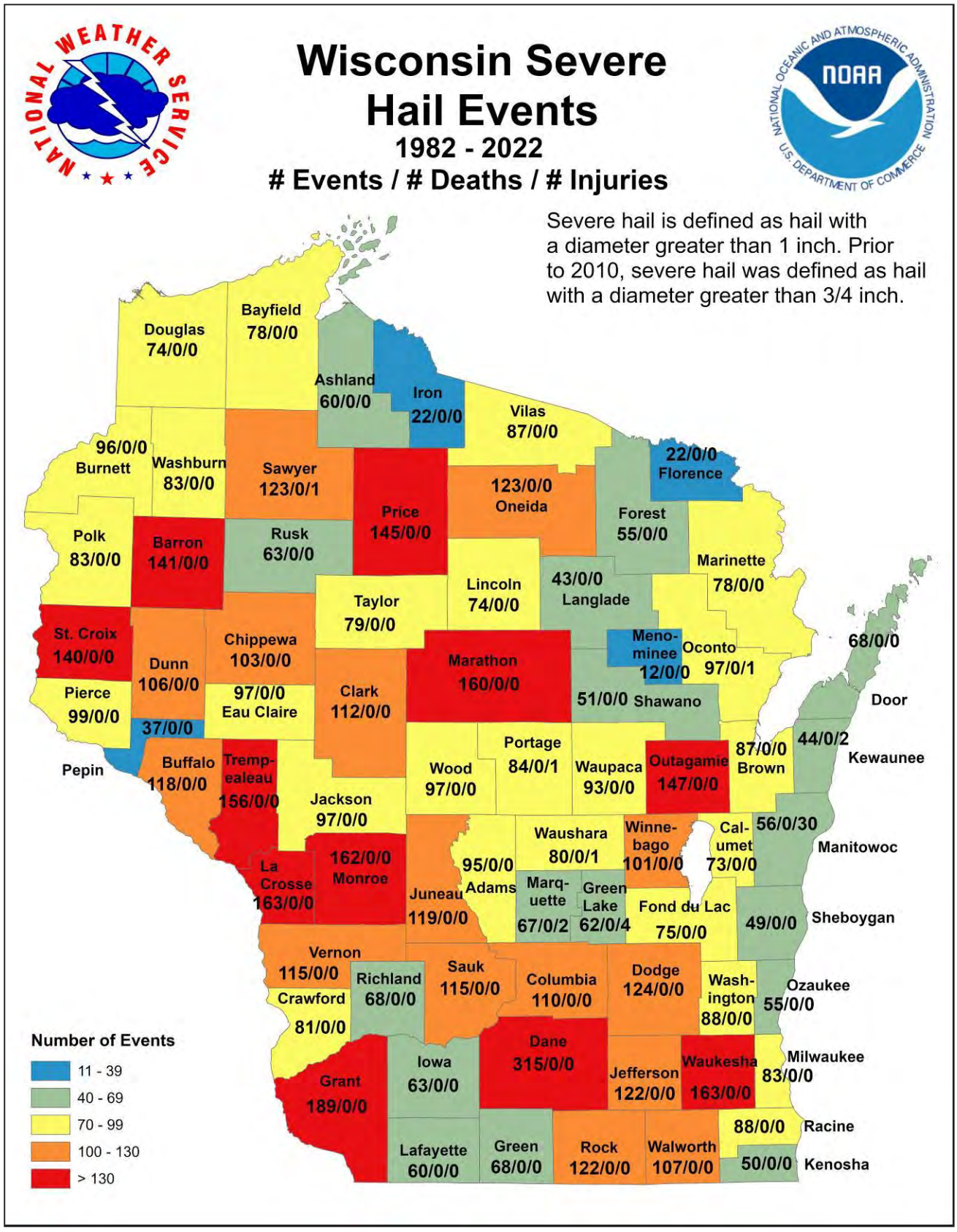


Figure 22. Wisconsin Hail Events, 1982-2022



National Climate Data Center (NCDC) Summary

Thunderstorms and hail are the most common hazard events for Eau Claire County. Shown in the table below is a summary of the thunderstorm events that have been reported to the National Climatic Data Center for Eau Claire County since 1993; the detailed list of these events can be found in **Appendix E**.

Thunderstorm, Heavy Rain, Lightning, & Hail Event Summary 1/1/1993 - 12/31/2023			
Total Events:	207	Number of Events Per Year:	6.90
Total Event Days:	103	Number of Event Days Per Year:	3.43
Total Injuries:	3	Total Deaths:	0
Total Event Days with Property Damage:	26		
Property Damage (from NCDC):	$ 2,675,000		
Property Damage (adjusted for inflation):	$ 4,774,819		

For the above:

- 207 events were reported on 103 event days, reflecting that many of the events reported in Appendix E are for the same storm cells recorded for different parts of the County.
- The 207 events include:
  - 6 heavy rain events on 4 event days with no associated damage or injuries.
  - 103 hail events on 49 event days with over $31,000 in reported property damage, no reported crop damage, and no associated injuries.
  - 2 lightning events on 2 different event days with 1 injury, over $132,000 in reported property damage, and no reported crop damage.
  - 96 thunderstorm wind events on 62 event days with about $4.2 million in property damage, $20,519 in crop damage, 2 injuries and no deaths.
- The damage and impacts of the 96 thunderstorm wind events (not heavy rain, hail, or lightning) were all or nearly all due to associated high winds. As such, these thunderstorm winds are also included in the previous *Tornadoes & High Winds* threat section; this event summary and any probabilities based on this summary overlap with (are not in addition to) the previous *Tornadoes & High Winds* data.
- Appendix E shows that the above thunderstorm events can occur in any month of the year though they are more frequent in the months of April through September.

Significant Eau Claire County Events

The *Tornado & High Winds* section previously highlighted the most significant **thunderstorm wind events** in recent history. Flooding as a result of heavy rain is discussed in the *Flooding* section. The NCDC database did not include any uniquely notable lightning or hail events. However, a severe hail storm (estimated H4 event) with up to golf ball-sized hailstones did strike the Fairchild area on May 18, 2024, resulting in damages to siding, roofs, and vehicles.

Hazard Probability—Thunderstorms, Lightning, & Hail

The Plan Steering Committee rated thunderstorms, lightning, and hail events as having a moderate probability of occurrence in Eau Claire County. The *Tornado & High Winds* section discusses the probability of high wind events, which were rated by the Plan Steering Committee as having a moderate probability of occurrence and vulnerability (impact).

Based on the thunderstorm events since 1993 and the National Risk Index (NRI), it is probable that Eau Claire County will experience:

- **3-4 thunderstorm wind events (or about 2 event days) per year with strong winds causing the most damage**
- **3-4 hail events per year (on 1.5 to 2 event days), with serious hail damage being relatively rare (1 serious event every 15 years).**

Due to the lack of NDC data for lightning events, damage or injuries, a probability estimate for lightning events is not included. However, every thunderstorm produces lightning, so the thunderstorm probability above also applies to lightning. The NRI suggests Eau Clarie County experiences 32 lightning events per year, making it the most frequent hazard facing the County; it is suspected that multiple reports can be attributed to a single thunderstorm. According to the NOAA, the odds of a person being struck by lightning in a given year are one in 1.2 million and almost 90% of victims live.

Based on stakeholder and local official input, the NCDC data in Appendix E underestimates the frequency of heavy rain events, so the probability for these events is not estimated here. Instead, it is more important to consider the probability and vulnerability of flooding induced by heavy rain events, which is discussed in *Flooding* threat section.

The *Tornadoes & High Winds* and *Flooding* sections note that the probability of thunderstorm and heavy rain events, with accompanying lightning and hail, will likely increase in the future due to long-term weather patterns as discussed in Section III.C.

Vulnerability Assessment—Thunderstorms, Lightning, & Hail

The vulnerabilities related to thunderstorm wind events are previously discussed in the *Tornadoes & High Winds* section due to their commonalities and heavy rain vulnerabilities are discussed in the *Flooding* section. This section focuses on lightning and hail vulnerabilities.

As shown previously, most thunderstorm events occur with minimal negative impacts and this trend will likely continue. However, severe thunderstorms can cause injury or death from lightning, falling trees, downed power lines, and high-wind impacts. They may cause power outages, disrupt telephone service, and severely affect radio communications and surface/air transportation, which may seriously tax the emergency management capabilities of the affected municipalities.

Appendix F provides the following regarding the potential impacts of lightning and hail events for Eau Claire County as a whole:

- a description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- a description of the vulnerability of each community lifeline for this hazard
- the potential consequences or impacts to the above assets and community lifelines.

In summary, all Eau Claire County populations and above-ground assets are vulnerable to lightning and hail events. During the planning process, the following assets were identified as having the greatest vulnerability:

Lightning

- Festivals, Fairgrounds, & Outdoor Recreation - Large outdoor gatherings pose a unique lightning vulnerability.
- Other Persons outside – There is conflicting information on the number of U.S. lightning deaths each year ranging from 28 to over 300. Unlike a tornado event, lightning does not cause mass casualties, usually claiming one or two victims at a time. Lightning most often strikes people who engage in outdoor recreational activities or work outside. However, one-third of lightning victims are indoors.
- Tall structures and towers. Lightning usually strikes the tallest thing on the landscape. While Eau Claire County does not have any skyscrapers, communication towers, water towers, and above-ground electrical infrastructure are all good lightning targets, including emergency communication towers and sirens.
- Electric infrastructure and systems. See the *Long-Term Power Outage* threat section for related vulnerabilities.
- Farms. The National Board of Fire Underwriters reports that lightning is the top cause of farm fires. Lightning is also responsible for more than 80 percent of all livestock losses due to accidents and millions of dollars in damage to farm buildings and equipment annually. In Wisconsin, insurance records show that one out of every fifty farms are struck by lightning or has a fire that may be caused by lightning each year.
- Forests and development within forested areas. Tall trees, especially on hillsides, are good lightning targets.

Hail

- Buildings, especially siding, windows, and roofs.
- Vehicles.

- Agricultural Crops, especially if mature and close to harvest.
- People and livestock can be injured, though deaths are rare.

The May 24, 2012, thunderstorm with high winds provides insight into potential critical facilities impacts. This event downed trees and power lines on the west side of Eau Claire which closed roads and damaged buildings. A radio communications tower was also damaged and a number of related radio stations were off the air. Many homes and businesses were without power, some for more than 12 hours, and the City's wastewater treatment facility was operating on its emergency power generator.

Potential Loss Estimates

FEMA's National Risk Index (NRI) suggests that Eau Claire County's losses to lightning and hail are relatively high, and provides the following expected annual losses (EALs) for the county:

Risk Factor	Lightning	Hail
EAL Rate – Population	1 per 23.70m	1 per 36.90m
EAL Rate – Buildings	$1 per $2.26m	$1 per $4.53m
EAL Rate – Agriculture	--	$1 per $7.25k
Total EAL	$62,512	$52,817
Exposure	$1.2 trillion	$1.2 trillion
Events per year	32.2	3.4
Historic loss ratio	Very Low	Very Low
Overall Loss Score	39.7 (Relatively Low)	39.7 (Very Low)

The above table suggests that Eau Claire County is projected to experience annual lightning losses 1.2 times greater than hail losses. Based on $9.1 billion in 2023 assessed improvements, annual hail damage to Eau Claire County's buildings would be over $2,000 each year once tax-exempt structures are included. The NRI data also shows that the risk of injury to Eau Claire County's residents from lightning is much higher than that of hail, and a single lightning death would significantly increase the projected total lightning losses.

As discussed in the community profile, Eau Claire County is continuing to grow and develop. This creates an increasing exposure to the number of residents and properties that could be at risk from future thunderstorm, hail, and lightning events.

Risks for Individual Plan Participants—Thunderstorms, Lightning, & Hail

All individual plan participants in Eau Claire County (i.e., villages, cities, educational institutions) are equally at risk of experiencing a thunderstorm, lightning, or hail event. The potential impacts, in general, are also shared, though vulnerability increases with development density, population density, type of development (e.g., height, amount of glass, siding/roof type), and value of improvements.

Outside of high winds and heavy rain, which are discussed elsewhere, the cities and villages did not identify unique risks or vulnerabilities related to thunderstorms, hail, and lightning. Some communities have noted that lightning strikes to infrastructure (e.g., wells, water towers, wastewater plants) have occurred.



During previous mitigation plans, the Village of Fairchild noted that a liftstation had problems in the past with repetitive lightning strikes, but the Village has since worked with Xcel Energy to install resistors and additional grounding which appears to have resolved this concern. The City of Eau Claire has had some repetitive strikes at the well field. Altoona has also experienced lightning strikes at the City Hall, a water tower, and at the Public Safety Building, the latter of which received computer damage, though none of these strikes have been a repetitive problem at a single site.

For electric cooperatives and utilities, lightning and electric storms can also damage equipment and cause outages as discussed in the *Long-Term Power Outage* section. Other than insurance, options to mitigate such lightning strikes are very limited in many cases.

Appendix K provides sub-plans for each city and village and **Appendix L** provides sub-plans for participating educational institutions. These sub-plans identify any thunderstorm-related events or vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County.

v. WILDFIRE

This section relies heavily on analysis tools provided by the Northeast-Midwest State Foresters Alliance and a report generated utilizing these tools on December 2, 2024. The report provides data and maps that identify various factors that contribute to risk, intensity, and impact of wildfires in Eau Claire County. While this section summarizes several of the findings within the report, the full report provides additional depth and detail. The tools provided by the Alliance are updated as factors change and the most current data may be valued over this plan, should a conflict arise. Additional information and resources can be found at https://northeastmidwestwildfirerisk.com/.

Defining the Hazard—Wildfire

A **wildfire**, in the context of this plan, is an uncontrollable, unwanted fire in the natural environment spreading through vegetative fuels, exposing and possibly consuming structures. They often begin unnoticed, spread quickly, and are usually signaled by dense smoke that may fill the area for miles around. Wildfires can be human-caused through arson, campfires, prescribed burns, or carelessness, or can be caused by natural events such as lightning.

A **forest fire** is defined in Wisconsin State Statues as "an uncontrolled, wild or running fire burning in forest, marsh, field, cutover, or other lands." Any wildfire in Wisconsin, no matter what type of vegetation it is burning, is legally termed a "forest fire." As such, "wildfire" and "forest fire" are often used interchangeably within this plan.

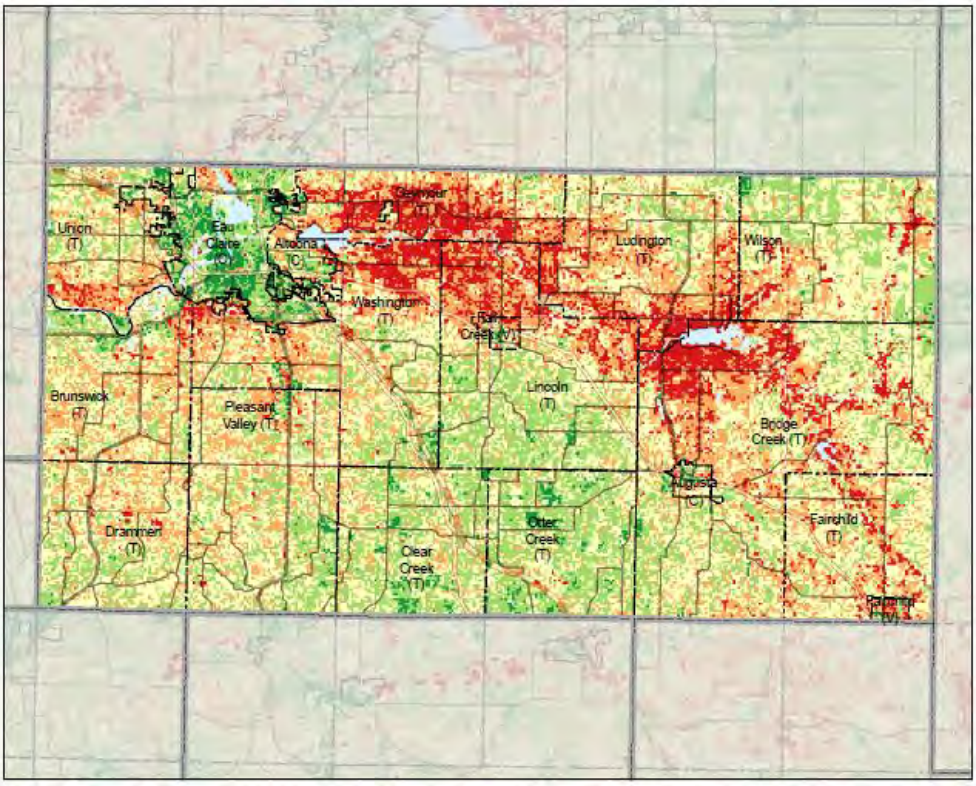


This plan does not attempt to make great distinctions between the different types of wildfires, though more wildfire data is available for the WDNR Intensive Fire Protection area, which has a higher predominance of forest vegetation. It is not uncommon for a large wildfire to include a mix of vegetative types. Grass fires fueled by low-lying vegetation are generally more easily controlled than a wildfire in a forest area, but also will typically spread quicker. Grass fires can be the most dangerous in terms of safety due to highly variable speed, intensity, and direction. In wooded settings, access is often the biggest challenge. In areas of hardwoods, a wildfire is typically less intense, with the fire being commonly limited to leaf litter. Wildfires in coniferous forest that climb into the top of the tree canopy (crown fires) can be the most difficult to control and can produce spotting when large, burning embers are blown to areas outside of the main fire. Regardless of the fuel types, local topography and weather conditions also influence the characteristics of a wildfire.

Hazard Location

The Wisconsin DNR has also identified thirteen communities in Eau Claire County with an elevated wildfire risk.[29] One community (Town of Seymour) has a very high risk. The list of these communities was generated by a WDNR analysis completed in 2008, which considered the hazard (vegetation type), the risk (wildfire history), and the wildland-urban interface (development within forested areas). This 2008 analysis, summarized by **Figure 32** below, is slightly outdated, but still provides important insights into the historical wildfire location for Eau Claire County.

Figure 32.
Eau Claire County Communities at Wildfire Risk (2008)

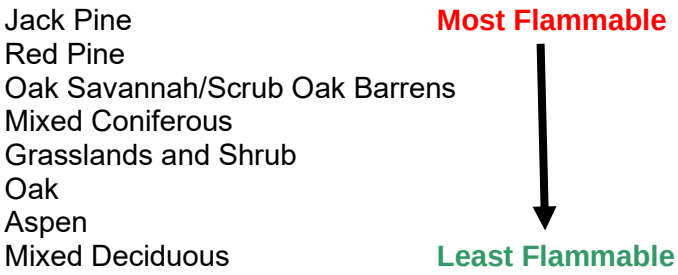


Eau Claire	Bridge Creek (T)	High
Eau Claire	Brunswick (T)	High
Eau Claire	Drammen (T)	Concern
Eau Claire	Eau Claire (C)	Concern
Eau Claire	Fairchild (T)	High
Eau Claire	Fairchild (V)	High
Eau Claire	Fall Creek (V)	High
Eau Claire	Lincoln (T)	High
Eau Claire	Ludington (T)	High
Eau Claire	Seymour (T)	Very High
Eau Claire	Union (T)	Concern
Eau Claire	Washington (T)	High
Eau Claire	Wilson (T)	Concern

[29] https://dnr.wisconsin.gov/sites/default/files/topic/ForestFire/communitiesAtRiskWildfire.pdf

Vegetative Fuels

As reflected by the previous map, the geographic distribution of vegetative cover type is directly related to wildfire risk. The degree of flammability for different vegetative covers is in the general following order:



The above is highly influenced by local soil type. For example, Oak forests on silt loam soils where more moisture is retained in the soil have a lower wildfire risk compared to Scrub Oak Barrens that are typically found on sandier, excessively drained soils.

Approximately 47% of Eau Claire County is forested and 15% is shrub and grasslands. But keep in mind that many forested areas are actively managed for timber production; thus, vegetative characteristics can change from year-to-year as part of the timber growth and harvesting cycle. And this land cover data is older and does not reflect the recent development and agricultural trends, such as increased cropped land for corn production.

Based on Wiscland land cover data[30], deciduous trees (e.g., aspen, oak, maple) are, by far, the predominant forest type in the County. Around 24,000 acres of pine and other coniferous forest still exist, in particular in the County Forest and areas closest to the Eau Claire River. But forest lands in the County have been increasingly fragmented over time. This reduces the chance of a large-scale wildfire event, but does often mean that there are more homes and other structures located within forested areas.

There are also over 56,000 acres of public natural resources lands in Eau Claire County, the far majority of which is in County Forest (abt 51,000 acres). The largest concentrations of these public resources lands can be found in the Town of Bridge Creek (abt 25,300 acres), Town of Wilson (abt 13,500 acres), and Town of Fairchild (abt 7,900 acres). Though public forest lands tend to be more actively managed against wildfire risks, not all of these public lands are forested. Notably, there is a high degree of fragmentation of forest lands within the County which decreases the potential for a project-level wildfire. Yet, this also can mean there is more development occurring within or adjacent to remaining forested areas which increases vulnerabilities and risk of ignition.

Forest health also influences the risk of wildfire ignition and can increase the difficulty of fire suppression. Tree damage from storm events, diseases, insect infestation, and exotic species can weaken plants, making them more susceptible to storm damage, or can kill a forest stand outright. The Wisconsin Department of Natural Resources has rated large portions of Eau Claire County, especially in the Eau Claire area, as having medium or high levels of risk for experiencing 25 percent or more tree mortality

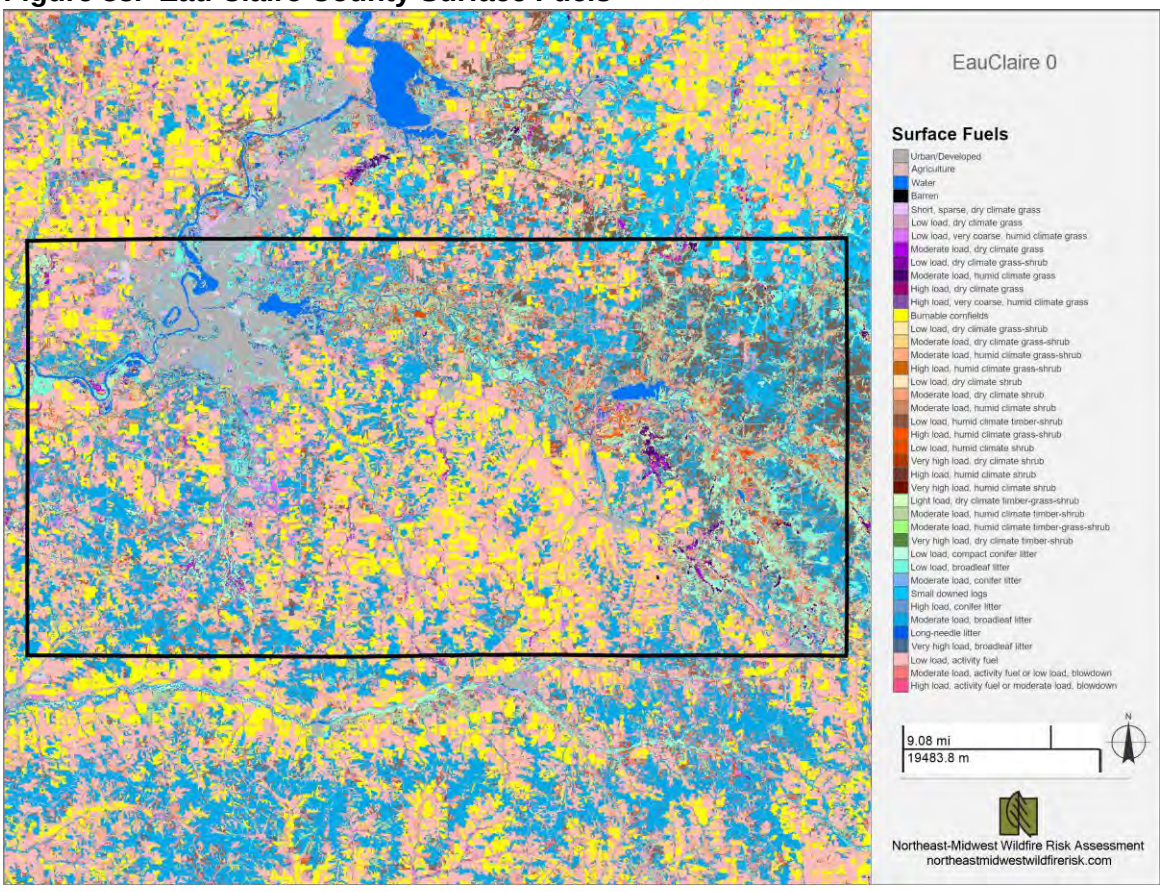
[30] https://dnr.wi.gov/maps/gis/datalandcover.html

between 2009 and 2024 due to native and exotic insects and diseases.[31] Wisconsin's average annual temperature has also been increasing, with shorter winters and recent droughts,[32] which not only affects forest health, but also increases the wildfire risk.

Forests have a natural life cycle. Humans can interrupt this cycle by introducing new species or diseases, encouraging certain growth patterns, or through timber harvest practices. Characteristics such as dense stands of unmanaged pine plantation or creating large piles of slash can increase wildfire risks. Creating brush piles and allowing for the accumulation of dead plant litter in home ignition zones or along roadways also increases wildfire risks. Forest management practices can increase wildfire risks or help to mitigate the ignition or spread of wildfires.

Figure 33 provides a county-wide assessment of surface fuels for Eau Claire County. This map identifies the types of surface fuels, but does not indicate the likelihood of fires in these areas. Understanding fuel types and reviewing this map in tandem with others helps to prioritize areas of concern.

Figure 33. Eau Claire County Surface Fuels



[31] Wisconsin Department of Natural Resources. *Wisconsin Statewide Forest Assessment 2010.*
[32] Ibid.

Key takeaways from the above map include:

- Agriculture (20%), moderate load, broadleaf litter (19%), and burnable cornfields (10%) are the most common surface fuel types within Eau Claire County.
- Concentrations of agricultural surface fuels and downed logs increase the risk of larger wildfires. This finding is reflected in several maps throughout the full report. Specifically, burnable cornfields increase the flame length, rate of spread, and heat unit per area. Fire breaks, removing fuel sources (e.g., downed trees) and other fire suppression efforts built into the landscape may help mitigate the ability of a wildfire to spread.

Hazard Extent (Potential Intensities)

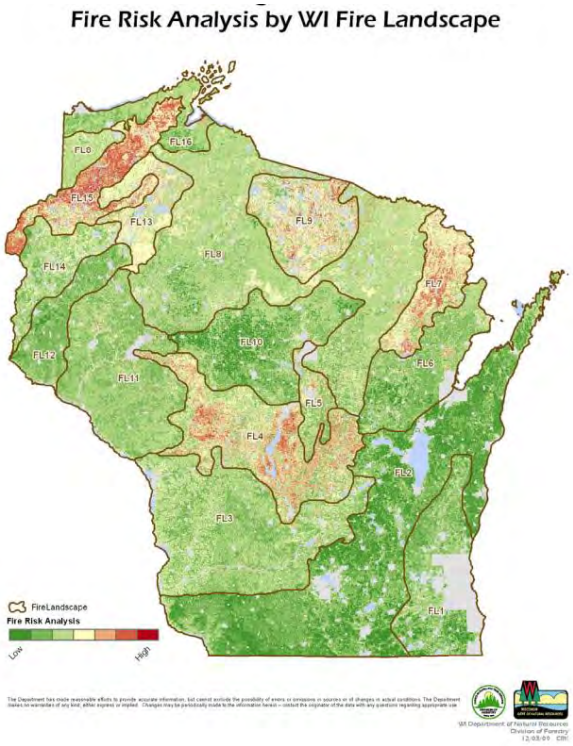
Wildfires are capable of occurring and impacting large areas. Areas with dense pine and oak vegetation are more likely to experience wildfires. In March 2010 the Wisconsin Department of Natural Resources – Division of Forestry, completed a Wildland Fire Management Program Assessment that included identification of sixteen distinct fire landscapes throughout the State with associated management recommendations.[33] The landscapes were determined based on five features:

- Vegetation
- Ecological Subsections
- Soils
- Land Parcel Improvements
- Forest Patch Size

Eau Claire County falls within the two different landscapes:

(1) Areas east and north of U.S. Highway 12, and east of the City of Eau Claire, fall within the **Central Wisconsin Sands fire landscape,** which has a moderate to very high wildfire risk. This area is one of the highest fire risk landscapes in Wisconsin and is characterized by extensive areas of jack and red pine, with dry, sandy, and organic soils. There is great history of, and potential for, a 10,000 acre project class fire in this area. In fact, since 1975, there have been four fires greater than 2,500 acres in this area. This is a primary mitigation area and community wildfire protection planning, Firewise outreach, targeted media messaging, and other mitigation efforts are to be supported. School fire prevention programs must be conducted in grades K-3 every three years.

(2) Nearly all of the rest of the County falls into the **West Central Wisconsin fire landscape**, in which wildland fires would generally be expected to remain under 500 acres and can typically be



[33] https://dnr.wisconsin.gov/sites/default/files/topic/ForestFire/fireAssessment_wildlandFireMgmtFinalReport.pdf

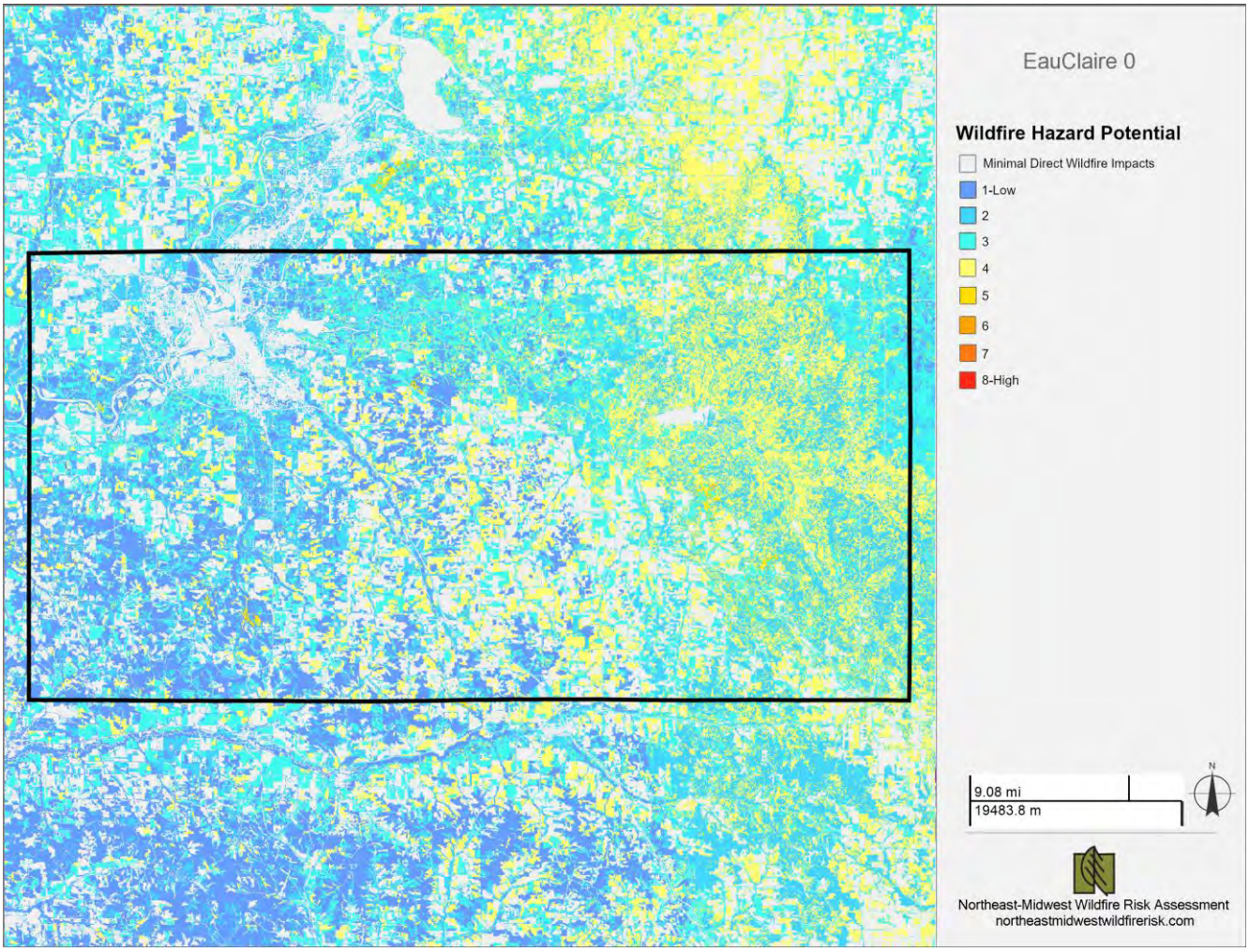
managed by local fire departments without WDNR assistance. Very limited mitigation activities for this fire landscape are suggested, such as statewide prevention messages and periodic K-3 school fire prevention programs. A very small area of northeastern Eau Claire County falls into the "Central Ag and Hardwoods" fire landscape which has mitigation recommendations similar to those in the "West Central Wisconsin" landscape.

While the fire landscape approach is valuable for State- and regional-level resource planning, the communities-at-risk, as identified earlier in this section, provides a better understanding of local variations, such as development density and vegetation.

Wildfire Hazard Potential – Difficulty to Control

The wildfire hazard potential (WHP) dataset represents an index that quantifies the relative potential for wildfire that may be difficult to control. WHP can be used as a measure to help prioritize where fuel treatments may be needed.

Figure 35. Eau Claire County Wildfire Hazard Potential

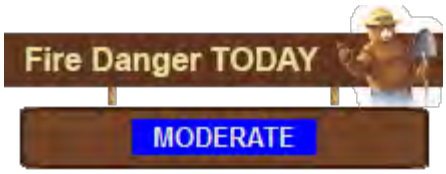
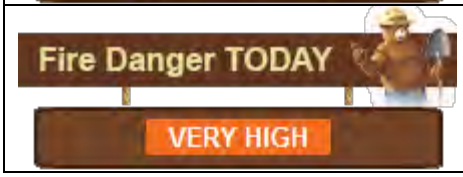


Key takeaways from **Figure 35** include the following:

- There is a consistent trend of wildfires becoming more difficult to control when moving from southwest to northeast. This trend aligns with the overall land cover and accessibility. Forested areas increase when moving in this same direction while road access decreases.
- The overall potential for the County is low. Very few areas in Eau Claire County exceed at 4 rating; 1,010 acres are rated 5 and 13 acres in the County are rated 6.
- The areas rated 3 and 4 account for 38% of the County.
- While forested areas have higher hazard potential, there does not appear to be a direct correlation between developed areas and a lower wildfire hazard potential. This may be associated with the relatively low hazard potential generally for the County, but city and village boundaries are indistinguishable on the map.

Table 20 lists the fire danger rating classifications as defined by the U.S. Forest Service. The "Adjective Ratings" as a public information description of the relative severity of the current fire danger situation in a general area. Since 1974, five rating levels have been used to describe danger levels.[34] The Wisconsin Department of Natural Resources uses these same categories to help describe the wildfire risk throughout the State. The Extreme rating is also known as a Red Flag warning.

Table 20. Adjective Class Rating Method under the Wildland Fire Assessment System

Fire Danger Rating and Color Code	
	**Low (L, Dark Green) -** Fuels do not ignite readily from small firebrands although a more intense heat source, such as lightning, may start fires in duff or punky wood. Fires in open cured grasslands may bum freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.
	**Moderate (M, Light Green or Blue) -** Fires can start from most accidental causes, but with the exception of lightning fires in some areas, the number of starts is generally low. Fires in open cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
	**High (H, Yellow) -** All fine dead fuels ignite readily and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
	**Very High (VH, Orange) -** Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.

[34] USDA Forest Service. *Understanding of the National Fire Danger Rating System.* https://www.fs.usda.gov/detail/r5/fire-aviation/?cid=FSEPRD604105

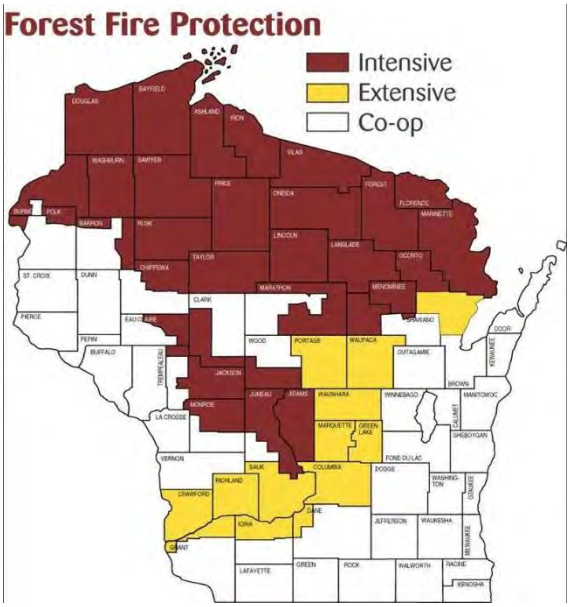
	**Extreme (E, Red) -** Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.

WDNR Fire Protection Areas

All incorporated cities and villages in Eau Claire County and most of the southwestern parts of the County fall within the Cooperative Fire Protection. The eastern 4/5th of the Town of Seymour and most areas of the County east of Eau Claire and north of US Highway 12, including all of the Town of Fairchild, are under Intensive Fire Protection. These are defined as follows:

Intensive Fire Protection areas are the most heavily forested and contain the most fire hazards and risks in the State. Limited assignment of skilled personnel, specialized equipment, and facilities provide for an adequate degree of forest fire prevention, detection, and suppression efficiency and effectiveness at a minimum cost. Wisconsin Department of Natural Resources (WDNR) equipment is designed to suppress fires that are beyond the capability of the local fire department. The WDNR by statute takes whatever action is necessary to suppress the fires. Fire detection is provided by WDNR aircraft, and there is a strong reliance on public reporting of fires. Burning permits are required whenever the ground is not snow-covered; non-commercial burning permits are issued online through the WDNR website, which includes information on daily burning restrictions and other requirements.

The intensive fire protection area in Eau Claire County falls under the WDNR Augusta Fire Response Unit headquartered at the Augusta WDNR Ranger Station. This station takes the local lead in all WDNR wildfire prevention, education, and coordination efforts in the County. These efforts in the County have been primarily been educational in nature, such as wildfire danger signage and articles in local newspapers. Wildfire flyers have been included with tax mailings within the Intensive Protection Area and some door-to-door outreach has taken place, but funding and resources are limited. WDNR staff from the Augusta Ranger Station have attempted to visit residents in one town each year, if staff time allows. Separate mailings were distributed about four years ago. As will be discussed, the Town of Seymour has engaged in additional educational outreach through their community wildfire protection efforts.



Cooperative Forest Fire Protection is aid and counsel from WDNR, upon request, to the town authorities who are legally responsible for forest fire prevention, detection, and suppression activities in territory outside boundaries of established extensive fire control areas. Town Chairmen, by virtue of their office, are fire wardens. Costs

of forest fire prevention and suppression incurred by a town chairman, acting in his capacity as town fire warden, are paid by the town. Local municipalities may regulate burning and issue burning permits; WDNR does not regulate burning permits in cooperative protection areas.

Local fire departments are critical partners in managing wildland fires. Eau Claire County fire departments are part of the Mutual Aid Box Alarm System (MABAS), which may be used for deploying fire, rescue, and emergency medical services personnel if assistance from other departments is needed. Though WDNR is not part of the MABAS system, WNDR resources can also be called upon for wildfires if needed. WDNR Augusta Ranger Station personnel meets with area fire departments through the Eau Claire County Fire Chief's Association and does conduct annual refresher courses and periodic larger exercises. WDNR Augusta Ranger Station also hosts periodic functional wildfire exercises for communications, coordination, and structural protection training with area fire departments and the WDNR Incident Management Team.

Other Risk Factors

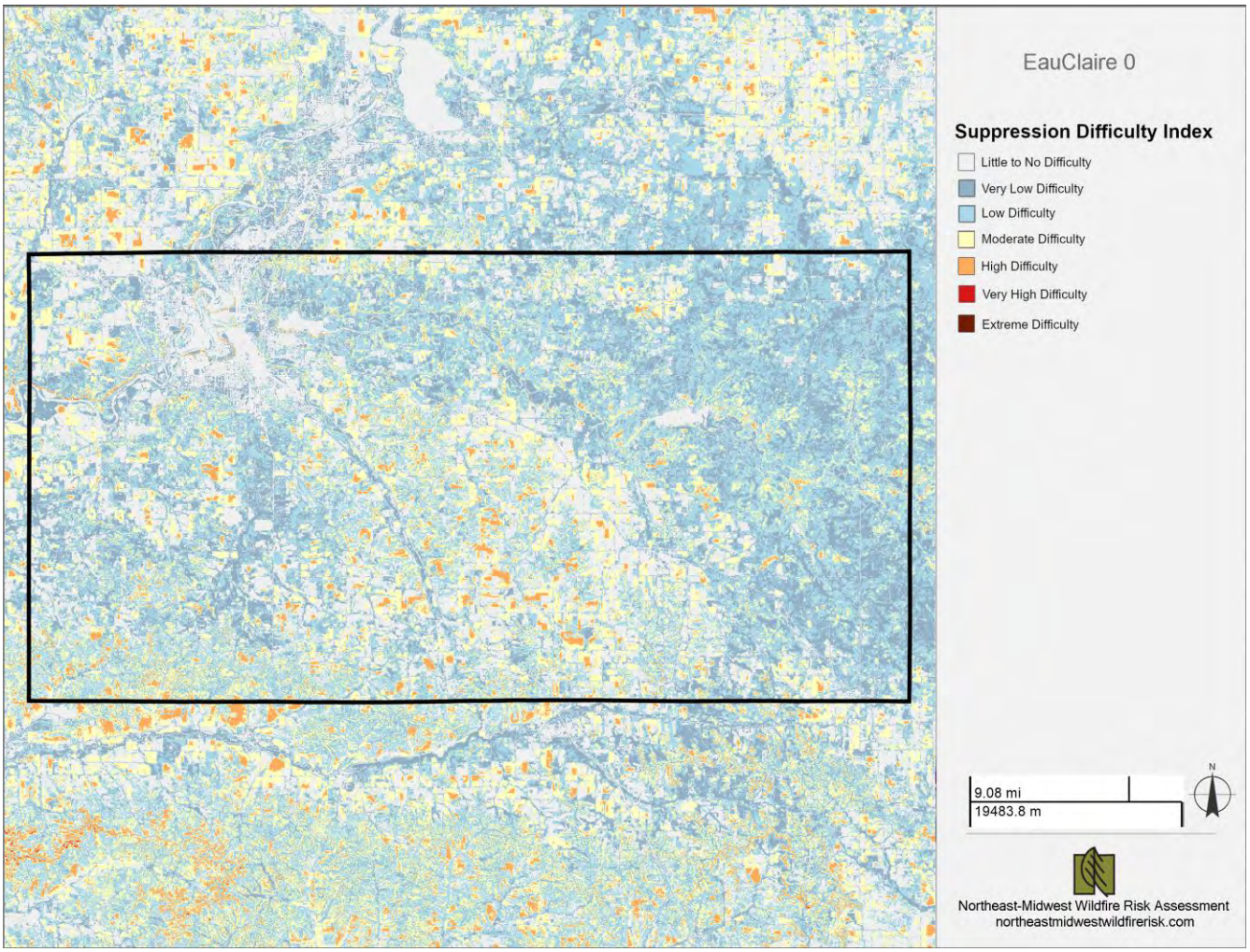
Ignition

Most wildfires are caused by humans, whether accidental or deliberate, though there has been a slight increase recently in fires caused by lightning due in part to extended dry conditions. And areas of higher population within wildlands can be expected to have a higher risk of ignition.

Suppression Difficulty Index

Wildfire Suppression Difficulty Index (SDI) is a quantitative rating of relative difficulty in performing fire control work. SDI factors in topography, fuels, expected fire behavior under severe fire weather conditions, firefighter line production rates in various fuel types, and accessibility (distance from roads/trails) to assess relative suppression difficulty.

Figure 37. Eau Claire County Suppression Difficulty Index



Key takeaways from the map include the following:

- Overall, most (56%) of Eau Claire County has a low or very low suppression difficulty.
- When reviewed against **Figure 33** (surface fuels), there is a correlation between agricultural and grassland surface fuels and suppression difficulty.
- Suppression difficulty is lower in many areas of western and central Eau Claire County despite some of these areas having a higher wildfire potential. While fires in some of these areas may be easier to start, and more likely to start, they may also be easier to control.

Event History – Wildfire

Regional Trends

Wildfires are not uncommon for Wisconsin and can occur at any time of the day and during any month of the year, though the peak fire season in Wisconsin is typically from March through November; and the season length and peak months varies from year-to-year. Land use, vegetation, amount of combustible materials present, and weather conditions (e.g., wind, low humidity, lack of precipitation) are the chief factors determining the number of fires and acres burned. Forest fires are more likely when vegetation is dry from a winter with little snow cover, followed by a spring and summer with sparse rainfall.

The most disastrous forest fire in Wisconsin history occurred on October 8, 1871, when more than 1.2 million acres were burned and the communities of Peshtigo and Brussels were obliterated. "All hell rode into town on the back of a wind" one survivor described. In about two hours' time, a swath of forest ten miles wide and 40 miles long was burned. Though overshadowed by the Great Chicago Fire of the same time period, the Peshtigo fire resulted in 1,152 people killed, 350 missing, and an estimated 3,000 people left homeless.

The April 1977 Five Mile Tower Fire, which started in northern Washburn County, burned 22 square miles at a rate of one mile every 41 minutes and destroyed 64 structures. The book "*Monster Fire at Minong—Wisconsin's Five Mile Tower Fire of 1977*" by Bill Matthias provides an excellent account of this project fire and its impacts on fire management in its aftermath.

In April 1980, more than 16,000 acres were burned and over 200 buildings were lost in the Ekdall Church and Oak Lake fires. The Ekdall Church fire originated less than 20 miles north of Polk County in the Grantsburg area. The fire started in oak scrub and timber slash, but embers then created spot fires in a nearby pine plantation. Within three hours time, the fire was consuming 1,000 to 1,600 acres an hour. Within eight hour's time, it had run nine miles and was 2.5 miles in width at its widest point.

The May 5, 2005, Cottonville wildfire began in northern Adams County; and 3,410 acres of grass, pine, and scrub oak burned quickly before the fire was contained eleven hours later. During the fire, over 100 people were evacuated. Nine year-round residences, 21 seasonal homes, and at least 60 outbuildings were completely destroyed. Lack of access (long, narrow driveways) and a lack of defensible spaces around buildings were significant contributing factors to the loss of these structures, offering important lessons to be learned.



The 2013 Germann Road fire consumed 7,499 acres and destroyed 104 structures (23 of them residences) in the Towns of Gordon and Highland in Douglas County and the Town of Barnes in Bayfield County. An estimated 350 structures were saved due to fire control efforts. The fire began around 2:45 p.m. on May 14, 2013, burning a swath

nearly 10 miles long and a mile and a half wide before being declared 100 percent contained on May 15 at 9 p.m. The fire was started unintentionally from a logging crew harvesting timber on industrial timber lands.

Wildfire potential is elevated during a drought. A total of 4,144 forest fires and wildfires occurred in Wisconsin during the drought year of 1976, with drought conditions continuing into 1977. Likewise, 1988 was one of the driest years on record, with a total of 3,242 fires occurring and 9,740 acres burned in Wisconsin.

Eau Claire County Events

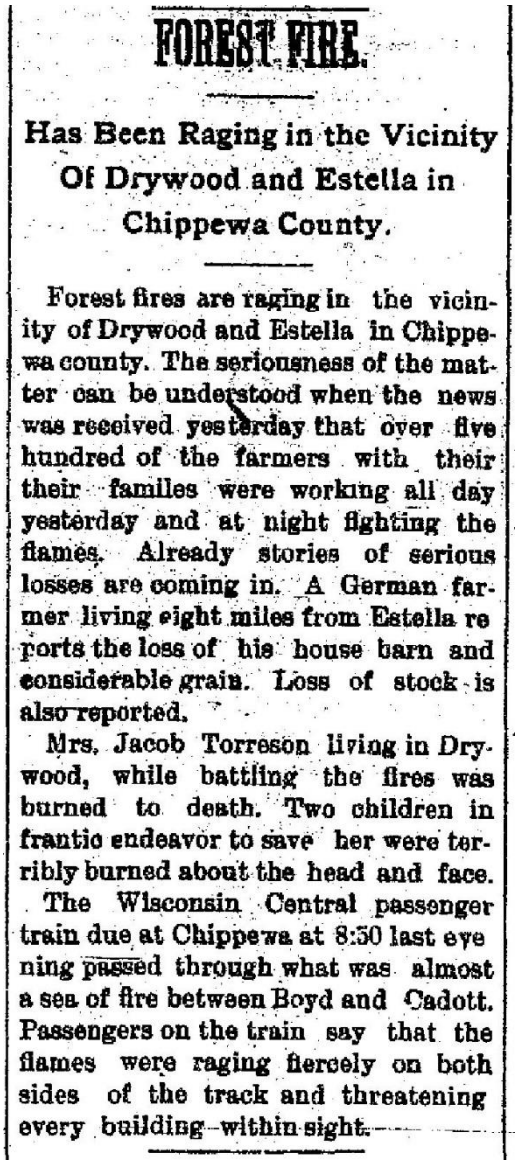
Forest fire is not a new threat to Eau Claire County, though based on limited research, the County has not experienced extensive historical forest fires burnings hundreds of square miles such as those in the 1800s and early 1900s which raged across nearby Barron, Chippewa, and Polk counties. For instance, the 1898 article to the right describes an "immense sea of flames" which burned over 600 square miles of pine lands in northern Wisconsin and Minnesota[35]. While losses were greatest in nearby Polk and Barron counties, the fires brought destruction and death to the Cornell, Cadott, and Boyd areas. Later in 1906, the City of Stanley was partially destroyed by forest fire. And a few years later in July 1910, a forest fire fifty miles long and forty miles wide raged near Chippewa Falls resulting in at least three deaths and leaving 300 people homeless.

In 1895, the entire business district in the Village of Fairchild, over twenty establishments, succumbed to fire. The City of Eau Claire has also had large fires in its history as discussed in the City's mitigation plan. But these fires were not associated with a forest fire or grass fire.

As the pine forests were logged and agriculture came to dominate much of region, the forest fire risk also changed. The potential for a large forest fire was chiefly limited to forested areas less suitable for agriculture and in the resort and seasonal housing areas typically associated with recreational surface waters.

The largest, best documented wildfire in the County's recent history occurred in April 1982 in the County Forest in the Town of Bridge Creek. Named the Canoe Landing Fire, a 274-acre forest fire was ignited from an unattended campfire.

Eau Claire Weekly Telegram
September 29, 1898



FOREST FIRE.

Has Been Raging in the Vicinity Of Drywood and Estella in Chippewa County.

Forest fires are raging in the vicinity of Drywood and Estella in Chippewa county. The seriousness of the matter can be understood when the news was received yesterday that over five hundred of the farmers with their their familes were working all day yesterday and at night fighting the flames. Already stories of serious losses are coming in. A German farmer living eight miles from Estella reports the loss of his house barn and considerable grain. Loss of stock is also reported.

Mrs. Jacob Torreson living in Drywood, while battling the fires was burned to death. Two children in frantic endeavor to save her were terribly burned about the head and face.

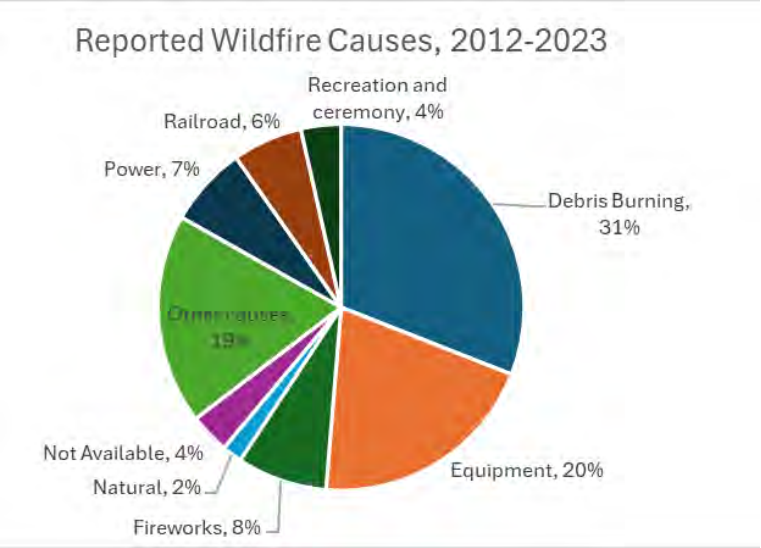
The Wisconsin Central passenger train due at Chippewa at 8:50 last evening passed through what was almost a sea of fire between Boyd and Cadott. Passengers on the train say that the flames were raging fiercely on both sides of the track and threatening every building within sight.

[35] The Daily Gazette. Janesville, WI. Number 148 and 149. 9/4/1894 & 9/5/1894.

Winds spread the fire to dry grass and into a young pine plantation. WDNR fire fighter Don Eisenberner lost his life when a sudden wind shift resulted in the fire trapping Don and his tractor plow unit. Fire conditions for that weekend had been rated as extremely hazardous. This same area would be impacted by a second, larger fire in 1994.

Figure 38 shows the approximate location of the 113 reported wildfires in Eau Claire County between 2012 through 2023, which are identified in the WDNR database. The Town of Seymour had the greatest number of reported wildfires during this period with 28 – just over 24.8% of all fires reported. The Town of Bridge Creek had 24 reported wildfires and the Town of Ludington had 18 reported wildfires. From 2012 to 2023, an average of 9.4 wildfire events were reported per year in Eau Claire County within the WDNR database. The 2018 Plan noted that from 2010 through 2017, the number of events decreased to 10.2/year. This points to a positive trend of a slight decrease in the number of reported wildfire events in recent years.

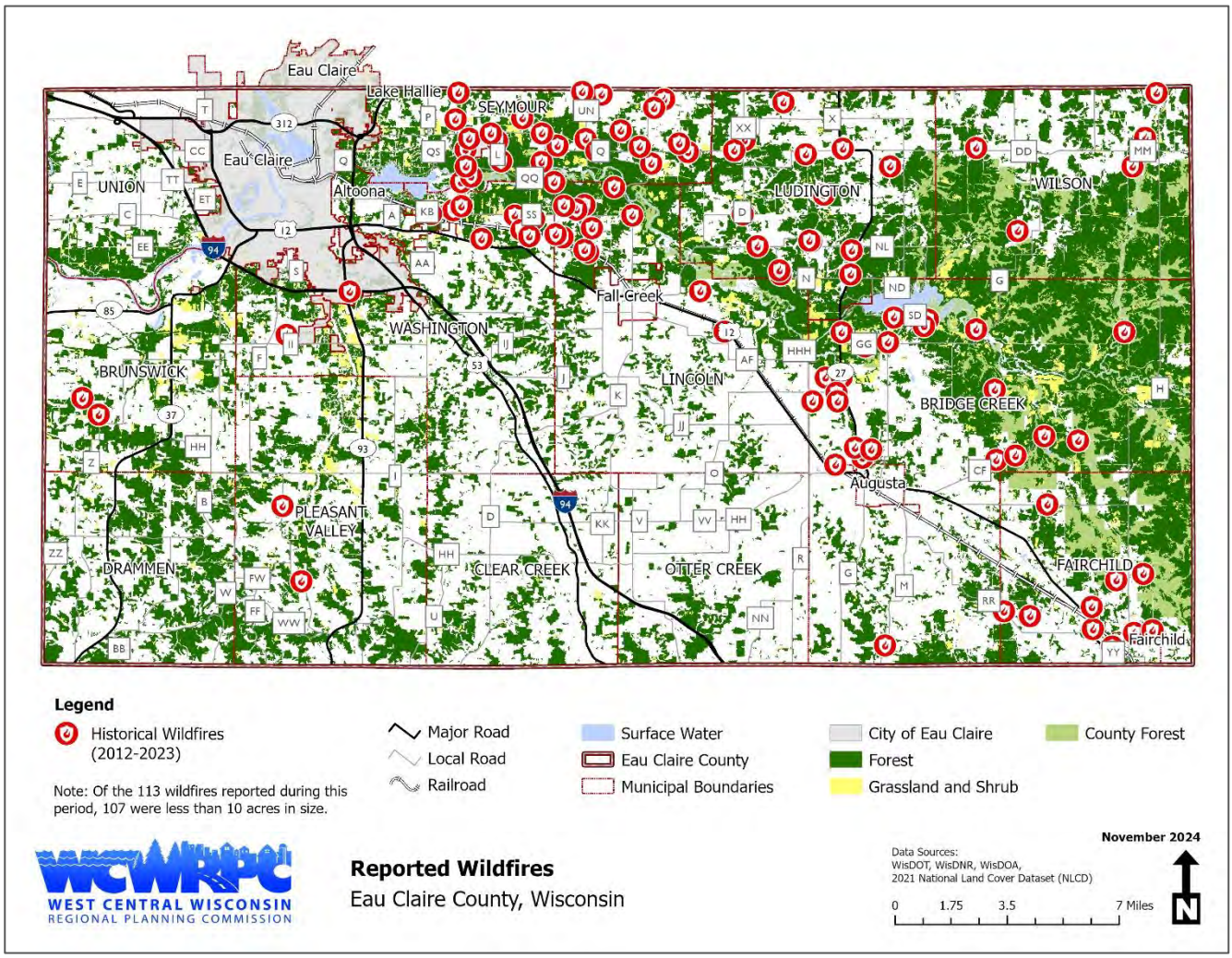
Of the 113 reported wildfires from 2012 to 2023, the average acreage of burned land is 2.94 acres with 70 (or 61.9%) of the total fires less than a half-acre in size. Twenty-five fires were greater than one-acre and eleven fires were greater than five acres in size. The largest amount of acreage burned is 122 acres in April of 2018. No wildfires were reported during the months of December or February and only one fire was reported during the month of January. Only nine (7.9%) were reported between the months of November through February. By far, the largest number of wildfires occurred in the months of March through May with 11, 34, and 31 fires respectively (approximately 67.3% of all fires).



The most common source of ignition was debris burning for 31% of all wildfires and an additional 20% of wildfires were caused by equipment (non-railroad). Debris burning ignitions have decreased recently. While most of these equipment-related fires started within road right-of-way, there is increasing concern over fires started by ATVs along trails. About 43% of the wildfires were largely in open agricultural fields and lawns, even though the data is primarily limited to the more forested intensive protection area. About 51% of the 113 wildfires occurred when the fire danger was rated as high or very high, 36% occurred during moderate fire danger and 13% occurred when fire danger was rated as low.

As part of mitigation planning efforts, all towns were sent surveys requesting the identification of any unique natural hazard and emergency management concerns or needs in their communities. During this plan update, Bridge Creek commented on concerns with unpermitted burning and the need for additional enforcement, including fines if necessary. Not much illegal burning has been occurring in the County Forest.

Figure 38. Reported Wildfires in Eau ClaireCounty • 2012 to 2023



Note: **Additional wildfires have occurred that are not shown on the map.** Wildfires that are typically reported to WDNR are either located within the Intensive Fire Protection area or were larger wildfire events potentially requiring WDNR support.

Hazard Probability – Wildfire

Several factors must be taken into consideration when assessing the probability of a wildfire. A fire can occur anywhere; if it grows and where it spreads is dependent on wind direction, weather, access to fuel sources, and chance. Understanding the factors that support fire growth will help identify areas of risk and vulnerability. The Plan Steering Committee rated the probability of wildfires as of some concern, compared to many of the other natural hazards (see Table 11). This is in part due to most of the forest lands being significantly fragmented and having predominantly deciduous vegetation which will help slow and limit the spread of wildfires.

Vegetation fuel types and the fragmented forest landscape combine to make the fast-spreading, regional fires of the late 1800s very unlikely within Eau Claire County for the foreseeable future**. In the near**

term, it can be expected that Eau Claire County will continue to experience 10 to 11 wildfires per year on average within the intensive fire protection area, and perhaps greater if drought conditions are in effect. **The far majority (over 90%) of these fires will be less than five acres in size.** Estimates for wildfires in the remaining portion of the County within cooperative fire protection are not currently available.

A number of factors could significantly contribute to an increase in the number and size of wildfires over the long term. Foremost, population increases, development in the wildland-urban interface, and the transition from seasonal to year-round housing has great potential to increase the frequency of wildfires in Eau Claire County. Long-term weather patterns, insect infestation, and plant disease are additional factors that may also increase wildfire risks.

Burn Probability

Taking several factors into account, the burn probability is an assessment of the annual probability of a wildfire burning in a specific location. **Figure 39** identifies the burn probability throughout Eau Claire County.

Key takeaways from the map include the following:

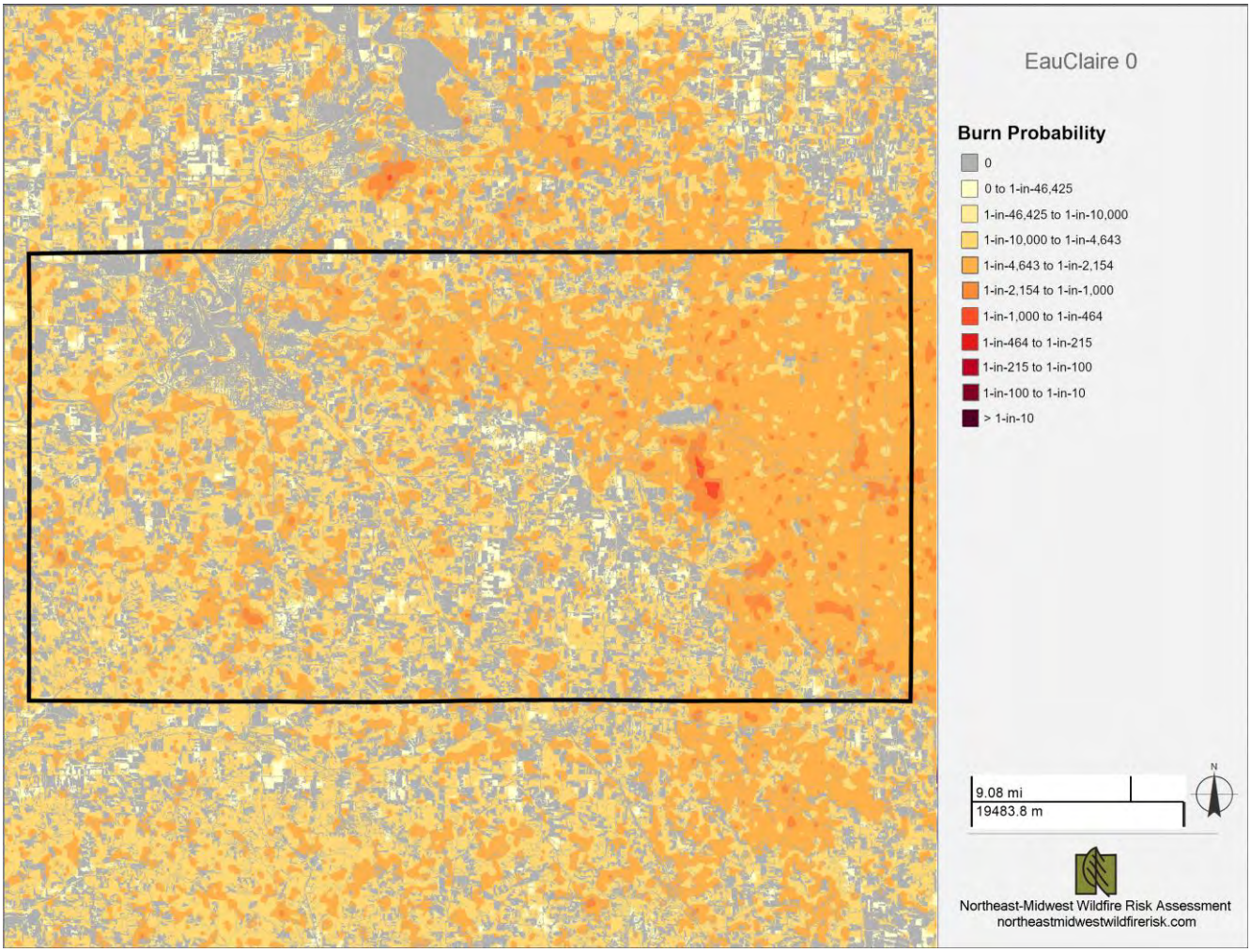
- The areas with the highest burn probability are located in the most heavily wooded part of the County, including the County Forest. This map is generally consistent with the intensive fire protection areas identified for the County.
- The overall burn probability in the County is moderate. The highest probability identified is in the "1-in-1,000 to 1-in-464" range, and this only included 313 acres within the County. The top 4 ranges are not shown on the map as there are no lands in the County identified in these categories.

Vulnerability Assessment – Wildfire

The Plan Steering Committee rated the vulnerability of Eau Claire County to wildfire as moderate or substantial level. **Appendix F** provides the following regarding the potential impacts of wildfire events for Eau Claire County as a whole:

- A description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- A description of the vulnerability of each community lifeline for this hazard; and
- The potential consequences or impacts to the above assets and community lifelines.

Figure 39. Eau Claire County Burn Probability



During the planning process, the following assets were identified as having the greatest vulnerability, especially in areas where more flammable vegetative fuels exist:

- **Residential development and populations within forested areas (wildland urban interface).** It was noted that residential development within the wildland urban interface (WUI) is increasingly in the County.
- **Farms and crops** adjacent to grasslands or later in the fall when dry crops are potential fuel.
- **Campgrounds & resort properties.** Eau Claire County has campgrounds, tourism-related cottages, RV parks, and resorts, many of which are located within the at-risk communities and other forested areas of the County. For such facilities, visitors are a potential source of fire ignition (e.g., campfires), may not understand risk factors, and are a vulnerability should a wildfire occur.
- **Lake properties**. Homes and cottages located on or near lakes and rivers often have an elevated vulnerability due to location within a wooded area and have limited access/egress. These

properties are frequently identified as a concern by emergency responders due to narrow, winding private roads and driveways, sometimes with steep grade/topographical changes.

- **Above ground utilities in wooded or grassland areas, such as electrical poles**. Large wildfires can result in cascading impacts to critical infrastructure, such as destroying communication, equipment, blocking roadways, and causing system failures both with respect to water availability and power distribution.

Populations, farms, property, and infrastructure located within those previously identified communities and areas of higher wildfire risk would be more vulnerable.

Wildfires and the resulting burnt landscape can also damage and contaminate the natural environments, which includes polluting sources of drinking water, destroying habitats, exacerbating erosion and runoff to surface waters, and degrading air quality for miles.

Large wildfires produce a significant amount of polluted smoke that degrades air quality well beyond the boundaries of the fire, posing health risks. An example of this impact is May 2023 air quality advisory that was issued for Eau Claire County as a result of the Canadian wildfires. Wildfire smoke originating from Canada started to move into Wisconsin from the northwest causing reduced air quality.

DNR RECOMMENDS WISCONSINITES LIMIT TIME OUTSIDE DUE TO CANADIAN WILDFIRE SMOKE

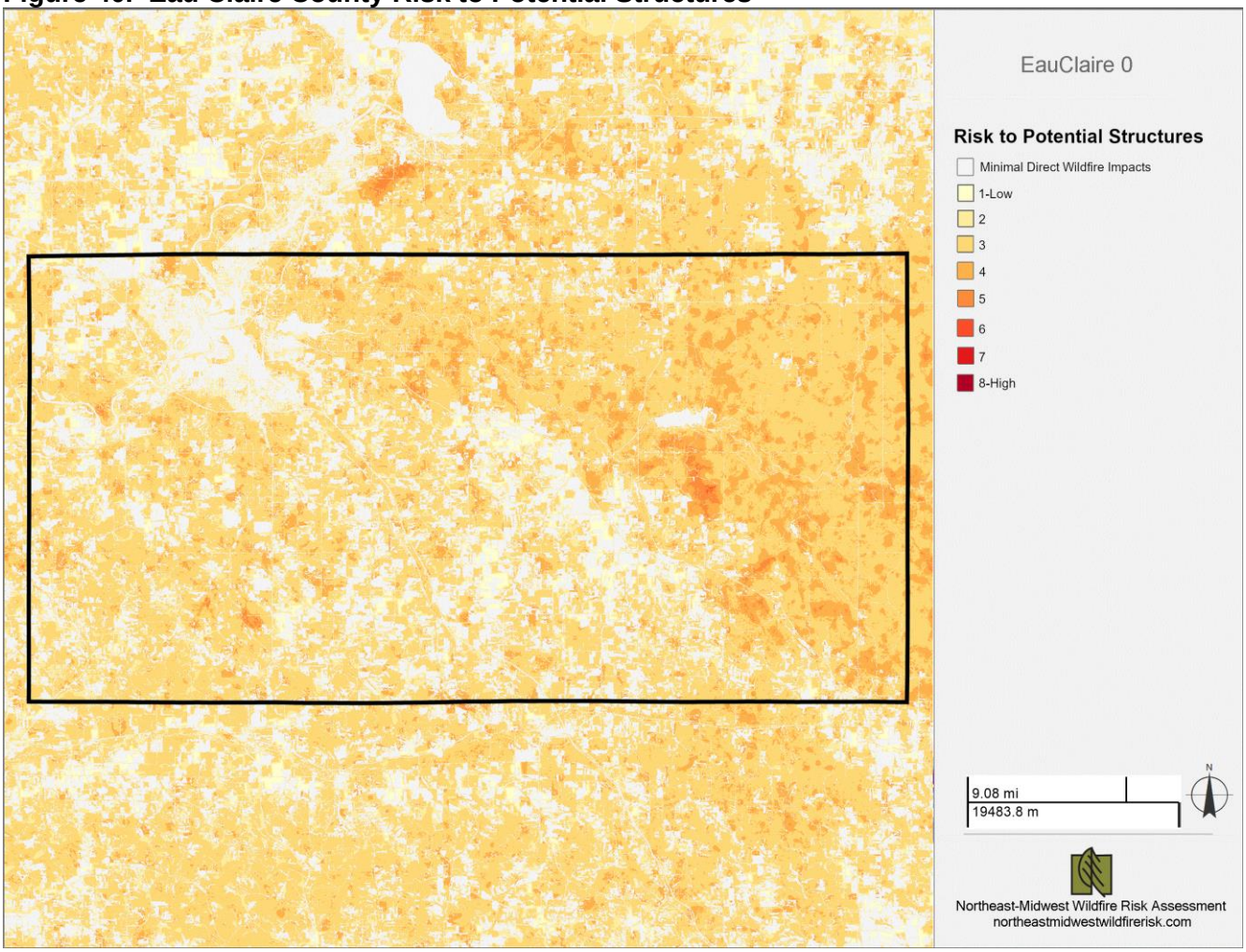


The DNR is advising Wisconsinites to reduce their time outdoors due to ongoing air quality alerts resulting from Canadian wildfire smoke.
Photo credit: Wisconsin DNR

Vulnerability to Structures

Understanding wildfires' impact on the built environment will help the County assess where and how development should occur. As stated earlier in this section, the communities with the most reported fires have been some of the fastest growing as well. **Figure 40** identifies the expected risk to potential structures. It represents a measure that integrates wildfire likelihood and intensity with generalized consequences to a home. This map does not take existing homes into account; it is identifying the overall risk to structures.

Figure 40. Eau Claire County Risk to Potential Structures



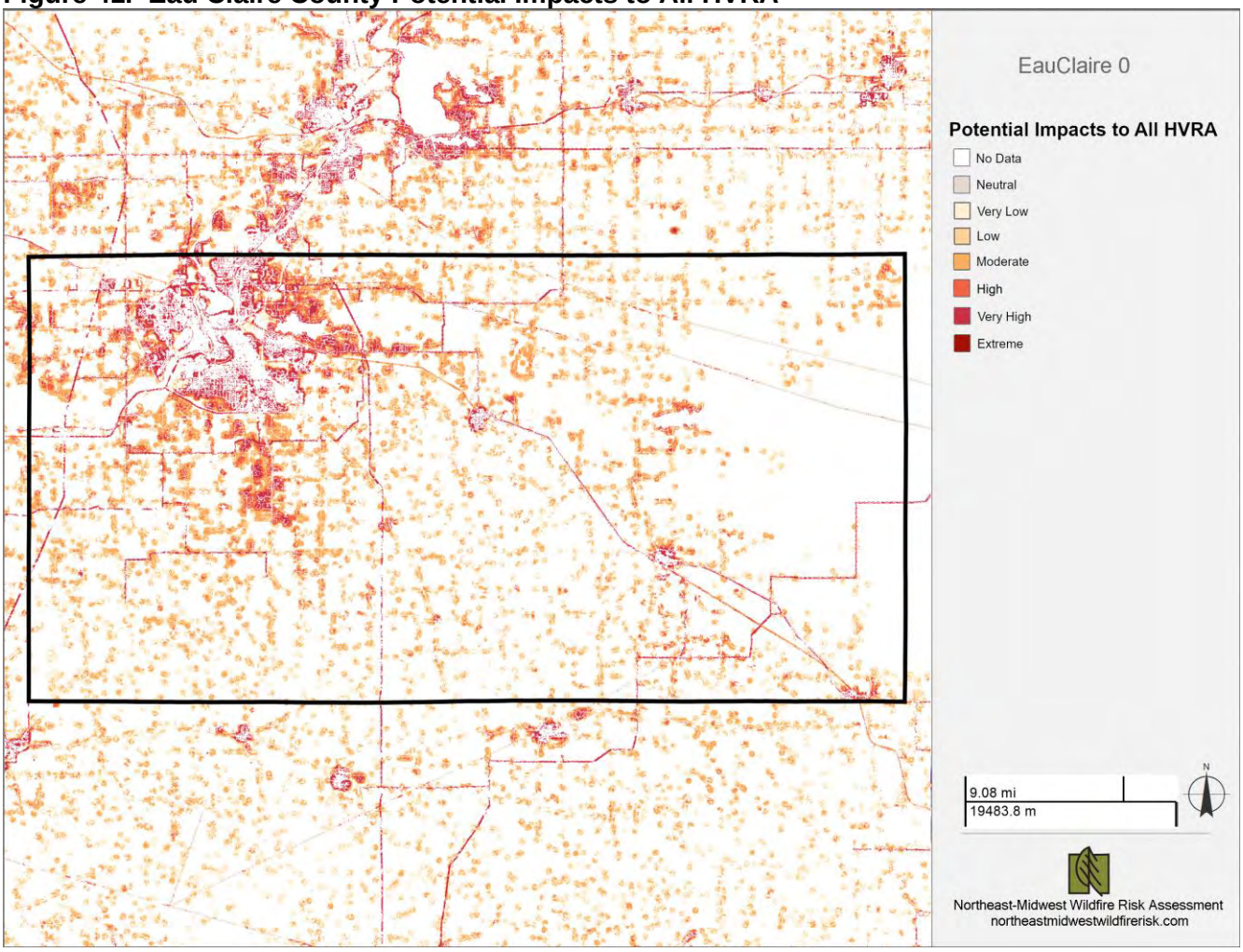
Key takeaways from the map include the following:

- The map parallels Figure 39 (burn probability). The same takeaways from that map apply here.
- No lands were rates higher than a 6. The category with the most land area was 3, incorporating 52% of the County.
- Risk is distributed across the County, reflecting the need for fire services over a large area rather than in concentrated clusters.

Potential Impacts to All Highly Valued Resources or Assets (HVRA)

The Northeast-Midwest State Foresters Alliance identifies Highly Valued Resources or Assets (HVRA). These resources and assets include three categories: people and property, infrastructure, and cultural resources. The full Wildfire Risk Assessment report provides an impact assessment for each individual category. **Figure 41** is a consolidation of the three individual assessments. This map does not indicate the likelihood of a fire in a given area. If an area is labeled "very high" the impact a wildfire would cause to HVRA in that location would be very high, though the likelihood of a fire occurring there may be very low.

Figure 41. Eau Claire County Potential Impacts to All HVRA



Key takeaways from the map include the following:

- Population centers rate high to extreme. This is to be expected given the density of people and property in these areas. These areas cover a very small percentage of Eau Claire County's acreage. Although they are dispersed throughout the County, localized fire services can address a significant amount of the above risks within relatively small service areas.

- The County's rural development pattern can be seen clearly on the map. Low-density single-family homes and farmsteads dot the entirety of the County. Despite 75% of the County being classified as having "no data" or "neutral" impact, fire services must cover a large amount of territory to protect the entire community.

Projected Loss Estimates

Forest fire can cause significant injury, death, damage to property, and loss of natural resources. As shown in **Table 21**, the Town of Seymour (very high risk) and Towns of Bridge Creek, Fairchild, Lincoln, Ludington, and Washington (high risk) had over $1.5 billion in assessed improvements on 6,504 improved parcels and over $7.5 million in assessed personal property in 2023 as well as a combined 2020 Census population of about 15,870. Nearly all of these parcels were residential; only 231 parcels were commercial in use and six were manufacturing. The official Wisconsin Department of Administration 2013 population projections show that all of these Towns, with the exception of Bridge Creek and Fairchild, are expected to grow over the next twenty years.

The WDNR Intensive Fire Protection area encompasses all or parts of seven of Eau Claire County's 13 towns. As reflected in Table 21, these seven towns contain about 15percent of the County's population, 19 percent of the County's improved parcels, and 17 percent of the County's total improvement value. While we do not have the wildfire data to state with certainty that these seven towns have a higher wildfire risk than all other towns in Eau Claire County County, their intensive fire protection status was based, in part, upon their vegetative fuel types and wildfire risk.

Table 21. Population and Improvements of Towns with Intensive Fire Protection

Town	Population			2023 Assessed Improvements				2023 Assessed Value of Personal Property
	2020 Census	WI DOA Proj. 2040	% Chng. '20-'40	# of Imp. Parcels	# com	# ind	Total Value of Improvements	
Augusta Fire Response Unit - Intensive Fire Protection								
T Bridge Creek*	2,214	2,060	-7%	940	56	2	$125,295,200	$1,812,900
T Fairchild	450	340	-24%	237	7	0	$ 24,664,300	$3,511,487
T Lincoln*	1,125	1,210	8%	487	3	0	$ 94,392,300	$242,800
T Ludington	1,067	1,160	9%	545	6	0	$ 69,491,200	$235,200
T Seymour*	3,352	3,615	8%	1,356	22	1	$ 231,333,000	$476,000
T Washington*	7,662	8,060	5%	2,939	136	3	$ 954,885,700	$1,258,600
T Wilson	427	545	28%	276	1	0	$ 23,007,100	$26,300
Totals	16,297	16,990	4%	6,780	231	6	$1,523,068,800	$7,563,287

* These towns are partially within an intensive fire protection area with a rough percentage in parenthesis, though numbers provided are for the entire town.

Some local fire personnel also noted that within non-wooded areas and outside the intensive protection areas, wildfires in grasslands and fields have the potential to spread more quickly than fires in wooded areas. Homes, agricultural operations, livestock, crops (especially hay and grains), and travelers on roadways are all potentially vulnerable, depending on proximity to vegetative fuel.

FEMA National Risk Index (NRI) Estimated Annual Losses

FEMA's NRI provides a source of estimated annual losses (EALs) for Eau Claire County with a wildfire hazard.

Risk Factor	Wildfire
EAL Rate – Population	1 per 6.46m
EAL Rate – Buildings	$1 per $524.10k
EAL Rate – Agriculture	$1 per $11.92m
Total EAL	$65,171
Exposure	$121.4 billion
Events per year	.006% chance per year
Historic loss ratio	Relatively Moderate
Overall Loss Score	58.6 (Very low)

According to the NRI data, wildfire has a relatively low estimated annual loss of natural hazard events ($65,171) for Eau Claire County. The estimated loss for Wildfire is higher than Lightning, Hail, and Drought for the County.

Other Factors Influencing Future Losses



A wide variety of preparedness and mitigation efforts can reduce wildfire losses. Active forest planning and management can reduce fuel and provide fire lanes for responders. Eau Claire County has an active forestry program that implements the County's **15-Year Comprehensive Forest Land Use Plan** in collaboration with Wisconsin DNR and communities. The 2020-2035 Forest Land Use Plan considers fuel reduction, encourages forest health through proactive measures such as pests, and promotes awareness of wildfire risks. Firewise practices, such as maintaining the home ignition zone, fire-resistant building materials, and composting, can target areas most at risk of wildfire. Residents and visitors can all benefit from fire prevention messaging, increased awareness of burning permits, etc. Though rarely used, Eau Claire County can restrict trail use and logging within County Forest lands during Extreme (Red Flag warning) wildfire conditions and can limit campfires within the County Forest and campgrounds. The County is maintaining Chaney Road within the County Forest, in part, due to its importance in providing access should a wildfire occur.

During municipal meetings and discussions with Fire Department personnel, **access for emergency vehicles** was a moderate concern for wildfires and other emergencies, especially on private roads and driveways in lake or resort areas. Some private roads/driveways in the County do not have adequate

clearance and/or cannot support larger emergency vehicles. Longer, dead-end roads also exist that can complicate access and evacuation, especially if pull-offs and turn-arounds are not adequate for larger equipment. Access can be further complicated by gated driveways or other obstructions and seasonably wet roads that can make access difficult or unwise. All of these conditions, especially if signage is inadequate, can result in slowed emergency response, unsafe working conditions for firefighters, and dangerous conditions during evacuations.

When surveyed, no fire departments noted specific wildfire equipment needs, though multiple volunteer departments expressed **challenges in attracting and retaining enough volunteers**, especially given mandated training. The manpower needs can be especially acute during daytimes hours when many firefighters are employed outside the community.



Only the Fairchild Fire Protection District identified a dry hydrant need; the dry hydrant at Fairchild Pond is cracked and in need of repair or replacement. However, this was mentioned as a need for a number of areas in the previous plan updates—Town of Fairchild on CTH "H" (would service 50+ sites), southern parts of the Town of Union, Town of Brunswick, and potentially the Lake Altoona area in the Town of Seymour.

General equipment needs identified by fire departments include emergency power generators and aging larger vehicles. Township Fire noted that a new engine costs more than $1 million today and Fairchild Fire specifically identified a need for a new pumper. A few departments have encouraged **more public education** on wildfire and flood risks, as well as the importance of maintaining the visibility of fire/address signs and housing numbers.

Risks for Individual Plan Participants – Wildfire

Overall, the risk of wildfire for the participating cities and villages is low given that most tree-lined street are hardwood and larger stands of forest or large grassland areas do not exist. **Appendix K** compiles Hazard Mitigation Sub-Plans for each city and village within Eau Claire County and includes a summary of current wildfire mitigation activities in each community. These sub-plans identify wildfire vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County.

All participating cities and villages currently have good well capacity and storage for fire protection, though some noted that an additional water tower may be needed in the future if significant new development or a heavy water user (e.g., food processing manufacturer) occurs.

vi. EXTREME HEAT

Defining the Hazard - Extreme Heat

In contrast to other natural hazard events, the occurrence and impacts of extreme heat are often more difficult to recognize. **Extreme heat** is the combination of very high temperatures and exceptionally humid conditions. The probability of exceeding 89°F in any given year is high, but temperatures are not the only determinant of the impacts of heat. Other factors include humidity, duration, and timing of each extreme heat event. The National Weather Service issues the following heat-related announcements and advisory warnings in order of severity:

Extreme Heat Outlook Statement — Issued two to seven days in advance of when Heat Advisory or Excessive Heat Warning conditions are anticipated. Issued as a Hazardous Weather Outlook (HWO). Broadcasted on NOAA All Hazards Weather Radio and posted on NWS websites (www.weather.gov).

Heat Advisory — Issued six to 24 hours in advance of any 24-hour period in which daytime heat index (HI) values of 100 degrees or more and/or when air temperatures are expected to be 95 degrees or higher. If four consecutive days of these conditions are expected, then the Excessive Heat Warning will be issued.

Excessive Heat Watch — Issued generally 12 to 48 hours in advance of any 24-hour period in which daytime heat index (HI) values are expected to be 105 degrees or higher and nighttime HI values will be 75 degrees or higher.

Excessive Heat Warning — Issued six to 24 hours in advance of any occurrence of a 48-hour period in which daytime heat index (HI) values are expected to be 105 degrees or higher and nighttime HI values will be 75 degrees or higher.

If such conditions persist for a prolonged period of time, it is called a **heat wave**. Excessive or extreme heat is typically a slowly evolving phenomenon that can catch many people by surprise. Unlike tornados or thunderstorms that normally develop and occur more quickly and with more observable characteristics, a heat wave typically builds slowly over time. Because of this creeping effect, it is important for forecasters and officials to be constantly aware of heat and humidity conditions in order to properly warn and protect citizens.

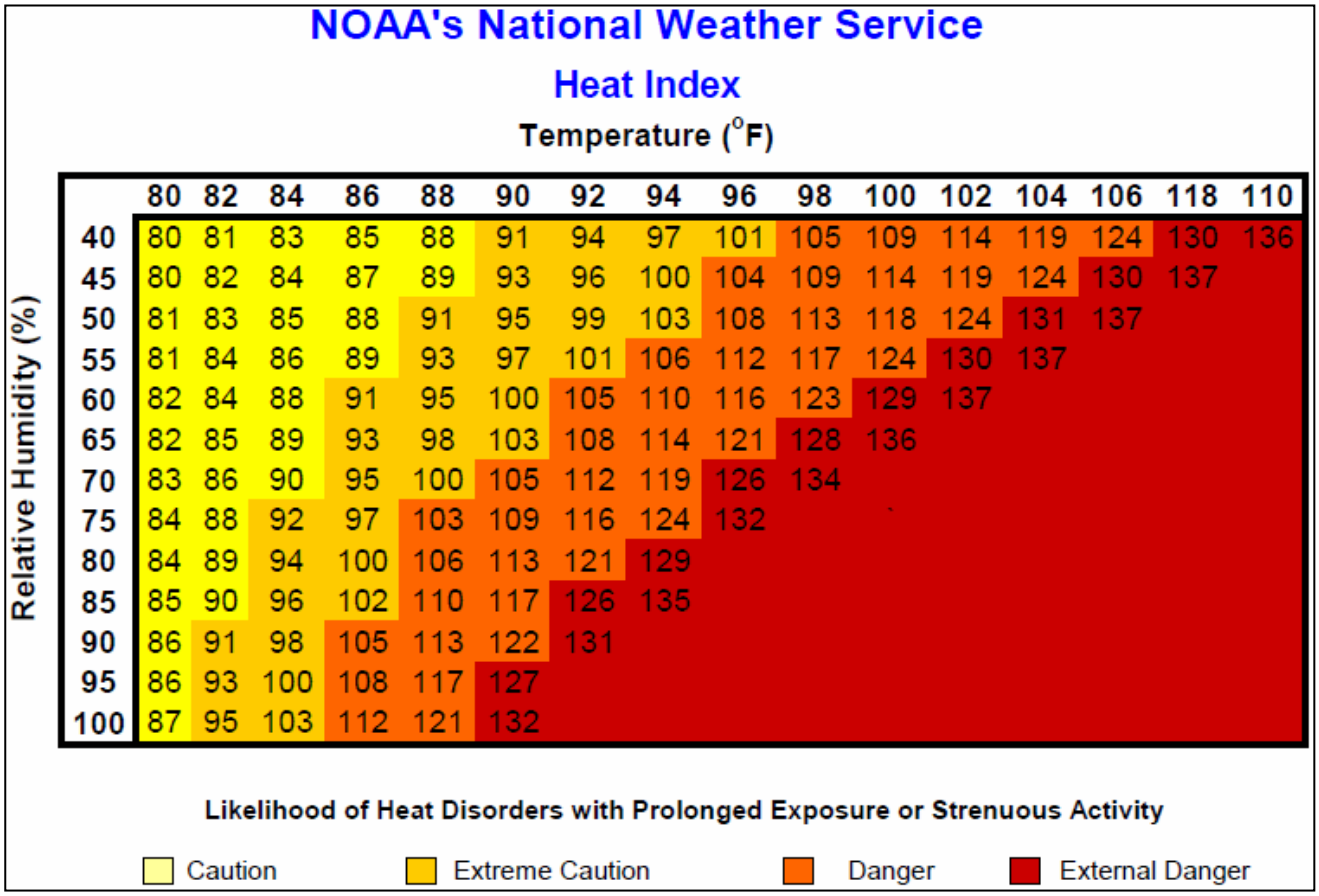
Hazard Location

Extreme Heat is capable of causing health concerns, especially for vulnerable populations. There are no geographic boundaries of locations within Eau Claire County uniquely affected by extreme heat events. All Eau Claire County jurisdictions are equally at risk of experiencing an extreme heat event. Generally, extreme heat events are regional and will not impact assets outside of the heat event, although they will place additional pressure on medical services.

Hazard Extent (Potential Intensities)

Heat waves usually consist of high temperatures and high relative humidity. The combination of high temperatures and high relative humidity makes it difficult for the human body to dissipate heat through the skin and sweat glands. Sweating will not cool the human body unless the water is removed by evaporation. High relative humidity retards evaporation and, thus, inhibits the cooling process. The National Weather Service (NWS) uses the heat index as a measure of the combined effects of high temperatures and high relative humidity, as shown in **Figure 28**.

Figure 28. Heat Index Table



SOURCE: NATIONAL WEATHER SERVICE

As indicated, the heat index is a function of the actual temperature and the relative humidity. The categories in light orange, dark orange, and red indicate when the heat index values are of concern and precautions should be taken limiting sun exposure and physical activity.

Any time the temperature and humidity combine to produce a heat index that could cause health concerns for humans, the National Weather Service will issue various statements on heat conditions. For example, the NWS issues "Heat Advisories" when it expects the daytime heat index to equal or exceed 105° for 3 hours or more and the nighttime heat index equals or exceeds 80° for any 24-hour period. The NWS issues "Excessive Heat Warnings" when it expects the daytime heat index to equal or exceed 115° for 3

hours or more and the nighttime heat index equals or exceeds 80° for any 24-hour period. The NWS may issue an "Excessive Heat Watch" 24 to 8 hours in advance of anticipated heat wave conditions.

Event History – Extreme Heat

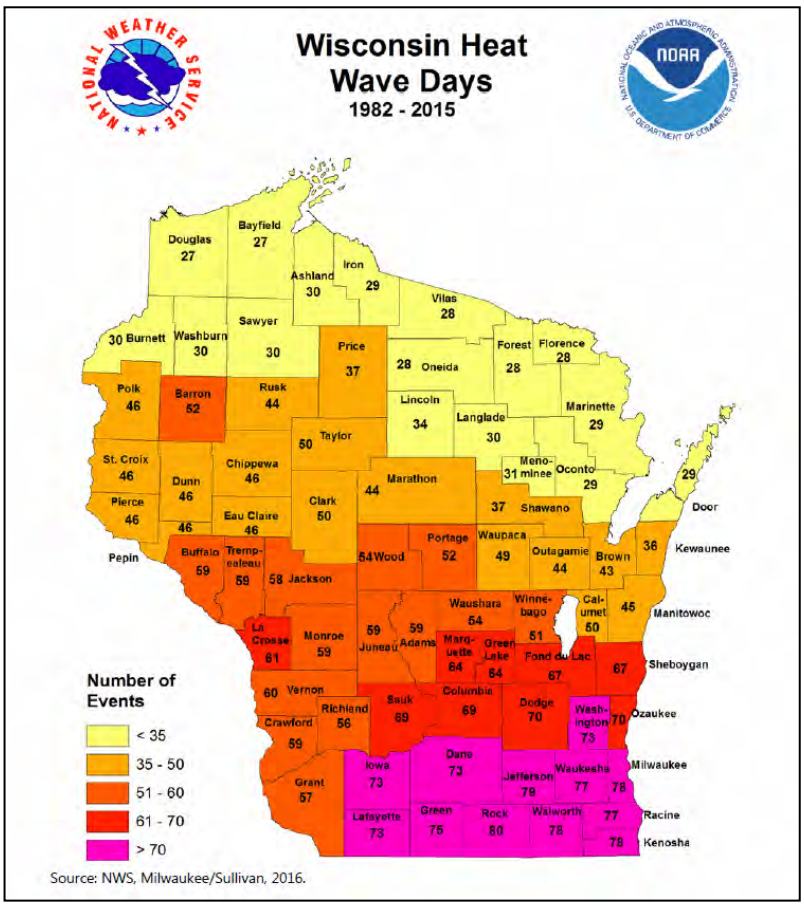
Regional Trends

Heat is the number one weather-related killer in the United States and Wisconsin. From 1979 to 1999, excessive heat exposure caused 8,015 deaths in the United States. During this period, more people died from extreme heat than from hurricanes, lightning, tornados, floods, and earthquakes combined.

Although Wisconsin may not be thought of as a high-risk area for deadly heat waves, every year the State of Wisconsin experiences a period or series of periods in which the temperature and humidity produce a heat index which could be harmful to human health. From 1982 to 2015, there were 137 deaths directly attributed to heat in Wisconsin and 102 indirect deaths. A death is considered direct if the medical examiner ruled that heat was the primary cause of death and not just a contributing factor. Department of Health Services identified 22 heat-related deaths from 2016 to 2022 (no breakdown or direct versus indirect). In total from 1982 to 2020, 261 people have died in Wisconsin from heat-related causes. It is likely that this estimate is lower than the actual number given the difficulty of determining and tracking heat-related deaths.

The following are examples of recent heat wave events affecting Wisconsin:

- During the summer of 1995, two heat waves affected most of Wisconsin. Together, they resulted in 154 heat-related deaths and an estimated 300 to 400 heat-related illnesses. This makes the combined 1995 summer heat waves the biggest weather-related killers in Wisconsin for the past 50 years, far exceeding tornado deaths. Nationwide, the heat waves claimed 1,021 lives.
- In 1999, heat waves occurred on in multiple weeks of July. Collectively, these heat waves were directly and indirectly responsible for 21 deaths.
- Several heat waves from mid-July through early August 2001 claimed 15 fatalities across



Source: NWS, Milwaukee/Sullivan, 2016.

Wisconsin. Additionally, it is estimated that 300 or more individuals were treated at hospitals for heat-related conditions.

- There were an additional 21 heat-related deaths and likely hundreds of related illnesses in July 2012, with heat indices peaking in the 100º to 115º F range, especially in the southern parts of the Wisconsin.
- In July of 2016, hot temperatures and very high dew point temperatures persisted over southern Wisconsin; the area saw heat index values in the lower to mid-100s. There were 3 heat-related deaths in 2016.

Eau Claire County Trends

From 1993 through 2023, Eau Claire County has experienced eight extreme heat events shown on **Table 19**, though the 1999 and 2001 events could be considered part of a single heat wave lasting multiple days.

Table 19. Eau Claire County Extreme Heat Events – 1993-2023

Date	Type	Deaths	Injuries	Property or Crop Damage
7/23/1999	Heat	0	0	No damages reported
7/29/1999	Heat	0	0	
7/31/2001	Heat	0	0	
8/01/2001	Heat	0	0	
8/04/2001	Heat	0	0	
7/31/2006	Heat	0	0	
7/18/2011	Excessive Heat	0	0	
7/20/2016	Excessive Heat	0	0	

source: National Climatic Data Center (NCDC), 2023.

As shown in Table 19, the NCDC database records did not identify any deaths or injuries from excessive heat events within Eau Claire County, though deaths and injuries often go unreported to the database.

The NCDC data does not reflect recent community and stakeholder perceptions and experiences when it comes to extreme heat events. While still a relatively lower risk compared to the other natural hazards of significant risk, extreme heat was frequently mentioned as a growing concern during plan update meetings and stakeholder interviews. This is consistent with the National Risk Index estimate of 0.7 extreme heats for Eau Claire County per year, which is much more frequent than the NCDC data suggests.

Hazard Probability - Extreme Heat

The Plan Steering Committee rated extreme heat as a moderate probability and vulnerability in Eau Claire County and of growing concern. Based on the NCDC data, FEMA's National Risk Index, and the weather-pattern changes discussed in Section III.C., it is estimated that **Eau Claire County will experience an extreme heat event once every 1.5 to 2 years on average, with a single event potentially lasting multiple days.** However, the frequency of these events is anticipated to increase and this probability estimate should continue to be re-assessed as part of future mitigation plan updates.

Vulnerability Assessment - Extreme Heat

Appendix F provides the following regarding the potential impacts of extreme heat events for Eau Claire County as a whole:

- A description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- A description of the vulnerability of each community lifeline for this hazard; and
- The potential consequences or impacts to the above assets and community lifelines.

The following assets were identified as having the greatest vulnerability in Appendix F:

- **Seniors, people with certain illnesses or medications, and children (especially newborns)** are most vulnerable to extreme heat.
- **Homeless populations**.
- **Populations residing in older structures and mobile homes** may lack sufficient air conditioning/HVAC systems or insulation. Campground facilities may also lack sufficient cooling stations.
- **Infrastructure.** Certain types of infrastructure can be impacted directly or indirectly by extreme heat. Direct impacts can include disruption of biological processes at wastewater treatment facilities, the "softening" or buckling of roadways, increased mechanical failure, water supply shortages (during times of drought), or the sagging of electrical transmission lines. Indirect impacts can include the power brownouts due to spiking demands for electricity. Rail lines are built with sufficient flexibility to accommodate the stresses related to most extreme heat, though buckling immediately in advance of fast-moving trains can occur. During extreme heat events, train speeds may be reduced and additional track department patrols may be ordered.
- **Agriculture, especially livestock.** In July 2012, Green Bay-area dairy farmers were reporting up to a 33 percent reduction in milk production due to heat; and it can take months before animals recover.[36] Extreme heat can also have long-term livestock reproductive and herd size management issues. Within confined livestock buildings, heat can also result in deaths, especially should power be lost, which has occurred in the region when a generator failed. Extreme heat and drought can also result in the build-up of toxic gases within grain silos to lethal levels or result in fires or explosions. will be later discussed.
- **Hazardous Materials**. Certain chemicals, gases, and other hazardous materials can be impacted by extreme heat resulting in a release, fire, or explosion. Care must be used to properly store these materials during extreme heat events.

Due to its largely rural development pattern and smaller cities, Eau Claire County is not as vulnerable to the urban heat island effect experienced by residents in larger urbanized areas. This was a factor in the large number of heat-related deaths in Milwaukee County in 1995. Concentrations of buildings can disrupt the cooling and moderating influences of winds. And large areas of concrete and asphalt retain

[36] http://www.wbay.com/story/19037284/2012/07/16/milk-production-takes-a-dip-with-extreme-heat

heat. Large numbers of heat sources in urban areas are typically a secondary factor. However, other factors also influence a population's vulnerability to extreme heat.

Assessing the Potential Vulnerability & Impacts to County Residents

Temperatures in excess of 90°F pose a risk of heat-related illness and death, especially when humidity levels exceed 35 percent. The risk is highest for individuals who are suffering from chronic illnesses and for those who are not acclimated to these conditions. Most health-related illnesses involve the elderly, especially those residing in urban areas for which temperatures can be further elevated due to the urban heat island effect. However, people on certain medications, isolated individuals who live alone and seldom leave their home, infants and young children, persons with chronic heart or lung problems, overweight people, persons with disabilities, and people who work outside are also at greater risk during extreme heat events. Research findings strongly suggest that heat index values of 90 to 105 make sunstroke, heat cramps, and heat exhaustion possible with prolonged exposure and/or physical activity. Heat index values of 105 to 130 degrees make sunstroke, heat cramps, and heat exhaustion likely with prolonged exposure and/or physical activity. Shown in **Table 20** are the potential dangers associated with heat index temperatures.

Table 20. Apparent Temperature Heat Stress Index (Dangers Associated with Heat Index Temperatures)

Category	Apparent Temperature (Heat Index - °F)	Associated Dangers
Caution	80-90°F	Exercise more fatiguing than usual.
Extreme Caution	90-105°F	Heat cramps, exhaustion possible.
Danger	105-130°F	Heat exhaustion likely; heatstroke possible.
Extreme Danger	Greater than 130°F	Heatstroke or Sunstroke imminent.

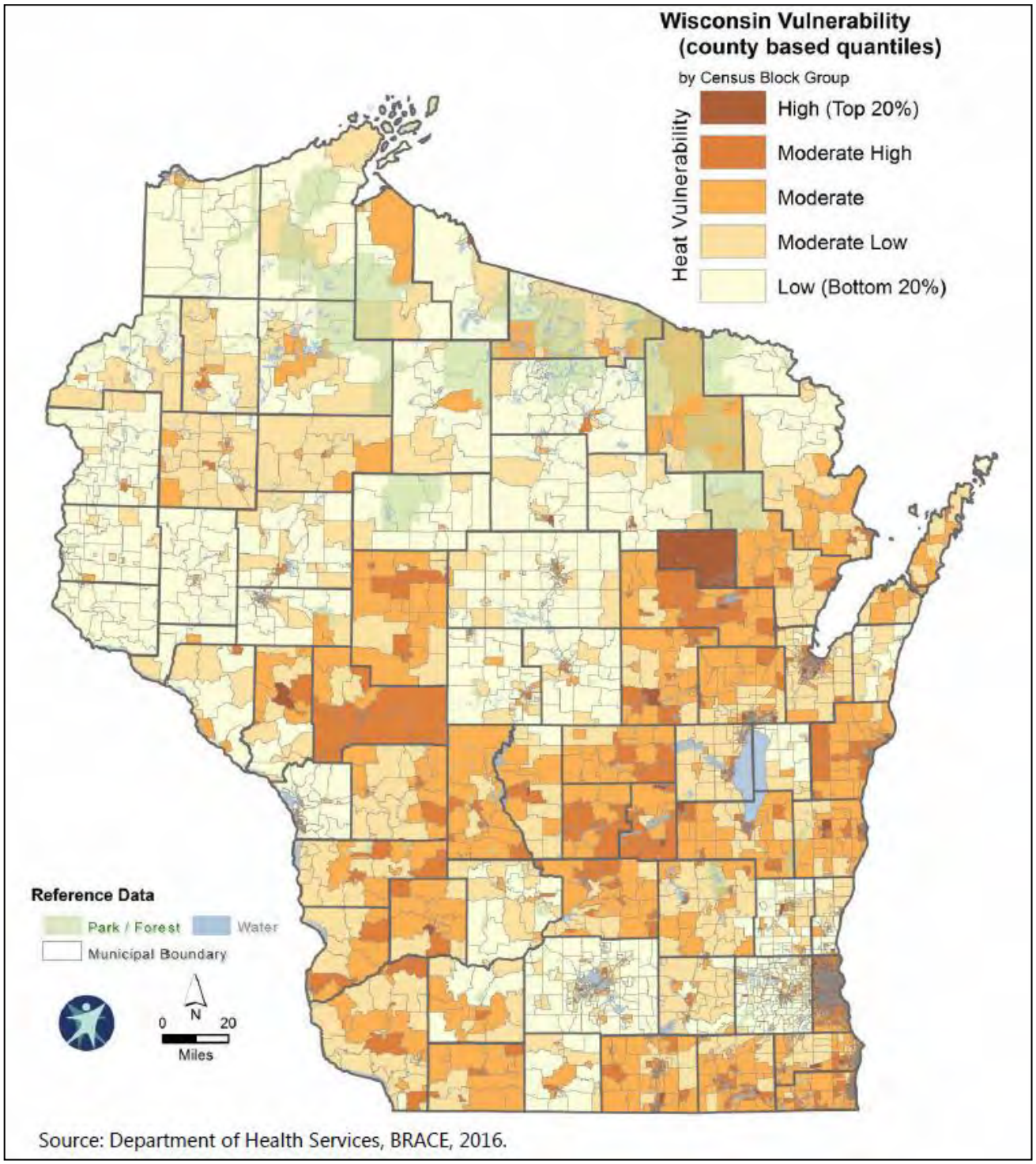
Source: National Weather Service

Heat cramps are muscle spasms from the result of a large amount of salt and water, and generally cease to be a problem after acclimatization. **Heat exhaustion** may cause dizziness, weakness, nausea, or fatigue from the depletion of body fluids, and may be accompanied by slightly to moderately elevated body temperatures. **Heatstroke** is when the body is unable to regulate and prevent a substantial rise in the body's core temperature. It is usually diagnosed when the body's temperature exceeds 105º F due to environmental temperatures. **Sunstroke** is a form of heatstroke brought about by excessive exposure to the sun. Heatstroke or sunstroke are considered medical emergencies and can be fatal. The risk of heat-related injury or death is for individuals who are suffering from chronic illnesses and for those who are not acclimated to these conditions. Most health-related illnesses involve the elderly. However, people on certain medications, isolated individuals who live alone and seldom leave their home, infants and young children, persons with chronic heart or lung problems, overweight people, persons with disabilities, homeless individuals who do not have an air conditioned place to go, and people who work outside are also at greater risk during extreme heat events. Mobile homes, campers, pole buildings, and similar construction, if not air conditioned, can also become dangerous under extreme-heat conditions.

The Building Resilience Against Climate Effects (BRACE) program in the Wisconsin Department of Health Services has compiled a heat vulnerability index map for the State based on a combination of risk factors (population density, health factors, demographic and socioeconomic factors, and the natural and built environment). **Figure 29** shows the heat vulnerability index map for Wisconsin. The vulnerability

for most of Eau Claire County was primarily rated low with some areas rated as moderate low, likely due to lower average incomes and/or an aging population.

Figure 29. Wisconsin Heat Vulnerability Index



Projected Loss Estimates

FEMA National Risk Index (NRI) Estimated Annual Losses

FEMA's NRI provides a source of estimated annual losses (EALs) for Eau Claire County with a heat wave hazard.

Risk Factor	Heat Wave
EAL Rate – Population	1 per 2.74m
EAL Rate – Buildings	$1 per $57.85m
EAL Rate – Agriculture	$1 per $26.59k
Total EAL	$451,739
Exposure	$1.2 trillion
Events per year	0.7
Historic loss ratio	Relatively Low
Overall Loss Score	80.2 (Relatively Moderate)

Out of eleven hazard types for Eau Claire County, heat wave is the sixth highest in expected annual losses with a value of $451,739, primarily due to the estimated losses to agriculture. Based on Eau Claire County's 2020 population of 105,710 and the above EAL rate, one County resident will be seriously injured by extreme heat about once every 26 years.

Other Factors Influencing Future Losses

1. Population growth and new development. As the population increases and ages, it is only natural that the exposure to extreme heat events will also increase. As previously noted, urban areas can experience an urban heat island effect, which would increase as more development and hardscape (e.g. buildings, concrete sidewalks and parking lots, asphalt roads and driveways) occurs. A significant urban heat island effect is not anticipated to occur in Eau Claire County.
2. Long-Term Weather Pattern Changes. As noted previously, the probability of extreme heat events is projected to increase.
3. Preparedness & Mitigation. Section III.C. discusses some potential adaptation strategies to mitigate extreme heat. The 2024 Plan Steering Committee also recognized the potential of extreme heat events occurring during a period of power outage, which is discussed further in the *Long-Term Power Outage* section.
4. Access to Cooling Centers or Emergency Shelters. During the 2024 Plan update, there was increased interest in identifying cooling centers or emergency shelters with emergency power generators compared to previous mitigation plans. Most communities lack such centers or, in other cases, local officials were unaware if a shelter has been designated. Most of these places lack an emergency generator.

Cooling/Warming Centers & Emergency Shelters

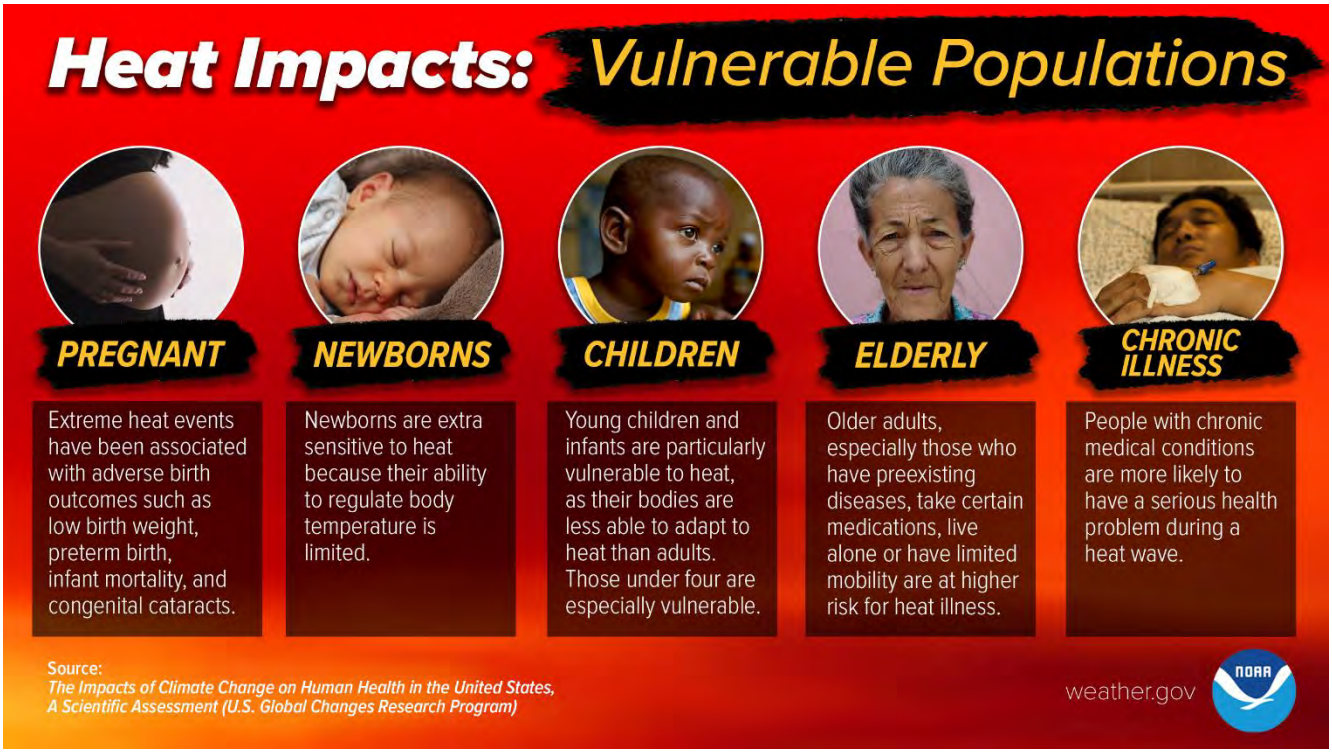
The Eau Claire City-County Extreme Heat & Extreme Cold Plans define **cooling/warming centers** as places where people can temporarily go during extreme weather or power loss events with few additional supportive services, such as malls, libraries, and community centers. The Plan recommends that a list of cooling and warming centers is maintained, but has not yet been formalized. Red Cross maintains a list of **emergency shelters** if overnight accommodations and basic services are needed.

Risks for Individual Plan Participants - Extreme Heat

All individual plan participants in Eau Claire County (i.e. villages, cities, educational institutions, electric cooperatives) are equally at risk of experiencing an extreme heat event. The potential impacts, in general, are also shared, though vulnerability increases based on the density of the population, type of development, etc. Vulnerabilities can also differ based on factors such as socio-economic characteristics.

During meetings with cities and villages, no unique risks or vulnerabilities related to extreme heat were identified, with the possible exception of homeless populations in the cities of Eau Claire and Altoona. Mobile homes without air conditioning were identified as a special concern since temperatures within these structures can more easily rise to dangerous levels compared to more conventional stick-built construction. Augusta offers the Senior Center as a cooling center and public libraries are available when open. No cooling centers have been formally designated in Eau Claire County. It is important that such center and, especially, longer-term emergency shelters have emergency power generation if possible.

Appendix K compiles sub-plans for each city and village within Eau Claire County and educational institution sub-plans are included in **Appendix L**. <u>These sub-plans identify extreme heat vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County.</u>



vii. DROUGHT

Defining the Hazard - Drought

A **drought** is an extended period of unusually dry weather which may be accompanied by extreme heat (temperatures which are ten or more degrees above the normal high temperature for the period). Drought conditions may vary from below normal precipitation for a few weeks to a severe lack of normal precipitation for multiple months.

There are two basic types of drought in Wisconsin—agricultural and hydraulic. **Agricultural drought** is a dry period of sufficient length and intensity that markedly reduces crop yields. **Hydraulic 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. Soil types greatly influence agricultural drought risk. Some sandier, well-drained soils experience drought-like effects almost annually and can experience the lowest yields when a true drought is declared.

Hazard Location

Droughts can occur in all areas throughout the State, including areas with high and low average precipitation. Healthy soils allow more water to infiltrate and retains more moisture, enabling it to effectively absorb extreme rainfalls as well as support crops during droughts. Soil texture refers to the feel of soil; soils are made up of different amounts of sand, silt, and clay. A loamy soil is one that combines all three of these types of particles.

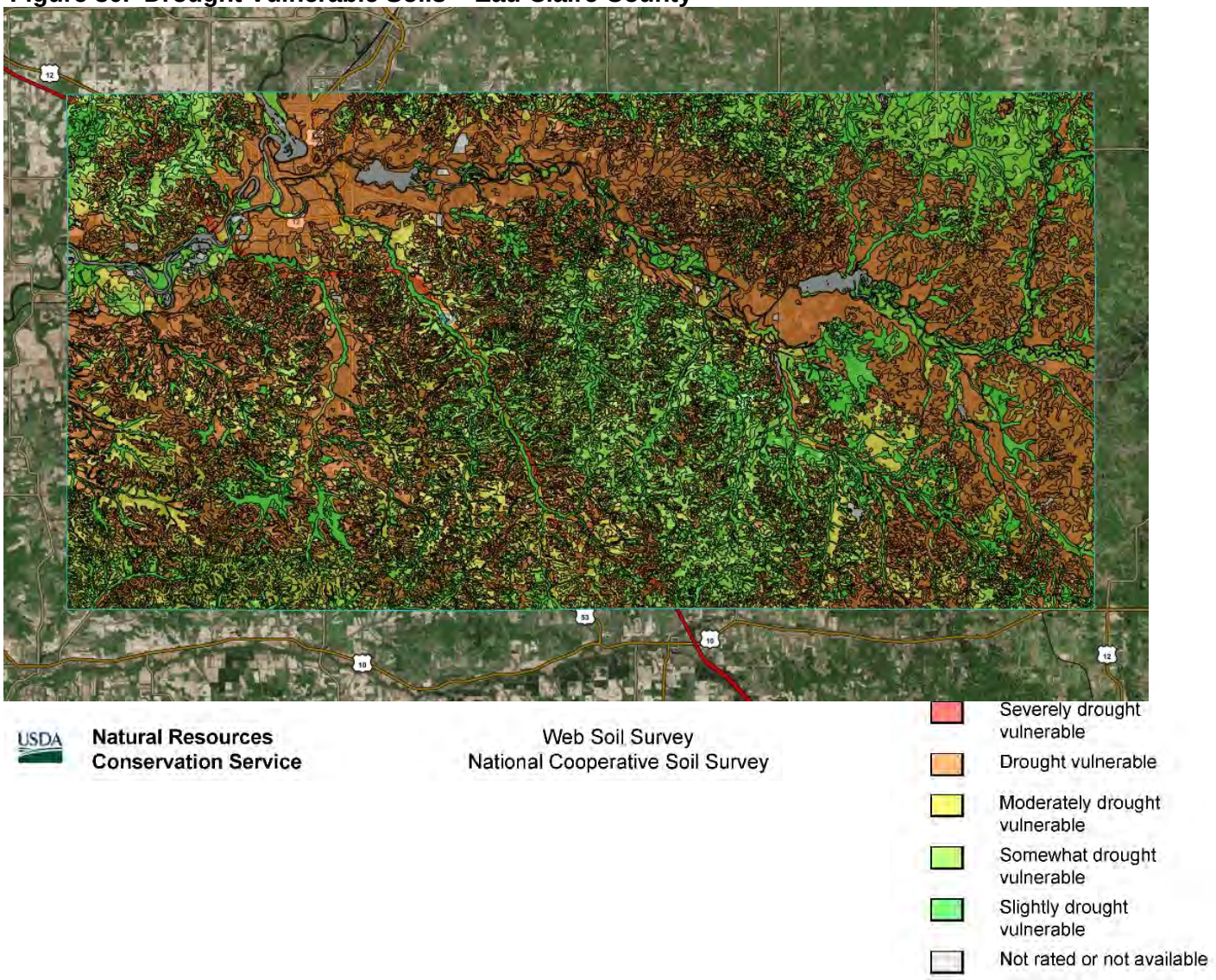
- Sandy soils have the largest particle size, which allows water to drain quickly. This causes water to drain out faster. These soils have low water holding capacity and struggle to retain enough water for good crop growth.
- Silty soils have medium-size particles, providing better water retention than sandy soils. During drought periods, they can retain more water than sandy soils.
- Clay soils have small fine particles and a higher water holding capacity. During extreme heat, clay soils can retain moisture relatively well.

Figure 30 and the table below show that the soils of Eau Claire County have some drought vulnerability, **though no soils are severely vulnerable**:

Drought Rating	% of Soils	Soil-Drought Characteristics
Slightly vulnerable	12.9%	typically low-lying areas with near-surface water
Somewhat vulnerable	19.5%	annual precipitation generally adequate for plant growth)
Moderately vulnerable	22.2%	some water stress in an average year
Drought vulnerable	43.6%	drought generally occurs every year
Severely vulnerable	0.0%	plants must be very drought tolerant even in normal years
Not rated	1.8%	e.g., lakes, rivers

Comparing this map with the previous ***Wildfire*** section maps will yield similarities since drought-prone, sandier soils in the County have more coniferous vegetation and there is less soil moisture for plants during times of drought.

Figure 30. Drought Vulnerable Soils – Eau Claire County



Hazard Extent (Potential Intensities)

The **Palmer Drought Severity Index (PDSI)** utilizes several factors (i.e., temperature, soil moisture, and precipitation) to calculate the magnitude of the drought conditions. The results of the algorithm range from -4 (extreme drought) to 4 (extremely moist); 0 represents normal historical conditions. Categories of drought are as follows:

- **D0: Abnormally Dry**
  - Going into drought:
    - Short-term dryness slowing planting and growth of crops or pastures
  - Coming out of drought:
    - Some lingering water deficits
    - Pastures or crops not fully recovered

- **D1: Moderate Drought**
  - Some damage to crops and pastures
  - Streams, reservoirs, or wells low, some water shortages developing or imminent
  - Voluntary water-use restrictions requested
- **D2: Severe Drought**
  - Crop or pasture losses likely
  - Water shortages common
  - Water restrictions imposed
- **D3: Extreme Drought**
  - Major crop and pasture losses
  - Widespread water shortages or restrictions
- **D4: Exceptional Drought**
  - Exceptional and widespread crop and pasture losses
  - Shortages of water in reservoirs, streams, and wells creating water emergencies

The index is effective at determining drought over a period of months, but less effective over shorter timeframes. The index for Eau Claire County is provided in **Figure 31** on the following page.

The relative severity and geographic extent of drought impacts on crops can also be described in terms of different State and Federal designations:

- State or Governor Drought Emergency or Disaster Declaration
- USDA Secretarial Disaster Declaration
- Presidential Emergency or Disaster Declaration

The above declarations may be limited to the primary counties affected by the drought or may also include contiguous counties that are less impacted, but may also be eligible for financial assistance.

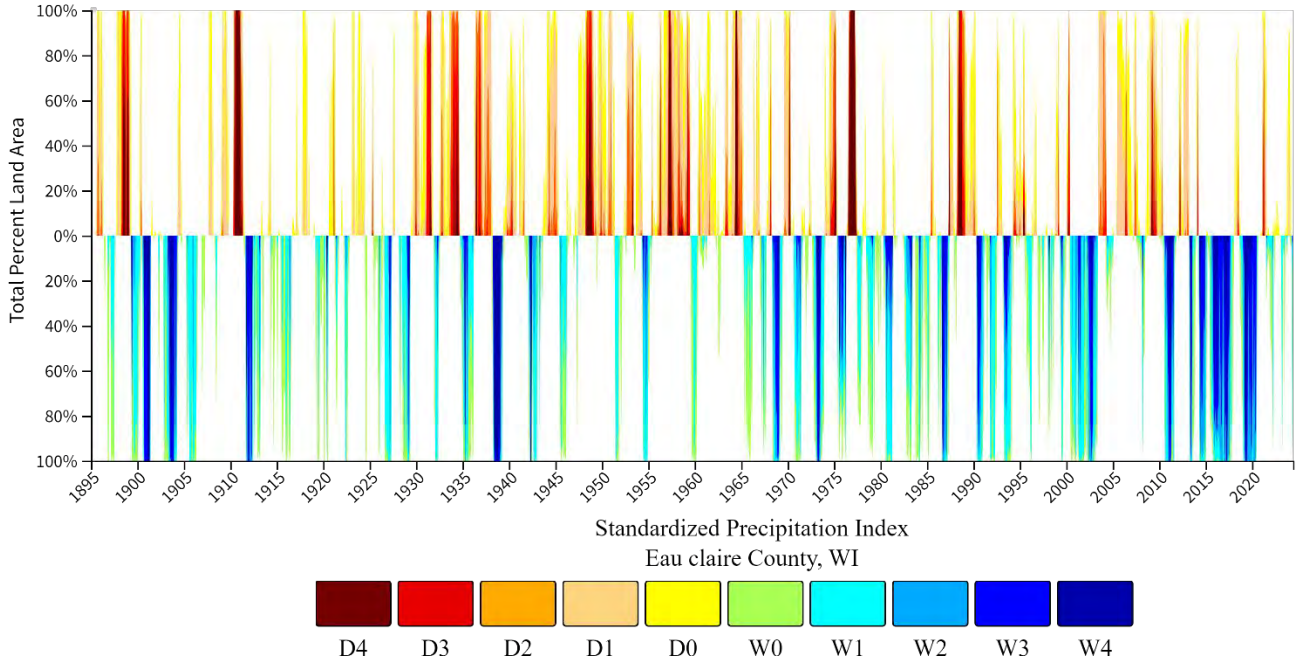
Event History - Drought

Regional and Local Events

Drought is a relatively common phenomenon in Wisconsin and has occurred statewide in 1895, 1910, 1939, 1948-1950, 1955-1959, 1976-77, 1987-1989, 2003, 2005, and 2006-2007. The drought of 1929-1934 (Dust Bowl Years) was probably the most significant in Wisconsin history, given its duration; some of areas of the State experienced drought effects until the early 1940s. Additional information on these historic droughts can be found in the *State of Wisconsin Homeland Security Council Threat & Hazard Identification and Risk Assessment (THIRA)*, most recently amended in 2021.

As shown in **Figure 31**, recorded years of severe drought for Eau Claire County have occurred with exceptional drought conditions reported in 1898, 1910, 1948, 1959, 1976, 1987 and others. Severe drought for Eau Claire County also occurred in 2009.

Figure 31. Eau Claire County Drought Severity Index (1895-2024)



D4	Exceptional Drought Conditions	W4	Exceptional Wet Conditions
D3	Extreme Drought Conditions	W3	Extreme Wet Conditions
D2	Severe Drought Conditions	W2	Severe Wet Conditions
D1	Moderate Drought Conditions	W1	Moderate Wet Conditions
D0	Abnormally Dry Conditions	W0	Abnormally Wet Conditions

The table below shows the State and Federal Drought Emergency Declarations involving Eau Claire County for which financial assistance was provided:

Crop Year	Declaration Type
1976	Federal Drought Area Declaration under the Disaster Relief Act
2003	State Drought Emergency Declaration
2005	State Drought Emergency Declaration
2006	State Drought Emergency Declaration
2007	State/USDA Drought Disaster Declaration
2009	State Drought Emergency Declaration
2012	State Drought Emergency Declaration

1970s-1980s Droughts

A Presidential Emergency Declaration was issued for the statewide drought in 1976, during which agricultural losses in the State were estimated at about $2.7 billion in today's dollars and some private wells in western Wisconsin dried up. Point wells in certain areas of the region also dried up during the drought of 1988-1989, and agricultural losses in the State were estimated at approximately $2.6 billion.

The 1987-1989 drought not only had below-normal precipitation, but also was characterized by persistent dry air and above-normal temperatures. Heatwaves killed an estimated 5,000 people nationwide and contributed to high livestock loss. An estimated 52% of Wisconsin's 81,000 farms had crop losses of 50% or more, with 14% of farmers suffering losses of 70% of more.

2003-2013 Droughts

Until 2000, drought conditions have been impacting corn and soybean yields to some degree in the County about once in every five to seven years. However, beginning about 2003, northern Wisconsin experienced a lengthy period of drought conditions with serious impacts to agricultural producers and hydraulic levels of surface and ground waters. As shown in the previous table, a number of emergency declarations were issued during this period. Water levels in the region's many seepage lakes dropped precipitously, leaving some docks dry, increasing water temperatures, and exacerbating water quality concerns. Some municipalities instituted municipal water system use restrictions during the summer months. As a result, the Governor issues State of Emergency drought declarations, which included Eau Claire County, during five of the ten years between 2000 and 2010.

Summer 2010 brought some significant relief from the region's drought conditions, as a new record for the average statewide summer rainfall was established (18.65 inches). In June through September 2010, northwest Wisconsin experienced total monthly rainfall amounts of about two inches or more above the mean in each of these four months. Though the rainfall provided relief for agricultural crops, water levels in many surface waters remained below average and monthly rainfall amounts were still below average for six of the months of the year.

However, a nearly statewide drought would again impact Eau Claire County during the 2012 summer and fall seasons, resulting in reduced crop and alfalfa yields. As feed costs rose, some farmers were forced to sell-off some livestock. There were many reports of wells in Wisconsin running dry and some well depths had to be increased in order to find water. The drought was generated by a large, warm blocking high pressure in the upper levels of the atmosphere which was centered over the middle of the nation in May and June. Part of this high pressure expanded north into the western Great Lakes region in July, forcing storms to stay mostly north of Wisconsin as the summer progressed. The drought started across the southern third of counties in June and steadily expanded north during July and August. Eventually, the southern two-thirds of the state was in severe (D2) to extreme (D3) drought status. The drought continued into December, thanks to a very dry November.

2022-2024 Drought

While Eau Claire County was less impacted than some areas of the region, a period of drought expanded and intensified in Summer 2023, largely influenced by not only lack of precipitation, but extreme heat and evaporative demand. This drought period was very unusual since Wisconsin experienced the wettest January-April on record, followed by the 4th driest May-August, a wet October, then the 8th dried November on record. These large swings in precipitation was a challenge for crop farmers. The drought period would "break" with above average precipitation in May 2024, though near-drought conditions would return later in the year.

Hazard Probability - Drought

The Plan Steering Committee rated drought probability as being of some (below moderate) concern in Eau Claire County, with some vulnerability. **Based on the severe drought years since 1970, a severe, countywide or regional drought year can be anticipated once every 5-7 years on average, with events often occurring in subsequent years. As the previous soil information notes, some areas of the County can be expected to experience an agricultural drought on an annual or near annual basis.**

As discussed in Section III.C., research from the Wisconsin Initiative on Climate Change Impacts[37] (WICCI) shows that annual precipitation in Eau Claire County has been increasing since 1950, though most of these increases have been occurring during the winter months. Concurrently, Eau Claire County's average annual temperatures have increased by around 4ºF since 1950. WICCI has projected that Eau Claire County's climate will continue to become much wetter overall, but perhaps slightly drier during the summer months, with significantly higher temperatures. As such, the probability and severity of future droughts may increase, but there is insufficient data available at this time to be definitive.

Vulnerability Assessment - Drought

Appendix F provides the following regarding the potential impacts of extreme heat events for Eau Claire County as a whole:

- A description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- A description of the vulnerability of each community lifeline for this hazard; and
- The potential consequences or impacts to the above assets and community lifelines.

The following assets were identified as having the greatest vulnerability in Appendix F:

- **Agricultural crops and the agricultural economy** are the greatest drought vulnerabilities in Eau Claire County. As will be later discussed, drought can impact other aspects of farming.
- **Groundwater supply for private and municipal wells can decrease**, though this has not been a recent concern. Some private wells dried up within the region in 1976 and 1988. Under such circumstances, wells may be re-drilled at significant cost; or a farmer whose livestock relied on a pond in the past may have to install a well and pump to provide water for stock. Water use bans during dry periods are still occasionally instituted in some cities and villages with municipal water systems.
- **Surface water levels may decrease, impacting recreation and water quality.** This was a significant concern for some of the County's seepage lakes in the early 2000s. No experiences or concerns with drought-related decreases in surface waters for hydroelectric power or industrial consumption were identified during the process.

[37] Wisconsin Initiative on Climate Change Impacts website: www.wicci.wisc.edu

- **The potential for wildfire increases dramatically**. Drought conditions can also stress forest vegetation, making it more vulnerable to certain pests and diseases.

Projected Loss Estimates

Overview of Potential Agricultural Losses



Drought can impact parts or all of Eau Claire County's agricultural base. The agricultural overview in Section II.C.iv. discussed and quantified the importance of agriculture to Eau Claire County's economy and the potential market value of the crops at risk.

In general, for Wisconsin, droughts have the greatest impact on agriculture. Even small droughts of limited duration can significantly reduce crop growth and yields, while making crops more susceptible to pests and diseases. More substantial events can decimate croplands and result in total loss. Droughts also greatly increase the risk of forest fires and wildfires because of extreme dryness. The loss of vegetation due to drought can result in flooding, even from an average rainfall.

The vulnerability to agricultural drought is high for Eau Claire County. Crop yields can dramatically decrease; and livestock, especially those kept in close quarters, can experience decreased milk production or even death. Since the severity of drought can vary, determining its financial impacts on crop and livestock operations is difficult.

Table 19 provides an example of how one countywide drought impacted crop yields by comparing crop production for the 2003 drought year against the average production for 1999 to 2004. During the 2002-2003 drought (and related winter kill) in Eau Claire County, soybean yields were up to 47% lower (15.8 fewer bushels per acre) and grain corn yields were up to 16.4% lower (21.8 fewer bushels/acres) than the averages for 1999-2004, excluding 2003.

Table 19. Soybeans & Grain Corn Yields, 1999-2004
Eau Claire County

Year	Soybeans	Corn (grain)
	bushels per acre average	
1999	44	143
2000	41	131
2001	29	129
2002	45	130
2003	23	111
2004	35	131

drought years (2003)

source: USDA-NASS, Agricultural Statistics Database, <http://www.nass.usda.gov>.

At a 2023 average corn price of about $4.40 per bushel, twenty fewer corn bushels per acre would be equivalent to a $88 per acre loss. At $12.40 per bushel for soybeans, the loss of 16 fewer bushels per acre would be equivalent to a $198 per acre loss. Yields can vary greatly by location, with corn yields ranging as high as 200 bushels per acre in some areas to less than 100 bushels per acre in others during drought years. The lowest yields are located in the sandier and lighter soils of the County.

During 2003, hay yields were also below average, driving up hay prices for livestock operators. Farmers will often supplement feed before allowing a drop in milk production due to drought. Additional feed purchases could also vary based on drought severity and length, but $1,500 of additional feed per mature cow is not unrealistic ($1,500 x 32,000 head of cattle = $48 million) resulting in many millions in required supplemental feed for Eau Claire County farmers under a typical, single-season drought event. Such losses are a significant financial hardship, especially for an industry that is struggling overall.

Drought conditions can also result in the build-up of nitrates in feed and silage to levels that are toxic to cattle. In recent years, there have been a small number of cattle deaths in the region due to nitrate toxicity. Extreme heat and drought can also result in the build-up of toxic gases within grain silos to lethal levels or result in fires or explosions. Extreme heat within large, confined livestock buildings has also been a concern in the past resulting in livestock deaths within the region, though no large-scale, animal mass casualty events due to extreme heat have been reported in Eau Claire County.

The far majority of local farmers understand and practice good management to reduce the vulnerabilities associated with drought conditions, but some knowingly take chances. Many farmers carry some type of crop insurance, especially in drought-prone areas. Most farmers also participate in Farm Service Agency programs, which require multi-peril crop insurance and protect losses at average County yields. But such insurance is very expensive, and participation will often increase as the price received for the commodity increases. It is typically not cost-effective to insure low-value crops, such as alfalfa. And for many smaller specialty growers and community-supported agricultural operations, it can be cost-prohibitive to carry crop insurance. In all, only about 28% of cropland operations in Wisconsin have crop insurance according to the 2022 Censes of Agriculture. Further, the demands on crop insurance are increasing and with increasing risks the current insurance system may not be sustainable.

FEMA National Risk Index (NRI) Estimated Annual Losses

FEMA's NRI provides a source of estimated annual drought losses (EALs) for Eau Claire County:

Risk Factor	Drought
EAL Rate – Population	--
EAL Rate – Buildings	--
EAL Rate – Agriculture	$1 per $94.63k
Total EAL	$1,090
Exposure	$21 million
Events per year	3.4
Historic loss ratio	Very Low
Overall Loss Score	23.9 (Very Low)

The NRI table suggests drought impacts in Eau Claire County will largely be limited to agricultural crop losses. The data suggests that three drought events will occur annually, reflecting that some soils of Eau Claire County will experience drought on a near annual basis. Overall, the NRI rates the County's drought vulnerability as very low.

Other Factors Influencing Future Losses

- Agricultural irrigation can help alleviate drought threats, though this is not widely practiced in Eau Claire County. As of February 2025, the Wisconsin DNR reports that 43 high-capacity wells have been permitted for Eau Claire County for agricultural irrigation.
- As surface waters decrease during periods of drought, shoreline areas are more vulnerable to erosion, water temperatures can change, and contaminants and nutrients become concentrated which can further contribute to toxicity, eutrophication, and fish kills.
- Some of the longer-term consequences of rising temperatures and drier summers were discussed previously in Section III.C. on the possible hazard impacts of climate change, such as the loss of cold-water trout streams and further loss of surface waters through increasing evaporation.
- Encouraging agricultural best management practices has the potential to make farmland more resilient to drought. New agricultural technologies may also improve resiliency.

SOIL HEALTH AS A DROUGHT MITIGATION TOOL

Soil health best management practices, such as cover crops and reduced tillage, can improve soil health and make cropland more resilient to drought. Good soil health allows precipitation to infiltrate, thereby increasing moisture in the soil and helping to recharge groundwater.

The conservation of Eau Claire County's farmland soils is important to current and future generations of farmers. Soils that are physically and biologically healthy can produce higher crop yields with fewer external inputs, which is great for the pocketbook.

Healthy soils are also important to the quality of groundwater and surface waters. As precipitation infiltrates, it naturally filters the water. The soils and nutrients stay in place, rather than run-off. Healthy soils reduce erosion, flooding, and pollutant/nutrient loading to surface waters, while increasing the recharge of the groundwater.

Risks for Individual Plan Participants - Drought

All cities and villages in Eau Claire County are equally at risk of a drought event, though some, have areas with soils more susceptible to drought. The availability of municipal water for residents, businesses, and fire protection is the primary drought concern for most incorporated communities.

No cities or villages reported fire protection concerns due to limited groundwater quantity, though additional municipal wells and/or water storage may be needed as growth continues. The participating electrical cooperatives and educational institutions identified no significant drought vulnerabilities; they primarily rely on municipal water systems.

Appendix K provides the sub-plans for each city and village and **Appendix L** provides the sub-plans for participating educational institutions. These sub-plans identify any drought risks and vulnerabilities

specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County. The sub-plans also assess each participant's capabilities to prepare for and mitigate hazards.



viii. LONG-TERM POWER OUTAGE

Long-term power loss in Eau Claire County is most likely to be caused by a natural hazard threat (e.g., winter storms, tornadoes), but can also be the result of an accidental technological failure or purposeful act. For example, Eau Claire County offices experienced a multi-day power outage in 2009 due to an electrical fire. The following pages provide a special analysis of the long-term power outage threat for the County. This approach allows additional attention to this critical threat, while avoiding undue repetition with the other natural hazard assessments sub-sections (i.e., winter storms, tornadoes & high winds).

Defining the Hazard – Long-Term Power Outage



An **electric power outage** (also power failure or power loss) is the loss of the electricity supply to a geographic area. There is no standard definition of a "long-term power outage." For purposes of this Plan, a **long-term power outage (LTPO)** event is an unplanned loss of electrical power lasting more than 48 hours and impacting 500+ customers and/or multiple community lifelines.

A power outage can be described as a blackout if power is lost completely or as a brownout is the voltage level is below the normal minimum level specified for the system. There are varying reasons for a power loss or outage such as a power station defect, damage to a power line, or the overloading of the system. "Load shedding" is a common term for a controlled way of rotating available generation capacity between various districts or customers, thus avoiding total wide area blackouts.

Three natural hazards pose the biggest, longer-term power loss threat: (1) a large ice storm, possibly in conjunction with heavy/wet snow; (2) the high winds associated with unstable summertime weather patterns; or (3) high winds during a blizzard. A large wildfire may also destroy above ground electric infrastructure. However, it is large ice storms that pose the greatest threats due to the potential to affect entire regions during times of year when the vulnerabilities due to the loss of power are at their highest.

Hazard Location

Long-term power loss is capable of harming residents and damaging homes and infrastructure throughout Eau Claire County. While long-term power loss can occur throughout all of Eau Claire

County, wooded areas with nearby overhead power lines are more likely to have a higher risk of producing an outage due to ice, winds, tree damage, etc.

Hazard Extent (Potential Intensities)

Electrical power outage events are typically measured and compared by the number of customers affected and the length of the outage. There is no accepted scale for evaluating the intensity or severity of a long-term power loss event.

Event History – Long-Term Power Outage

Snow/Ice Storms

The threat of extended power loss is not limited to large, regional, and multi-state winter storms. Smaller events can still have devastating and costly impacts on multiple counties or more localized areas, such as the March 1962 event which struck the Eau Claire area, leaving many without electric or telephone service.

Since 1993, there have been three major ice storm events reported for Eau Claire County. In **January of 1996,** freezing rain produced ice accumulations up to three inches in some areas of the region resulting in scattered power outages that were relatively short in duration. A **January 1998** ice storm also hit the County. Most recently, winter storms struck the region in **December 2022** and **early 2023** with heavy snow and some ice weighing down trees and power lines with scattered outages and some areas without power for 24-36 hours.

However, the risk of a long-term event is very real. For example, the March 1976 ice storm was one of the worst natural disasters to hit Wisconsin; Eau Claire County was not one of the 22 counties which were part of this disaster declaration. Ice accumulations of up to five inches were reported, and high winds of 60 mph made the situation worse. Up to 100,000 people were without power at the height of this storm. Serious winter or ice storms in central Wisconsin also occurred in December 1904, February 1922, February 1936, and November 1943, though data on the impacts are limited.

In January 1998, an ice storm hit the Montreal area and left over four million residents with-out power. Some areas were without power for over three weeks. The January 2009 ice storm which hit Kentucky resulted in $616 million in damages, 36 fatalities, and 700,000 customers without power at its peak; 50,000 customers were still without power after two weeks, and it took 38 days for full restoration.

Wind Storms

While the focus of power loss is often on ice storms due to their widespread nature and below freezing temperatures, other natural events can also result in a sizable loss of power. In fact, high winds appear to be a more frequent cause of widespread loss of power in Eau Claire County. As discussed in the Tornados & High Winds assessment, the **July 1980** windstorm/tornado left parts of the City of Eau Claire without power for 5-7 days with electric crews putting in 16-18 hour daily.

In July 1991, a particularly violent and widespread straight-line wind (or derecho) lasted 17 hours and stretched from South Dakota to western Pennsylvania, including parts of Wisconsin. This event caused

over $100 million in damage and resulted in power loss to nearly one million customers. A similar event in May 1998 which blew through central Wisconsin resulted in at least $500 million in damage; and over two million people were without electrical power, some for over 10 days. More recently, the 2011 Burnett County straight-line wind left some areas without power for about a week. And in July 2016, severe thunderstorms left about 250,000 Xcel Energy customers in the Twin Cities metropolitan area without power.

Most recently, the **May 2024** tornado in the Augusta area resulted in short-term power loss to many customers, especially in the wooded Lake Eau Claire area. Over 3,000 Eau Claire Energy Cooperative customers lost power. With ROPE mutual aid assistance, most power was restored within 24 hours though it required 2.5 days for about 800 customers.

Eau Claire County Electric Providers

There are two primary electrical providers in Eau Claire County:

Eau Claire Energy Cooperative (serves approximately 87% of the County area)

Xcel Energy (serves approximately 11% of the County area).

The remaining two percent of the County area is served by Jackson Electric Cooperative, Clark Electric Cooperative, and Dunn Energy Cooperative. Xcel Energy, which serves most of the incorporated city and village areas, has the most electric customers in the County.

Eau Claire County has not recently experienced a long-term power outage event. According to Eau Claire Energy Cooperative, the 5-year average of outage minutes per member is 5.6 hours and about 75% of the major events are weather related. Most outages are related to trees falling on lines.

The threat of a cyber-attack on the power grid has been increasingly in the news as will be discussed further in the Cyber Attack subsection. A cyber-attack could result in a large-scale or regional loss of power, since such an attack would likely target the power generating facilities or transmission infrastructure. The vulnerabilities or impacts are significantly less for the local distribution systems. Hacking of billing systems or digital electric meters is possible, but would likely not result in a widespread, long-term outage.

In summary, a widespread, long-term power outage event covering most or all of Eau Claire County would be rare, but the potential does exist. Based on discussions with personnel from area electric providers, it is estimated that only about five or six long-term power outage events have likely impacted the region during the past century, but these have not approached the scale of the 1976 Wisconsin, 1998 Montreal, or 2009 Kentucky outages. A large-scale, long-term power outage, whether caused by cyber-attack or a weather event, would likely involve electrical transmission infrastructure and not just local distribution systems.

Areas of Higher Risk

All above ground/overhead power lines have a higher risk of producing an outage due to ice, winds, tree damage, etc. Electrical providers in the County have buried some electric lines in at-risk areas and Eau Claire Energy Cooperative continues to harden its infrastructure.

The loss of power due to falling limbs and trees has been further significantly mitigated through proactive, aggressive tree-trimming programs by the electric providers serving Eau Claire County. Eau Claire Energy Cooperative has spent nearly $500,000/year over the past 4-5 years on right-of-way clearing and vegetation management. But even with such efforts, forests are the dominate land cover in large parts of the County and overhead lines in such wooded areas are still at higher risk. Such tree trimming also reduces the wildfire ignition risk.

Xcel Energy, Eau Claire Energy Cooperative, and local municipalities were asked to identify areas of higher outage risk or prone to outages. Xcel Energy did report occasional outages from winds or ice, but did not identify any specific problem areas within the County.

Other than forested areas with overhead lines in general, Eau Claire Energy Cooperative did not report a specific area as being prone to frequent outages, but they are concerned about overhead lines which cross Interstate 94. Ice, wind storms, tornados, and wildfire could all result in overhead lines collapsing onto the interstate which has average daily traffic counts ranging from 20,000 to nearly 30,000 in Eau Claire County. The Cooperative has made efforts to pursue mitigation grant dollars to help bury these lines without success since there is not a history of outages related to these lines (and numbers of customers affected and length of these outages) and these lines are structurally sound; FEMA's current benefit-cost analysis approach makes it difficult for such projects to score high enough to receive funding. The Cooperative was able to convert some to underground lines as part of bridge reconstruction projects.

The Cooperative did note that some scattered single residential feeds in wooded areas do have a higher outage risk. Power lines on the north side of Lake Eau Claire were converted to underground in the last three years, and efforts to bury some on the south side are continuing. The hills and narrow rights-of-way within the Town of Drammen and along Highway 37 pose unique access challenges for the restoration of power when overhead lines are impacted, especially during the winter months when snow and ice are present. Due to topography, many of the lines are not located within rights-of-way, so are much more difficult to access.

Power loss due to falling trees is not limited to the unincorporated areas. Residential neighborhoods with older trees or built within wooded areas of cities and villages are also vulnerable to outages. No cities, villages, or towns identified specific areas as being uniquely prone to power outages.

Hazard Probability – Long-Term Power Outage

The Plan Steering Committee rated the probability of a long-term power outage event as being of some (below moderate) concern for Eau Claire County, with a high/serious vulnerability should an event occur. The burying of power lines, infrastructure hardening, and tree-trimming efforts by electrical providers, have reduced the probability of a long-term outage event over the past two decades.

Since 1980, it is estimated that Eau Claire County has only had 4-5 power outage events of 2+ days impacting a substantial number of customers, with most outages being more localized and restored within 48 hours. Based on these events and trends, **Eau Claire County is expected to experience a**

significant long-term power outage about once every 8-10 years on average. Nearly all of these events would impact a portion of Eau Claire County and affect less than 15,000 customers, with power restored within 5-6 days. While a widespread, long-term power outage event covering most or all of Eau Claire County would be rare, but the potential does exist. Past power outage events in Eau Claire County have not approached the scale of the 1976 Wisconsin, 1998 Montreal, or 2009 Kentucky outages.

As discussed in the ***Tornadoes & High Winds*** and ***Winter Storms*** sections, the probability of these hazards is likely to increase due to long-term weather patterns. As such, the probability of long-term power outage events is also likely to increase. It is possible that a widespread, long-term loss of power could occur as a result of other causes (e.g., terrorism, cyberattack, loss of a power-generating facility). The probability of these other causes resulting in a long-term event are considered extremely rare and unlikely, but this does not discount the importance of protecting against such instances.

Vulnerability Assessment – Long-Term Power Outage

Many of the natural hazard events facing Eau Claire County have the potential to cause an extended and widespread loss of electrical power. **Appendix F** provides the following regarding the potential impacts of tornado and high wind events for Eau Claire County as a whole:

- a description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- a description of the vulnerability of each community lifeline for this hazard
- the potential consequences or impacts to the above assets and community lifelines.

In summary, all Eau Claire County populations and businesses, are vulnerable to a long-term power outage event. During the planning process, the following assets were identified as having the greatest vulnerability:

- **Above-ground electrical system infrastructure.** In most cases, a long-term power outage event in Eau Claire County will be the result of damage to electrical infrastructure. And, as the past events described, this can necessitate substantial repair costs.
- **Individuals that are oxygen dependent, require electricity to operate medical equipment, or live independently, but have special needs.**
- **Eau Claire County residents and visitors, especially if power loss occurs during a period of extreme cold or extreme heat.** This vulnerability is further explored, including related vulnerable populations, within the ***Winter Storms*** and ***Extreme Heat*** sections.
- **Businesses and community lifelines that lack generators or access to emergency fuel.** The Steering Committee and stakeholders were particularly concerned about assisted living facilities, nursing homes and memory care facilities, facilities with ventilation equipment for patients, municipal utilities, and local emergency operations centers and emergency shelters.

Given experiences elsewhere, it is not unrealistic to imagine a significant portion of the County's population and facilities could be without power for one to three weeks should a 50- or 100-year event

occur. Following the 2009 Kentucky storm, 37 percent of affected customers were still without power after one week and seven percent were without power after two weeks. Extended power loss in Eau Claire County due to a natural storm event would also likely involve many downed trees and power lines. Downed lines present safety hazards for residents, travelers, and emergency responders. Emergency response can be further hampered by blocked roads from power lines and debris.

Projected Loss Estimates

Exposure estimates for all electrical infrastructure in the County is not available. However, in the entire Eau Claire Energy Cooperative system, there is approximately 1,765 total miles of line serving about 13,128 active services (customers). Approximately 56 percent (or 991 miles) of their electric lines are underground; this is over 90 more miles buried since the previous mitigation plan.

2024 replacement costs for lines vary based on physical site conditions, but are approximated as follows:

Phase I – Overhead:	$99,400/mile
Phase I – Underground:	$79,200/mile
Phase III – Overhead:	$233,000/mile
Phase III – Underground:	$200,000/mile

Other Factors Influencing Future Losses

- **Eau Claire County's aging population** is documented in Section II.C. Seniors living alone in rural areas are especially of special concern. With this aging population, the County has a significant number of assisted living and nursing facilities as documented in Section II.D.

  The Eau Claire County Aging and Disability Resource Center (ADRC) promotes individual emergency planning for senior and special needs clients, with emergency communications networks and other preparedness actions. ADRC has a binder of emergency preparedness toolkit materials it shares with clients and works with County Emergency Management, Public Health, and other partners for the distribution of hazard awareness and preparedness educational announcements through the ADRC monthly newsletter with a monthly circulation of about 3,000 copies. A preparedness checklist is also provided to the roughly 400 clients participating in ADRC's Meal's on Wheels program; these volunteers are a key resource.

- **Development located in forested areas with overhead lines is particularly at risk of power loss.** Some of the greatest concentrations of these at-risk areas are lake properties. These concerns are not limited to the unincorporated towns. Residential neighborhoods with older trees or built within wooded areas of cities and villages are also vulnerable to outages.

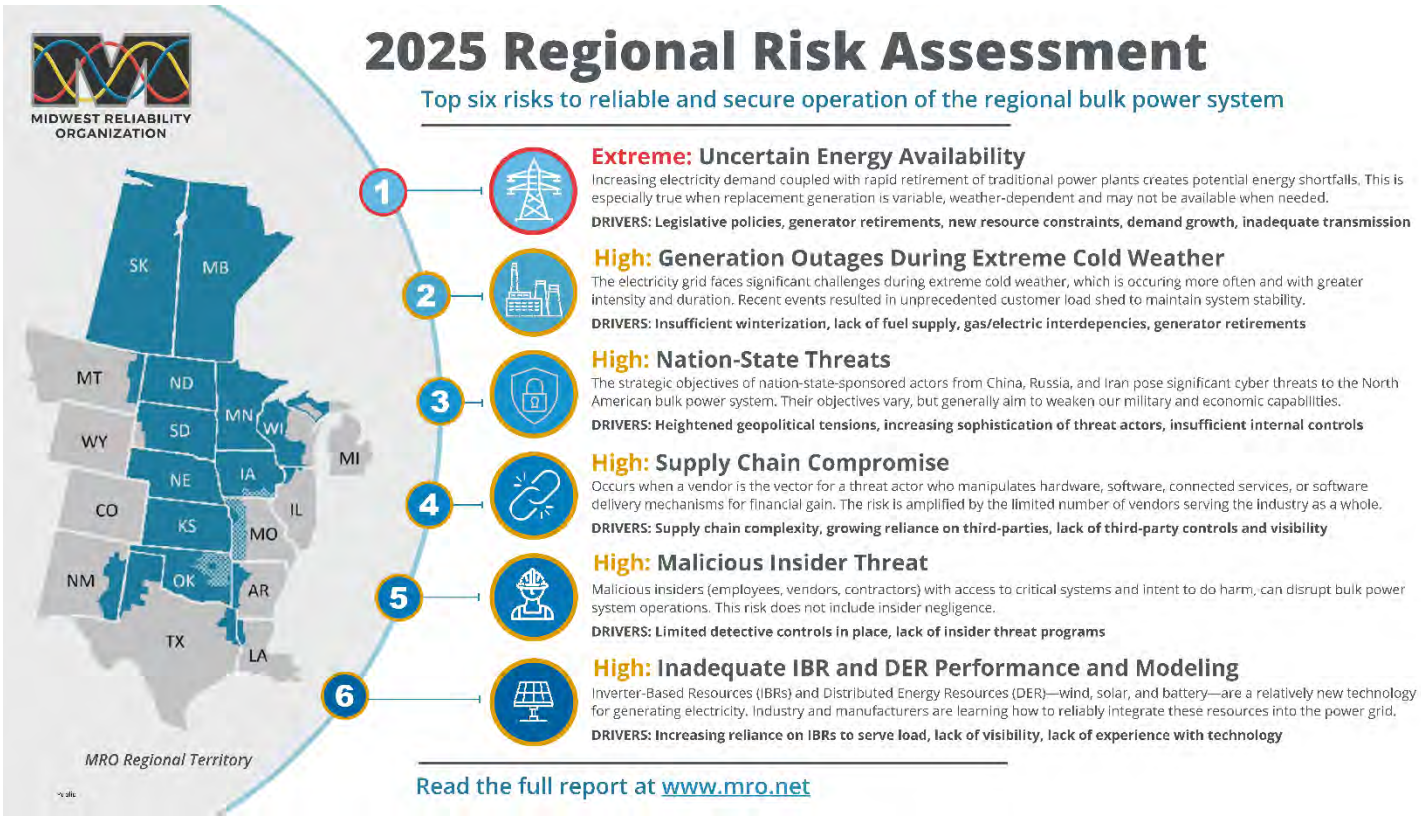
- **Burying overhead lines is an effective mitigation action.** Electrical providers in the County have buried some electric lines in the most at-risk areas. And many of the local and municipal electric providers have a policy of moving towards all below-ground power lines through attrition and as part of annual work plans. The loss of power due to falling limbs has been further significantly mitigated through proactive, aggressive tree-trimming programs by the electric providers serving Eau Claire County.

- **Improper use of generators.** During the Kentucky event, carbon monoxide from improper generator use was the largest cause of death. But it must be remembered that the potential

impacts for Eau Claire County could be much more severe—Kentucky's temperature warmed well above freezing following their ice storm. In comparison, Eau Claire County's average winter temperatures could prove quite deadly should power be lost and transportation systems hindered for an extended time. This is discussed more in the winter storm risk and vulnerability assessment.

- The availability of **emergency power generators** for utilities, communications, centers/shelters, emergency operations, fuel sources, and critical facilities is crucial to mitigating the potential impacts of a LTPO event. Further, demands may be high on limited fuel sources for response vehicles, electric crews, and power generators. The County's three hospitals have undertaken actions to be prepared for such an event, and the Northwest Wisconsin Healthcare Coalition can provide some preparedness planning assistance.
- **Preparedness efforts.** Long-term power outage (LTPO) planning has been receiving increased attention in Wisconsin during the past decades. Realizing the seriousness of this threat, Eau Claire County Emergency Management has participated in workshops and exercises on this topic. regional- level workshops and tabletop exercises in 2010 on this topic. Based on these workshops and exercises, the following groups and critical facilities were identified as being especially vulnerable or important during a long-term power outage event:

Not unique to Eau Claire County are the long-term challenges of increasing electrical demands, which could potentially be exacerbated by "climate migration" as people and industry (e.g., data centers) seek out cooler, non-coastal places to relocate. The Midwest Reliability Organization's *2025 Regional Risk Assessment* raises significant concerns regarding our region's electrical energy supply:



Related Preparedness and Response Actions

Cooperation, communication, and planning with power providers and critical facilities are key to preparing for and mitigating the impacts of power loss. Based on discussions with representatives from Xcel Energy, Eau Claire Energy Cooperative, and other area electric providers, the following should be considered:

- Involving utility providers in disaster event exercises with other key partners is very important.
- Communication between electric providers and utilities, emergency management personnel, service providers, and local communities can be vital during a LTPO event to help protect the safety of responders and residents. This includes notifying electric restoration crews of known road washouts, flooding areas, etc. For a major disaster, utilities may provide a liaison at the County Emergency Operations Center. The Electric Cooperative noted that it has an excellent working relationship with County Emergency Management.
- Electric providers have a strong mutual aid network should it be needed, such as the Restoration of Power during an Emergency (ROPE) system for cooperatives. It is important to remember that during a large event, mutual aid support may come from communities throughout North America. Staging, logistics, tracking, and related administration for such efforts can be tremendous challenges. Lodging availability has limited mutual aid options.
- During a disaster or power outage, electric providers can "ping meters" to help identify areas with outages, possible downed power lines, etc.
- Utilities and electric providers often maintain lists of critical accounts/clients with medical or other unique needs that will be a priority for power restoration. Providers also encourage household planning. For example, the following statement is provided to Xcel Energy's "critical accounts":

  > *"An approved medical designation on the customer's account does not guarantee uninterruptible utility service or immediate restoration of utility service. Inform customers of the importance of having a household backup plan in place for use of their medical equipment should a disruption of utility service occur."*

  Eau Claire Energy Cooperative also maintains a critical clients list for customers who are dependent on oxygen or other electronic medical devices, which is considered when planning power restoration.
- Public messaging and crisis communication is vitally important during an event. Electric providers and utilities have a key public informational role during an outage. In addition to working with media and social media, many providers, have web-based power outage maps.
- A number of new web-based tools have been introduced in recent years for the tracking and management of power outages, including:
  - The Outage Data Initiative Nationwide, with a map of nationwide outages hosted by the U.S. Department of Energy, though only 125 utilities are participating as of January 2024
  - National Outages & Mutual Aid website, with a map of multi-utility outages
  - Wisconsin Electric Cooperative Association website, with a map of member outages
- It is important that emergency response and public-sector road crews understand the risks of working near downed power lines and how power is restored. Eau Claire Energy Cooperative also provides related educational efforts, such as high voltage and electric vehicle demonstrations for school children, emergency responders, law enforcement, and tow truck drivers.

- More public education is needed on how safety issues during a power outage, how to get information during an outage (e.g., media, websites, mobile apps), and how power is restored. The websites of area electric providers are a great place to start.
- Tracked vehicles can be important resources for electrical providers when restoring power under difficult conditions.

The lessons learned from past LTPO workshops and exercises have been integrated into a state-level report which is available at the Wisconsin Emergency Management website or from West Central Wisconsin Regional Planning Commission. The recommendations of the State report were considered during this hazard mitigation planning effort and, when appropriate, have been integrated into the mitigation strategies found later in this document.

Risks for Individual Plan Participants – Long-Term Power Outage

All individual plan participants in Eau Claire County (i.e., villages, cities, educational institutions, electric cooperatives) are equally at risk of experiencing the vulnerabilities of long-term power outage events. The potential impacts, in general, are shared, though vulnerability increases in wooded areas near overhead power lines.

Appendix K provides the sub-plans for each city and village and **Appendix L** provides sub-plans for participating educational institutions. These sub-plans identify long-term power outage risks and vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County.

Overall, most communities did not have specific areas that are more prone to or at-risk of power loss. Power outage concerns for these participants primarily focused on the need for emergency power generators. A growing number of these communities also expressed a need to identify or equip emergency shelters, including heating/cooling centers, with generators. Since the 2019 Plan, there has been significant improvement in acquiring emergency power generators, though needs still exist. For example, many city, village, and town halls are designated as emergency operations centers, but do not have generators. And many buildings that could potentially serve as heating/cooling centers also lack emergency power.

Space Weather Events: Solar Flares and Geomagnetic Storms

Defining the Hazard

Solar flares are intense bursts of electromagnetic radiation (X-rays) that erupt from an active region of the Sun and can potentially reach Earth in less than 20 minutes. As shown in the table below, solar flare intensities are categorized based on their strength (X-ray brightness) with each progressive class on the scale 10 times the strength of the previous class. **M- and X-class solar flares have the potential to impact radio communications but are less likely to impact the electrical grid.**

Solar Flares Intensity Scale		
Scale	***Severity Descriptor***	***Effects***
X	Extreme	Can trigger radio global blackouts and transmission issues
M	Severe	Can cause brief radio blackouts at poles and minor radiation storms imposing danger to astronauts
C	Strong	C-class and smaller flares are weak and do not noticeably affect Earth, SID monitoring will only detect strongest C-class flares
B	Moderate	Too weak to affect Earth and/or be detected with SID monitoring
A	Minor	Too weak to affect Earth and/or be detected with SID monitoring

Source: X-Class: A Guide to Solar Flares (NASA, 2011), https://svs.gsfc.nasa.gov/10109

Geomagnetic Storms can disturb and compress the Earth's magnetic field. Geomagnetic storms are typically caused by high-speed solar winds and **Coronal Mass Ejections (CMEs)**, which may be triggered by a large solar flare event. **CMEs** are giant clouds of particles and magnetic fields (like a gas bubble) hurled into space that can reach Earth in15 hours to several days. **NASA utilizes the scale below categorize Geomagnetic Storms and their impacts to communications and the electrical grid.**

Category		Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
Scale/Descriptor		Duration of event will influence severity of effects	K_p values* determined every 3 hours	Number of storm events when K_p level was met; (number of storm days)
G5	Extreme	**Power systems:** widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage. **Spacecraft operations:** may experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. **Other sytems:** pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for 1-2 days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora seen as low as Florida and southern Texas (typically 40° geomagnetic lat.)	Kp = 9	4 per cycle (4 days per cycle)
G4	Severe	**Power systems:** possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. **Spacecraft operations:** may experience surface charging and tracking problems, corrections may be needed for orientation problems. **Other sytems:** induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.).	Kp = 8, including a 9	100 per cycle (60 days per cycle)
G3	Strong	**Power systems:** voltage corrections may be required, false alarms triggered on some protection devices. **Spacecraft operations:** surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems. **Other sytems:** intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.).	$K_p = 7$	200 per cycle (130 days per cycle)
G2	Moderate	**Power systems:** high-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage. **Spacecraft operations:** corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. **Other sytems:** HF radio propagation can fade at hjgher latitudes, and aurora has been seen as low as New York and Idaho /typically 55° geomagnetic lat.).	Kp = 6	600 per cycle (360 days per cycle)
G1	Minor	**Power systems:** weak power grid fluctuations can occur. **Spacecraft operations:** minor impact on satellite operations possible. **Other sytems:** migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan & Maine).	$K_p = 5$	1700 per cycle (900 days per cycle)

Source: NOAA, https://www.swpc.noaa.gov/noaa-scales-explanation, (December 2023).

Event History

According to NOAA and NASA, the most significant and impactful space weather events are as follows:

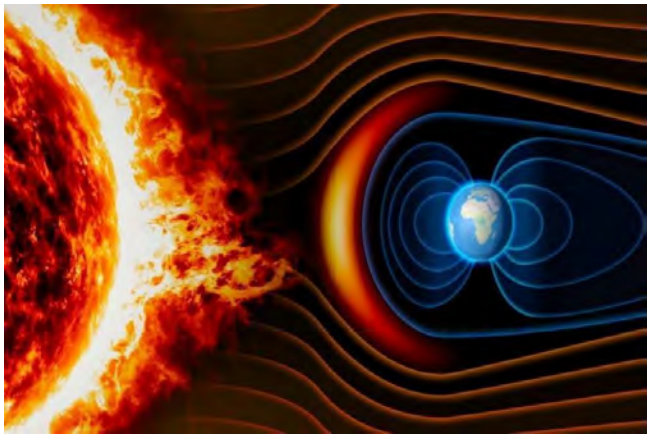
- **September 2, 1859 (The Carrington Event)** - Largest geomagnetic storm recorded impacting expanses of Europe and North America. Telegraph systems were disrupted or down entirely, equipment malfunctioned and caught fire, and aurora displays were visible as south as the Caribbean.
- **May 23, 1967** - A major solar flare produced strong X-ray and radio waves resulting in radio blackouts, global communication disruptions, and power outages.
- **August 4, 1972** - A powerful solar flare triggered a series of solar storms and a coronal mass ejection (CME) the following day. The CME led to global radio communication and power systems disruptions, power outages in northeastern United States and Canada, and damage to several satellites.
- **March 9-11, 1989** – A CME eruption caused a severe geomagnetic storm that reached Earth four days later, leading to a sequence of power outages, satellite and radio communication disruptions, temporary satellite shutdowns, and permanent damage to electronics. Over six-million Canadians were without power for nine hours and effects were present in the upper Midwest, northeast, and mid-Atlantic regions of the United States.
- **October 28-November 4, 2003 ("Halloween Storms") –** A CME on Oct. 28 created sixth most powerful geomagnetic storm in 70 years, resulting in a 30-hour outage of the Federal Aviation System.
- **May 7-11, 2024** - Several intense solar flares and at least seven coronal mass ejections (CMEs) erupted, disrupting technology and resulting in a $500 million impact on the agricultural industry where GPS systems for tilling, irrigation, and planting are necessary.[1] The multiple CMEs created the first extreme geomagnetic storm intensity (G5) since 2003.

Hazard Probability

Solar activity typically operates within the Sun's 11-year solar cycle, with an increased potential for solar flares and geomagnetic storms when closest to the solar maximum. According to NASA and NOAA, the current solar cycle (Solar Cycle 25) began in December 2019 and reached its maximum in October 2024. However, the current cycle, Solar Cycle 25, is expected to a fairly weak cycle with similar strength to that of its former cycle. Despite some regularity with solar cycles, experts cannot make longer-term predictions when a specific flare will occur. The previous Geomagnetic Storm table provides an average frequency of storm events for each solar cycle by category (intensity). Solar flares can occur several times a day when near the solar maximum.

Hazard Vulnerabilities

Solar flares and resultant geomagnetic storms have the potential to impact various aspects of society due to dependence on the operation of satellites, aircrafts, communication networks, navigation systems, and electric power grid. Storm severities and their specific implications regarding power systems, spacecraft operations, and other systems are outlined in the previous Geomagnetic Storms table.



Preparation and Mitigation

To prevent and mitigate the effects space weather can have on our daily and essential functions, it is imperative that warning systems are utilized to provide sufficient notice to the community. A summary of local and critical facilities vulnerable to space weather events should be easily accessible. In addition, critical facilities should implement backup power and communication systems. This is especially vital for power grids and communication networks for emergency response.

ix. ACTIVE THREATS

Defining the Hazard—Active Threats

For the purpose of this plan, an active threat incident occurs when an individual (or group) displays a weapon, having made threats, and shown intent to cause harm or act our violence. A weapon includes any firearm, knife, vehicle, or other instrument that can cause bodily harm, injury, or death. Such incidents can include:

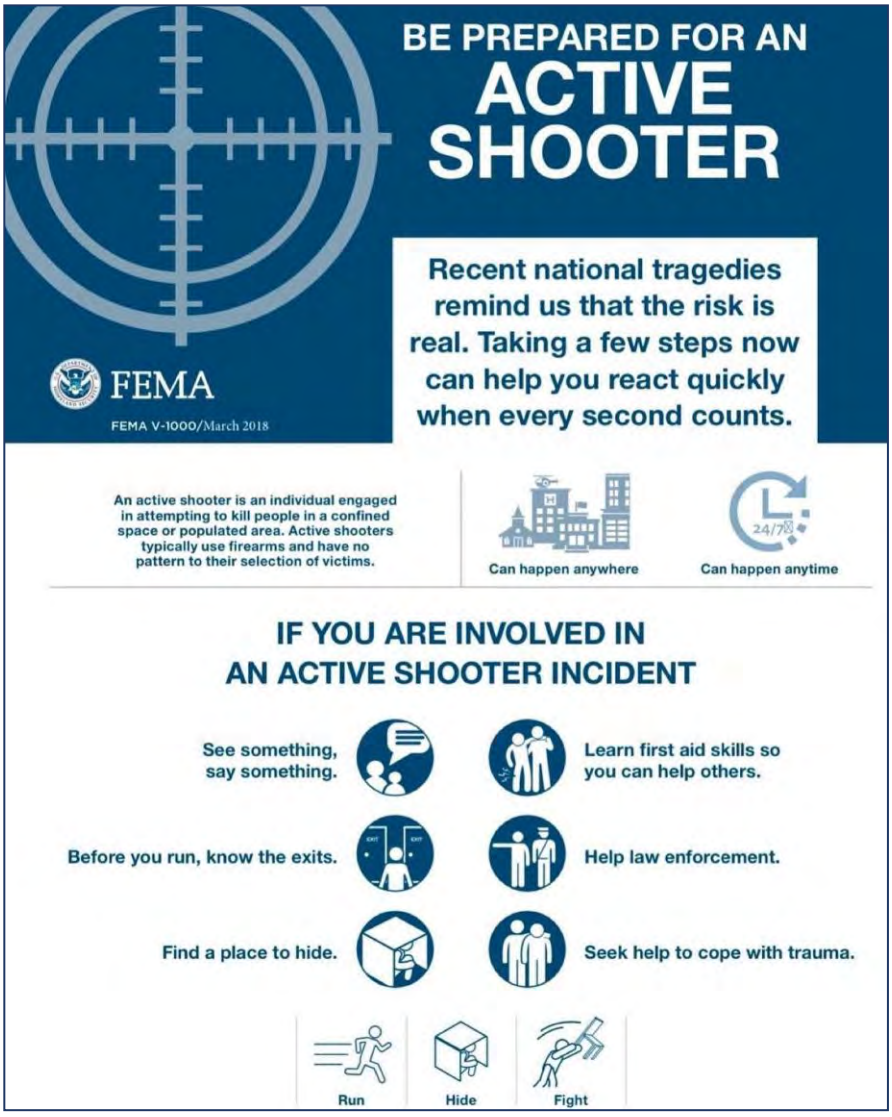
- **Active shooters** – one or more subjects who participate in a random or systematic shooting spree with the intent to continuously harm or kill others.
- **Bombs and/or bomb threats** – any explosive device or bomb or bomb on or near a target, regardless of the method of delivery (e.g., pipe bomb, car bomb) or whether the threat is real or a hoax.
- **Hostage situations** – one or more subjects hold people against their will in order to hold off authorities, often threatening to harm the victims if approached. The hostage-taker(s) may issue demands, often including the release of hostages.

The U.S. Department of Homeland Security defines **active shooter** as "a person or persons actively engaged in killing or attempting to kill people in a confined and populated area." In most cases, active shooters use a firearm, though they may be using other weapons as well (e.g., explosives, knife), and there is no pattern or method to their selection of victims.

An active shooter incident at a work site can be a type of workplace violence. According to OSHA, **workplace violence** is any act or threat of physical violence, harassment, intimidation, or other threatening disruptive behavior that occurs at the work site. It ranges from threats and verbal abuse to physical assaults and, in the case of an active shooter, even homicide. It can affect and involve employees, clients, customers and visitors. n active shooter incident at an educational institution is a workplace violent event that often referred to as targeted school violence.

Targeted school violence is defined by the U.S. Department of Education as "any incident where a current student or recent former student attacked someone at his or her school with lethal means (e.g. a gun or knife); and, where the student attacker purposely chose his or her school as the location of the attack."[38] The Safe School Initiative examined incidents of "targeted violence" in school settings where the school was deliberately selected as the location for the attack and was not simply a random site of opportunity. The term "targeted violence" evolved from the Secret Service's five-year study of the behavior of individuals who have carried out, or attempted, lethal attacks on public officials or prominent individuals. For purposes of this report, targeted school violence will include any incidents of targeted violence, as described above, brought forth by anyone whether or not connected with the targeted school and may not be limited to active shooter threats.

[38] Combating Targeted School Violence: Inside & Outside Attackers, 2007.



According to the Federal Emergency Management Agency (FEMA), **Civil Disturbance** is defined as a civil unrest activity such as a demonstration, riot, or strike that disrupts a community and requires intervention to maintain public safety. Civil disturbances, like riots, interfere with the normal functioning of a community, can disrupt critical services, and require the actions of law enforcement, emergency services, and/or the military to restore peace. While the vast majority of protest is peaceful, the right of citizens to protest must be balanced against the rights of non-protesting citizens to conduct their own business. Despite the peaceful nature of most protest and civil disobedience, such events are disruptive, can be costly for local governments, and have the potential to degenerate into violence resulting in property damage, injury, and death.

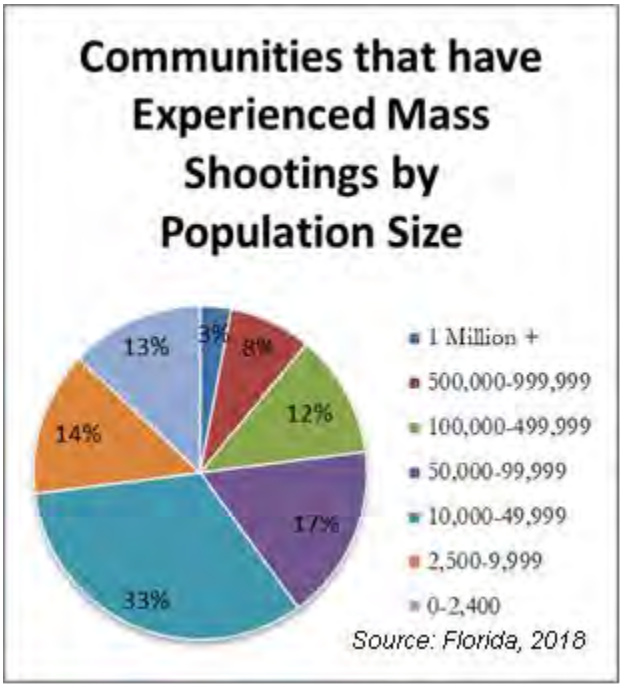
Active threats can include acts of terrorism, but not all active threats are performed for reasons of terrorism. The FBI defines two categories of terrorism:

> **International terrorism**: Perpetrated by individuals and/or groups inspired by or associated with designated foreign terrorist organizations or nations (state-sponsored). For example, the December 2, 2015, shooting in San Bernardino, CA, that killed 14 people and wounded 22 involved a married couple who radicalized for some time prior to the attack and were inspired by multiple extremist ideologies and foreign terrorist organizations.
>
> **Domestic terrorism**: Perpetrated by individuals and/or groups inspired by or associated with primarily U.S.-based movements that espouse extremist ideologies of a political, religious, social, racial, or environmental nature. For example, the June 8, 2014, Las Vegas shooting, during which two police officers inside a restaurant were killed in an ambush-style attack, was committed by a married couple who held anti-government views and who intended to use the shooting to start a revolution.

Further, there are types of terrorist attacks that would not be classified as a traditional active threat, such as cyberattacks, a critical infrastructure attack, vandalism, or intimidation.

Hazard Location

Active threat events can occur anywhere in Eau Claire County. Using Stanford University's data base on Mass Shootings, Patrick Alder at the Martin Prosperity Institute analyzed demographic data of the communities where mass shootings happened from 1971 to 2016.[39] The database included 307 mass shootings in 223 places, occurring between 1971 and 2016. Alder's conclusions were that mass shootings were experienced by communities of all sizes, income levels, and racial diversities.



Although mass shootings were spread across communities of different sizes, a plurality of mass shootings, 33 percent of the total 307 mass shootings, happened in communities of 10,000 to 49,000 people. According to 2015 census data, communities of this size comprised 11.7 percent of incorporated municipal governments in the United States, or 2,281 municipal governments total. This means that 4.4 percent of municipalities of this size (101 total) have experienced a mass shooting. At the same time, 27 percent of mass shootings (83 total) took place in communities of less than 10,000 people. There are 16,470 incorporated places of this size and .5 percent have experienced mass shootings from 1971 to 2016.

Three percent of mass shootings have taken place in cities with populations of more than one million people. The cities of Chicago, Illinois, Los Angeles, California, and Phoenix Arizona have each seen five mass shootings. Killeen, Texas, with a population of 127,921 in 2010, has experienced four mass shootings, including Luby's Shooting in 1990 and the Fort Hood Shooting in 2014.

Mass shootings happen in communities across the spectrum of economic circumstances. Only six percent of mass shootings occurred in communities that had mean household incomes of less than $40,000. In general, mass shootings happened in middle class America. The mean household income for communities which had experienced mass shootings was $65,900 while the United Sates mean household income was $77,866. Seven percent of mass shootings took place in communities with average household incomes of $130,000 or more. Mass shootings occurred in the least racially diverse communities in America as well as in the most racially diverse communities. However, only 24 percent of mass shootings happened in white-minority communities. 76 percent of mass shootings were experienced in communities with majority white populations.

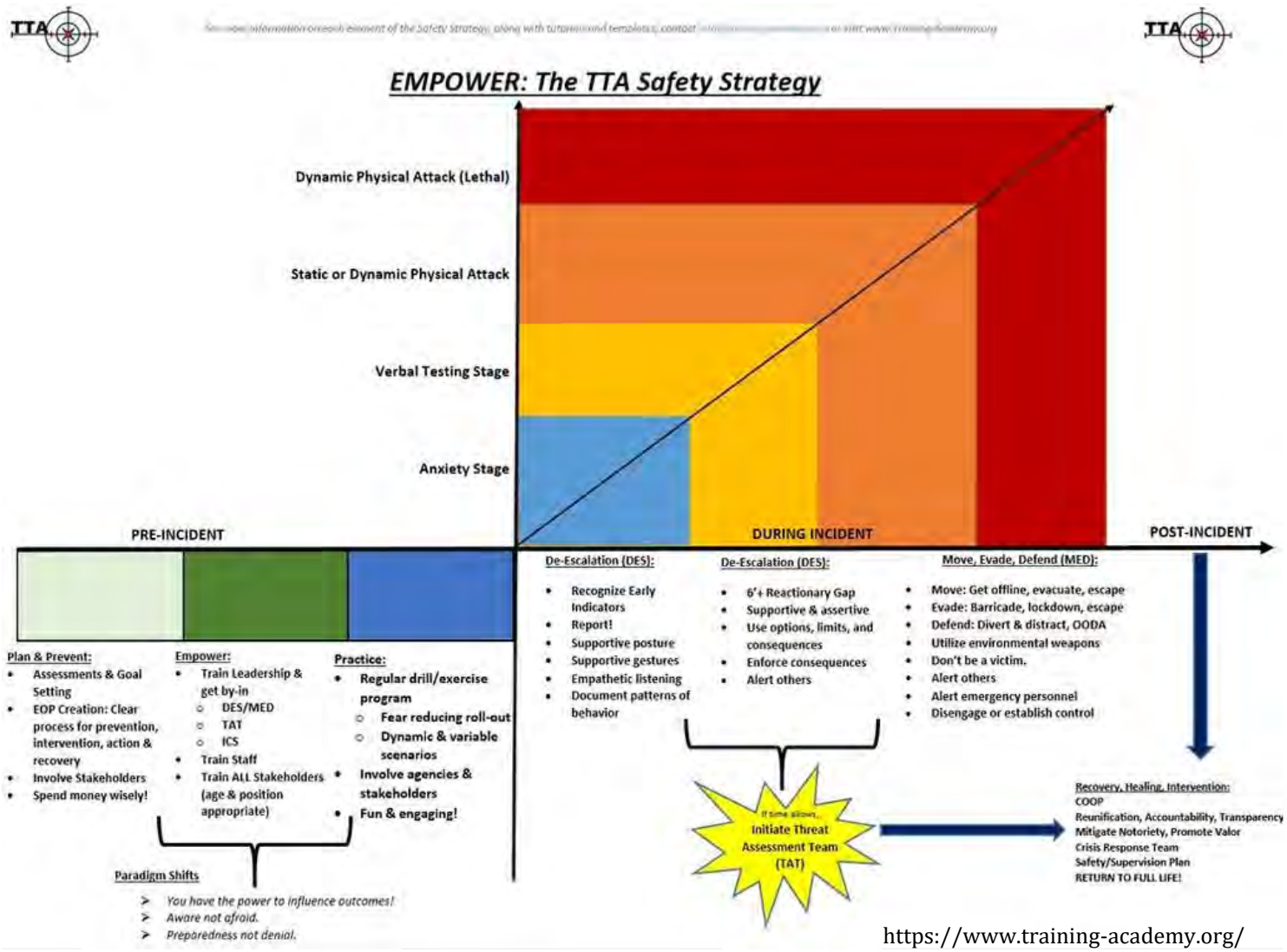
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[39] Boone, a. (2018, March 1). *Where Do Mass Shootings Take Place?* Retrieved March 3, 2018, from City Lab: https://www.citylab.com/life/2018/03/where-do-mass-shootings-take-place/554555/

While active threats can occur anywhere, places and events people gather have a higher risk. The communities with larger populations, more businesses, and more critical facilities have slightly higher risks, but no location is immune. In Eau Claire County this would be churches, hospitals, schools, community events, larger employers, and other gathering spaces.

Hazard Extent (Potential Intensities)

There is not a scale to measure and compare active threats intensity. The intensity of active threat events are largely measured by the number of individuals impacted (i.e., killed, injured, otherwise threatened). The Tactical Training Academy, a private agency providing workplace safety training & consulting, has created the following escalation and control management matrix for evaluating the evolution of an active threat event and related actions:



According to OSHA, workplace violence typically falls into one of the following four categories. However, the perpetrator's primary purpose of workplace violence events may not be to harm large numbers of people:

Type I: Criminal Intent. The perpetrator(s) has no legitimate relationship to the business or victims, but the violence is incidental to another crime, such as robbery or terrorism. The vast majority of workplace homicides (85%) are Type I. A workplace may be at a higher risk of Type I violence if the business handles cash or drugs.

Type II: Customer/Client. The violent person(s) has a legitimate relationship with the business, such as a customer, client, patient, student, or inmate. A large portion of the Type II incidents occur in the health care and social services industry, and the victims are often patient caregivers. Less than five percent of all workplace homicides are Type II, though this category accounts for the majority of nonfatal workplace violence incidents.

Type III: Worker-on-Worker. The perpetrator(s) is an employee or past employee that targets another existing or past employee. Type III incidents account for approximately seven percent of all workplace homicides. An employer that is downsizing or reducing their workforce may have a heightened risk of this category.

Type IV: Personal Relationship. The perpetrator(s) usually does not have a relationship with the business but has a personal relationship with the primary intended victim(s). This category includes domestic violence in the workplace and accounts for about five percent of all workplace homicides. Prevention of this type of violence can be very difficult in workplaces that are accessible to the public during business hours, such as retail establishments. A disgruntled partner may not know where their former lover now lives, but they likely knows where he/she works.

Unlike most workplace violence events, other active threats often aim to impact large numbers of people, which is the primary focus of this plan section. In Eau Claire County, there are many different gathering places for which a larger, multi-victim active threat event could occur. And the impact of an active threat event goes beyond those involved with the immediate threat. Those who are not directly impacted by the event may be psychologically impacted through fear, concern for safety, and reduced activity. Services may also be disrupted and economic ramifications could occur.

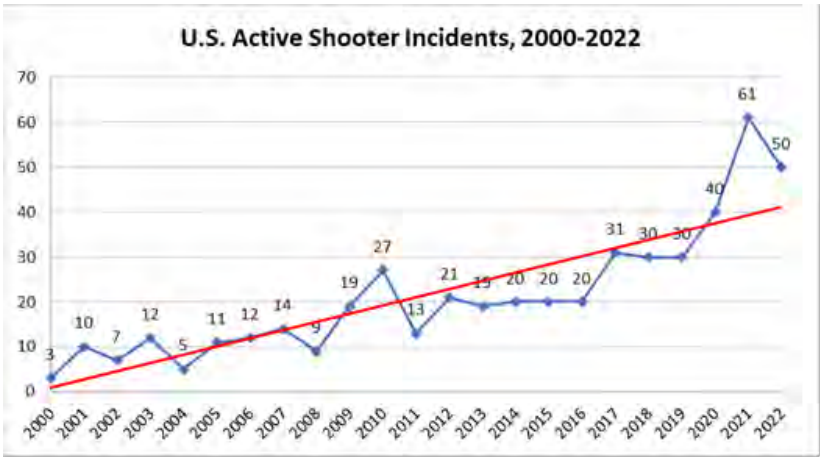
Event History - Active Threats

National Trends

Active Shooter Trends: The Federal Bureau of Investigation identified 484 active shooter incidents in the United States between 2000 and 2022. The number of incidents will vary depending on one's definition of active shooter. For example, the FBI does not include gang or drug violence, or individuals who shoot family members in their own homes. Based on the FBI data, the frequency of active shooter events has clearly been increasing, with an average of 10 events per year from 2000 to 2009. Now almost tripled to 29 events per year from 2010 to 2022.

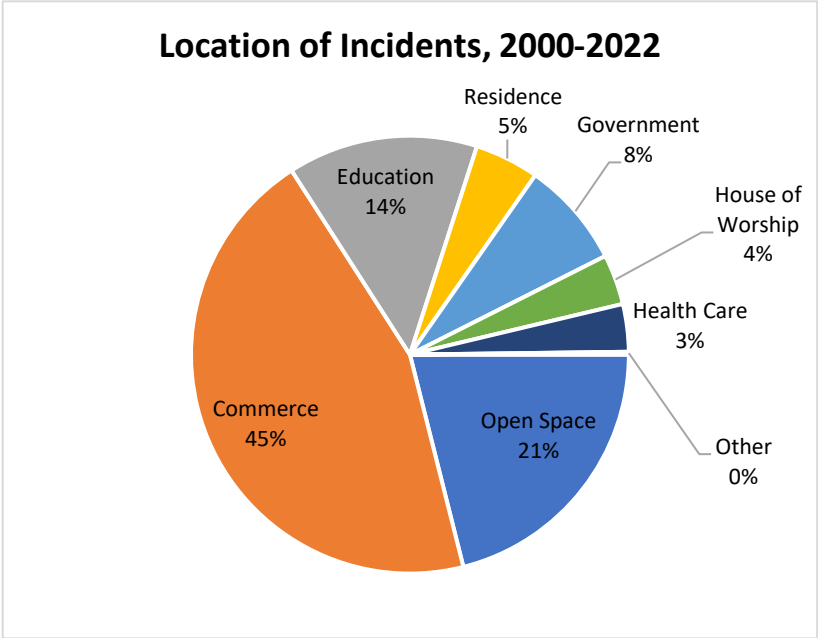
The largest majority of these 484 events (45%) occurred at commerce locations, such as retail stores, malls, non-profit organizations, and manufacturing plants. While not technically meeting the Federal

active shooter definition of occurring in a "confined space," 102 of the incidents (21%) occurred in open spaces, such as on public roadways, in parking lots, or involving multiple locations.



Other notable facts regarding active shooter events in the United States from 2000 to 2022 are:

- While they can occur any day of the week, the largest percentage occurs on Saturdays.
- 95% of shooters are male.
- Motivation or intent can vary (e.g., close relationship, notoriety, upset at government, workplace revenue, religious affiliation, mental instability).
- Most shooters generally share one or more common characteristics that can be warning signs (e.g., depression, dramatic personality swings, makes threats, fascination with weapons).



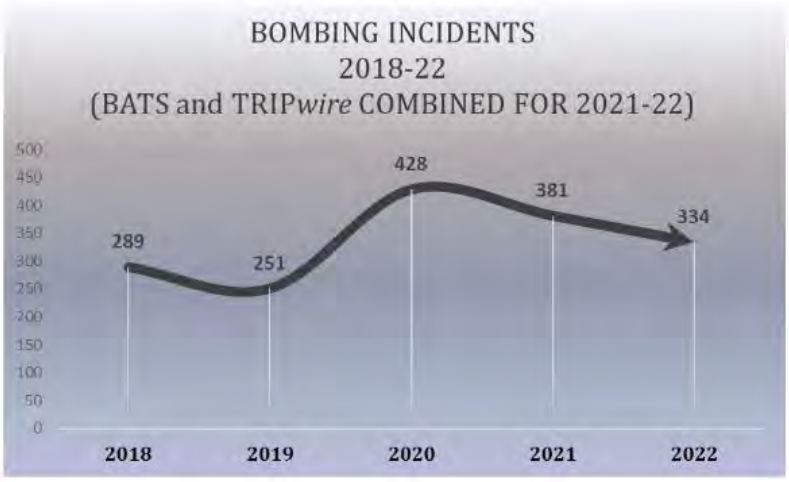
It is important to remember that very few organizations will experience an active shooter incident involving a shooting spree that wounds and kills multiple victims. However, a far greater number will experience other forms of workplace violence [e.g., threats, simple assaults (no weapon), aggravated assaults, robbery, intruder or trespassing, rape].

Explosive Incident Trends: The *2016* and *2022 Explosives Incident Report*, prepared by the United States Bomb Data Center, allows an examination of the long-term incident data reported in the *Bomb Arson Tracking System* from 2012 to 2022.[40] Explosive incidents refer to bombings, accidental explosions ,and undetermined explosions. Additionally, the report inventories bomb recoveries, reports of suspicious packages, bomb threats, and hoaxes.

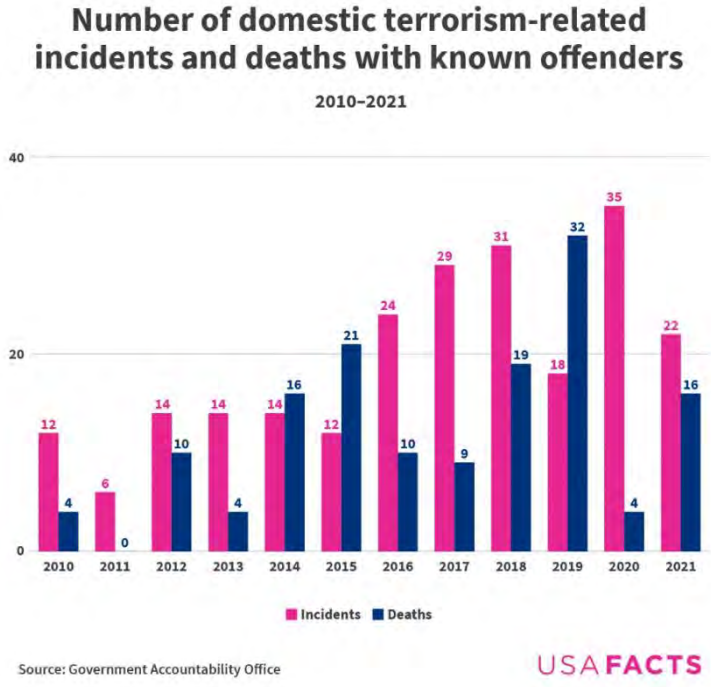
[40] United Sates Bomb Data Center. *2016 and 2022 Explosives Incident Reports.*

A comparison for the 2016 and 2022 *Explosive Incident Report* data yielded:

- Bombings were about one-third of all reported explosive incidents in the United States in 2022. The graph to the right from the 2022 *Explosive Incident Report* shows a spike in bombing incidents in 2020, which has been slowing increasing since then.



- Of the 2022 bombings, 50% were explosive (non-IED), 32% were IED, 4% were over-pressurized devices, and the remaining were other types or not specified.
- Only two of the 2022 bombings occurred in Wisconsin.
- Reported bomb threats more than tripled between 2020-2022 with a total combined number of 2,538 reported incidents. Assembly, education, and office/business locations were the top three targets of bomb threats during 2022. Educational institutions were, by far, the top threat target, with over half targeting high school/junior high/middle school facilities and about one-third targeting colleges or universities.
- The report did not provide injury and death data specific to bombings. From 2020-2022, there were 88 injuries and 24 fatalities reported each year on average for all explosion incidents. Of these, 7 of the injuries and 0.3 fatalities in an average year were to fire service or law enforcement personnel, while 16.7 injuries and 3 injuries a year were attributed to the suspects.



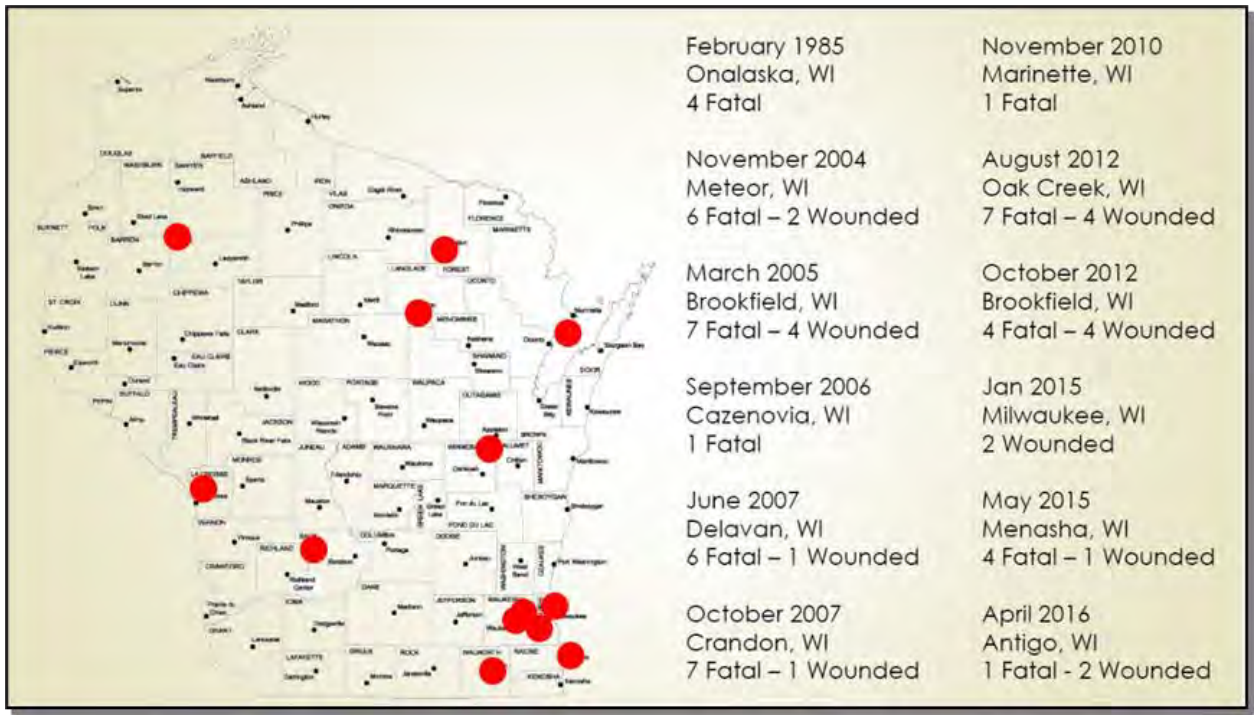
Terrorism and other Active Threats: Long-term trend data from a single governmental source on terrorism and other types of active threats is limited, and it is likely that some thwarted attacks have not been publicly announced. According to one database.[41] of 201 incidents between 2008 -2016, far-right extremists were behind 115 of the incidents (35% foiled) with nearly a third involving fatalities, while

[41] https://apps.revealnews.org/homegrown-terror/

Islamist domestic terrorism resulted in 63 cases (76% foiled) and 13% involving fatalities. Left-wing ideologies, including ecoterrorism and animal rights, were relatively rare with 19 incidents. In recent years, we have also seen the growth of new threats, such as the use of a vehicle as a weapon (e.g., Berlin-December 2016, New York Times Square-May 2017, London Bridge-June 2017, Barcelona-August 2017, New York-October 2017). Such data demonstrates the importance of remaining objective and alert to potential warning signs.

Significant Eau Claire County Events

To date, there have been no large, active shooter incidents in Eau Claire County in contemporary history. However, Wisconsin is not immune to this threat. Below is a listing of recent active shooter incidents in Wisconsin provided by Barron County Emergency Management through 2016.



The list does not include more recent mass casualty events in Wisconsin, including:

- March 22, 2017 - Active shooter incident in the Rothschild area that resulted in the deaths of a police officer and four civilians. The suspect was motivated by a domestic incident; and the violent spree involved gunfire at a bank, law office, and apartment building.
- November 20, 2020 – Eight people were hospitalized with non-life-threatening injuries after a person opened fire at the Mayfair Mall in Wauwatosa.
- February 26, 2020 – A former employee shot and killed five people at the Molson Coors Beverage Company campus in Milwaukee, then committed suicide.

There is no reason to believe that active shooter events in Wisconsin (or Eau Claire County) would significantly differ in character than national trends. The Wisconsin events listed previously are quite diverse and, for example ranged from a domestic/home shooting (Delavan, 2007) to a Sikh Temple (Oak

Creek, 2012) to a beauty salon (Brookfield, 2012) to a school parking lot (Milwaukee, 2015) to a park/trail (Menasha, 2015). Located north of Eau Claire County, the 2004 Meteor shooting involved a dispute over a hunting stand.

Hazard Probability - Active Threats

The Plan Steering Committee ranked active shooter/active threats as a hazard of some (lower than moderate) probability but high vulnerability for Eau Claire County. Terrorism, including domestic, international, and critical infrastructure, were ranked low with minimal risk. However, the Committee ranked active threat events as the highest threat vulnerability (potential impacts) facing Eau Claire County, with terrorism just slightly lower in vulnerability.

Predicting the active threat risk for Eau Claire County (105,710 population) is difficult, if not impossible. In the United States from 2018-2022 each year on average there were:

- 42.2 active shooter incidents with 222.5 casualties (injuries & fatalities)
- 336.6 bombings with 105 casualties

Based on the U.S. population of 332 million, the above active threat incidents are rare. Using these national averages and the County's population, **Eau Claire County would, on average, experience 0.0134 active shooter incidents in a year (about 1 event every 74 years) and 0.107 bombing incidents per year (about 1 event every 9.3 years), keeping in mind that many events occur without casualties.** And based on the Wisconsin and national trends, we can say that rural areas and smaller communities, such as Eau Claire County, are not immune to active shooter events, though the risk is higher in areas of higher population density.

The previous pie charts also show that risk varies by location and type of facility, though, again, no location is immune and preparedness efforts should not be limited by past trends. Based on national trends, there is a greater chance that an active shooter event will involve an Eau Claire County business. This is not surprising, since there is a greater number of businesses in most communities compared to schools, government buildings, churches, or health care facilities.

There are a few factors that could potentially influence the frequency of active shooter, workplace violence, and targeted school violence incidents, such as:

1. **Social media/internet access and management**—Information is passed to others quickly online and has resulted in copycat behavior (e.g. a bomb threat in a school resulting in a bomb threat in nearby school soon thereafter). Further, the internet provides a plethora of information, including instructions on how to carry out illegal activities as well as social discourse among individuals and groups that are considering potentially violent behavior.
2. **Population trends**—The population of Eau Claire County is increasing and becoming more ethnically diverse. This trend could cause tensions between existing and new residents. It is also not surprising that the number of incidents generally increase as the population increases, as reflected by the concentration of Wisconsin events in the southeast corner of the State.

3. **Mental Health programming**—The rate of active shooter incidents can be decreased by improvements in access to mental health programming and the public's acceptance of such services without the social stigmas.
4. **Mitigation and preparedness efforts**—A variety of potential mitigation and preparedness efforts are discussed later in this subsection.
5. **Access to firearms** - The availability and accessibility of firearms can significantly impact the likelihood and severity of active shooter incidents. States with more lenient gun laws typically see more mass shootings and more fatalities.

Vulnerability Assessment— Active Threats

Appendix F provides the following regarding the potential impacts of active threat events for Eau Claire County as a whole:

- a description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- a description of the vulnerability of each community lifeline for this hazard;
- the potential consequences or impacts to the above assets and community lifelines.

An active shooter incident can have a variety of negative impacts on people and property. The primary vulnerability of an incident is the injury or death of any persons regardless if a primary intended target exists or was event present. This vulnerability includes Eau Claire County residents, employees, students, and the many thousands of visitors who come from outside Eau Claire County.

The incident and response can also cause damage to property and buildings, often resulting in extended or even permanent closures. The victims, their family members, and other witnesses (e.g., facility managers, emergency responders) can be traumatized in the aftermath of these intense, horrific events, resulting in mental and physical stress, memory loss, etc. And the location and community can be stigmatized by the event or experience a loss of reputation that can impact future business or discourage future use. Lawsuits and other financial costs may also result.

As summarized in Appendix G, the following are the primary active threat-vulnerable locations in Eau Claire County, the greatest concentration of which are located in the cities and villages:

Educational Facilities – Schools (and their students and staff) were the most-frequently mentioned active threat vulnerability mentioned during the planning process. Details on the active threat vulnerabilities and capabilities for those educational institutions participating in the planning process are included in **Appendix L**.

Places of Commerce - Large employers were the second most-frequently mentioned active threat concern during the 2024 Plan update. The general distribution of businesses by type are described in Section II.C.ii., though non-payrolled locations (self-employed; no other employees) are not included. Not only do these places of commerce vary in type, but they also vary in size.

Hospitals and Health Care Facilities - These facilities not only serve a potentially vulnerable population, but also have a large number of employees. A study published in the Annals of Emergency Medicine in September 2012 found that large hospitals (more than 400 beds) had an incidence rate of 99.8 active shooter events per 1,000 hospitals compared to 6.7 events per 1,000 hospitals among smaller facilities; Eau Claire County's hospitals are relatively smaller facilities. According to the previously referenced study on hospital-related shootings:

- There were no patterns or factors that could definitively profile vulnerable sites and situations. Nearly 60% of shootings happened in the hospital building, with the rest on the grounds or parking structures. 34% of shootings happened in the Emergency Department and 32% in patient rooms.
- Most involved a determined shooter with a specific target. Most shooters were neither current or former patients or employees. 91% of shooters were men.
- About 40% could have been prevented using a metal detector, but such a security practice can be difficult and expensive to fully implement.

Governmental Facilities - County and local municipal buildings were also frequently mentioned active threat target during the planning process. **Section II.D** identifies the local government buildings, fire halls, and law enforcement facilities in Eau Claire County. Details on the active threat vulnerabilities and capabilities the cities and villages are included in **Appendix K**.

Houses of Worship - Houses of worship have not experienced active shooter incidents as frequently as the previous locations but remain a top target. The reported events at houses of worship varied in denomination and included retreat centers/camps. It is notable that at least half of these incidents were likely motivated by hate due to the denomination or race of the worshippers.

Projected Loss Estimates

Given the relative rarity of these events and the lack of past events in Eau Claire County, projected loss estimates are not provided in this plan.

Other Factors Influencing Future Losses

- Population Growth. As noted previously, Eau Claire County continues to grow, which increases the exposure to active threats.
- Preparedness & Mitigation. Due to the great variety in the type and sizes of these locations, there is no "one size fits all" solution to mitigating active shooter risks. (see subsection on Prevention and Mitigation Alternatives)

Risks for Individual Plan Participants - Active Threats

There are no unique city, village or town risks associated with active shooter events in Eau Claire County. Generally, the communities with larger populations, more businesses, and more critical facilities have slightly higher risks, but no location is immune.

Appendix K provides the sub-plans for each city and village and **Appendix L** provides sub-plans for participating educational institutions within Eau Claire County and includes a summary of current active threats mitigation activities in each community. These sub-plans identify active threat vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County.

During community meetings, schools, hospitals, and large employers were typically identified by the communities as being the greatest active shooter concern, with governmental buildings, houses of worship, and festivals/parades also sometimes mentioned. Most communities did not have a specific active shooter policy or plan. The City of Eau Claire in particular has made some security hardening improvements since the 2017 Plan. Eau Claire County's educational institutions, in collaboration with local law enforcement, have been very active in preparing, planning, and exercising for active threat events.

Prevention and Mitigation Alternatives

Due to the great variety in the type and sizes of these locations, there is no "one size fits all" solution to mitigating active shooter risks. It is advisable to take an "all threats" approach rather than focusing on a single type or profile of active threat. Preparedness and mitigation activities generally fall into one of the following categories.

Education and Awareness
Education is important to recognize that Eau Claire County and Wisconsin are not immune to active shooter events and to increase public awareness of warning signs as well as what to expect and what do should an event occur. Without education and preparedness, initial reactions are often disbelief, denial, shock, or failure to act. It is also important for bystanders to know how to act once law enforcement arrives on the scene.

Planning and Exercises
Given that the related risks, vulnerabilities, opportunities, and regulatory requirements can vary greatly by location, most preparedness planning occurs at the business, facility, or school district level. Active shooter preparedness planning can encompass:

- preparedness actions (e.g., education, site assessment, security measures, public announcement systems, related employee assistance or mental health programming);
- incident mitigation and response planning and training (e.g., recognizing and reporting a potential threat, de-escalation and conflict resolution techniques, what do we do when the event occurs, regular exercises and training in ALICE techniques and any location-specific procedures, train-the-trainers efforts); and
- post-event actions (e.g., can be an all-hazards approach, employee/client counseling, legal team, public relations, business continuity).

Various guides and materials are available to assist with above, including materials for the general public and pertinent to most place of employment, with additional preparedness and response guides for specific types of businesses and facilities (e.g., health care, schools, retail establishments). The Disaster Ready Chippewa Valley (DRCV) website has a collection of active shooter and workplace violence guides, pamphlets, and weblinks from sources such as FEMA, OSHA, and others at:

www.disasterreadychippewavalley.org

Site Assessment, Security, and Control

Many of the above guides include ideas and recommendations for security hardening and other control measures. For example, OSHA's *Recommendations for Workplace Violence Prevention Programs for Late-Night Retail Establishments* includes security checklists and workplace control checklists (environmental, engineering, and administrative practices); this guide is available at the above link.

Employee/Client Assistance Programs and Policies

Preventing an incident is always preferred. A robust active shooter strategy for a place of business will include programming and policies regarding access or required referrals to mental health services, encouraging reporting of concerns or suspicious activity in an appropriate manner, tracking/monitoring systems, and other "pre-event" de-escalation techniques (e.g., dealing with a disgruntled client, employee firing). For schools, this includes policies and programming to discourage bullying.

Partnerships and Continued Coordination

Key to all of the above are effective partnerships and repetition. The excellent working relationships between local law enforcement and school administrative staff serve as a model for their entire community. Such training should be extended to other emergency responders, such as fire and EMS as well as any specialized roles (e.g., PIO, 9-1-1 communication, evacuation/sheltering, crowd control). Tactical EMS training for victim evacuation and treatment has been established in Eau Claire County. A bomb squad can be activated from outside the region when needed. It is important to nurture such relationships and create them before disaster strikes. And equally critical to response (and preventing panic) is repetition in training, exercises, and drills to ensure everyone knows their roles and how to respond.

Wisconsin State Statute 118

Health and Safety Requirements for Schools

Wisconsin State Statute 118 requires that schools conduct drills in the proper method of evacuation or other appropriate action in case of a **school safety incident** at least twice a year. The public and private school safety drill shall be based on the school safety plan. A school safety plan shall be created with the active participation of appropriate parties and shall include general guidelines specifying procedures for emergency prevention and mitigation, preparedness, response, and recovery. The plan shall also specify the process for reviewing the methods for conducting drills required to comply with the plan.

The school board or governing body of the private school shall determine which persons are required to receive school safety plan training and the frequency of the training. The training shall be based upon the school district's or private school's prioritized needs, risks, and vulnerabilities. Each school board and the governing body of each private school shall review the school safety plan at least once every 3 years after the plan goes into effect.

x. CYBERATTACK

This hazard is included in order to raise awareness of this growing threat and to guide potential mitigation or preparedness actions at a county or community level. A survey or detailed analysis of cyber-preparedness for Eau Claire County and its community lifelines was not performed.

Defining the Hazard - Cyberattack



For purposes of this report, **cyberattack** is defined as a malicious computer-to-computer attack through cyberspace that undermines the confidentiality, integrity, or availability of a computer (or network), data on that computer, or processes and systems controlled by that computer.

National Security Presidential Directive 54/Homeland Security Presidential Directive 23 (NSPD-54/HSPD23) defines **cyberspace** as the interdependent network of information technology infrastructures, and includes the Internet, telecommunications networks, computer systems, and embedded processors and controllers in critical industries. Common usage of the term also refers to the virtual environment of information and interaction between people.[42]

In most cases a cyberattack can be characterized as either being carried out for financial gain, for theft of information, or to further a social or political agenda. An attack for financial gain may directly target financial institutions such as banks or credits unions. An attack may also be directed at a specific business or organization for theft of information. Social or political agenda attacks typically try to gain access to sensitive material that can then be shared publicly to embarrass the target or other political advantage.

Hazard Location

Cyberattacks are capable of occurring in any community. There are no geographic boundaries or locations within Eau Claire County uniquely affected by cyberattacks. All Eau Claire County jurisdictions are equally at risk of experiencing a cyberattack event.

Hazard Extent (Potential Intensities)

The U.S. Cybersecurity & Infrastructure Security Agency (CISA) has created the National Cyber Incident Scoring System to estimate the risk or impacts of a cyberattack incident. This system rates a cyber incident or threat on a score between zero and 100 based on a range of weighted factors. A category is then assigned that drives CISA response urgency:

Baseline (No Color) – Unlikely to affect public health, national or economic security, foreign relations, civil liberties, or public confidence. Likely to be immediately resolved.

Minimal (Blue) – Same as baseline, but needs further scrutiny and could be escalated.

[42] Cyberspace Policy Review, Assuring a Trusted and Resilient Information and Communications Infrastructure, U.S. White House.

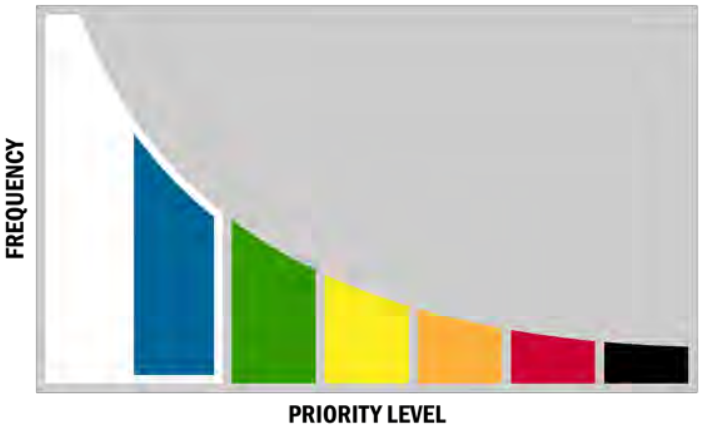
Low (Green) - Unlikely to affect public health, national or economic security, etc.

Medium (Yellow) - May affect public health, national or economic security, etc.

High (Orange) – Likely to result in a demonstrable impact to public health, national or economic security, etc.

Severe (Red) – Serous incident likely to result in significant impact to public health, national or economic security, etc.

Emergency (Black) – Priority incident poses an immediate threat to the provision of wide-scale critical infrastructure services, national government stability, or the lives of U.S. persons.



Not surprisingly, the frequency of events decreases as the priority categories increase. Below is the distribution of FFY2022 Incidents reported the CISA's Threat Hunting unit:[43]

Partner	Baseline 0-29	Minimal 30-49	Low 50-59	Medium 60-74	High 75-84	Severe 85-94	Emergency 95-100	Total Tickets
Private Sector	53	46	10	4	0	0	0	113
State, Local, Tribal, and Territorial	22	16	9	2	0	0	0	49
Government Facilities	208	250	41	1	0	0	0	500
Totals	283	312	60	7	0	0	0	662

Event History - Cyberattack

National & State Trends

Threats to cyberspace, or cyberattacks, pose one of the most serious economic and national security challenges of the 21st Century for the United States. The December 2008 report by the Commission on Cybersecurity for the 44th Presidency states: "America's failure to protect cyberspace is one of the most urgent national security problems facing the new administration."[44] In a 2017 survey of U.S. executives, cyberattacks was ranked as #2, misuse of technologies #3, and data fraud/theft #5 among the top global risks for doing business in the United States within the next ten years.[45] For perspective, terrorism ranked #1, natural catastrophes #6, and extreme weather events #10.

[43] U.S. Cybersecurity & Infrastructure Security Agency. Theat Hunting – Fiscal Year 2023 Report to Congress. July 13, 2023.

[44] CSIS Commission on Cybersecurity for the 44th Presidency, Securing Cyberspace for the 44th Presidency, December 2008.

[45] World Economic Forum. http://reports.weforum.org/global-risks-2018/global-risks-of-highest-concern-for-doing-business-2018/#country/USA

There are a growing number of cyber threat actors, such as terrorists and international criminal groups, that are targeting U.S. critical infrastructure and government. These actors have the ability to compromise, steal, change, or completely destroy information.[46] As the Director of National Intelligence (DNI) recently testified before Congress, "the growing connectivity between information systems, the Internet, and other infrastructures creates opportunities for attackers to disrupt telecommunications, electrical power, energy pipelines, refineries, financial networks, and other critical infrastructures."[47]

The 2018 Government Outlook issued by the non-profit Center for Internet Security, Inc. and its Multi-State Information Sharing and Analysis Center[48] included the following regarding cyberattack threats for the near future:

- Financial gain will remain the most prevalent cybercrime motivation and the majority of cyber incidents affecting local governments will continue to be opportunistic in nature. One area of growth will be in profit maximization per attack, rather than increasing the number of attacks.
- Risks are expanding beyond traditional computer networks to include apps, Internet of Things, social media, public engagement tools, smart cities, cloud computing, mobile devices, point-of-sales systems, etc.
- Third parties are playing an increasing role in local government cybersecurity, and cybersecurity workforce demand is outstripping supply. Use of third-party storage and outsourcing has the potential to increase data breaches.
- There is a growing need for cybersecurity staff to communicate to executives in business (non-technical) terms and having good, soft people skills. Mitigation efforts are moving beyond basic cybersecurity hygiene to more detailed efforts and protocols.
- Cyber threat actors are highly likely to continue using malspam, malvertising, and, while rare, remote desktop protocol attacks as initiation vectors, though tactics can shift.
- Cybercrime is increasing in sophistication and includes well-crafted social targeting and engineering (e.g., more accurate phishing emails and scams).
- Extortion and ransomware attacks will continue to increase.
- Industrial control systems are a wildcard. Known vulnerabilities exist in some systems, though such systems have not been a major target.
- Health care is a popular target, including for ransomware and extortion attempts.

In March 2018, the U.S. Department of Homeland Security and Federal Bureau of Investigation released an alert that since at least March 2016 Russian government cyber actors targeted government entities and multiple U.S. critical infrastructure sectors, including the energy, nuclear, commercial facilities, water, aviation, and critical manufacturing sectors. In particular, sophisticated attacks were made against power infrastructure (electrical grid) including companies that manage U.S. nuclear facilities. Gaining

[46] Director of National Intelligence, Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee, Statement for the Record, March 10, 2009.

[47] Director of National Intelligence, Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee, Statement for the Record, March 10, 2009.

[48] https://www.cisecurity.org/white-papers/2018-sltt-government-outlook/

access to such networks is extremely difficult but does have the potential to cause significant damage and severe disruptions in service. The DHS/FBI alert includes technical recommendations to improve cyber-defense from such attacks.[49]

According to Waterfall Security report, there was a 140% surge in cyberattacks that led to physical consequences in manufacturing and critical industrial infrastructure in 2022, impacting over 150 industrial operations. The report speculated that " at this rate of growth, we expect cyberattacks to shut down 15,000 industrial sites in 2027".[50] An Axios article states that the average number of weekly cyberattacks against utilities grew 118% from 2020 to 2022.[51] And municipal utilities are not immune and have become targets of State actors (cyber-terrorism).

Statewide, a 2023 survey by the Wisconsin Center for Manufacturing & Productivity found that 22% of respondents have been hacked or experienced a data breach. And these cyberattacks are not limited to specific industries or organizations. FBI and CISA speakers at Disaster Ready Chippewa Valley's July 2022 spring seminar identified the top major cyber threats facing organizations in Wisconsin as Ransomware and Business Email Compromise attacks:



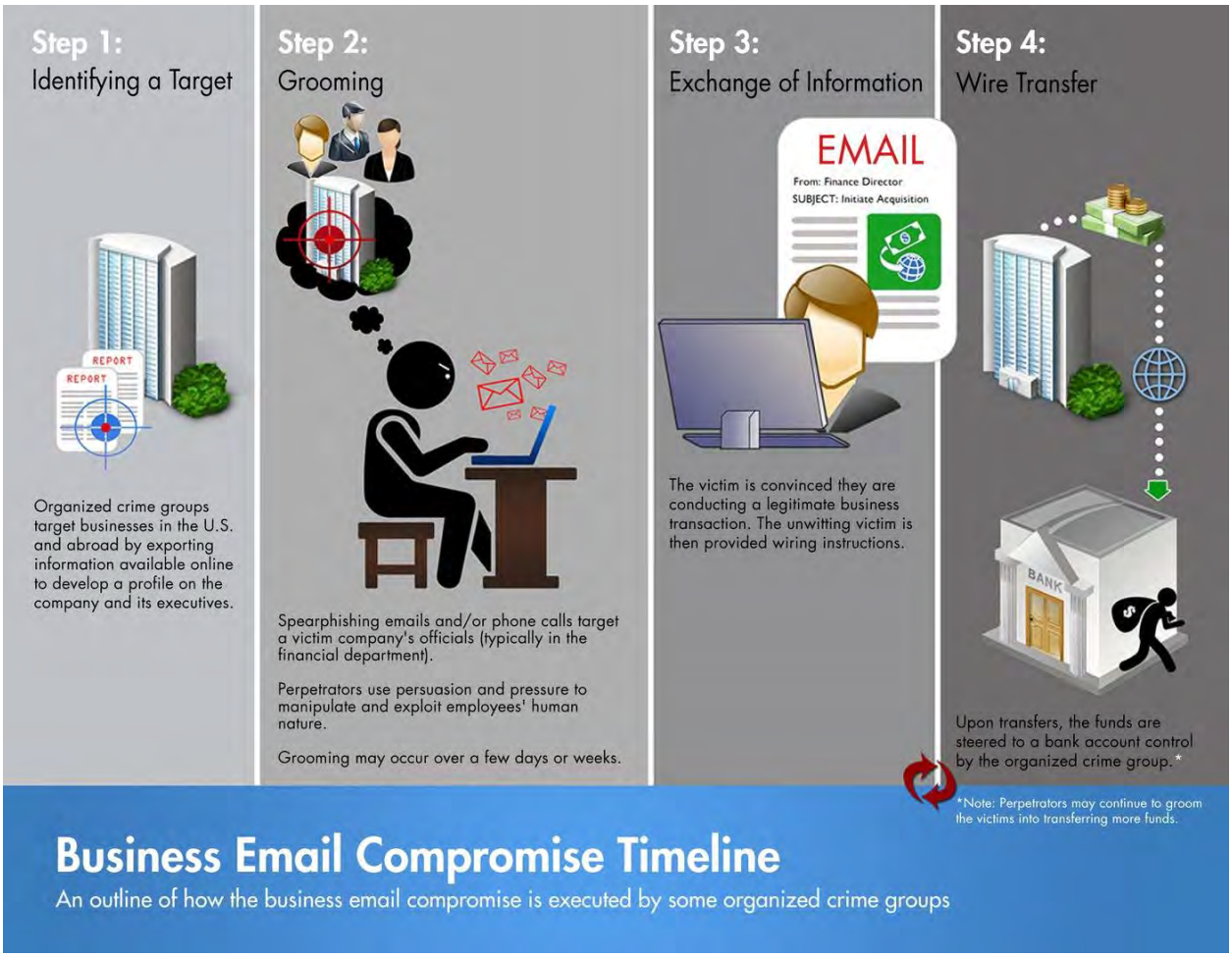
- **Ransomware** is a "huge" and growing problem for Wisconsin and the world" making it important to keep systems and applications up-to-date and to regularly maintain backups offline. Ransomware is a form of malware designed to encrypt files on a device, rendering any files and the systems that rely on them unusable. Malicious actors then demand ransom in exchange for decryption. Ransomware attacks in Wisconsin more than doubled from 2020 to 2021. According to the Wisconsin Office of Attorney General, the FBI received 81 ransomware reports in Wisconsin for 2021 compared to just 30 reports in 2020. The far majority (91%) were from the private sector. And of these, 29% were from manufacturing businesses and 14% from financial services. Nationally, there are increasing numbers of ransomware attacks targeting school districts and medium-to-smaller organizations.
- **Business email compromise** is the other most common, major threat. BEC is a form of spoofing or phishing attack where criminals send an email message that appears to come from a known source making a legitimate request. These attacks can be quite sophisticated and can even involve virtual meetings. Be on the look out for requests involving last-minute actions or changes to account/direct deposit information, purchases, or advanced payments. Verify vendor information and email addresses.

[49] https://www.us-cert.gov/ncas/alerts/TA18-074A; https://www.cnn.com/2018/03/15/politics/dhs-fbi-russia-power-grid/index.html; https://www.symantec.com/blogs/threat-intelligence/dragonfly-energy-sector-cyber-attacks

[50] Waterfall Security. *2023 Threat Report*. https://waterfall-security.com/scada-security/whitepapers/2023-threat-report/

[5151] https://www.axios.com/2023/08/03/infrastructure-power-threats

Other, more general phishing attacks via email, text messages, or phone calls are also on the rise in the attempt to lure individuals into providing sensitive data, credit card details, passwords, etc. These attacks often attempt to mimic popular brands or capitalize on current events. One study found the number of phishing attacks in the United States rose 61% in 2022.



Some recent notable attacks include:

July 2023 – Langlade County, WI issued an emergency declaration after experiencing a catastrophic software failure due to a LockBit ransomware attack. Among the impacts, all phone lines were non-functioning and 911 calls were re-routed. The attackers also threatened to leak all stolen data. This attack shows that even smaller organizations and governments can be a target for hackers, even to large, advanced groups like LockBit.

August 2023 – Hospital Sisters Health System and Prevea Health experienced cyberattacks that caused system-wide outages, temporarily impacted hospital communications, and took weeks to fully recover from. In Spring 2024, the Ascension health care system experienced a ransomware attack with data breach.

September 2023 – Rock County, WI experienced a ransomware attack in their Human Services Department. The attack targeted email systems and managed to obtain limited data. The attacker requested $1.9 million in ransom, but no payments were made.

October 2023 – Kwik Trip identified a cyberattack on their systems, which disrupted the company's internal systems and loyalty program. This is an example of a cyberattack largely based elsewhere having regional or even worldwide implications as all Kwik Trip locations were impacted.

November 2023 – Cyberattacks impacted multiple U.S.-based water and wastewater systems through internet-accessible devices in the systems' hardware. The attack had the potential to impact energy, food, and healthcare industries as they use the same equipment, identifying a significant vulnerability to essential service providers. These municipal utilities attacks occurred across the U.S., including in smaller communities, when international hackers who exploited a certain piece of equipment to shut down remote monitoring and water pressure regulating equipment.

October 2024 – The City of Sheboygan experienced a network security breach and some data may have been exposed, though it appears that no services were impacted. As of January 2025, the City was still dealing with this situation and the City's has spent over $400,000 on upgrading their cybersecurity systems. Rock County was also attacked in 2024 when perpetrators targeted employee e-mails.

January 2025 – A cloud-based software provider (PowerSchool) that is used by school districts across Wisconsin announced that it had experienced a data breach that may have exposed data about students and school staff.

Eau Claire County Trends

No data source was identified during this Plan update that provides a complete history of attacks, impacts, and losses within Eau Claire County or the region. Eau Claire County has been targeted twice. During the second attack in January 2010, overseas hackers acquired credentials through a computer virus which allowed the hackers to attempt to transfer nearly $800,000 from the County's accounts. The County's financial institution helped thwart the robbery attempts in both cases, demonstrating the importance of security partnerships with those providing such services to municipalities. Eau Claire County has taken additional security steps to further help prevent such crimes. In April 2012, the City of Eau Claire's website was hacked and temporarily unavailable, but no computer systems were impacted.

Similar cyberattacks on the public sector have occurred throughout west-central Wisconsin:

- In 2009 St. Croix County, west of Eau Claire County, encountered malicious keylogging software that was used to track keystrokes on a City of Glenwood City computer which allowed hackers to gain access to banking account information; like the Eau Claire County cases, the theft was prevented by the bank.
- More recently, the Village of Roberts had experienced identity theft, though this was not cyber-security related.

- The websites of a few communities in the region have been hacked and temporarily unavailable but local computer systems were likely not impacted.

Hazard Probability - Cyberattack

The Plan Steering Committee rated both the probability and vulnerability of major cyberattacks in Eau Claire County as moderate (see Table 11). These events will continue to occur within or affect Eau Claire County and its communities, businesses, and residents. And based on trends, the probability (and vulnerability) of such incidents is projected to increase as cyber-threat actors increase, become more sophisticated, and diversify in their targets. The probability will also increase as our world becomes increasingly connected and reliant on broadband, smart appliances, etc. However, good cyber-security practices (cyber-hygiene) if very effective at decreasing the probability.

Vulnerability Assessment - Cyberattack



Appendix F provides the following regarding the potential impacts of cyberattack events for Eau Claire County as a whole:

- a description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- a description of the vulnerability of each community lifeline for this hazard;
- the potential consequences or impacts to the above assets and community lifelines.

Any system, organization, or service that utilizes technology has some risk to cyberattacks. As some of the significant events have highlighted, most of the community lifelines identified in this plan are vulnerable to cyberattacks due to their use of internet-accessible systems. All computers, networks, and many other computerized devices share general vulnerabilities to viruses, Trojans, malware, denial of service attacks, and data loss.

While most or all community lifelines are potentially vulnerable, **Table 23** shows the primary cyberattack vulnerabilities discussed during the planning process.

Table 23. Primary Cyberattack Vulnerabilities by Attackee

Type of Attackee	Primary Vulnerabilities of Public Concern
Government	Access to confidential data to possibly steal, alter, or delete information. Website hacking and other disruption of public services or voting systems, including impacts to public confidence. Emergency communication systems, including 9-1-1 call centers, have been increasingly targeted by cyberattacks, including

	ransomware and denial-of-service attacks. As was the case in Eau Claire County and Glenwood City, hackers may attempt to obtain access to bank accounts, financial information, etc. A 2023 cyber-attack targeted Langlade County's 9-1-1 system.
Power Grid and Utilities	Ability to remotely take control of critical systems that monitor and control water supplies, wastewater treatment systems, power generating facilities, dams, communications infrastructure, etc. Power outage (see *Long-Term Power Outage* section). Damage to equipment. Lack of redundancy in systems and shared systems can increase risks and vulnerabilities.
Transportation	Disturbance of traffic signals resulting in confusion, traffic congestion and/or accidents.
Financial Institutions	Access to personal information (bank accounts) resulting in theft and/or identity theft. As more and more banking is performed on-line, financial institutions have been very proactive on cyber-security issues.
Schools Districts	Access to confidential data to possibly steal information or alter/delete it. Disruption of educational services. For public schools, cyber-security issues are frequently addressed in cooperation with CESA. Given that students are increasingly using computers and mobile devices in the classrooms, the risk of viruses, malware, etc., is high.
Health Care Facilities & Social Services	Access to confidential data is protected by HIPPA (Health Insurance Portability and Accountability Act of 1996) rules. Cyberattack is a major threat to such entities and health data is some of the most valuable on the black market (e.g., filing of claims). The average fine or settlement for the loss of confidential patient information is over $2.5 million.
Seniors	As a socially disadvantaged population, seniors are frequently the target of phishing attacks.
Other Businesses	For many of the same reasons identified previously, Eau Claire County's businesses and economy can be affected by cyberattack. Elevated vulnerabilities are financial institutions, businesses conducting e-Commerce, and businesses or manufacturers utilizing computer-controlled equipment that may be remotely controlled. Data breaches will likely reduce the public's trust in any business or facility for which customer data is exposed and may result in liabilities or lawsuits.

The growing sophistication of cyberattacks could cause serious problems, such as:

- **Failure of critical infrastructures**. The CIA reports malicious activities against information technology systems have caused the disruption of electric power capabilities in many regions

overseas, including a case that resulted in a multi-City power outage.[52] In today's world, broadband technology is a path of attack to utilities and communications. And given that infrastructure often shares systems and grids across large areas, the vulnerability from a single attack is increased.

- **Exploiting global financial services**. In November 2008, payment processors at an international bank were compromised, permitting fraudulent transactions at more than 130 automated teller machines in 49 cities within a 30-minute period.[53] In another case, a U.S. retailer in 2007 experienced data breaches and loss of personally identifiable information that compromised 45 million credit and debit cards.[54]
- **Systemic loss of U.S. economic value.** Industry estimates of losses from intellectual property to data theft in 2008 range as high as $1 trillion.[55]

Projected Loss Estimates

The Federal Bureau of Investigation's Internet Crime Complaint Center's 2023 Internet Crime Report provides some estimates on the financial impacts as a result of cyberattacks.

- $12.5 billion dollars were lost to cyber crime, a 22% increase in losses suffered, compared to 2022. Business Email Compromise and Investment scams were the costliest crimes, accounting for more than 50 percent of losses.
- The age cohort of 60+ had the largest number of victims and losses.
- Wisconsin ranks 23rd overall in number of victims per state (7,683) and 29th overall in victim losses ($92,084,459).
- The average victim in Wisconsin lost $11,985.48. This is below the national average of $14,197.80 per victim.
- Wisconsin's financial loss average has increased by almost 227% since 2020.

Risks for Individual Plan Participants - Cyberattack

All individual plan participants in Eau Claire County (i.e., villages, cities, educational institutions, electric cooperatives, businesses) are equally at risk of experiencing a cyberattack event. The level of preparedness in terms of both policy and level of protection varies among the governmental entities in Eau Claire County, though overall has improved since the 2018 Plan, including some communities purchasing cyber-insurance and nearly all back-up their data off-site in some form. Some communities

[52] www.sans.org/newsletters/newsbites/newsbites.php?vol=10&issue=5, CIA presentation, SANS SCADA Security Summit, January 16, 2008.

[53] www.bankinfosecurity.com/article.php?art_id=1197, February 5, 2009.

[54] www.infoworld.com/d/security-central/retailer-tjx/reports-massive-data-breach-952, January 17, 2007.

[55] 16 www.mcafee.com/us/about/press/corporate/2009/20090129_063500_j.html. See also http://resources.mcafee.com/content/NAUnsecuredEconomiesReport, McAfee, "Unsecured Economies: Protecting Vital Information", January 2009. Projection based on survey by Purdue's Center for Education and Research in Information Assurance and Security.

have also begun to limit security permissions to municipal utilities (e.g., wastewater SCADA systems) so such systems can only be monitored (not controlled) remotely. In some cases, the COVID-19 pandemic increased attention to cyber-security due to increase in remote working, teleconferencing, etc.

Appendix K provides sub-plans for each city and village and **Appendix L** provides sub-plans for participating educational institutions. These sub-plans identify cyberattack risks and vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County. During the planning process, cities and villages were asked about their current policies and protections, which are summarized in Appendix K. This was not a detailed, formal assessment of cyberattack vulnerabilities and level of protection. For reasons of security, specifics are not included in this plan.

As previously described, cooperatives provide electric service to a large part of Eau Claire County. Electric cooperatives have been working with the Department of Energy (DOE), the North American Electric Reliability Corporation (NERC), the Federal Energy Regulatory Commission (FERC), the U. S. Department of Homeland Security, and the electric industry to strengthen cyber-security. In 2011, NERC performed an exercise called "GridEx" to identify any issues of cyber security and to encourage utilities and governments to work together on the issues. The test showed that most utilities have adequate response plans in place but need updated guidelines, more training, and better communication.[56]

Cyberattack Preparedness and Mitigation

National Level of Preparedness

The Cybersecurity & Infrastructure Security Administration (CISA) has wide range of preparedness and response resources. Nearly every business or organization can fit within the Federal definition of critical infrastructure to receive their support. Two tools in particular are a great starting point with assistance through CISA's State office:

- Cyber Resilience Review - An assessment to evaluate an organization's cybersecurity resilience and practices. This can be self-administered or facilitated.
- Cybersecurity Infrastructure Survey - A 2.5-4 hour structured assessment of essential cybersecurity practices focusing on protective measures and threat scenarios, with an on-line dashboard of comparative results.



Additional resources are available through CISA's national team, but may require up to a 2-year wait, including cyberstorm exercises, phishing campaign assessment, vulnerability scanning, and remote penetration testing. CISA's "Shields Up" campaign is driven by the elevated cybersecurity risks as a result of the Ukraine conflict. CISA also has an on-line catalog of educational tools and videos. And attacks/incidents can also be reported to CISA, which shares such data

[56] Wisconsin Energy Cooperative News, Cyber Security Patrols Electric Co-ops Protecting Security of their Systems. June 2012.

with the FBI. The CISA office for the Wisconsin district is available to assist businesses with navigating through these many resources and programs.

The Department of Homeland Security National Cyber Security Division has a program called the Control Systems Security Program (CSSP), which works to reduce industrial control system risks within and across all critical infrastructure and key resource sectors by coordinating efforts among Federal, state, local, and tribal governments as well as industrial control systems owners, operators, and vendors.[57] The program coordinates activities to reduce the likelihood of a successful cyberattack and attempts to reduce the severity of impacts from a successful cyberattack against critical infrastructure control systems through risk-mitigation activities. Further, the Department of Homeland Security's United States Cyber Emergency Readiness Team (US-CERT) strives to improve the nation's cybersecurity, coordinate information sharing, and manage cyberattack risks.[58] US-CERT partners with private and public sector critical infrastructure owners and operators to enhance cybersecurity. Cyber-security assessment tools are available through US-CERT and businesses that provide critical infrastructure may be eligible for additional audit and planning support. Given that cyberattack threats are escalating, new programs and resources are continuing to become available. For example, in January 2024 the Department of Energy announced grant funding to support the research, development, and demonstration (RD&D) of next generation tools to protect clean energy delivery infrastructure from cyberattacks.

State of Wisconsin Level of Preparedness

The State of Wisconsin's Cyber Incident Annex "discusses policies, organizations, actions, and responsibilities for a coordinated, multidisciplinary, broad-based approach to prepare for, respond to, and recover from cyber-related incidents."[59] The Annex describes the framework for Wisconsin State Agencies to support local units of government during a cyber incident response. This support is coordinated with State and Federal agencies. Wisconsin is a home rule state and "the role of any state agency, including the Department of Military Affairs and the division, in an emergency declared under this chapter, is to assist local units of government and local law enforcement agencies in responding to a disaster or the imminent threat of a disaster."[60]

The Wisconsin Statewide Intelligence Center (Fusion Center) provides a variety of resources to businesses and organizations, including hosting the Statewide Cyber Response Team to assist businesses and organizations if they experience a cyberattack. The make-up of the Team will vary depending on the nature of the attack and type of organization and there is strong collaboration between the FBI, CISA, and Fusion Center team members. Regional-level cyber-response teams have also been established should a local government or business require support due to a significant data breach.

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[57] http://www.us-cert.gov/control_systems/

[58] http://www.us-cert.gov/about-us/

[59] Cyber Incident Annex—State of Wisconsin, http://emergencymanagement.wi.gov/planning/WERP/Annex%20Cyber%20Terrorism%20Incident%20RD.pdf, June 30, 2010.

[60] Ibid.

The State of Wisconsin Department of Administration, Division of Enterprise Technology's Office of Security also provides information to Wisconsin residents, educators, and businesses on cyber risks and ways to stay protected online.

Eau Claire County Government Preparedness

The level of preparedness in terms of both policy and level of protection varies significantly among the governmental entities in Eau Claire County, but has increased dramatically since the previous mitigation plan update. During the plan update process, cities and villages were asked about their current policies and protections. For reasons of security, specifics are not included in this plan. An increasing number of local communities frequently back-up their data off-site or to the cloud, which is also important for fire or other disaster events during which information can be destroyed.

Eau Claire County has made significant investments in cyber-security including the creation of a related position. The County conducts regular training of staff—including at home and work—as well as active threat scanning, penetration testing, and phishing campaigns with the assistance of a third-party, cyber-security firm. The County has also created a Cyberattack Incident Response Plan should an attack occur and is formalizing a recovery plan. The County and many communities now have cyber-insurance coverage.

The County and the City of Eau Claire have a strong IT partnership, including shared services and the backup of critical applications and data off-site, which lessens the vulnerability to ransomware threats. IT staff from the County and City are also members of the regional Cyber Response Team and the Government Information Processing Association of Wisconsin (GIPAW). These ongoing partnerships are critical to the ongoing exchange of ideas, techniques, and support should a serious cyberattack occur.

Other than the Eau Claire County and the City of Eau Claire, Smaller local governments (and organizations) are more likely to outsource IT support. .During the plan update, the importance of vetting of IT contractors was discussed, potentially with background checks similar to those required for law enforcement. It was also noted that the City of Altoona conducts an annual cyber-security assessment, which includes spoofing (mock attack).

Mitigation Strategies



How an entity responds to a cyberattack can limit or increase its liabilities. It can be valuable to have a cyber-response plan with a technical team and a separate executive team, with clear roles and responsibilities for each. Regular exercising of the plan will minimize stress and allow increasing focus on decisions, rather than the process and procedures.

Eau Claire County IT staff encourages everyone to do the fundamentals to help strengthen cybersecurity at work and at home:

- perform regular back-up of important data
- have strong passwords and use multi-factor authentication
- educate employees and family members on phishing; consider mock phishing testing

- have good end-point protection; keep the firewall on and set virus/malware software to automatically update
- migrating to the most current version of Windows and ensure that the Windows operating system is automatically updated
- have a plan should an attack occur or data be exposed

There are additional actions and policies that can be taken to reduce cyberattack risks as discussed at April 2011, May 2017, and June 2022 Disaster Ready Chippewa Valley cyber-security workshops, such as:

- use of hardware firewalls and how web servers are managed
- use multi-factor authentication
- IDS/IPS real-time monitoring in both directions
- data and password encryption, including encrypted tunnels for transport
- password policies and procedures
- policies for the use of computer equipment, Internet, and downloading
- segregation of certain duties
- safeguarding and proper disposal of old equipment, including copiers
- safeguarding and proper disposal of paper reports
- training of staff in risks, guidelines, and security measures
- know what is covered under insurance in term of cyberattack damages and liabilities
- request assistance from law enforcement, State, and Federal government when needed
- if an employee is leaving your firm, especially if disgruntled, it is important to cut them off immediately from access to your systems in order to help prevent insider threats or the theft of intellectual property.
- if you are victim of a cyberattack, immediately contact your financial institution to monitor or request a freeze or recall of funds. Also monitor for irregularities with payroll deposits. And file a complaint with the FBI's Internet Crime Complaint Center (www.ic3.gov). If notified immediately, the FBI may be able assist with freezing funds. In certain instances, the FBI may also open an investigation.
- the FBI issues flash messages, private industry notifications, and advisories, including alerts for specific industries.

Reflecting the importance of this threat, in May 2025, Eau Claire County Emergency Management partnered with Disaster Ready Chippewa Valley to host FEMA's AWR-136 Developing Cybersecurity Resiliency for Everyone course, which was widely advertised and open to anyone. Registrations were lower than hoped suggesting more efforts may be needed to raise awareness of the threat or consideration of alternative ways to engage the community on such topics.

Even with the best email filters, some spam and cyber threats will still get through. Employees are an integral part of your cybersecurity system and the last line of defense. Train employees to recognize suspicious emails, web sites, billings, and other identity theft threats. Warning flags include: differences

in shipping, billing, and return addresses; similar (but slightly different) business names and web links; and many large orders from new customers. If uncertain, follow-up with phone calls, web searches, etc.

Continuity planning is also important, though most local governments in Eau Claire County have not developed such plans. Continuity planning is the identification of strategies for the preservation and/or restoration of critical business functions during or following a disaster or other disruption of service. Not only should data be frequently backed-up off site, but organizations should consider how this data is to be recovered following an event and, should disaster strike, does the recovery location meet the organization's technology needs. Larger municipalities may need a secondary data and operations center and/or a back-up server. These systems should be tested regularly. The business continuity planning template available at the Disaster Ready Chippewa Valley website (www.disasterreadychippewavalley.org) includes a section on data protection, storage, and recovery which may be helpful. Local governments should obtain technical assistance in addressing their risks, if needed. One opportunity is the State & Local Cybersecurity Grant Program, which was established in 2021 to address cybersecurity risks and threats to information systems owned or operated by, or on behalf of, state, local, or tribal governments.

NATIONAL SECURITY AGENCY
CYBERSECURITY INFORMATION

NSA'S Top Ten Cybersecurity Mitigation Strategies

NSA's Top Ten Mitigation Strategies counter a broad range of exploitation techniques used by Advanced Persistent Threat (APT) actors. NSA's mitigations set priorities for enterprise organizations to minimize mission impact. The mitigations also build upon the NIST Cybersecurity Framework functions to manage cybersecurity risk and promote a defense-in-depth security posture. The mitigation strategies are ranked by effectiveness against known APT tactics. Additional strategies and best practices will be required to mitigate the occurrence of new tactics.

The cybersecurity functions are keyed as: **Identify, Protect, Detect, Respond, Recover**

1. Update and Upgrade Software Immediately

Identify, Protect

Apply all available software updates, automate the process to the extent possible, and use an update service provided directly from the vendor. Automation is necessary because threat actors study patches and create exploits, often soon after a patch is released. These "N-day" exploits can be as damaging as a zero-day. Vendor updates must also be authentic; updates are typically signed and delivered over protected links to assure the integrity of the content. Without rapid and thorough patch application, threat actors can operate inside a defender's patch cycle.

2. Defend Privileges and Accounts

Identify, Protect

Assign privileges based on risk exposure and as required to maintain operations. Use a Privileged Access Management (PAM) solution to automate credential management and fine-grained access control. Another way to manage privilege is through tiered administrative access in which each higher tier provides additional access, but is limited to fewer personnel. Create procedures to securely reset credentials (e.g., passwords, tokens, tickets). Privileged accounts and services must be controlled because threat actors continue to target administrator credentials to access high-value assets, and to move laterally through the network.

3. Enforce Signed Software Execution Policies

Protect, Detect

Use a modern operating system that enforces signed software execution policies for scripts, executables, device drivers, and system firmware. Maintain a list of trusted certificates to prevent and detect the use and injection of illegitimate executables. Execution policies, when used in conjunction with a secure boot capability, can assure system integrity. Application Whitelisting should be used with signed software execution policies to provide greater control. Allowing unsigned software enables threat actors to gain a foothold and establish persistence through embedded malicious code.

4. Exercise a System Recovery Plan

Identify, Respond, Recover

Create, review, and exercise a system recovery plan to ensure the restoration of data as part of a comprehensive disaster recovery strategy. The plan must protect critical data, configurations, and logs to ensure continuity of operations due to unexpected events. For additional protection, backups should be encrypted, stored offsite, offline when possible, and support complete recovery and reconstitution of systems and devices. Perform periodic testing and evaluate the backup plan. Update the plan as necessary to accommodate the ever-changing network environment. A recovery plan is a necessary mitigation for natural disasters as well as malicious threats including ransomware.

5. Actively Manage Systems and Configurations

Identify, Protect

Take inventory of network devices and software. Remove unwanted, unneeded or unexpected hardware and software from the network. Starting from a known baseline reduces the attack surface and establishes control of the operational environment. Thereafter, actively manage devices, applications, operating systems, and security configurations. Active enterprise management ensures that systems can adapt to dynamic threat environments while scaling and streamlining administrative operations.

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CYBERSECURITY INFORMATION

6. Continuously Hunt for Network Intrusions

Detect, Respond, Recover

Take proactive steps to detect, contain, and remove any malicious presence within the network. Enterprise organizations should assume that a compromise has taken place and use dedicated teams to continuously seek out, contain, and remove threat actors within the network. Passive detection mechanisms, such as logs, Security Information and Event Management (SIEM) products, Endpoint Detection and Response (EDR) solutions, and other data analytic capabilities are invaluable tools to find malicious or anomalous behaviors. Active pursuits should also include hunt operations and penetration testing using well documented incident response procedures to address any discovered breaches in security. Establishing proactive steps will transition the organization beyond basic detection methods, enabling real-time threat detection and remediation using a continuous monitoring and mitigation strategy.

7. Leverage Modern Hardware Security Features

Identify, Protect

Use hardware security features like Unified Extensible Firmware Interface (UEFI) Secure Boot, Trusted Platform Module (TPM), and hardware virtualization. Schedule older devices for a hardware refresh. Modern hardware features increase the integrity of the boot process, provide system attestation, and support features for high-risk application containment. Using a modern operating system on outdated hardware results in a reduced ability to protect the system, critical data, and user credentials from threat actors.

8. Segregate Networks Using Application-Aware Defenses

Protect, Detect

Segregate critical networks and services. Deploy application-aware network defenses to block improperly formed traffic and restrict content, according to policy and legal authorizations. Traditional intrusion detection based on known-bad signatures is quickly decreasing in effectiveness due to encryption and obfuscation techniques. Threat actors hide malicious actions and remove data over common protocols, making the need for sophisticated, application-aware defensive mechanisms critical for modern network defenses.

9. Integrate Threat Reputation Services

Protect, Detect

Leverage multi-sourced threat reputation services for files, DNS, URLs, IPs, and email addresses. Reputation services assist in the detection and prevention of malicious events and allow for rapid global responses to threats, a reduction of exposure from known threats, and provide access to a much larger threat analysis and tipping capability than an organization can provide on its own. Emerging threats, whether targeted or global campaigns, occur faster than most organizations can handle, resulting in poor coverage of new threats. Multi-source reputation and information sharing services can provide a more timely and effective security posture against dynamic threat actors.

10. Transition to Multi-Factor Authentication

Identify, Protect

Prioritize protection for accounts with elevated privileges, remote access, and/or used on high value assets. Physical token-based authentication systems should be used to supplement knowledge-based factors such as passwords and PINs. Organizations should migrate away from single factor authentication, such as password-based systems, which are subject to poor user choices and susceptible to credential theft, forgery, and reuse across multiple systems.

Disclaimer of Warranties and Endorsement

The information and opinions contained in this document are provided "as is" and without any warranties or guarantees. Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not constitute or imply its endorsement, recommendation, or favoring by the United States Government, and this guidance shall not be used for advertising or product endorsement purposes.

Contact Information

Client Requirements and General Cybersecurity Inquiries
Cybersecurity Requirements Center (CRC), 410-854-4200, email: Cybersecurity_Requests@nsa.gov

U/OO/122630-18 PP-18-0120 March 2018

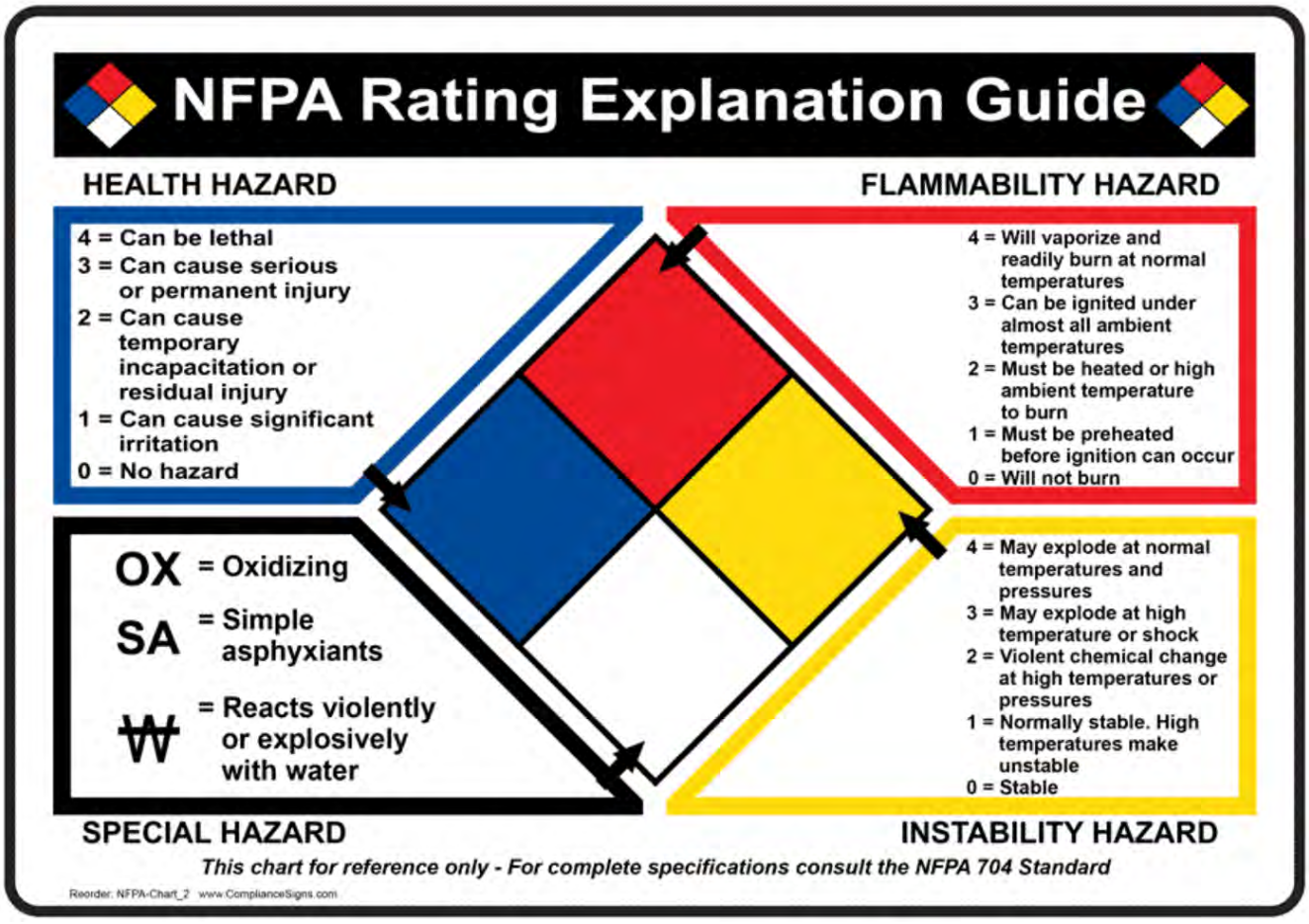
xi. HAZARDOUS MATERIALS SPILLS

Note: This plan only focuses on point sources of contaminants due to an accidental or malicious hazardous materials incident, such as a hazardous materials spill or a release from a leaking tank.

Defining the Hazard – Hazardous Materials Spills

Hazardous materials and substances can present special risks to humans and the environment at the time of disaster as well as pose substantial difficulties and necessitate special precautions for post-disaster clean-up. There are many definitions and descriptive names being used for the term "hazardous material," each of which depends on the nature of the problem being addressed. Unfortunately, there is no one list or definition that covers everything. The United States agencies involved, as well as state and local governments, have different purposes for regulating hazardous materials that, under certain circumstances, pose a risk to the public or the environment. The following are some of these Federal definitions.

Hazardous Materials – The National Fire Protection Association (NFPA) 704 Standard is widely used to classify hazardous materials, which it generally defines as "**a chemical or substance that is classified as a physical hazard material or a health hazard material, whether the chemical or substance is in usable or waste condition**." The United States Department of Transportation (DOT) uses the term "hazardous materials" which covers eight hazard classes, some of which have subcategories called classifications, and a ninth class covering other regulated materials (ORM). The DOT includes in its regulations hazardous



substances and hazardous wastes, both of which are regulated by the Environmental Protection Agency (EPA), if their inherent properties would not otherwise be covered.

Hazardous Substances - The EPA uses the term "hazardous substance" for the chemicals which, if released into the environment above a certain amount, must be reported and, depending on the threat to the environment, Federal involvement in handling the incident can be authorized. A list of the hazardous substances is published in 40 CFR Part 302, Table 302.4.

Extremely Hazardous Substances - The EPA uses the term "extremely hazardous substance" for the chemicals which must be reported to the appropriate authorities if released above the threshold reporting quantity. Each substance has a threshold reporting quantity. The list of extremely hazardous substances is identified in Title III of Superfund Amendments and Reauthorization Act (SARA) of 1986 (40 CFR Part 355).

Toxic Chemicals - The EPA uses the term "toxic chemical" for chemicals whose total emissions or releases must be reported annually by owners and operators of certain facilities that manufacture, process, or otherwise use a listed toxic chemical. The list of toxic chemicals is identified in Title III of SARA.

Hazardous Wastes - The EPA uses the term "hazardous wastes" for chemicals that are regulated under the Resource, Conservation and Recovery Act (40 CFR Part 261.33). Hazardous wastes in transportation are regulated by the DOT (49 CFR Parts 170 - 179).

Hazardous Chemicals - The United States Occupational Safety and Health Administration (OSHA) uses the term "hazardous chemical" to denote any chemical which is a physical hazard or a health hazard. Hazardous chemicals cover a broader group of chemicals than the other chemical lists. There is no list of hazardous chemicals, but they are any substance for which OSHA requires a facility to maintain a Material Safety Data Sheet.

Hazardous Substances - OSHA uses the term "hazardous substance" in 29 CFR Part 1910.120, which resulted from Title I of SARA and covers emergency response. OSHA uses the term differently than EPA. Hazardous substances, as used by OSHA, cover every chemical regulated by both DOT and EPA. [61]

Active Reporting Facilities – Sometimes called "Tier Two facilities", under Section 312 of the Emergency Planning and Community Right-to-Know Act (EPCRA), these facilities must annually share/report to the County Local Emergency Planning Committee any chemical(s) with a physical hazard or health hazard as defined in Federal regulations and any substance for which OSHA requires a facility to maintain a Safety Data Sheet (SDS). Due to OSHA requirements, any owner or operator of a facility is required to submit an SDS for a hazardous chemical into WHOPRS or to WEM for the following:

1. For each hazardous chemical present at a facility at or above 10,000 pounds at any one time, OR
2. For each Extremely Hazardous Substance (EHS) present at a facility at or above 500 pounds or the Threshold Planning Quantity (TPQ), whichever is less, at any one time.

Active Planning Facilities - Sometimes called "EHS facilities", these facilities have a total amount of an extremely hazardous substance present that equals or exceeds threshold planning quantity for that chemical. These facilities must also annually file Tier Two reports, in addition to submitting emergency plans for its hazardous substances for review by the Local Emergency Planning Committee (LEPC).

1. The chemical is expected to cause significant adverse acute human health effects at concentration levels which are likely to exist beyond the facility site boundaries as a result of a release. Acute (short-term) effects occur rapidly as a result of short-term exposure, usually to high concentrations of a chemical.

[61] Ingham County Emergency Planning Committee, Hazardous Materials Page, http://www.orcbs.msu.edu/AWARE/pamphlets/hazwaste/HazMatdef.html, as of Feb 2004.

2. In humans, the chemicals are expected to cause cancer, birth defects, nervous system effects, gene mutations which can be passed on to the next generation, or other chronic (long-term) health effects associated with repeated exposure to a chemical over a long period of time.
3. The chemical is expected to cause significant and serious adverse effects on the environment due to its toxicity, and/or its persistence (tendency to remain in an unchanged form, rather than breaking down into smaller chemical parts), and/or its tendency to bioaccumulate (to become increasingly concentrated in plant and animal tissue).

A solid waste may be a "listed hazardous waste" if it appears in one or more U.S. Environmental Protection Agency tables that list hazardous wastes. Other solid wastes are "characteristic hazardous wastes" because they exhibit any of the four hazardous-waste characteristics: corrosiveness, reactivity, toxicity, or ability to ignite. If the waste is hazardous, then it must be managed in compliance with the applicable sections of NR 600-685, Wisconsin Administrative Code (DNR Pub SW-232).

Within this plan, we apply the term "Hazardous Materials" broadly to include…

> **…any substance or combination of substances (including wastes of a solid, liquid, gaseous, or semi-solid form) which, because of its quantity, concentration, physical chemical, or infectious characteristics, may cause or significantly contribute to an increase in mortality, an increase in serious irreversible or incapacitating illness, or pose a potential hazard to human health or the environment.**

This definition encompasses the hazardous substances and wastes definitions listed previously, including those chemicals required to be reported under Title III of SARA, otherwise known as the Emergency Planning and Community Right-to-know Act (EPCRA). Companies across a wide range of industries (including chemical, mining, paper, oil and gas industries) that produce more than 25,000 pounds or handle more than 10,000 pounds of a listed toxic chemical must report it to the Toxics Release Inventory.

Given the hazard mitigation and disaster preparedness context of this planning effort, this plan only focuses on point sources of contaminants due to an accidental or malicious **hazardous materials spill or chemical incident**, when a hazardous substance is released and potentially has a significant, negative health, safety, or environmental impact. Risks and impacts from non-point sources or potentially created during normal, permitted activities are not included in the plan scope.

Hazard Location

Hazardous materials are widely used, stored, and transported in Eau Claire County. A hazardous materials spill incident could take place almost anywhere. There are no geographic boundaries or locations within the County uniquely affected by hazardous spills. Based on stakeholder and local official input during the planning process, areas and neighborhoods adjacent to the County's rail lines and major highways, especially Interstate 94 and Highway 53, have a higher likelihood of experiencing a hazardous spill event. EHSs may be transported over any local, state, or federal highway for which weight limits are met. Most fixed facilities with large quantities of hazardous chemicals (e.g., industry, commercial businesses, utilities) are located in the incorporated cities and villages.

Hazard Extent (Potential Intensities)

The extent of a hazardous materials spill can be measured by its impacts such as: what has been contaminated, the area of exposure, environmental damage, the number of people injured, any required evacuation (zone size, numbers evacuated, evacuation length), economic losses, and clean-up costs. The extent of a spill event is unique for each occurrence and there is not a commonly used scale for measuring the size or intensity of most hazardous materials spills.

There are instances in which known or threatened hazardous materials releases are so extensive, posing a serious risk to human health and/or the environment, or the hazardous materials site has been largely abandoned, that Federal assistance is needed. In 1980, Congress established the Comprehensive Environmental Response, Compensation and Liability Act (**CERCLA**) or informally called the **Superfund** Program, which forces the parties responsible for the contamination to either perform cleanups or reimburse the government for EPA-led cleanup work. Those Superfund sites that pose the greatest risks to humans or the environment, and/or require EPA take a more active role during long-term response and clean-up are identified on the Superfund **National Priority List** (NPL). Many of these NPL locations are former mining sites, hazardous/solid waste dumps, chemical/fuel companies, and industrial areas which produced military ammunition.

Not all Superfund sites are on the NPL. Using EPA's Hazard Ranking System (HRS), sites with a score of 28.50 or greater are eligible for placement on the National Priority List. The HRS score is based on a range of factors, including: the likelihood of the release, toxicity and quantity of the waste, people or sensitive environments affected, and the pathways for exposure (e.g., drinking waters, surface water, soils, air).

State & Regional Events & Trends

State and regional hazardous materials spill events and trends are summarized here to provide insight into the potential risks for Eau Claire County. Though current data is not readily available, in the past nearly 58 percent of all spills in Wisconsin are petroleum-related; and 49 percent of all spills occur at industrial-related facilities, automotive-related facilities, or on the roadways.[62] Spills at private properties account for nearly twelve percent of all spills. More than fourteen percent of spills each year in Wisconsin are contained and/or recovered before they impact the environment. Surface water spills account for more than fifteen percent, while spills to groundwater occur more than seven percent of the time. The vast majority of reported hazardous materials incidents in Wisconsin result from the loading, unloading, and transportation of hazardous materials.

Based on 2014 and 2016 Wisconsin DNR data, Wisconsin averages almost 1,000 hazardous substance spills every year, with more populated areas experiencing more spills. About one-half of all spills in Wisconsin are petroleum-related; and about one-third of spills occur on roadways. Spills at private properties account for about 12% of all spills and commercial properties account for around another 12%. About 5-10% of spills occur at farms. About one-third of spills each year in Wisconsin are contained and/or recovered before they impact the environment. The remaining spills can impact the environment or become a public health concern through the contamination of air, soil, and water. Spills to surface water or storm sewers account for 15-20% percent, while spills to groundwater occur 5-10%

[62] Wisconsin Department of Natural Resources. "Hazardous Substance Spills in Wisconsin". July 2014.

of the time. A majority of reported hazardous materials incidents in Wisconsin result from the loading, unloading, and transportation of hazardous materials. [63]

State & Regional Trends – Hazardous Materials Spills at Fixed Facilities
Under the Emergency Planning and Community Right-to-Know Act (EPCRA), there are thousands of facilities in Wisconsin that plan and report the use/storage of certain potentially hazardous chemicals. The EPCRA Program requires communities to prepare for hazardous chemical releases through emergency planning and by maintaining hazardous chemical information that is submitted to them by the facilities covered under the law. This does not include practices which are exempt from such reporting, such as routine agricultural operations and retail gas stations.

According to the Wisconsin Department of Natural Resources, there are over 11,000 businesses, schools, and government institutions in Wisconsin that generate varying quantities of hazardous wastes each year. Overall, the number of hazardous waste generators and the quantity of hazardous waste that they generate are declining each year as everyone learns how much it costs to generate wastes and manage hazardous wastes according to the strict requirements that apply. The number of largest generators has been decreasing significantly in recent years while the number of very small generators has been increasing slowly. While much of the solvent-type hazardous wastes that are generated in Wisconsin are recycled here, many other hazardous wastes are handled out of state.

Wisconsin has 701 Superfund sites in the EPA database with 37 locations proposed, on, or previously on the National Priority List due to the seriousness of the spill. Wisconsin also is home to approximately twenty-six licensed hazardous waste management facilities, which increased in number from the previous 2017 Plan.[64] Many of these facilities are privately operated, serving the needs of that particular facility's hazardous wastes. The commercial hazardous waste facilities in Wisconsin primarily focus on recycling of hazardous waste solvents and mercury, fuel blending of hazardous wastes for energy recovery, storage of hazardous wastes prior to the treatment at licensed hazardous waste facilities in other states, and treatment of hazardous wastes to facilitate disposal.

The use of chemicals and hazardous materials is part of daily life. As could be expected, the largest site-specific toxic releases in Wisconsin are at heavy industrial facilities, power plants, military installations, and paper/pulp mills. However, non-point pollution of surface and ground waters from agricultural run-off, contaminants in stormwater, and improper disposal of household chemicals (e.g., bleach, used motor oil, paints) can also cause environmental harm.

State & Regional Trends – Hazardous Materials Spills on Transportation Facilities
Recent, detailed information on transportation-related Haz Mat spills was not readily available, but it is expected that past trends are continuing. From 1971 to 2016, Wisconsin has had a total of 10,958 reported hazardous materials transportation incidents. This total is comprised of 10,498 highway incidents (95.8%), 266 rail incidents (2.4%), 188 air incidents (1.7%), 2 other incidents (>0.1%), and 0 water incidents (0.0%). The total cost for all reported incidents is approximately $57 million dollars. These incidents included 175 involving a crash or derailment, 68 causing or contributing to personal

[63] Wisconsin Department of Natural Resources. "Hazardous Substance Spills in Wisconsin", July 2014 and August 2016.

[64] Wisconsin Department of Natural Resources, "Wisconsin Hazardous Waste Treatment/Storage/Disposal Facilities. Licensed for Year 2015". April 2, 2015.

injury, 59 causing or contributing to an evacuation, 38 closing a major transportation arterial or facility, and seven causing or contributing to a fatality.



Source: National Transportation Safety Board Report, CHI 96 FR 010, Derailment/Hazardous Material Release, Wisconsin Central, LTD, Weyauwega, Wisconsin, August 16, 1997.

Approximately half of the above reported costs ($26.6 million) were from the 1996 Weyauwega Train Derailment. In March 1996, a train consisting of two locomotive units, 68 loaded freight cars and 13 empty freight cars derailed at Weyauwega, Wisconsin. The train included sixteen cars with hazardous materials—seven cars of liquid petroleum gas, seven cars of propane, and two cars of sodium hydroxide. A fire engulfed many of the cars themselves as well as an adjacent feed mill. About 3,155 residents were immediately evacuated, with approximately 2,300 residents evacuated for sixteen days due to the fire and leaking chemicals. Two U.S. highways were also closed as well as several county highways. Additional issues arose when numerous residents illegally began to re-enter the evacuation area to retrieve pets left behind.

Sometimes, hazardous materials spills can be the result of natural hazard events. For instance, on June 7, 1980, a Chicago & Northwestern train derailed in Chippewa County due to a flash flood which washed out the tracks. Three cars of #6 fuel oil were torn open, and 86,000 gallons spilled. Containment dikes were built and most of the oil was recovered.

Eau Claire County Superfund Sites

According to the Wisconsin DNR, Wisconsin has 36 active National Priority List (NPL) sites, 9 deleted/removed National Priority List sites, 1 proposed National Priority List site, and 10 other non-priority Superfund sites. While there are no active NPL sites in Eau Claire County, the National Presto Industries site which was listed in 1986, lies almost entirely within the city of Eau Claire in Chippewa County. Per the EPA, the site will require long-term groundwater treatment, soil vapor extraction, groundwater monitoring, and cap maintenance. The most recent 5-year review of the site, completed in 2022, concluded that the cleanup being done on the site is protecting people and the environment.

Two sites in Eau Claire County were previously on the NPL but have been removed; these include the Eau Claire Municipal Well Field site which was removed in 2014 and the Waste Research & Reclamation Co. site which was removed in 1981.

Eau Claire County also has nine Superfund sites identified in the EPA's Superfund Enterprise Management System (SEMS). These sites are:

- Northwestern Motor Co Lease (Eau Claire)
- Eau Claire/Blue Valley Landfill (Eau Claire)
- Eau Claire Municipal Well Field (Eau Claire)

- Eau Claire Skypark City Landfill (Eau Claire)
- Waste Research & Reclamation Co. (Eau Claire)
- Midwest MFG Division of Menard Inc (Eau Claire)
- Wayne's Service Center Property (Eau Claire)
- Supercomputer Systems Incorporation (Eau Claire)
- Fall Creek Ravine (Fall Creek)

Information in the EPA database regarding the above three locations is very limited and the sites may be on the Superfund list more for testing/monitoring purposes rather than actual contamination.

Other Significant Eau Claire County Events

Bureau for Remediation & Redevelopment Tracking System (BRRTS) Records

The Bureau for Remediation & Redevelopment Tracking System (BRRTS) keeps data on hazardous materials releases and the clean-up of contaminated sites and is maintained by the Wisconsin Department of Natural Resources. The BRRTS system categorizes these events by activity type. As shown in **Table 27**, there are 1,479 BRRTS records for Eau Claire County with dates from 1978 to 2024, of which only 36 are still open; the remaining are assumed to be closed for which no further action is likely needed.

Table 24. BRRTS Records for Eau Claire County – 1978 thru 2022 report dates[65]

Activity	1978-1999		2000-2024	
Spills	367	43.3%	424	67.2%
Leaking Underground Storage Tanks	245	28.9%	24	3.8%
Environmental Repair (non-LUST)	60	7.1%	41	6.5%
No Action Required Discharge	159	18.8%	123	19.5%
Abandoned Container or Other	17	2.0%	19	3.0%
Totals	**848**	**100.0%**	**631**	**100.0%**
Average Reports per Year	**40.4**		**26.3**	

The above suggests that hazardous materials releases in the County are decreasing in frequency. Since 2000, about 67% of all BRRTS reports were spills. **Spills** are locations where a clean-up is confirmed by laboratory analysis, generally within 60 to 90 days. While most records are associated with spills, two other activity types are particularly important—leaking underground storage tanks (LUSTs) and environmental repair (ERPs) sites.

A **LUST** site has soil and/or groundwater contaminated with petroleum, which includes toxic and cancer-causing substances. However, given time, petroleum contamination naturally breaks down in the environment (biodegradation). Some LUST sites may emit potentially explosive vapors. The previous data suggests that the majority of older LUST sites in the County have likely been addressed and this risk will continue to be a small or decreasing proportion of such records in the future.

[65] Wisconsin Department of Natural Resources, WDNR BRRTS on the Web, http://dnr.wi.gov/topic/Brownfields/wrrd.html The locations of some records are unconfirmed.

ERP sites are sites other than LUSTs that have contaminated soil and/or groundwater. Examples include industrial spills (or dumping) that need long-term investigation, buried containers of hazardous substances, and closed landfills that have caused contamination. The ERP activities include petroleum contamination from above-ground (but not from underground) storage tanks. Unlike spills which are typically reported and cleaned up quickly, LUST and ERP sites many times are undiscovered or go unreported for long periods of time until significant contamination occurs. For reference, **Figure 46** later in this assessment shows the location of the open LUST and ERP sites in the County.

Of the BRRTS records from 2000-2024:

- 60% were located in the City of Eau Claire
- 11% were located in the Town of Washington
- 8% were located in the City of Altoona
- 4% were located in the Village of Fall Creek
- There are many sites with more than one record, primarily due to fuel spills. WRR Environmental, Xcel Energy, Union Pacific Railroad, and gas stations had the largest number of reports.

Other Recent Hazardous Materials Spills

No recent, major hazardous materials spills within Eau Claire County were identified during the planning process.

The most frequently mentioned event was the 2007 fire at the Waste Research & Reclamation facility, which required a temporary evacuation of nearby homes and businesses, but no off-site release of HazMat was reported.

Most local officials were most concerned with transportation-related spills rather than spills at fixed locations . Train derailments have occurred but without large incident. A derailment occurred in April 2022, but the twelve cars involved were empty. In July 2020, a truck on USH 53 near Interstate 24 tipped over with 26,000 pounds of ammonium nitrate, 300 gallons of diesel, and dynamite; roughly 8,000 pounds of fertilizer spilled and nearby homes and businesses were evacuated for a short period.



Hazard Probability – Hazardous Materials Spills

The Plan Steering Committee rated hazardous materials spills as having a low-to-some risk (frequency), but having a moderate vulnerability (impact) should an event occur (see Table 11). Transportation-related events were of slightly higher impact than spills at fixed sites.

Approximately 20-30 hazardous materials spills or other releases will be reported in any given

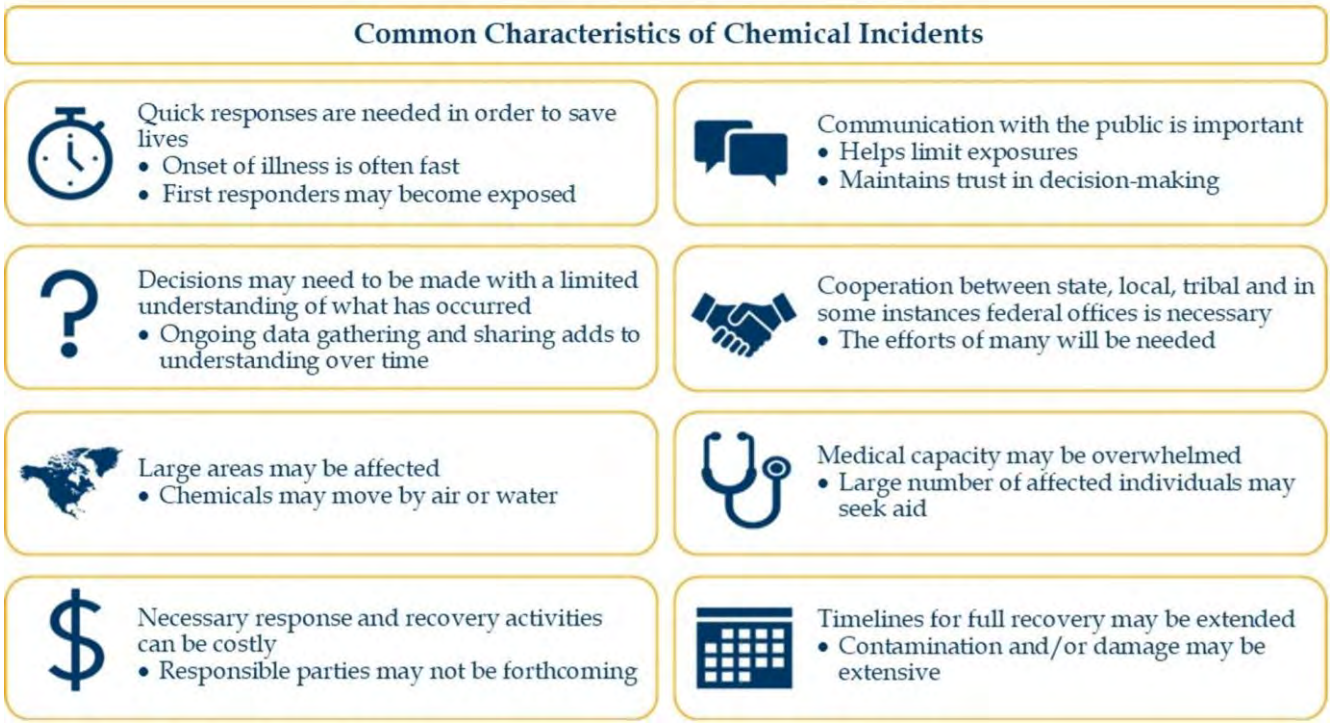
year in the County based on the BRRTS data since 2000. The largest proportion of these events will be spills, for which the majority are smaller incidents that are cleaned-up with a very short timeframe. Leaking underground storage tanks (LUSTs) are expected to continue to decrease in frequency.

Of greatest concern are the environmental repair projects for contaminated sites, such as illegal dumpsites, closed landfills, buried containers, overturned trucks/rail cars, illegal drug laboratories, or large industrial spills. Such sites have the greatest potential for environmental impact; environmental repair sites have the highest likelihood of requiring a long-term investigation and significant remediation measures**. Based on BRRTS data, new environmental repair sites will be reported for the County at an average of two per year, though not all will require significant remediation activities.**

The level of risk is also influenced by growth in Eau Claire County. As more growth occurs, there is an increase in the potential number of contamination sources. And, as the number of industries increases, there is an increase in the general use of hazardous materials in the County for domestic, institutional, and commercial purposes. Traffic volumes are also rising, which increases the potential for accidents involving vehicles carrying hazardous materials. Further, as additional private wells are installed, more residents are potentially vulnerable to groundwater contamination. It can be expected that the frequency of hazardous materials incidences and spills in the County could slowly increase as the County's population continues to rise and development occurs. Not included in the previous probabilities is the potential for an intentional HazMat release, including as an active threat or act of terrorism.

Vulnerability Assessment – Hazardous Materials Spills

Hazardous substances and materials can have a wide variety of harmful impacts to people, property, and



the environment. These substances can be in solid, liquid, gaseous, or semi-solid form, which can often be difficult to detect or contain if a release does occur. Impacts may be immediate, as in the case of fire, explosion, or physical harm to bystanders (e.g., fire, inhalation, chemical burns, radioactivity). And some impacts can be longer term, such as degraded water quality, illness among wildlife, corrosion, or increases in health problems (e.g., cancer, birth defects). The magnitude of the vulnerability zone and potential for fire or explosion also varies by substance type (e.g., gas vs. solid) and by environmental conditions (e.g., wind speeds, access to surface or groundwater, temperature). In extreme cases, contamination of buildings and soils can be at such levels as to make a property unusable or uninhabitable for lengthy periods. Evacuation of nearby residents may be needed. Recovery and clean-up costs can also vary widely depending on the type of hazardous material, amount released, and conditions at the site (e.g., soil type, temperature).

Appendix F includes the following regarding the potential impacts of hazardous materials spill events for Eau Claire County as a whole:

- a description of those assets, including populations, structures, economic sectors, services, and resources, that are at most risk or uniquely vulnerable;
- a description of the vulnerability of each community lifeline for this hazard
- the potential consequences or impacts to the above assets and community lifelines.

All Eau Claire County communities are vulnerable to a Haz Mat spills event. During the planning process, the following assets were identified as having the greatest vulnerability:

- **Residents, businesses, and community lifelines, especially those located near highways, railroads, or facilities utilizing significant quantities of hazardous chemicals. Incorporated cities and villages have the greatest vulnerabilities given the concentrations of people, businesses, lifelines, and hazardous materials facilities.**
- **Wells and Drinking Water Sources.** Wells for potable drinking water are especially vulnerable to groundwater contamination, especially private ones which are typically tested less frequently than their public counterparts and do not have associated wellhead-protection programs. Contamination may be from point sources (a spill or release) or may be more indirect, such as the application of atrazine pesticides over time within a wellhead draw area. These include the municipal systems, with some communities planning to construct new wells in the future to keep up with the pace of growth. As the population increases in the County, the number of new private well permits each year has also been significantly increasing.
- **Travelers, Shipping, and Transportation Systems.** While transportation infrastructure may not be physically impacted by a hazardous materials spill, the use of the infrastructure and nearby land uses can be impacted. A wide variety of chemicals move through and within Eau Claire County via railroad and truck traffic. If a spill should occur, adjacent residents, travelers, buildings, water supplies, and ecosystems can be impacted. And as response and clean-up proceeds, these transportation routes may need to be temporarily closed and nearby homes, businesses, and structures evacuated. Extended closures of rail and highway systems can impact local businesses and delay emergency response. Rail lines pass through portions of most incorporated communities in Eau Claire County; likewise, the Interstate 94 and Highway 53 corridors travel through numerous incorporated and developing area in the County. As traffic

volumes increase on Interstate 94, Highway 53, and other roadways in the County, the potential for accidental spills of hazardous materials increases. Extended closures of rail and highway systems can impact local businesses and delay emergency response.

- **Business and Services Using Hazardous Substances and their employees.** The County's EHS planning, Tier Two reporting, and Toxic Release Inventory (TRI) facilities have elevated vulnerabilities due to the use or storage of Haz Mat on-site; these are discussed more later.
- **Emergency responders**. Law enforcement personnel and emergency response providers are also vulnerable to the potential impacts of toxic releases as they respond to an incident or situation. In 1999, two responders in the region did receive respiratory injuries during a transportation-related hazardous materials incident.
- **Agricultural Chemicals** - With contract spraying and local cooperatives, fewer farms are storing large quantities of hazardous materials, but some stakeholders in the region have anecdotally suggested that this trend may be reversing.
- **Other Utilities and Services**. Three natural gas transmission pipelines cross eastern Eau Claire County and a fourth hazardous liquid pipeline crosses the southern part of the County; these transport substances that are hazardous but are also energy community lifelines. During the planning process, some community officials identified natural gas lines, transfer stations, and propane tank farms as special hazardous materials risks. Continued planning with tank farm owners is advised to help mitigate risks.

Public Officials Have An ACTIVE ROLE in Pipeline Safety and Security

- Be aware of pipeline facility locations in your area.
- Report suspicious individuals or activities immediately.
- Be aware of signs of leakage (e.g., sight, smells, sounds)
- Watch for and report unauthorized digging along pipeline right-of-way.
- Address pipelines in your emergency response procedures; work with your pipeline company.
- Know that pipeline company employees and contractors carry photo ID and will show it to you upon request.

source: Pipeline Association for Public Awareness

Key Areas of Concern

A hazardous materials spill or release can occur virtually anywhere in the County due to transportation accident, illegal dumping, improper handling, leaking storage tank, or other accident. To provide a sense of the number and distribution of potential brownfield and remediation sites in the County due to past hazardous materials dumping, storage tank leaks, or other such contamination requiring action, **Figure 46** identifies past and current sites in the County where contamination has occurred according to the BRRTS database. All of these sites have had some level of contamination to soil, groundwater, or both, to varying degrees, but often limited to the site itself.

Figure 46 also identifies the highways and railroad of Eau Claire County. During the planning process, transportation-related spills were consistently identified as the greatest hazardous materials concern for the following primary reasons:

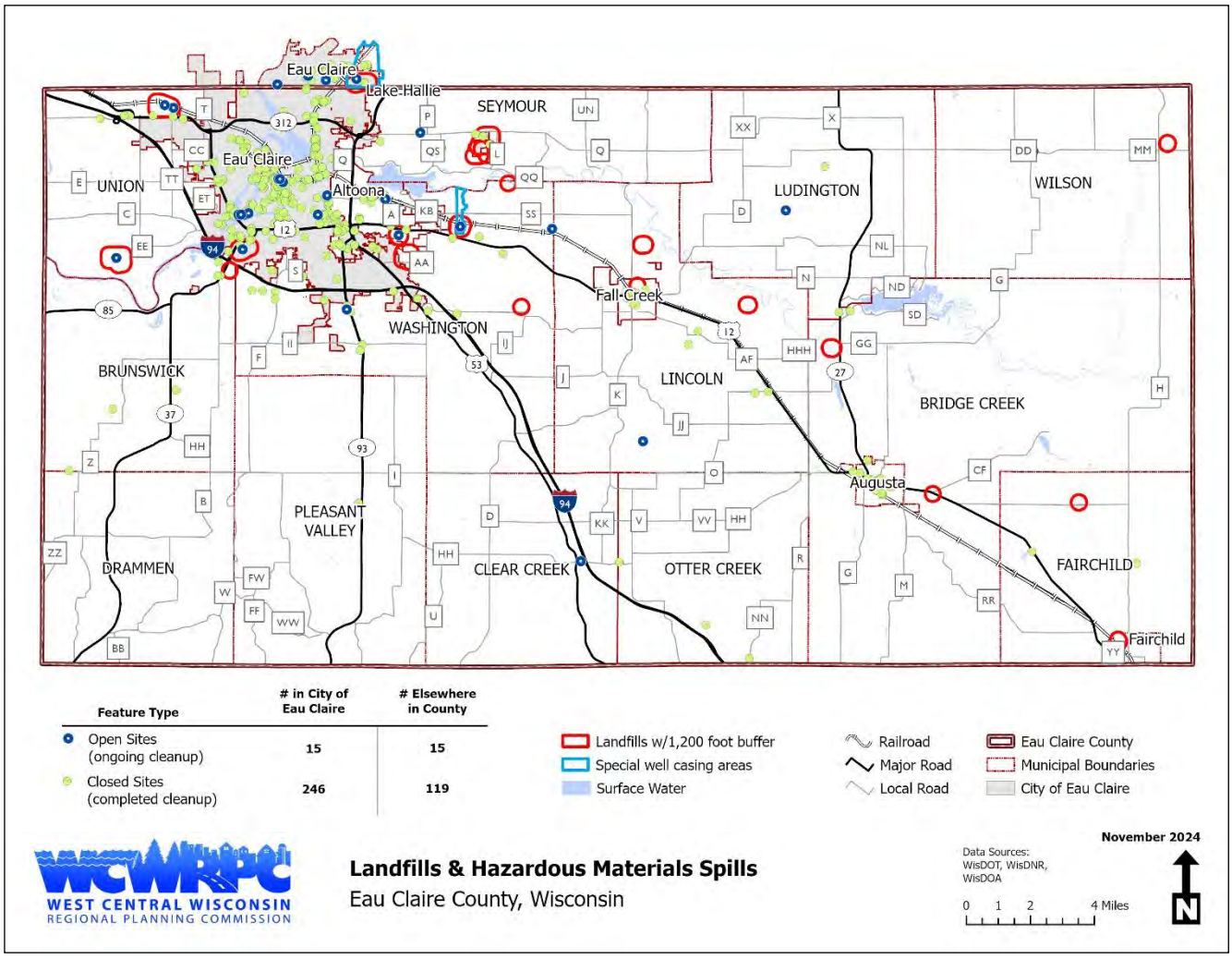
- Traffic accidents occur with many contributing factors that can be difficult to control or mitigate, including the uncertainty of what materials and quantities being transported.

- Major highways with heavy truck traffic and the rail lines pass through residential areas and near schools, hospitals, and other critical facilities.
- Most fixed facilities using hazardous materials have security measures, plans, and procedures in place to monitor, mitigate, and response to spills. For many of these facilities, local emergency response personnel are familiar with the facilities and materials being used.

Deep-Well Casing Areas & Landfills

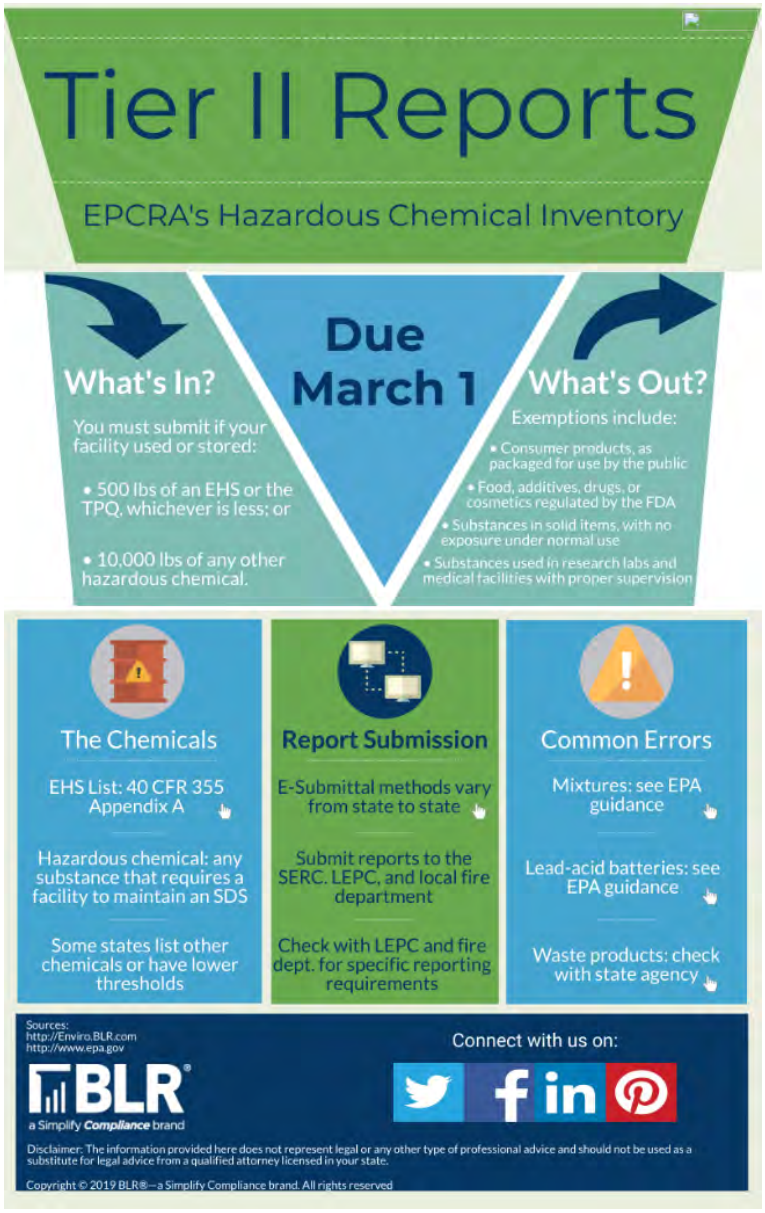
As shown on Figure 46, Eau Claire County has one WDNR-designated deep-well casing area for potable groundwater (wells) due to groundwater contamination. This designated area is in the Town of Washington and is a closed landfill. Also shown on Figure 46 are the County's numerous landfills for which a special variance approval is needed prior to drilling a potable well within 1,200 feet.

Figure 46. Key Areas of Hazardous Materials Concern



EHS and Tier Two Facilities

According to Eau Claire County Emergency, as of December 2024, there were 33 Tier Two Reporting facilities and 24 active EHS Planning facilities located within Eau Claire County. These facilities represent significant potential sources for a hazardous materials incident, with the EHS facilities being the greater concern. All of the EHS facilities and most Tier Two facilities are located within the cities and villages within the County. These include two underground storage tanks used by Eau Claire County for fuel oil and above ground fuel tanks at Highway Department facilities. For reasons of security, maps showing the locations of these EHS and Tier Two facilities have not been included within this plan.



Tier-Two facility reports are submitted annually, by law (SARA Title III), for any facility that is required to prepare or have available a Material Safety Data Sheet (MSDS) for a hazardous chemical present at the facility. EHS (Extremely Hazardous Substances) facilities store and/or use one of over 300 chemicals with extremely toxic properties identified within Title III of SARA. In addition to the MSDS reporting requirements, EHS facilities must cooperate with Eau Claire County Emergency Management and the Local Emergency Planning Committee (LEPC) to develop an emergency response plan.

The MSDS must identify any hazardous chemical present at the facility at or above 10,000 pounds at any given time or for each extremely hazardous substance (EHS) at or above 500 points (or the threshold planning quality, whichever is less) at any given time. There are a number of exemptions from these reporting requirements, including retail gas stations, hazardous wastes regulated under the Resource Conservation and Recovery Act, substances used in routine agricultural operations by the end-user, tobacco products, wood products, food products regulated by the Food & Drug Administration, and hospitals.

It is important to note that these facilities are not limited to industry, but include some public water and wastewater treatment facilities. These facilities have no known unique, inherent characteristics (e.g., location, type of construction) that make them any more vulnerable to the natural hazards covered within this Plan when compared to other facilities, and thus were not individually analyzed. However, the hazardous nature of the chemicals and substances used or stored at these locations can pose unique vulnerabilities to local residents and the environment.

Toxic Release Inventory (TRI) Sites

Facilities in certain industries which manufacture, process, or use significant amounts of toxic chemicals are required to annually report on their releases of these chemicals. More specifically, facilities with ten or more employees that process more than 25,000 pounds in aggregate, or use greater than 10,000 pounds of any toxic chemical in a given year are required to report releases each year to the Toxic Release Inventory (TRI) database. Releases include any toxic chemicals spilled, discharged, injected or otherwise released into the air, land, water, or underground. **These releases are not accidental hazardous materials spills**, but are an indicator of potential risk.

In 2023, Eau Claire County had about 101,800 pounds of on-site releases or off-site disposal of toxic chemicals from thirteen locations. The majority (72%) were disposed of or released off-site; nearly all onsite releases were to the water. American Phoenix Inc., located in the City of Eau Claire, accounted for much of the off-site release. And as a positive, of the 14.2 million pounds of production-related waste managed in the County in 2023, 73% was recycled, 21% was energy recovery, 5% was treated and only 1% was disposed or released. Additionally, the trend shows that the amount of production-related waste managed in the County continues to decrease.

It must be stressed that some type of inappropriate action should not and cannot be insinuated or implied when a facility appears in the TRI database**. In most, if not all, cases, the TRI reported releases are in compliance with applicable regulations and are consistent with the appropriate management plans. The far majority of releases in the TRI database are not accidental spills, but could be considered part of normal business practice under current regulations**. This information is provided to convey a greater sense of the risks of an accidental spill at a location using these substances or during transport. And, again, this only includes reports for facilities releasing 10,000 or more pounds.

Manure Storage and Animal Waste Management Facilities

As documented in Section II.C., Eau Claire County is home to large numbers of livestock. Manure and other animal waste is a natural by-product of the County's agricultural economy. For example, on average, an adult dairy cow produces 20-21 tons of manure per year. Most farms that have livestock also have manure management or storage facilities. If not properly designed and maintained, such facilities can be a source of contaminated runoff to groundwater and surface waters, as discussed previously in the flooding assessment.

Manure and other animal waste is a potential source of nitrates, phosphorus, bacteria, and pathogens that can impact public health with exposure or due to the contamination of drinking water. If not properly managed, animal waste has the potential to contaminate wells, kill fish, and pollute lakes and rivers. Pathogens in manure can make water unsafe to drink or use for recreation. Nitrogen and phosphorus in manure runoff to surface waters can create toxic algae blooms that can block out sunlight, starve the

water of oxygen, and destroy habitat. This risk is not limited to spills at fixed sites (barnyards, storage facilities) or transportation spills. For many areas, non-point sources (e.g., landspreading, pasture management, poor nutrient management) are of equal or greater concern.



To date, there have been no large manure spills or large fish kills as a result of nutrient run-off in Eau Claire County. A study of 300 reported manure incidents in Wisconsin showed that forty percent of manure incidents from 2005 to 2009 occurred on the main farmstead, such as the storage pit overtopping or a line break. About thirty percent of manure spills occurred during transportation between the storage facility and application site. Another thirty percent occurred during or after land application, such as movement following a rain event. The study also stated that there is increasing awareness of risks from snowmelt- and precipitation-driven runoff, which appears to have decreased manure applications on frozen soil. Forty-three percent of the incidents had a surface water impact, though manure released to road ditches was included in this category. Four percent of the incidents in this study resulted in a fish kill.

To discourage spreading in high-risk areas, the Wisconsin DNR provides maps online to landowners showing nutrient management restrictions, winter spreading risk areas, and "safe" manure stacking areas. WDNR also manages the web-based Runoff Risk Advisory Forecast that identifies the daily runoff risk by subwatershed. The Wisconsin Department of Natural Resource (WDNR) has regulatory authority related to nutrient management and water quality and operates a Spill Hotline that dispatches the local Conservation Warden should an event occur. The larger concentrated animal feeding operations are required to have a nutrient management plan and obtain State wastewater discharge permits from Wisconsin DNR prior to operation. The National Resource Conservation Service, Wisconsin Department of Agriculture, Trade, & Consumer Protection (WI DATCP), and UW-Extension provide additional education and support programs regarding nutrient and animal waste management.

Locally, issues related to animal waste and nutrient management are primarily monitored and addressed by WDNR and the Eau Claire County Land Conservation Division. The Land Conservation Division enforces the *Eau Claire County Manure Storage Ordinance*, provides related educational services, and manages a program to potential cost-share the proper abandonment of facilities that are no longer being used.

It must be noted that there is ongoing political and legal debate whether manure should be classified as a hazardous material or hazardous waste. As part of a 2015 Wisconsin Supreme Court Case (Wilson Mutual Insurance Co. v. Falk), the Court found that "just because manure may be beneficial when spread

on a field, does not mean it is not a pollutant." This report does not attempt to make such legal and regulatory distinctions.

Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

During the 2024 Plan update, PFAs were identified by Public Health and some local officials as a growing concern. This subsection recognizes these growing concerns, though information regarding PFA contamination is evolving, and the threat comes from many sources, not just Haz Mat spills.

PFAs are a large group of over 6,000 human-made chemicals that have been used in industry and consumer products worldwide since the 1950s. PFAs were widely used, long lasting chemicals. Since their components break down very slowly over time that have been nicknamed "forever chemicals".

Most PFAS use was discontinued in the early 2000's, but they continue to impact the environment. PFAS were used in a wide variety of products from non-stick cookware to stain resistant coatings for carpets and furniture. Because they do not decay very quickly, PFAS are able to infiltrate groundwater and water supplies through runoff and absorption. The true effects of PFAS on the environment and on people are not fully known. It has been determined that PFAS, through water infiltration, are being ingested by animals and people where they then collect in the body overtime.

PFAs continue to be studied and related regulations also continue to change. WDNR has created an interactive data viewer to identify testing areas, contamination sites and fish and game consumption advisories. As of Fall 2024, PFAs have not been detected above the WI DHS hazard index in any municipal water system in Eau Claire County, though they have been detected in the municipal water systems of Fairchild, Augusta, Fall Creek, Altoona and Eau Claire. The Eau Claire Well Field (known as the Eau Claire Water Treatment Facility) in the City of Eau Claire as well as the WRR Environmental Services site in the Town of Washington, are both sites that are open under investigation. Action at these sites is required to address PFAs contamination.

Potential Groundwater Impacts

Nearly all Eau Claire County residents rely on local groundwater for their source of portable water. Businesses, including agriculture and industry, also rely on groundwater. One of the potential environmental impacts of a hazardous materials release or spill is groundwater contamination. Groundwater collects or flows beneath the Earth's surface, filling the porous spaces in soil, sediment, and rocks, and is the source of water for aquifers, springs, and wells. The degradation or pollution of groundwater quality due to some substance or toxin introduced or spilled onto the soil and making its way to the groundwater can pose health risks for those using the groundwater for drinking and domestic use.

All groundwater is susceptible to contamination. Soils, geology, and depth to water table are characteristics of the natural environment that influence a location's relative susceptibility to groundwater contamination. **Figure 47** is a generalized picture of how groundwater contamination susceptibility varies in the County. While such information may guide general planning and policy, site-specific variation exists and such information should not be used for making site-specific decisions.


What are PFAS?
PFAS are a group of human-made chemicals used for decades in numerous products.
stain-resistant carpet & fabric
non-stick cookware
firefighting foam
fast food packaging
Products that may contain PFAS.
What is Wisconsin Doing About It?
establishing PFAS health standards for drinking water, groundwater and surface water
soil & water testing
researching fish & wildlife
listening & feedback sessions
state collaboration
Additional efforts include a PFAS Action Committee (WisPAC) and a PFAS Technical Advisory Group.
Why Should I Care?
PFAS persist in the environment and the human body for long periods of time. Recent findings indicate that exposure to certain PFAS may have harmful health effects in people.
certain types of cancers
thyroid & heart issues
developmental delays
infertility & low birth weight
What You Can Do...
Test Your Water
dnr.wi.gov/u/?q=177
Check State Fish Advisories
dnr.wi.gov/u/?q=176
Learn More About PFAS Health Risks
dnr.wi.gov/u/?q=175
Visit dnr.wi.gov, search PFAS.
RR-114b-E

Multi-County Commodity Flow Studies

During the planning process, areas and neighborhoods adjacent to the County's rail lines and major highways were the most frequently mentioned risk. In 2012, a *Multi-County Commodity Flow Study* was completed by Five Bugle Training & Consulting, LLC to attempt to provide insight into the types of hazardous materials moving through the region. This study included Chippewa, Dunn, Eau Claire, and St. Croix counties.

An update to the commodity flow study is nearing completion and included the following findings:

- Training – Fire departments reported a wide-range of training, with the most common number of dedicated training hours being 2-6 hours, covering primarily the Awareness and Operations level.
- Equipment – Fire Departments generally carry absorbent materials and/or mats, spill kits, multi-gas meters, Tyvek suits, containment pools, and self-contained breathing apparatus (SCBAs). Some carry additional equipment. The Chippewa Falls & Eau Claire Fire Departments have the highest level of equipment given that they, together, make up the Regional Type I Response Team.
- 5-10% of commercial truck traffic was carrying hazardous materials
- 44% of observed materials during the study were not found on the Tier II report and are potentially unfamiliar to first responders.
- Approximately 17% of chemicals observed were labeled generically

The February 2024 initial draft recommended:

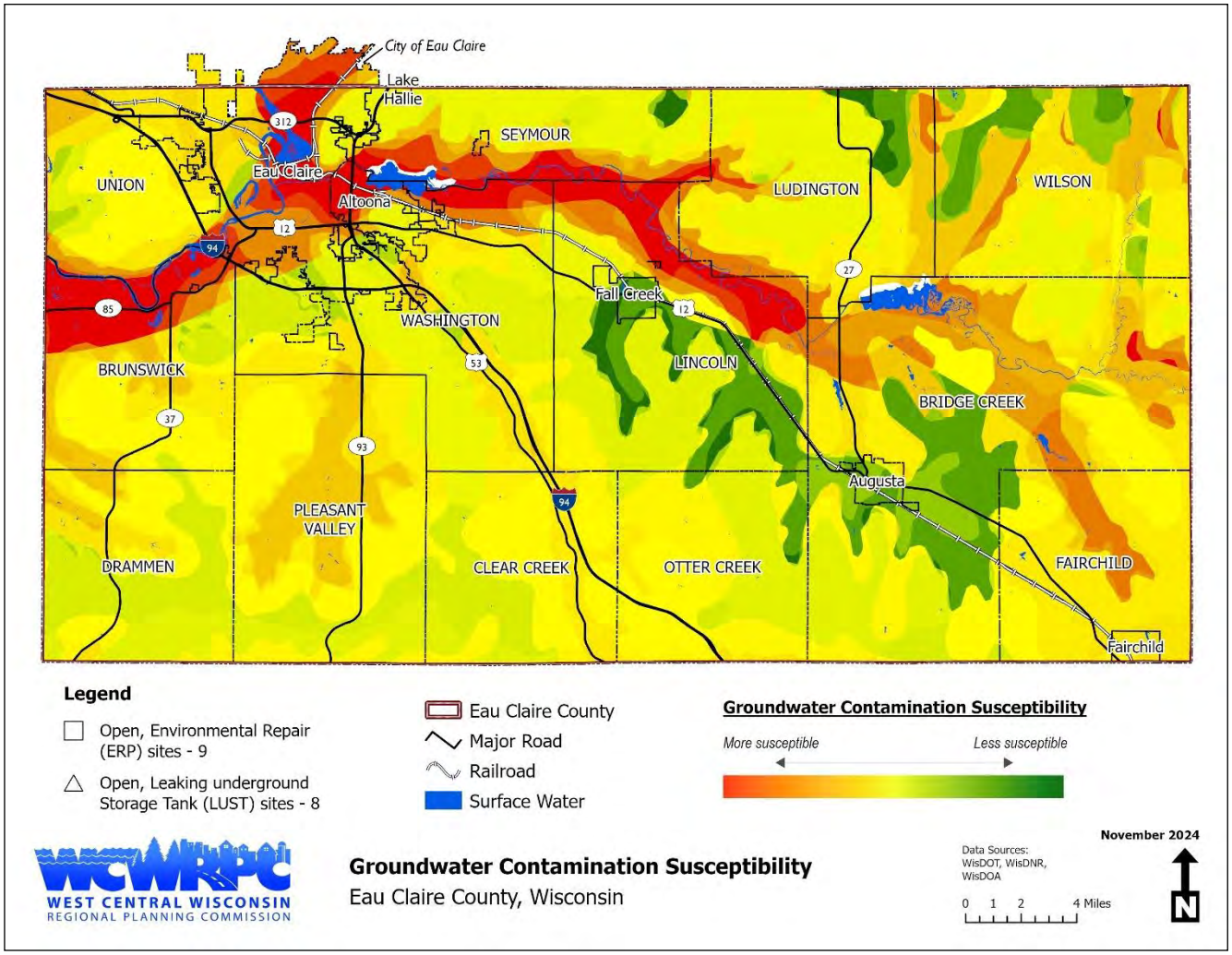
- Review and assess preparedness measures, including training records and response capabilities.
- Schedule a minimum of annual training appropriate to each fire department, including reviewing chemical properties and types of vehicles transporting HazMat.
- Inventory HazMat response equipment
- Collaborate to ensure that local decontamination equipment and procedures are in place.

Some local stakeholders expressed concern over the limitations of the commodity flow survey since it is a "point in time" visual analysis of placards, which offers limited information, skepticism regarding the compliance with placarding, and the limited information on what is being transported via railroads. For information regarding a specific train, an AskRail application was launched in 2014 for emergency responders to query railcar contents.

Projected Loss Estimates

Due to the lack of comprehensive, up-to-date data and related studies, future loss estimates for hazardous materials spills in Eau Claire County are not included. However, basing future losses on historic spill data under-estimates the true vulnerability. A very large Haz Mat release is possible in Eau Claire County and would greatly exceed any projected loss estimates based on historic data should there be significant injuries, long-term evacuation/quarantine, and/or environmental damage.

Figure 34. Groundwater Contamination Susceptibility



Other Factors Influencing Future Losses

Eau Claire County is growing. As growth occurs, there is an increase in the potential number of contamination sources. And, as the number of industries increases, there is an increase in the general use of hazardous materials in the County for domestic, institutional, and commercial purposes. Traffic volumes are also rising, which increases the potential for accidents involving vehicles carrying hazardous materials. Further, as additional private wells are installed, more residents are potentially vulnerable to groundwater contamination.

Mitigation, preparedness, and response can decrease future losses. Strategies include maintaining or upgrading Haz Mat storage equipment and related security as well as maintaining and implementing facility, emergency response, and other Haz Mat plans, with related training and exercises. All fire departments have had some training at the operations level for hazardous materials response.



WC WI Regional Response Team Practice Drill

As needed, the West Central Wisconsin Regional Response Team, based in the Chippewa Falls and the Eau Claire fire departments, can be contacted for additional reconnaissance and research support. This Type I team can also be requested to respond to the most serious of spills and releases requiring the highest level of skin and respiratory protective gear. This includes all chemical, biological, or radiological emergencies requiring vapor-tight Level A gear with self-contained breathing apparatus. Additional support from the Menomonie Fire Department Type III team may also be available. For larger events, a State-level response team is available with support from a variety of agencies including Wisconsin DNR, Wisconsin Emergency Management, and even Federal support. Rail lines, utilities, and larger industries often have their own, internal Haz Mat response teams trained and equipped to various leaves.

Risks for Individual Plan Participants – Hazardous Materials Spills

All individual plan participants in Eau Claire County (i.e., villages, cities, educational institutions, electric cooperatives) are equally at risk of experiencing the vulnerabilities of hazardous materials spills. The potential impacts, in general, are shared, though vulnerability increases in those communities with larger numbers of EHS and Tier 2 facilities. Overall, communities and plan participants were more concerned with the potential spills on railroads and highways than from fixed facilities, given that plans are in place and more information available for fixed facilities with hazardous materials.

Appendix K provides the sub-plans for each city and village and **Appendix L** provides sub-plans for participating educational institutions. These sub-plans identify Haz Mat spill risks and vulnerabilities specific or unique to these individual participants and are supplemental to the previously described event history, probability, and vulnerability assessment for Eau Claire County.

SECTION IV.
CAPABILITY ASSESSMENT

FEMA Resiliency Rating for Eau Claire County

Overall, FEMA's National Risk Index (NRI) rates Eau Claire County's community reliance as having a relatively VERY HIGH ability to prepare for anticipated natural hazards, adapt to changing conditions, and withstand and recover rapidly from disruptions when compared to the rest of the United States. However, when compared to the rest of Wisconsin, the County's community resilience is somewhat lower, but still strong (i.e., 91.76 national percentile vs. 69.40 state percentile). This community resilience assessment is based on 49 social, economic, environmental, governance, and housing/infrastructure variables.

Overview of Mitigation Actions in Eau Claire County

FEMA's planning guidance requires that mitigation plans document each jurisdiction's existing authorities, policies, programs, and resources and its ability (or lack of ability) to expand on and improve these existing policies and programs as they relate to the local hazard mitigation. To address this requirement, this section is arranged as a "checklist" of potential mitigation and preparedness activities indicating whether each activity is being carried out in Eau Claire County; additional notes are provided for each activity, including any opportunities to expand upon or improve local actions.

The focus of this section is on existing policies and programs related to natural hazards, partnerships, and all hazard mitigation and preparedness activities. This capabilities assessment is not comprehensive and evaluates Eau Claire County as a whole. Each participating city, village, and educational institution completed an individualized capabilities assessment as part of their respective sub-plans that are provided in **Appendices K & L**, with many city/village-level actions encompassing schools. The results demonstrate a strong tradition of communication and inter-agency cooperation.

Community Planning and Regulatory Activities				
Mitigation Action	**Yes**	**Some**	**No**	**Notes**
1. Mitigation planning has previously occurred in the County.	x			• Eau Claire County adopted a flood mitigation plan in 2000 and a natural hazards mitigation plan in 2007, which was updated in 2013 and became a multi-hazard mitigation plan in 2019. • City of Eau Claire adopted a flood mitigation plan in 2002 and a natural hazard mitigation plan in 2004, which was updated in 2013; the City participated in the 2019 County-level plan.
2. County and communities have incorporated mitigation strategies into their comprehensive plans.		x		• Varies by community, primarily limited to floodplain management and emergency services. • The County, all cities & villages, and the majority of towns have adopted comprehensive plans, though some local plans are out of date.

				• County Comp Plan included assessment and strategies for various community facilities/lifelines, flood/stormwater management, and emergency services; opportunity to improve with next update.
3. Construction standards mitigate natural and other hazard risks.		x		• All municipalities enforce State Uniform Dwelling & Commercial Building Codes; the County enforces for most communities. While these codes include standards appropriate for Wisconsin climate (e.g., design wind & snow loads), State rules limit ability to include some additional mitigation-related standards.
4. Local zoning and subdivision controls mitigate natural and other hazard risks beyond floodplain zoning. (e.g., Are emergency plans or safe rooms required? Long cul-de-sacs avoided? Police or fire consulted during site plan review?)		x		• As of 2024, 7 towns are under county general zoning, 1 town has its own zoning, and most cities/villages are also zoned. Emergency planning/mitigation can be addressed as part of conditional use permitting to extent allowed by State law. No safe rooms or emergency plans required for manufactured home parks, but could be a condition of permitting. Most campgrounds likely lack such plans. • County subdivision regulations apply to unincorporated towns. Includes road design standards. County consults with police/fire during plan review as needed. • Shoreland zoning and stormwater management/erosion control rules are also adopted countywide. • See Appendix K for city and village discussion.
5. Land information and GIS data is available to accurately delineate hazard risks.		x		• County GIS and land information coordinated through County Planning & Development Department. • Some data layers for mitigation planning continue to be improved and a new Hazard Dashboard created as a public educational tool. • Countywide GIS data for individual structures (e.g., # stories, value/structure, BFEs) not available for detailed hazard assessment. • Concerns over accuracy of D-FIRMs.
6. Improvements or updates to emergency management or services mapping are needed.	x			• Working with FEMA & WDNR to improve accuracy of D-FIRMs is the greatest priority, now that LIDAR is available. • Emergency Map Books updated in 2023.
7. A Comprehensive Land Use Plan has been adopted to maintain healthy County Forest Lands and mitigate wildfire risks.	x			• County Forest Comprehensive Land-Use Plan is maintained in accordance with the State of Wisconsin County Forest Law (Wis. Stats. 28.11).
8. Driveway regulations or other actions are used to encourage adequate design and maintenance for access by emergency vehicles.		x		• Driveways regulated by the governmental entity who owns the public roadway being connected to. County has basic standards for private roads/driveways if under county zoning, subdivision rules, or access to County highways. • A number of Fire Departments remain concerned with emergency vehicle access on some driveways due to width, height/tree canopy clearance, condition, or

				grades, especially in hilly, waterfront, and/or wooded areas. Long, dead end roads and cul-de-sacs can also pose access/egress challenges. Most municipalities have not involved fire departments in site plan review and similar planning.
9. Address signage standards have been adopted for consistency of placement, replacement with flag-style signs in towns, and standards for multiple homes on dead-end roads/drives.		x		• Eau Claire County enforce permitting for nearly all of the County; the Village of Fall Creek has its own address permitting. • Since driveways are often regulated at the town level, there are no countywide policies for multiple structures on private roads and long, dead-end driveways.
10. Community wildlife protection planning or related projects have occurred.		x		• Town of Seymour annually reviews and regularly updates its wildfire protection plan/action plan and has implemented related projects. • Need for similar planning may exist for other high-risk areas of the county.
Other community planning and regulatory activities or notes: • BCEGS participation varies and many local officials were unaware of this program. As part of the 2025 Plan update, more attention on building codes and BCEGS was given, which increased awareness. However, the State of Wisconsin establishes the framework for building codes and limits some mitigation-related opportunities, since Wisconsin has not adopted the most current international code standards, which restricts local municipalities from achieving the highest BCEGS scores. It is believed that Eau Claire County is participating, but needs confirmation. • A large variety of Federal, State, and local rules and policies are in place regarding hazardous materials planning, use, and reporting. Additional rules, policies, and plans are in place regarding surface and groundwater quality, manure management, etc. • See Appendix K for a summary of city and village mitigation activities. • Also see flood mitigation discussed in the "flood mitigation" table below.				

Flood Mitigation

Mitigation Action	Yes	Some	No	Notes
1. Floodplain ordinances have been adopted and communities are NFIP participants good standing.		x		• Floodplain ordinances consistent with the current state model have been adopted and all municipalities are NFIP participants in good standing, except for the Village of Fairchild, which is on the NFIP sanctioned list due to lack of floodplain zoning. County floodplain and shoreland zoning applies to all unincorporated towns. See flood assessment in Section III.
2. Development is strongly discouraged in 100-year floodplains and dam shadows.	x			• Local floodplain zoning and comprehensive plans discourage floodplain development. Accuracy concerns with current D-FIRMs makes enforcement difficult. • All permit applications reviewed to determine whether proposed building sites are reasonably safe from flooding. • County regulates dam shadows/failure areas of the following dams: Eau Claire River, Lake Altoona, Vogler, Johnson, & Dells Lake Dam shadows as part of floodplain zoning.

3. Stormwater management planning and regulation occurs.	x			• Eau Claire County recently updated its stormwater management ordinance. See Appendix K for more specific city/village actions. • As a federally-designated urbanized area, Eau Claire County and many of its municipalities have been required to obtain a MS4 permit to reduce polluted stormwater runoff by implementing stormwater management programs with a variety of educational, enforcement, and best practices activities. • Construction site erosion control measures under the uniform dwelling code (IHLR 20-25) and WDNR rules (NR 151, NR 216)
4. Stormwater system improvements have been completed.	x			• Ongoing. Significant improvements have been made since the 1993 flooding. Some of the flooding "hotspots" identified in previous mitigation plans have been addressed as discussed in the flooding assessment of Section III. • See flood risk and vulnerability assessment in Section III and the flooding related discussions in the individual city and village subplans..
5. Flood acquisition, floodproofing, and/or flood elevation projects have been implemented.	x			• Eau Claire County and City of Eau Claire have used mitigation grant dollars to acquire and floodproof many floodprone buildings as discussed in the flood assessment in Section III. • Many floodplain areas are designated as public parks or open space.
6. Dams offer flood control, dam shadows are mapped, and dams are in good repair.		x		• Dams are generally in good repair, though not all dams are managed primarily for flood control. • Eau Claire County does not have GIS dam shadow data layers for all high hazard dams.
7. Flood monitoring systems are used.	x			• The gauges are in place. USGS gauge on Eau Claire River funded by City of Eau Claire and monitored by NOAA/NWS and City. Also a USGS gauge between Dells Dam and the confluence funded by Xcel. The NOAA/NWS gauge on Eau Claire River near Fall Creek had previously failed, but was replaced since the 2019 Plan.
8. Flood emergency planning has occurred.	x			• City of Eau Claire maintains a flood emergency plan, including notifications and response based on flood risk and height. Eau Claire County has considered similar. • Emergency action plans for large and high-risk dams on file at the County Emergency Management. Inundation or dam failure areas identified for dams with emergency action plans. • Emergency plans for Xcel Energy hydroelectric dams are updated annually. Tabletop and functional exercises for dam failure conducted in conjunction with Xcel Energy and the City of Eau Claire in 2022.

				• Emergency plans for County dams reviewed annually, and updated as needed.
9. Public education regarding flood risks and insurance has occurred.	x			• Largely limited to plan review and permitting processes. • City of Eau Claire conducts additional public education as a CRS community.
10 Communities participate in the NFIP Community Rating System.		x		• The City of Eau Claire is a CRS community and is exploring additional educational efforts in order to improve its rating. • Most other communities lack sufficient concentrations of floodplain structures to make CRS participation feasible; costs outweigh benefits.
11. Other special flood prevention or mitigation activities occur.		x		• City of Eau Claire has integrated their floodplain management goals into additional plans (e.g., parks plan, waterways plan).
Other flood mitigation activities or notes: • See Appendix K for a summary of city and village mitigation activities related to flooding. • See flood risk and vulnerability assessment in Section III.B.i. • Eau Claire County maintains a limited stock of sandbags (8,000-15,000) to assist in flood containment. • County Code Administrator designated as NFIP Coordinator for Eau Claire County. • The *Eau Claire County Land & Water Resource Management Plan* includes discussion and recommendations on the importance of soil health, erosion control, stormwater management, and other best land use management practices that can protect water quality and mitigate the impacts of severe weather and climate trends, including flooding. Increasing awareness among the agricultural community that more resiliency is needed due to increasing heavy rain events and drought.				

Other Physical Mitigation Projects

Mitigation Action	Yes	Some	No	Notes
1. Community safe rooms have been designated or constructed.		x		• See Appendix K for city and village discussion. Only Augusta has formally designated public shelter (e.g. Community Center). Interest in Fairchild, Altoona, Fall Creek, and by private entities within Eau Claire. • FEMA mitigation grant funding is actively being pursued for a community safe room at Hillcrest Estates in Altoona and at the Fall Creek Schools. • No formal safe rooms at County Fairgrounds/Expo Center or County campgrounds.
2. Power lines have been buried in some areas prone to outages.		x		• Limited. See long-term power outage assessment in Section III.
3. Regular tree trimming near power lines occurs.	x			• Electric providers do a good job of regular tree trimming near power lines.
4. Snow fencing, berming, crop rows, or other efforts are used for drifting in prone areas.	x			• County Highway Department uses snow fencing and piling/rowing of snow to help control drifting. Participation in WDOT row crop program by farmers has been limited.

5. Special traffic calming, traffic controls, and/or notifications system have been installed on highways.		x		• Some on-ramp gates and remote monitoring cameras have been installed on I-94 and USH 53. Traffic will ignore and go around gates. • Additional portable message boards have been obtained since 2019 Plan.
6. Emergency power generators have been obtained for critical facilities.		x		• A survey of emergency power generator needs during the 2019 Plan update showed significant needs, though no complete inventory exists. See long-term power outage assessment in Section III for additional discussion. • Some significant improvements for County facilities since 2019. Govt Center has 3 generators. New Highway Shop, with EOC, has generator. Augusta & Foster Highway Shops allow connections for portable generators. Union Highway Shop lacks connection and no generator at Ag Center. Solar panels have now been installed at Govt Center, Highway Shop, and Ag Center offering some battery back-up capacity. • Several community lifelines, including the Pleasant Valley Town Hall/Fire Station and Altoona School District are looking for mitigation funding for generators. • Appendix K discuss the need in cities and villages.
7. Emergency fuel agreements have been executed for critical facilities.		x		• 2018 Generator Survey suggested that some larger critical facilities have fuel agreements; likely room for improvement.
8. Convenient access to water supplies is available for fire protection.		x		• See Appendix K for city and village discussion. • Most fire department have convenient access to water supplies. May be some need for additional dry hydrants or replacement/repair, such as at Fairchild Pond.
9. Warming or cooling centers have been designated.			x	• No formal list of warming and cooling centers or related agreements exists. Has issued press releases to use public buildings when available. City of Eau Claire has identified cooling sites in past, though no formal centers are designated. Some facilities that have been designated as centers in the County have limited hours and no generator. • An attempt to collaborate with FEMA to integrate a warming/cooling center/emergency shelter as part of a community safe room grant application was unsuccessful.
Other physical mitigation projects or notes: • See Appendix K for a summary of city and village mitigation activities related to the above. • The County and many municipalities maintain capital improvement or road improvement plans that incorporate mitigation projects and emergency equipment/facilities. Streets, utility, culvert, and stormwater management projects are commonly included in such plans. A County bridge/culvert assessment and inventory is underway. • County Planning & Zoning Department manages the County's Recycling and Clean Sweep Programs, which manages 11 recycling drop-off locations and collects and disposes of hazardous waste 3-4 times/year for residential and small				

quantity commercial. 1 agricultural Clean Sweep per year and pharmaceutical drop-off available through Sherriff's Department. Partnership with First Choice Computer Recycling for electronics and battery disposal.

- Some schools and other critical facilities have taken some security hardening measures in recent years, but no comprehensive preparedness assessment available. Security hardening has been included as part of the new County Highway Department facilities.
- Increasing attention to alternative energy sources (e.g., solar) and grid resiliency as mitigation measures for a long-term power outage. See the Eau Claire County Climate Action & Resilience Plan.

Emergency Operations Planning and Training

Mitigation Action	Yes	Some	No	Notes
1. The County has an Emergency Operations Plan (EOP) with annexes for various hazard events. There is strong coordination between the County's EOP and Public Health Emergency Preparedness Plan (PHEPP).	x			• County EOP is reviewed and updated annually. Includes key roles and responsibilities. • PHEPP uses a flexible, all hazards approach. Certain components of this plan are being updated. • Continuing collaboration between EOP and PHEPP. PHEPP includes a communicable disease section and is discussed at length in Section III.B.i. • County has an active shooter plan for County facilities based on ALICE model. • *Eau Claire City-County Extreme Cold Preparedness & Response Plan* updated in December 2024. • County Emergency Management has developed a 3-year Integrated Preparedness Plan (IPP) that incorporates components of the Mitigation Plan.
2. The cities, villages, and towns have updated EOPs or emergency policies.		x		• Varies, but improved since 2019. It is believed that most have plans, but some require updating, especially to contact info & roles. • County has created an EOP template for municipal use and provides assistance with updating. An "Elected Officials & Municipal Emergency Management" Guide has been distributed and quarterly "lunch-n-learns" are scheduled for 2025. • See Appendix K for city and village discussion.
3. The County and municipal EOPs are regularly exercised.		x		• Regular training organized by County Emergency Management, but not all municipalities regularly test their emergency plans; many have some type of drills. • See Appendix K for city and village discussion.
4. The County EOC has been activated or exercised in the last 5 years.	x			• EOC has been tested as part of regular exercises and partially activated during recent storm events. City of Eau Claire has also activated its EOC for past flooding. • Mobile command center is County's backup EOC.
5. HazMat planning and training occurs and gear is available.	x			• County emergency response protocols in place. Regular training organized by County Emergency Management, though federal funding for training has been decreasing.

				• Industrial facilities and hospitals doing a good job of on-site HazMat exercises and related monitoring. • 2018 WEM survey assessed gear, etc. See hazardous materials assessment in Section III.
6. Individuals identified in EOPs, including elected officials, have a minimal level of ICS training suggested for their roles.		x		• No official minimum NIMS/ICS standards for non-emergency services set. Additional training required or suggested depending on role. • Varies. Most emergency personnel and responders and many public works staff meet minimum standards. • County has identified PIOs for the EOC. • The County has implemented EOC Position Task Books and have begun related training as part of the County's Integrated Preparedness Plan. • Annual training on ICS 300 & 400. Offering the G-2300 Intermediate EOC Functions, G-402 Sr & Elected Officials, G-191 ICS/EOC Interface, and desired position-specific training every 2-3 years.
7. Other stakeholder groups participate in exercises.	x			• Regular participants include other County departments, public works/highway, VOADs, critical infrastructure, and some private-sector businesses depending on the exercise scenario. • Increasing participation by other partners, so they understand their potential roles during a disaster and strengthen their own plans, continues to be a comment received from stakeholders during interviews.
8. The County and some municipalities have developed continuity of government plans.		x		• County has adopted a basic continuity of government plan and is finalizing a Recovery Plan. • Most municipalities do not have a COOP/COG plan, but most have off-site data back-up and some have other continuity components. • Disaster Ready Chippewa Valley has a basic continuity planning template that could be utilized.
9. Evacuation and access control planning has occurred.		x		• A basic plan for City of Eau Claire exists. Bridges could be a barrier if unavailable. May need to exercise and revisit. • County has an Evacuation Plan that is at least 15 years old and in need of updating; seeking grant assistance to help with update. • State of Wisconsin (WEM) has been created a credentialing program.
10. Debris management sites have been designated.		x		• County has a Debris Management Plan with roles and responsibilities. Sites may be available for vegetation, but generally have not been designated for other debris. Municipalities were encouraged to begin thinking about as part of mitigation interviews. County notes that the landfill east of City of Eau Claire available for non-woody debris. • Municipalities encouraged to begin thinking about as part of 2025 Planning; see subplans for status. Sites

				may be available for vegetation but have not been assessed for other debris. WDNR may be able to provide guidance.
11. Emergency planning and periodic exercises are required for large festivals, fairs, and gatherings.		x		• Largely limited to general security, crowd control, medical, fire, & emergency vehicle access. Additional consideration of current plans and related permit requirements suggested for Expo Center and other event locations.
12. Planning for pandemics has occurred.	x			• See communicable disease assessment in Section III for discussion on the Public Health Emergency Preparedness Plan.
13. Highway and public works department have adopted billing rates for equipment.		x		• County Highway Department has adopted rates or State DOT rates. Discussed with cities and villages as part of the 2025 Plan update.
14. Policies and training has been completed for volunteer management.		x		• Basic policies and protocols are part of County Emergency Operations Plan and Public Health Emergency Preparedness Plan. • Volunteer Reception Plan and related training completed through Public Health • Medical Reserve Corps currently has 150 members and provides a wide range of training, personal preparedness activities (e.g., CPR & Stop the Bleed), and integrated into County emergency plans to provide support during an emergency/disaster event. MRC members participating in training and exercises. • Disaster Ready Chippewa Valley hosted a volunteer management seminar in Fall 2016.
15. Policies and training has been completed for active threats and workplace violence.	X			• County government conducts periodic active shooter training for all employees and as part of orientation for new hires; additional "refresher" training, including on de-escalation techniques, requested by some staff. Some physical hardening of facilities, including card access to certain areas, including communications towers.. Periodic "spot audits" of facilities and practices. Additional hardening continues to be evaluated on a department-by-department basis. • County Sherrif's Department supplement local law enforcement in working with schools and other local organizations. Law enforcement has keys and floor plans for schools and some other facilities. Collaborative training with UW-Eau Claire and CVTC. • Strong crisis de-escalation team at the City of Eau Claire conducts training. • Regional SWOT w/ City of Eau Claire have medics (Tactical EMS) • Joint Stop the Bleed and De-escalation training with City of Eau Claire and County was completed in 2024 after donated bleeding control kits were received by Emergency Management.

				• Participation in WEM ALERT for mutual aid if needed.
16. School Districts and post-secondary institutions have completed active threats training and have taken actions to mitigate risks.	x			• Varies by institution. All have had some type of training.

Other emergency operations planning and training activities and notes:

- See Appendix K for a discussion of city and village emergency planning and training.
- Emergency management and hazard mitigation planning is often a low priority for communities, with the exception of maintaining basic fire, police, fire responder, and ambulance services. Local emergency response plans can quickly fall out of date due to turnover of local government officials and these plans (and associated maps, resident information, etc.) may not be readily available to local officials should a disaster occur. It is also fairly common that hazard mitigation and emergency response issues are not integrated into other local planning and regulatory efforts. Education and outreach to cities, villages, and towns on emergency management issues is an ongoing effort.
- Eau Claire County has a very strong Public Health Preparedness Committee with public- and private-sector representation.
- Continuing to improve coordination between the County's Public Health Preparedness Plan and the County Emergency Operations Plan. Both have annexes for certain types of events (e.g., radiation protection plan, CBRN, mass casualty, communicable disease, at risk populations), including the 15 core public health standard capabilities. See communicable disease subsection in Section III.
- City of Eau Claire has an employee reference guide of Emergency Action Procedures, including topics such as severe weather, active threats, fire, chemical spills, medical emergencies, and evacuations.
- Similarly, the turnover in elected officials necessitates continued, periodic outreach to local officials on resources, public safety agencies, mitigation issues, and recent events. The communities, local emergency services, and County emergency management personnel should be commended for their emergency planning efforts. During the 2025 Plan update, it was noted that many local officials and key staff were participating in mitigation planning for the first time and others were retiring soon.
- County participates in Federally required training for Prairie Island Nuclear Generating Facility every eight years.
- Ongoing concerns with safety on U.S. Highway 53 ("new bypass") during poor weather.
- Cyber-security preparedness has increased since 2019 Plan. County and many communities now have cyber-insurance. See cyber-security assessment in Section III for a discussion on related mitigation.
- Civil Air Patrol with 2 fully qualified ground teams and generator at hangar.

Emergency Notification and Communication Systems

Mitigation Action	Yes	Some	No	Notes
1. Emergency communications in the County is centralized.	x			• The Eau Claire Emergency 9-1-1 Communication Center serves all police, fire, and rescue calls countywide and enhanced 9-1-1 system is in place.
2. Gaps or weaknesses in emergency communications and equipment have been addressed.	x			• A recent evaluation indicates that coverage is good though some gaps in service exist on the east side of County mostly with radio use within block buildings, basements, etc. Many public works departments rely on cell phones, but inconsistent in approach. Replacement of some town hardware underway.
3. Outdoor storm sirens are used for notification of severe weather	x			• See tornado assessment in Section III and city/village subplans for siren and notification discussion. Some

warnings. Any coverage, power, procedural, or educational concerns?				sirens are aging and/or lack battery back-up/emergency power. • Newer siren installed at Lake Eau Claire as part of a Girl Scout project. • Some of the public do not understand warning sirens or expect that the sirens will be heard indoors. Continued education on siren policies and watch/warning systems is necessary. Good information at County website.
4. NOAA All Hazard Radios or other notification equipment have been distributed.		x		• No larger-scale, formal program implemented, though some interest in NOAA radio distribution project for targeted populations.
5. Enhanced and/or Reverse-911 (or similar) GIS-based notification systems exist.		x		• County has access to agencies with IPAWS Emergency Alert Systems (EAS) authority for emergency alerts, reducing the need for the public to participate in auto-dialer mass notification systems. • County is researching the feasibility of an agreement with Chippewa County Emergency Management to utilize their mass notification tool for IPAWS alerts for those portions of the City of Eau Claire within Chippewa County (EC Co dispatch would handle these emergency calls). • Enhanced 911 with Rapid SOS in place. NextGen 911 enhancements being planned • City of Eau Claire utilizes a RAVE mass notification system.
6. Social media and the Internet is used for emergency notification and preparedness education.	x			• Facebook actively used by County Emergency Management and some municipalities. • Helpful preparedness information and web links are available at the County Emergency Management and Public Health webpages, including a new Hazard Dashboard of historical events and current threats. • County does not have a designated person to manage social media in a crisis. • Electric providers provide outage information at their webpages and through social media.
7. An active ARES/RACES group exists in the County.	x			• Very active group with a good working relationship with County Comm Center and Emergency Management. 10 active members. • Has 1 base at Comm Center, 1 mobile "war wagon" with equipment & generator, tower/repeater at Sacred Heart, and access to tower near Fall Creek. • Participates in exercises with County E.M. and members have relevant ICS training. • Assists with monthly siren testing • Goal to increase partner familiarity with WinLink Global email. • Group leadership suggested it could also potentially provide damage assessment support and support

				County or units of government with large events by providing communications & "eyes on the ground".
8. The County has an active Skywarn Storm Spotters program.	x			• Hosted by County E.M. with assistance from Eau Claire County ARES/RACES.
9. Railroad bridges, crossings, and sign posts have been mapped.		x		• Recommended in past mitigation plans. • Railroad mileposts and crossings are now in the Eau Claire County GIS database.
Other emergency notification and communications systems and notes: • The City-County Communications Center (9-1-1 Comm Center) has a back-up generator and redundant fiber loops plus microwave hops if needed. A back-up Center location with generators and portable workstations is available. Also available is a mobile communications tower if needed. • Communications Center Supervisor has completed relevant Incident Command System (ICS) training. Call volumes have been increased, but does vary with some seasonality. More Comm Center staff needed with vacant positions, but still meeting/exceeding NENA standards. • Great Rivers 2-1-1 if available as a public source of information during emergencies.				

Other Educational, Outreach, and Preparedness Activities

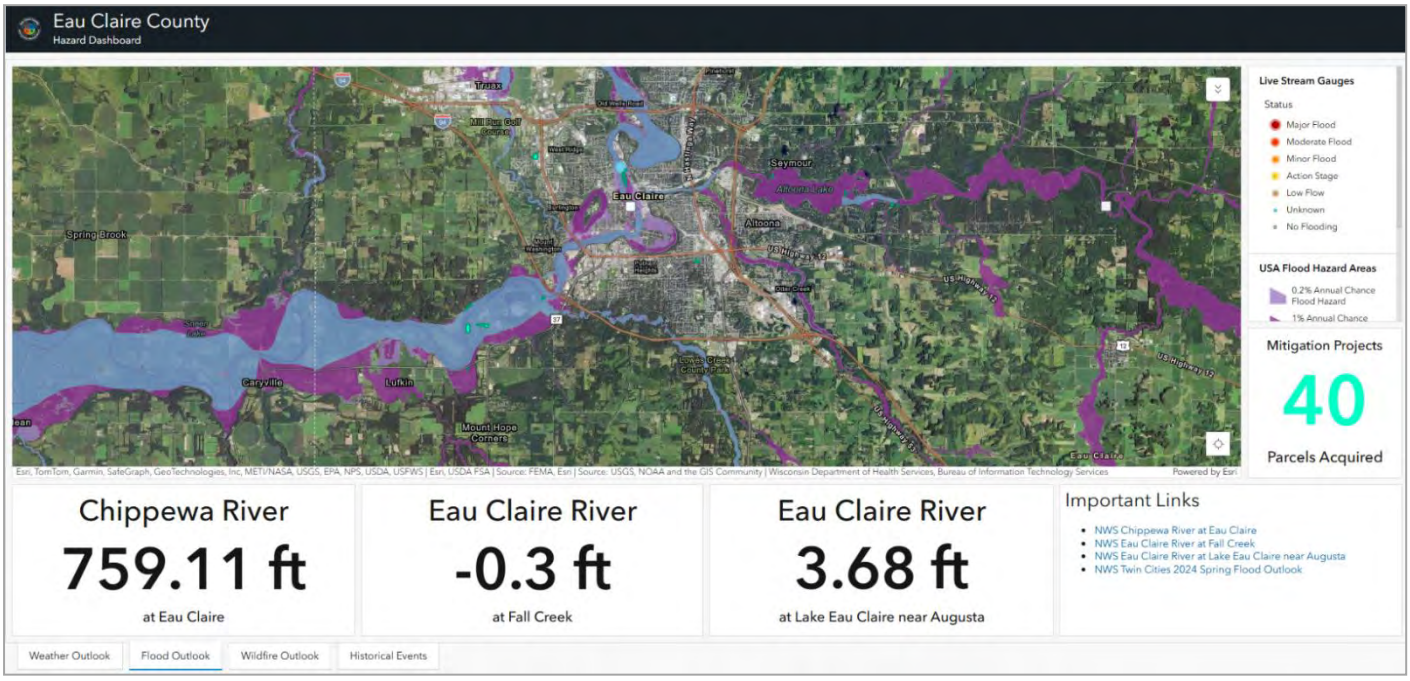
Mitigation Action	Yes	Some	No	Notes
1. Public education occurs are part of severe weather awareness week and during other seasons.	x			• Largest outreach by County Emergency Management via press and community organizations during Tornado & Severe Weather Awareness Week in April as well as National Preparedness Month, Winter Weather Awareness Week, and State-sponsored days for flooding, national flood insurance, etc. County Government also conducts internal staff "check-ins" on designated practices during awareness week. • Additional press releases during times of elevated risk.
2. Outreach to seniors and special needs populations occurs.	x			• County ADRC works with County Emgy Mgmt to on preparedness-related outreach through the 3.000 ADRC newsletters distributed monthly. • When clients join ADRC Nutrition Program, client intake/emgy contact info completed that can be valuable during a disaster event. • ADRC's four meal sites and about 400 home-delivered meals are an excellent opportunity for outreach and communications. Meal sites at Fairchild, Augusta, L.E. Phillips Senior Center, and the St. John's Heritage Apartments may serve as heating and cooling centers. Meal Sites have severe weather and evacuation policies, and conduct annual walk-throughs of these policies.` • Have distributed weather radios in past.
3. Outreach and education to area businesses occurs.	x			• Involve some industry and critical facilities in exercises, depending on the scenario. • Disaster Ready Chippewa Valley provides private-sector preparedness and continuity planning education and encourages private-public partnerships.

4. Outreach to the agricultural community occurs.	x			• Local UW-Extension staff, Farm Services Agency, NRCS, and County Land Conservation work with area farmers to educate on the mitigation of various hazard threats (e.g. winter kill, drought, manure/chemical storage). • Cost sharing may be available for spill containment and conservation projects. See notes at the end of this subsection for Farm Service Agency risk management assistance programs.
5. Staff from FSA, NRCS, Co. Land Conservation, and UW-Extension meet periodically to discuss mitigation opportunities, education needs, and damage assessment procedures.			x	• Partners involved will vary based on type of disaster threat. Have ongoing working relationships. Will work together when needed during times of disaster, but no regular meetings or formal "group".
6. Soil health and shoreland best practices are promoted in the County to help mitigate flooding impacts.	x			• Increasing emphasis on such techniques and best practices by County, regional, and State staff with partners such as Extension and the Eau Claire River Watershed Coalition. • Part of the Eau Claire County Land & Water Conservation Plan and the Eau Claire River Watershed 9-Key Element Plan.
7. Educational efforts related to forest management and wildfire has occurred.	x			• WDNR takes the lead role in wildfire-related efforts for much of the County with local fire department assistance. • Community Wildfire Protection Plan and subsequent Action Plans completed for Town of Seymour includes additional educational efforts. • County Highway Department has certifications to assist WDNR in wildfire equipment use if needed; participates in related training and exercises.
8. Planning and educational efforts related to invasive species have occurred.	x			• Various organizations working cooperatively, including Eau Claire County Land Conservation, County Highway, lake groups, municipalities, urban forestry programs, Beaver Creek Reserve, Lower Chippewa Invasives Partnership, and WDNR

Other educational, outreach and preparedness activities and notes:

- There is interest and effort from some municipalities that recent experienced a disaster to form emergency management teams and update their emergency plans. Quarterly lunch-n-learns, scheduled for 2025, to be led by County Emergency Management for the review of EOPs, damage assessments, Integrated Preparedness Planning, etc.
- County Code was updated in 2024 to have the County Emergency Operations Plan (EOP), Integrated Preparedness Plan (IPP), and other plans to go to the County Planning & Development Committee (which oversees Emergency Management) for review and approval. Future efforts to move towards a multi-year Comprehensive Emergency Management Plan (CEMP) should be explored.
- Educating elected officials on roles, responsibilities, and basic ICS is a challenge given turnover. Such education is not on a regular schedule. May be an opportunity to coordinate such with a regular review and, if needed, update of municipal emergency plans.
- ADRC has valuable resources during a disaster. Not only do their drivers and staff have relationships with seniors, but they also have access to meal sites with kitchens, ADA-equipped vehicles, and a large volunteer network. Including ADRC during training and exercises is an important opportunity.
- For agricultural losses, the USDA's Farmer Services Agency (FSA) offers Multi-Peril Crop Insurance and the Non-Insured Crop Disaster Assistance Program to assist with crop losses for reasons beyond a farmer's control. High crop insurance participation is required for certain USDA program eligibility, though concerns expressed over long-term sustainability of these insurance programs. On the livestock side, FSA has: (i) the Livestock Indemnity Program, which can allow for eligible producers to receive a per head payment on eligible livestock losses due to approved adverse weather events; (ii) the Emergency Livestock Assistance Program, which offers assistance with feed losses and additional feed expenses due to eligible adverse weather events; and (iii) the Livestock Forage Disaster Program, which is available in drought situations, but less commonly used in Wisconsin. Additional information on these and additional less commonly used programs are available at the FSA website.

Eau Claire County Emergency Management's new Hazard Dashboard not only can help the public understand current threats, but provides historical event data as well.



Mutual Aid and Other Partnerships

Mitigation Action	Yes	Some	No	Notes
1. Mutual aid between local law enforcement agencies exists and meet regularly.	x			• Statewide law enforcement mutual aid.
2. Mutual aid between local fire departments and first responders exist and meet regularly.	x			• Countywide MABAS adopted and going well. • IAmResponding used for emergency volunteer communications. • Quarterly Fire Chiefs Association meetings. • Wildland mutual aid for Intensive Protection Area adopted and regular wildland training in cooperation with WDNR.
3. Mutual aid between local public works & highway departments exist and meet regularly.		x		• A variety of mutual aid exists, but most of such agreements are informal (handshake rather than written). No countywide agreements. No formal, regular countywide meetings. • See Appendix K for city and village discussion.
4. Public health partnerships exist.	x			• Eau Claire County Public Health Preparedness Committee. • Good communication between County Public Health and County Emergency Management. Suggested that some time be spent further delineating the roles of the Public Health Preparedness Committee vs. the LEPC. • County also participates in the Northwest Wisconsin Healthcare Readiness Coalition and the Western WI Public Health Readiness Consortium.
5. Public-private partnering occurs.	x			• Some businesses are represented on LEPC and participate in exercises. Excellent P3 partnering as part of Public Health Preparedness Cmte, Medical Reserve Corps, and through VOADs. • Some local businesses have participated in ICS 300 training. • Disaster Ready Chippewa Valley, a 501(c)3, is a private-public partnership championing collaboration, preparedness, and resiliency in the County. • Electric cooperative provides training for Fire Depts and other educational efforts.
6. Intergovernmental preparedness and mitigation planning occurs across county lines.	x			• Regional WEM Office provides multi-county support and participates on LEPC. • Mitigation planning and other support also available through West Central Wisconsin Regional Planning Commission. • Also note partnerships in #4 above.
7. VOADS are active in the community and participate in preparedness planning and training.	x			• Very good relationships with local VOADs, including American Red Cross and Salvation Army. Critical volunteer base if needed + Medical Reserve Corps.

				• Many VOADs are experiencing decreases in volunteer pools. • Red Cross coordinates recovery/emergency shelters.
8. Support is provided to area educational institutions for preparedness planning and training.	x			• Eau Claire County Emergency Management, Public Health, and local municipalities have good working relationships with schools districts and post-secondary institutions. • CVTC provides required training for local emergency responders.

Other mutual aid and partnership activities and notes:

- Eau Claire County and the City of Eau Claire has a number of shared services, including Public Health, the 911 Communications Center, and some information technology infrastructure. City and County also participate on the region's Cyber Response Team.
- Housing authorities, community action programs, long-term care facilities, and houses of worship are important partners, especially when planning for socially vulnerable populations.
- Newer Federal CMS rule required additional emergency preparedness for health care providers receiving Medicare and Medicaid. Since the 2019 Plan, it is expected that all facilities are now in compliance with these requirements, but it may be valuable to review these plans with key resources to ensure that expectations are feasible.
- Some local volunteer EMS and Fire Departments expressed growing concerns with the ability to attract volunteers and have a sufficient number of volunteer responders available during daytime work hours. Increasing training requirements are also making it more difficult to attract and retain volunteer responders. A proposed OSHA major rule change would make it very difficult for many smaller departments to meet regulations. A shortage of health care workers also exists.

Barriers & Opportunities

In addition to the above, barriers to capabilities and mitigation action as well as ways to strengthen, expand upon, or improve the capabilities were discussed during plan update steering committee meetings, community meetings, and stakeholder interviews. The following primary barriers and potential approaches were identified:

Barriers

- Lack of funding, limited grant availability, and increasing costs. This was the most frequently mentioned barrier, especially for the implementation of mitigation measures, such as the construction of safe rooms, additional nature-based flood storage measures.
- Time for training, planning, and implementing mitigation/preparedness strategies.
- Lack of volunteers; volunteer fatigue and burnout.
- The homeless population is greater than available shelter space/beds.
- Many stakeholders are uncertain of storm, heating/cooling, and emergency shelter availability and shelter capacities (e.g., long-term availability, generators, open to pets). While Red Cross is starting to allow pets at some shelters, not all facility owners allow pets and not all facilities can accommodate pets.
- Challenges keeping up with changing threats, such as increasing heavy rainfall events due to long-term weather patterns and increasing sophistication of cyberattacks.

- Rural areas and significant Plain Community require different outreach strategies compared to the urban area.
- Political divisiveness, public skepticism, and eroding of trust in governmental programs.

Ways to Strengthen Capabilities

- Training, exercises, drills and meetings; bring stakeholders together to share understanding of trends, resources, and lessons learned.
- Continue to regularly engage local communities and the public, including educational outreach.
- Inventory key resources/needs (e.g., centers/shelters, emergency generators), then share findings with key stakeholders/communities and work collaboratively to fill gaps. It would be valuable to create a single database of all heating/cooling centers and longer-term shelters, including capacities and capabilities.
- Integrate the Mitigation Plan findings and recommendations into other County and community plans.
- Continue to assess potential climate change impacts to risks and encourage adaptation strategies as part of future mitigation plans and other related plans (e.g., comprehensive plans, stormwater management plans, County's Climate Action & Resilience Plan).
- Use the Integrated Preparedness Plan to guide equipment & training needs.
- Advertising, engaging, and empowering volunteers.
- Pursue grant opportunities to supplement limited local funding for the implementation of recommended mitigation projects. Utilize available local resources and partnerships for in-kind cost share contributions when possible. Engage State and Federal elected officials to share threats, barriers, and needs.

SECTION V.
PROGRESS ON THE 2019 MITIGATION PLAN STRATEGIES

Section V provides a brief status update for the County-level projects requiring significant resources & high-priority actions recommended in the 2019 *Eau Claire County Multi-Hazard Mitigation Plan.* As discussed in the 2019 Plan, the availability of resources and changing priorities affect implementation. The 2019 strategy list was comprehensive, and there was not an expectation that all strategies would be fully addressed within five years' time. The city and village sub-plans in **Appendix K** also note additional mitigation and preparedness actions, including floodplain management and other flood mitigation projects.

Table 28. Progress on 2019 Plan Recommended Projects & Priority Actions

2019 Plan Strategy	Progress
Flood-Related Projects & High-Priority Strategies	
Continue to monitor, study, and address stormwater and flash flooding hotspots in the County as identified in the flood assessment of the hazard mitigation plan. Potential projects include, but are not limited to: creation/expansion of flood/stormwater storage areas, the installation or re-sizing of culverts, the creation or improvement of drainageways, and the protection of natural drainage and retention areas.	Improvements to roads and stormwater managements systems are continuing across the County and many hotspots identified in past plans have been addressed. While FEMA grant funding has been used to mitigate floodprone properties in past, no projects funded since 2019 Plan.
Pursue hazard mitigation grant funding to acquire, relocate, or floodproof structures and properties with a flood history, most at risk of flood damage, and/or following a flood event in which significant damage occurs, if the landowner agrees to participate.	
Pursue opportunities to improve the accuracy of floodplain mapping (D-FIRMS) now that LIDAR data is available.	Continues to be a high priority. Dealing with Letters of Map Amendment can be difficult and costly. WDNR has considered pursuing RiskMAP funding to update.
Continue to enforce County and local floodplain regulations to: discourage future floodplain development and the storage of hazardous materials in floodplains; require dry land access for new structures; limit development in dam shadows; and maintain natural flood storage areas.	Ongoing.
Continue to maintain dams and dam emergency action plans. Discourage development in the hydraulic shadows (dam failure floodplains) of dams. Encourage residents and businesses within or near dam shadows to sign-up for the Smart 911 emergency notification system. Develop G.I.S. map layers for all large and high hazard dams.	Maintenance & planning ongoing; see Section III.D.i. Dam shadows, when mapped, regulated by County under floodplain zoning. Lake Wissota shadows mapped, but not available in GIS format. Johnson Dam shadow now mapped. No current notification system; remove this element of the strategy for update.
Severe Weather Projects & High-Priority Strategies	
If funding opportunities become available, work with communities to pursue grant dollars for emergency power generators for critical facilities and emergency operations centers in Eau Claire County.	While improvements in generator availability since last plan, no grant funding for generators identified.

2019 Plan Strategy	Progress
Based on landowner and/or community interest, pursue grant funding to make cost-sharing available for the installation of safe rooms (storm shelters) at mobile home parks, campgrounds, RV parks, recreational properties, slab-on-grade residential developments, festival grounds, and other areas and communities where no existing shelter alternatives exist, including public-owned facilities (e.g., campgrounds, parks, Expo Center).	Hazard Mitigation Grant Program funding pursued for Hillcrest Estates mobile home park. BRIC funding being considered for a safe room at Fall Creek School District.
Partner with area electric providers, oxygen providers, and ADRC to review the County's Special Populations Emergency Plan to identify the roles of electric providers within the County's emergency operations systems and lines of communication. Identify how special needs households are contacted or monitored and how back-up oxygen is distributed if needed. Collaborate with hospitals, clinics, and home health care providers, to identify patients and develop a notification and monitoring plan in the event of a long-term power outage or other disaster. Encourage these households to sign-up for Smart 911 system and to notify their electric provider to be added to their emergency contact lists.	At-Risk Population Plan and emPOWER database available. Lack of a specific plan for such events, then exercise the plan. Smart 911 system no longer available. Keep some aspects in the plan update and encourage sign-up with critical client lists maintained by electric providers, who have agreed to share.
Continue to work with local power providers to bury overhead electrical lines in areas prone to outages due to falling trees/limbs or high winds or for service to critical facilities. For areas prone to flooding, transformers or other such power infrastructure may require floodproofing, elevating, relocation, or other flood mitigation.	Lines increasingly buried as part of new development, but no mitigation grant-funded projects.
Other Projects & High-Priority Strategies	
Implement the recommendations of the 2018 State of Groundwater in Eau Claire County report, including additional groundwater testing and mapping of areas of high vulnerability.	Ongoing. Working with Army Corps of Engineers to study. PFA testing recommended; some "hotspots".
Update the 2011 Commodity Flow Study to provide a better understanding of the types of hazardous materials being transported by highway and rail in Eau Claire County.	Update nearly complete.
Develop an active threat/shooter plan for County facilities and events, then continue related training and exercises.	County has basic plan for its facilities and conducts staff training. No formal approach for event planning.
Support the efforts of County Land Conservation staff, NRCS, and UW-Extension to promote nutrient management, soil health, and other best practices that can increase infiltration, which helps reduce flash flooding, protects groundwater, and makes croplands more resilient to drought and wind erosion.	Ongoing. Also to help reduce sedimentation. Eau Claire River Watershed Coalition is an important partner.
Work with livestock producers, processers, veterinarians, and DATCP to educate on and evaluate current procedures for the monitoring, reporting, response, and quarantine for livestock viral/disease outbreaks and animal mass casualty incidents. Update and exercise these plans and policies as needed.	No formal action or plan. Driven by DATCP.
Encourage the creation and maintenance of community wildfire protection plans or FireWise strategies for the highest wildfire risk areas in the County, such as near Lake Eau Claire, Town of Seymour, and the Lowes Creek area.	Action plan maintained for Town of Seymour; no other plans completed.
Update the Emergency Map Books in 2019-2020.	Updated in 2023. Next update in 10-15 years may be entirely digital.

2019 Plan Strategy	Progress
Form a work group to explore options and best practices for retaining volunteers for smaller Fire and EMS departments, especially given recent changes in training requirements.	No group form, but Fire Chiefs meet regularly. Still a challenge for some volunteer departments.
Review and ensure coordination, clarity, and consistency between the County Emergency Operations Plan, County Public Health Emergency Preparedness Plan, and other related plans and protocols. Likewise, clarify roles and responsibilities of various committees, such as the LEPC, Public Health Emergency Preparedness Committee, and Infectious Disease Committee.	Ongoing. Continue to clarify roles of LEPC vs. Public Health Preparedness Committee.
Work with WDOT to obtain portable digital message boards for use on Interstate 94 and other roadways during emergencies or severe weather.	Completed. Some fixed signs now in place, plus portables.
Partner with emergency services providers and critical facilities to develop and exercise a mass evacuation, access, and temporary shelter protocol.	No action; keep in plan.
Continue the development of geographic informational systems (GIS) data for hazard mitigation and emergency management purposes. Continue to explore Reverse-911 capabilities, the ability to provide real-time mapping as part of the EOC or at the incident command center, and emergency mapping of railroad mileposts, key bridges, and grade crossings for emergency use.	Significant improvements and ongoing. GIS data being developed/updated to support Next Gen 911 system.
County Emergency Management should continue to maintain an up-to-date list of the status of local Emergency Operations Plans (EOPs) and work with local communities to practice/drill and update these plans regularly. Municipalities are encouraged to incorporate continuity planning, data backup, debris management, and mutual aid into their plans and to notify the County when plan changes or updates are completed.	Ongoing.
Encourage Eau Claire County residents, businesses, and organizations to enroll their cell phone numbers for the County's Smart 911 mass notification system. Educate residents and critical facilities on the capabilities of Smart 911, such as severe weather, hazardous spill locations, missing persons, evacuations, road closures, etc.	County Smart 911 system discontinued. Social media & IPAWS + other smart phone apps available. City of Eau Claire still using RAVE.

SECTION VI.
MITIGATION GOALS AND STRATEGIES

A. MITIGATION GOALS

The following mitigation goals apply to all hazards. The mitigation goals are intended to provide direction to achieve the desired outcomes and are to be used as guidelines by which mitigation activities are identified and impact is evaluated. The Plan Update Steering Committee reviewed the goals in the 2019 Mitigation Plan and determined that the 2019 goals were still consistent with community plans, with some minor changes and additions.

Goal One: Construction and Infrastructure

Maintain a safe, resilient physical and emergency response infrastructure, which reduces hazard vulnerabilities to residents, property, infrastructure, community lifelines, and natural resources.

Goal Two: Planning and Policy

Anticipate changing hazard risks, identify hazard vulnerabilities, and champion appropriate mitigation strategies to protect the health, safety, and general welfare of the community.

Goal Three: Coordination

Continue to collaborate and partner with other governmental jurisdictions, community members, non-profits, and local businesses to coordinate emergency preparedness efforts, assess and strengthen infrastructure capabilities, mitigate hazard threats, and provide high quality emergency services in a cost-effective manner.

Goal Four: Emergency Communications

Maintain a strong, effective emergency communications network and hazard warning system that is compliant with the latest standards.

Goal Five: Education and Outreach

Residents, businesses, and local officials will be aware of local hazard risks and the alternatives to mitigate hazard impacts in their homes, businesses, and communities.

B. EVALUATING MITIGATION ALTERNATIVES

i. Evaluating & Prioritizing the Mitigation Alternatives

The Plan Update Steering Committee identified the following criteria for the evaluation and prioritization of the mitigation alternatives, with those in bold being of higher importance:

Relative Need Criteria

- **mitigates an imminent or high-probability threat**
- **protects life, community lifelines, or critical infrastructure**
- **the action is required by law or regulation (code enforcement)**
- local demand for a mitigation action (e.g., community members want a safe room)
- benefits a vulnerable or underserved population
- enhances mitigation capacity, continuity of critical functions, or community resiliency

Feasibility Criteria

- **capacity, funding, and resource availability**
- **social, legal, and political feasibility (community acceptance, local support)**
- technical, engineering, and environmental feasibility

Benefits vs. Costs Criteria

- **financial costs – implementation, maintenance, etc.**
- **financial benefits - potential for loss prevention or reduction**
- **available staff resources** (time, budget); can be implemented at low cost or without significant resource commitments (e.g., low-hanging fruit)
- incorporates nature-based solutions/enhances natural systems
- opportunity costs – does the project divert resources from higher priorities
- lack of a mitigation alternative with greater benefits vs. costs

The above criteria are recommended for use by all plan participants (i.e., cities, villages, educational institutions, electric cooperatives) in the selection and prioritization of their mitigation actions.

ii. Identifying & Selecting the Mitigation Actions

Identifying and evaluating the alternatives and selecting the mitigation strategies for inclusion in this plan was a multi-step process generally described here:

#1 A comprehensive range of alternatives to meet the plan's vision and goals were considered during the planning process. A variety of alternative mitigation strategies were included in the Mitigation Toolbox in Appendix K of the County's 2019 Mitigation Plan. The alternatives in FEMA's *Mitigation Idea* resource guide from January 2013 were also considered.

#2 From this comprehensive list and suggestions identified during the planning process, a range of specific mitigation actions to address the current and future hazard vulnerabilities (Section III.C.) or to strengthen mitigation capacity (Section IV) were identified during the key stakeholder interviews, meetings, and surveys during the plan update process.

#3 County-Level Strategies.

a. Through discussions and a survey process, the Steering Committee analyzed and prioritized the County-level strategy alternatives using the previous criteria in Section VI.B.i. More specifically, each Committee member was asked:

- Is the strategy a high priority? What timeline do you recommend?
- Is the strategy feasible or should it be excluded from the plan?
- Analyze the priority based on the previous criteria; consider the costs vs. benefits.
- Provide any additional suggestions, strategy wording or focus, resources, or responsibilities.

b. The results of the Steering Committee's analysis were then incorporated into the draft of Section VI.C. Opportunities to further modify and "fine tune" the recommendations in Section VI.C. were provided as the draft was reviewed during the final Steering Committee meeting as well as made available for comment by County staff, stakeholders, and the general public.

Note:

The priorities for the strategies herein were made in the context of this plan and the hazard threats facing Eau Claire County. There may be other good reasons to implement a recommendation.

A low priority should not necessarily be interpreted as having a lesser importance to Eau Claire County overall.

The exclusion of a beneficial strategy from this plan should not prevent or defer action if the need exists and resources are available.

C. RECOMMENDED MITIGATION ACTIONS

Mitigation actions reduce or prevent the loss of life and property by lessening the impacts of disasters. These strategies are long-term solutions with preventative benefits to people, property, infrastructure, community lifelines, and/or the economy by reducing vulnerabilities. Mitigation actions can include:

- planning & regulations
- structure & infrastructure projects
- natural systems protection
- education & awareness programs
- climate adaptation strategies & nature-based solutions

The recommended strategies are organized by hazard type, then further organized into:

- ***Recommended Projects***: Projects are typically larger or more capital-intensive efforts that have a focused, action-oriented outcome that is achievable within a certain time period. Special grant funding or other resources are often needed for the implementation. Strategies involving physical structural or infrastructure changes likely fall into this category. Not all hazard types have a recommended project strategy.
- ***Recommended Planning, Policy, and Outreach Actions***: Policies tend to be ongoing, decision-making or programmatic guidance, though they may also include smaller, less costly planning, assessment, collaboration, or educational efforts. In most cases, these strategies can be funded or performed as part of normal operating budgets and do not require the identification of new or

special funding or other resources. However, some training, planning, and outreach may require additional funding.

For each recommended mitigation strategy, the following is also provided:

High Priority	High priority strategies are indicated based on the evaluation of mitigation alternatives by the Plan Update Steering Committee using the previously described criteria. These high priorities provide focus and are suggested to assist with plan implementation and monitoring. Also see related discussion in Section VI.F.
Timeframe	The Plan Update Steering Committee was asked to help assign a timeframe for each strategy using the following categories: **Short-Range:** *0 to 3 years* **Long-Range:** *4+ years* **As Needed:** *monitor & implement if conditions worsen or becomes feasible* **Exclude:** *there were very few "votes" to exclude; no alternative was excluded* The expected timeframe is based on a reasonable expectation of required resources, approvals, etc. The implementation of some strategies is subject to resources that are not controlled by the suggested responsible party, such as grant funding. The actual timeframes may also vary based on changing needs, regulations, community priorities, etc.
Lead Party(s)	This column suggests the position, department, jurisdiction, or entity that will have primary responsibility in initiating or implementing the mitigation action. However, in most cases, mitigation actions will require collaboration. Mitigation strategies involving land or property will in most cases always included the landowner as a lead party.
Funding	Potential and most likely funding sources are identified. FEMA guidance requires the identification of specific funding sources. In some cases, a mitigation action may be funded as part of the government's annual operating budget or a capital improvements plan, with revenue from multiple various sources.
Analysis	The analysis applies the previously described criteria to offer comments on feasibility, costs, benefits, opportunities, barriers to implementation, or additional explanation.

During the planning process, additional preparedness (non-mitigation) strategies were also recommended that are not included in this section, but are provided in Section VI.D.

Severe Weather & Extreme Temperature Mitigation Strategies – Project Alternatives

The following strategies prevent or reduce the vulnerabilities associated with various aspects of severe/extreme weather including: **tornados, high winds, thunderstorms, winter storms, extreme temperatures, and drought**. They are combined here since some mitigation alternatives mitigate the impacts of multiple hazards.

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
1. Pursue grant funding to make cost-sharing available for the installation of community safe rooms (storm shelters) at mobile home parks, private and public campgrounds, RV parks, and recreational properties, including the County Expo Center, where no existing shelter alternatives exist. Especially target safe room projects at mobile home parks and resort properties where landowners are strongly interested and supportive of such projects.	High; short-range or as needed & oppor-tunities arise	Landowner Communities and county may need to raise awareness of grant options. A partnership with a mitigation plan participant (eligible grant applicant) may be required in some cases.	FEMA BRIC or HMGP grant funding with local cost share by municipality and/or landowner	• $$-$$$ • Increasing interest in safe room projects, including at campgrounds, mobile home parks, schools, and near residential areas without basements. • A safe room could be part of a needed toilet/shower structure upgrade at Coon Fork County Park. • A safe room meeting FEMA standards provides near-absolute protection for occupants. • WCWRPC can provide direction & grant support with WEM assistance. • Emergency power generator may be FEMA mitigation grant eligible as part of a safe room project. • A FEMA mitigation grant has tentatively been approved for a safe room at Hillcrest Estates in Altoona. • Strong interest - A number of communities and entities have expressed interest in possible safe room projects or hardening.
2. Work with municipalities and businesses to explore grant funding for community safe rooms and storm hardening (retrofit) projects for community facilities, educational institutions, long-term care facilities, businesses, and manufacturers, especially if located in a slab-on-grade or large-span structure. In cases where an adequate shelter is available, a remote unlock system or operations & maintenance plan may be valuable.	High; short-range or as needed & oppor-tunities arise			
3. If funding opportunities become available, work with communities to pursue grant dollars for generators and, if needed, the wiring of fueling stations for a generator to provide emergency power for community lifeline facilities, centers/shelters, public works buildings, and local emergency operations centers in Eau Claire County.	Medium; as needed, but short-range for some facilities	Facility or shelter operator	Limited grant opportunities, unless part of a larger or multi-use facility.	• $$ • While generator availability continues to improve, it continues to be a significant need. • USDA Rural Development may fund generators in rare cases. WI PSC Refueling Readiness Grant Program for wiring of fueling stations.
4. Continue to explore options to increase energy resiliency, especially in rural areas that have a higher potential for longer-term outages. Work with local power providers to bury overhead electrical lines in areas prone to outages due to falling trees/limbs or high winds, when cost feasible. In addition to generators, explore renewable options (e.g., solar) and other electrical grid or micro-grid improvements. Pursue mitigation grant funding when needed and available.	Medium to High; short-range or as needed based on work plans, road projects, & funding	Electric Providers	Electric Provider typically covers cost to bury lines, though may be FEMA BRIC or HMGP grant eligible	• $$-$$$ • Lines are often buried for newer development or completed in conjunction with street improvement projects. • Cooperatives and municipal utilities may be eligible for FEMA BRIC or HMGP grant funding for projects in areas prone to outages.

Severe Weather & Extreme Temperature Mitigation Strategies – Planning, Policy, & Outreach Alternatives				
2025 Plan Strategy Alternative	**Priority & Timeframe**	**Lead Party(s)**	**Funding**	**Analysis**
1. Explore County ordinance language requiring new or expanding campgrounds, RV parks, and resorts to construct or identify per formal agreement a storm shelter for visitors. As needed, provide model language to local municipalities for consideration.	Low; long-range/may explore in the future	County Zoning & County Board	Existing County operational budget	• $ • A number of towns have campgrounds. • Potentially a growing vulnerability with new or expanding campgrounds. • Could potentially be handled as part of a conditional use requirement in zoned communities. • Explore if could be part of a Public Health or operational license.
2. Conduct a survey of campgrounds and resorts to determine the status of emergency plans, storm shelter availability, and related resource needs.	Medium; long-range	County Emergency Management	Existing County operational budget	• $ • Could be used to educate on safe rooms & other mitigation opportunities. • Identify strategies based on the survey results. • As an option, this could be included as part of the next hazard mitigation plan update.
3. Encourage farmers to allow the plowing of "berms" in areas prone to drifting. Along State and US Highways, continue to make farmers aware of WisDOT Standing Corn Snow Fence Agreements and the potential for reimbursement.	Low; continuing, but not a priority	Highway Department and towns	WisDOT Standing Corn Snow Fence program	• $ • Some participation in State program through County Highway Dept • More feasible than large-scale hill cuts. • Increases traveler) safety and emergency vehicle access; reduces snow removal expenses.
4. Inventory generator and emergency fuel availability among industry, community lifeline facilities, and major employers in the County. Explore the feasibility of joint bidding & purchasing, mutual agreements, and other options to address needs.	Medium-to-High; short-to-long range as resources allow	Industry Safety Group and/or Emergency Management	Existing staff and private-sector volunteers to initiate	• $ to evaluate; $$ to implement • No specific solution but, identifies needs & engages in discussion. • WI PSC Refueling Readiness Grant Program may assist with related wiring.
5. Identify heating and cooling centers and longer-term shelters with generators that are available for extended periods and power outages. Include capacity, policies, and pet options. Integrate such centers/shelters into planned community safe room projects. Increase public awareness of center/shelter availability and transportation options.	Medium-to-High; short-range	County Public Health working with Red Cross	If part of safe room, generator and HVAC costs may be eligible for FEMA BRIC or HMGP funding.	• $-$$; a single list of all centers & shelters is lacking • Demand may be slowly increasing as extreme temperatures increase. • Some facilities used as centers, like libraries, may only be available during limited hours. • Some currently identified centers/shelters lack generators or may not be widely known; see previous generator-related mitigation strategy.

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
6. Partner with area electric providers, home medical oxygen/equipment providers, City-County Health Department, and ADRC to develop a notification and monitoring strategy for at-risk populations in the event of a long-term power outage or other disaster. Considerations should include: (1) how special needs households are contacted or monitored during an extended power outage; (2) home oxygen sources and emergency oxygen availability, and potential demand during an extended power outage; and (3) how back-up oxygen may be distributed, including strategies for when roads are impassible. Coordinate between agencies how oxygen-dependent household lists (databases) will be accessed and used during an emergency, identify and address potential database gaps, and how these lists will be used to guide response during a disaster.	High; Short-to-long range as resources allow	County Public Health & Emgy Mgmt to initiate	Existing staff operational budgets	• $ for evaluation/planning • HSS emPOWER database includes 836 County residents that are Medicare beneficiaries reliant on electricity-dependent durable medical and assistive equipment (DME). • May require MOA/MDAs with electric providers to share lists of at-risk population to supplement emPOWER data. • A specific plan for such events does not exist and uncertain of emergency availability of oxygen. **A plan & process is needed in advance for how data with be shared in a timely and interoperable manner.** • May need to survey home oxygen suppliers. • Electric providers have their own data and critical client lists; have verbally agreed to share. • Access to State list of Medicare patients using oxygen-assisted devices not available unless there is an emergency.
7. Partner with interested communities to pursue mitigation grant dollars to distribute NOAA All Hazards (Weather) Radios, with a potential priority for seniors, mobile home residents, campgrounds, and community lifeline facilities.	Medium; short-to-long range depending on interest and grant assistance	County Emergency Management; ADRC; communities	May be eligible for FEMA HMGP grant funding (i.e., a 5% project)	• $ • Interest has been waning as smart phones become more common. • A number of communities and ADRC have expressed interest. • Partner w/ ARES/RACES, et. al., for radio programming as part of the local match contribution. • Could be implemented in conjunction with other natural hazard outreach.
8. Support the efforts of the Eau Claire Area Homeless Task Force. Encourage the Task Force to address the need for additional shelter capacity during winter storms and extreme temperature events and to strengthen shelter resiliency through emergency power generators, emergency/active threats planning, and staff/volunteer training.	Low; active task force, but not a priority	Eau Claire Area Homeless Shelter providers	various	• Homeless issue not limited to the City of Eau Claire • Continue to advocate for more State & Federal aid • Continue Street Ambassador Program to connect unhoused with essential services

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
9. Collaborate with electric providers and emergency communications to identify preparedness and mitigation strategies for the disruption of electrical and communications systems due to facilities due to geomagnetic storms and other long-term power outage threats and explore the creation of microgrids to increase the resilience of critical infrastructure and essential facility.	Low	County Emergency Mgmt & Electric Providers	Existing operational budgets	• Involve Xcel Energy & Electric Cooperatives • Involve ARES/RACES • DRCV may be able to assist with increasing awareness • May be grant funding available to assist with implementation, including microgrids.
10. Work with partners to explore the creation of cost-sharing programs for the purchase or rental of portable air conditioners for income-eligible households or special needs households.	Low; only pursue if strong advocate & funding	ADRC, Western Dairyland	Undetermined; explore FEMA grant eligibility and corporate sponsors	• $$ • Feasibility would need to be further explored.
11. Once updated floodplain maps are complete, undertake an all-hazards educational outreach initiative targeting rural households, including the Plain Community, on flood awareness; sirens, weather apps, and warning systems; shelter availability; home preparedness; and other resources. May include a local official educational component.	Medium-to-High; long-range	County Emergency Management City-County Health (PHEP Coord & MRC) Disaster Ready Chippewa Valley	Varies based on scope. FEMA mitigation grant funding could be used for a more formal outreach initiative	• $ • Some outreach underway, including through Public Health • Proactive mitigation strategy. • Overlaps with some other strategies, including a more detailed flood- and wildfire-related alternatives. • County be combined with the distribution of weather radios. • WCWRPC may be able to help. • Insurance providers certified to sell flood insurance could be important partners. • Potential related to continued NFIP compliance; FEMA HMGP or FMA funding could be available.

Flood Mitigation Strategies - Project Alternatives				
2025 Plan Strategy Alternative	**Priority & Timeframe**	**Lead Party(s)**	**Funding**	**Analysis**
1. Continue to monitor, study, and address stormwater and flash flooding hotspots in the county as identified in the flood assessment of the hazard mitigation plan. Potential projects include, but are not limited to creation or expansion of flood/stormwater storage areas, the installation or re-sizing of culverts, the creation or improvement of drainageways, and the protection of natural drainage and retention areas. Encourage nature-based solutions, low-impact development practices, and basin-level planning.	High; ongoing. Implement projects as needed and funding allows.	County Zoning or Soil & Water Conservation, County Emergency Management, County Highway, municipalities, landowners	Stormwater utilities, impact fees, CIPs, and road funding are traditional sources. CDBG Public Facilities, TIF, FEMA Flood Mitigation Grants, Army Corps of Engineers, & WI Municipal Flood Control & Flood Resilience Grants.	• $$ to $$$ • Increasing frequency & intensity of heavy rain events = more flooding. • Grant funding could mitigate a reoccurring flooding threat/vulnerability. • Often impacts transportation (a community lifeline). • Solutions are typically feasible, if funding available • Localized approach that increases drainage can increase flooding downstream. • Increase emphasis on nature-based solutions. • If significant damages, County Emergency Mgmt may provide support. • Potentially related to continued NFIP compliance.
2. When new governmental construction, subdivision development, and non-flood mitigation projects (e.g., safe rooms) are being planned, integrate nature-based solutions, if possible, to control stormwater runoff and mitigate flooding.	Medium; ongoing policy recommend ation	Developer or land owner	Same as above. New development unlikely eligible for mitigation grants unless part of a mitigation project.	• $ to $$$ • Proactive. • If part of a mitigation grant project, may score additional points. • May not be political support to amend ordinances to require or incentivize. • May serve as a model; could use WDNR Health Lakes grant dollars in shoreland areas.
3. Pursue hazard mitigation grant funding to acquire, relocate, or floodproof structures and properties with a flood history, most at risk of flood damage, and/or following a flood event in which significant damage occurs if the landowner agrees to participate.	Medium-to-High; As needed and resources allow	Landowner, County Zoning or municipalities	FEMA Flood Mitigation Grant & WI Municipal Flood Control Grant programs with landowner match contributions	• $$ to $$$ • Has been used extensively within the County in the past. • Strong grant potential if a reoccurring or vulnerability. • May mitigate a reoccurring flooding threat/vulnerability. • Solutions are typically feasible, if funding is available and with the landowner's consent. • Potentially related to continued NFIP compliance.

4. Seek cost-sharing funding assistance to address livestock feedlots that discharge water during heavy streams that are located near or within floodplains. Consider creation of feedlot permit rules to guide siting and encourage design of feedlots and manure storage facilities for 100+ year heavy rainfall events given weather trends.	Medium; long-range depending on resources & need	County Land Conservation	TRM grant likely best source of cost-sharing for feedlot projects	• $$ • Deed restrictions and buyouts may be best alternative for some sites • Eau Claire River Watershed Coalition may be a possible partner

Flood Mitigation Strategies - Planning, Policy, & Outreach Alternatives

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
1. Continue to advocate for State or Federal funding to improve floodplain map accuracy. In the interim, obtain FEMA approval so that Eau Claire County may engage in LiDAR-based Letter of Map Amendment (LOMA) approvals, which can save considerable time and expense.	High; 1-3 year or when WDNR secures funding	WDNR, FEMA, County Environmental Services Division	FEMA (RiskMAP) & WDNR; County projects budget	• $$ • Poor accuracy of floodplain maps weakens flood vulnerability assessment, creates flood insurance and ordinance compliance challenges, and damages public trust. • While a high priority, the use of LiDAR LOMA should be evaluated further to determine need and interest. County often only becomes aware of map amendments after the fact; averages about 5-6/year. • If needed, obtain FEMA certification of LiDAR data as meeting PM-61 standards. • Related to continued NFIP compliance.
2. Continue to maintain dams and dam emergency operating plans. Encourage mapping of hydraulic shadows (dam failure areas) of all high- and significant-hazard dams; discourage development in these dam shadows as noted in the County's floodplain ordinance. Ensure that all flood gates can be safely opened manually if needed, even if usually automated.	High; ongoing activity	varies by Dam Owner; Zoning staff for code enforcement	Funded by dam owners; WDNR Municipal Dam Grant; FEMA High Hazard Potential Dams Grant	• $$ to $$$ • Proactive; partly preparedness. • No major dam structural concerns or improvement needs identified. • Consider whether additional dam failure areas should be mapped and regulated (e.g., Dells Mill Pond, Fall Creek Pond). • Not all dam owners provide GIS-based dam shadow data to the County. • While dam maintenance can be expensive, code enforcement and educational outreach may largely be accomplished with existing resources. •

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
3. Conduct a tabletop exercise that assesses the damage, implications, and response capabilities of a failure of a high hazard dam (dam break).	Medium-to-Low; 3-5 years	County Emergency Management; Dam Owner(s)	Likely operating budgets, but dam owner(s) may contribute	• $ • Low probability, though there have been dam failures in the County in the past. • Include local municipal officials. Some concerns expressed by local officials; lack knowledge of conditions or plans. • Include impacts to transportation systems.
4. Continue to enforce County floodplain regulations to: discourage future floodplain development and the storage of hazardous materials in floodplains; require dry land access for structures; limit development in dam shadows; and maintain natural flood storage areas. Encourage low-impact development and nature-based stormwater solutions for new development projects.	High; ongoing activity & policy	County Zoning and County Board	County annual operating budget	• $ • Proactive; strong mitigation strategy. • County has adopted the most recent WDNR floodplain ordinance model. • No additional costs expected unless enforcement/compliance issues arise. • Related to continued NFIP compliance.
5. Once floodplain maps are updated, engage in an educational effort to increase public and elected officials knowledge of flood risks and the new maps, including awareness that typical homeowner's insurance does not cover flood damage, that many structures outside the 100-year floodplain are vulnerable to flooding, and the importance of well testing following flood events. Especially target those municipalities with the greatest assessed improvements in or near floodplain areas.	Medium-to-High; likely long-range	County and local designated floodplain managers County Emergency Management	County and community operational budgets. FEMA mitigation grant funding could be used for outreach.	• $ • Proactive mitigation strategy. • WDNR and WCWRPC may be able to help. • Insurance providers certified to sell flood insurance could be important partners. • No additional costs expected unless enforcement/compliance issues arise. • Related to continued NFIP compliance. • FEMA HMGP or FMA funding could be available.
6. Continue to expand public and community educational efforts and partnerships regarding alternatives to mitigate stormwater and flash flooding run-off, while promote low-impact development and nature-based solutions, such as rain gardens, permeable pavement systems, bioswales, road salt management, etc. For floodprone areas with a history of flash flooding that are outside the 100-year floodplain, encourage setbacks for new structures.	Low; explore as opportunities arise, but not a priority	County Land Conservation, WDNR, local communities	County and community budgets. Some grant funding available for larger initiatives, especially if linked to flood control or water quality.	• $ • Could involve many partners, such as municipalities and lake groups. • Rain to Rivers of Western Wisconsin has some related educational materials. • Some overlap with other mitigation strategies. • Could include model projects, including using Healthy Lakes grant dollars near lakes. • Local governments could explore integrating such standards into site plan review or local ordinances. • Rain to Rivers a possible partner for education.

Wildfire Mitigation Strategies - Planning, Policy, & Outreach Alternatives

Larger wildfire mitigation projects and community wildfire protection planning were considered, but the costs of such alternatives outweighed the overall risk, vulnerabilities, and anticipated benefits at this time within Eau Claire County. Instead, it was recommended to continue smaller, often targeted, educational and outreach efforts.

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
1. Within intensive fire protection areas, continue to educate residents and local officials in the mitigation of wildfire risks, with an emphasis on enforcement of burning regulations/burning permits, defensible spaces around homes, and emergency vehicle access on driveways and private roads. Increase resident awareness of burning restrictions, warning signage, and permit contacts. Outreach should especially target areas of highest risk.	Medium; ongoing	Local Fire Depts & Wisconsin DNR Assistance from Town Boards, schools, & County Emgy Mgmt	Largely uses existing staff or volunteer support. Some WDNR resources available.	• $-$$ • Continuing educational outreach, but could expand into additional programming and planning in highest risk areas. • Could include installation of additional Fire condition warning signage. • Special customized messaging and outreach may be needed for the Plain Community; Towns and County Land Conservation may be key to helping with such outreach
2. Collaborate with railroads, towns, loggers, and County Highway Department to educate on transportation-related wildfire ignition risks and to promote Firewise practices.	Medium; long-range, unless opportunities allow	WDNR, Local Fire Depts, County Emergency Management	Possibly WDNR Foresty Grants	• $ • Transportation-related ignition is an increasing cause of wildfire ignition within the County
3. Continue to maintain a Wildfire Risk Reduction Action Plan for the Town of Seymour, which grew out of their community wildfire protection plans (CWPPs). Encourage the Lake Eau Claire area to consider creation of a CWPP or become an active Wildfire Partner to support wildfire mitigation, educational, and Firewise-style programming actions. Development within forested areas (wildland-urban interface) of the Towns of Pleasant Valley and Washington may also benefit from similar Wildfire Partner activities.	Medium-to-High; Seymour's efforts are ongoing. Other Plan's likely longer-range depending on local interest	WDNR, Local Fire Dept, and Town	WDNR Forestry grants	• $ (for planning) - $$ • Typically not an extensive planning effort, but does require Town commitment. • Town of Seymour updated their Action Plan in October 2024. • Increases grant eligibility for FireWise strategies prioritized in the CWPP or Action Plan. • After 1-2 CWPP updates, a less robust Wildfire Action Plan that is reviewed annually may suffice. The Wildfire Partner program requires less of a local commitment and can focus on specific areas; a full CWPP is not always necessary.

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
4. Pursue grant funds for dry hydrants for fire protection where other water sources are not readily available.	Low, but priority & timing may vary by community.	Local Fire Departments	WDNR Forest Fire Protection Grant program; developer	• $-$$ • WDNR FFP Program could cover 50% of costs. • Not a widespread need.
5. Continue to maintain and implement the *Eau Claire County 15-Year Comprehensive Forest Land Use Plan* and the *Eau Claire County Land and Water Resources Conservation Plan* to include best management practices to reduce risks related to wildfire, drought, invasive species, and plant diseases. Maintain county forest roads and, when feasible, cutting of a "right-of-way" to provide safer access/egress during a wildfire.	Medium-to-High; ongoing	Eau Claire County Land & Water Conservation; landowners	Existing County budget for staffing costs with some State support. Further funding sources vary by project type.	• $-$$$ • This strategy recognizes the importance of the various forest-management actions recommended within these plans to mitigating wildfire risks. • County Forest Plan last updated in 2021.

Other Mitigation Strategies

The following are multi-hazard mitigation strategy alternatives or potential strategies to address non-natural hazards.

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
1. MULTI-HAZARD – Integrate the updated mitigation plan into the Eau Claire County Emergency Management Dashboard and, potentially, into a future regional mitigation plan story map.	Medium-to-High; short-range	County Emergency Management WCWRPC	County operational budget; FEMA grant funding for regional effort	• $ • Provides greater public access to the mitigation plan; given FEMA requirements, the full mitigation plan is not very "public friendly" • County has created the Dashboard • WCWRPC working with WEM to explore the regional-level story map
2. MULTI-HAZARD – Conduct a public educational outreach initiative for ESL populations that increases knowledge of natural hazard risks, notification systems, insurance programs, and available resources.	Medium-to-High; likely longer range unless resources allow	Public Health with partner support	Largely a collaboratively supported initiative, but some grant funding may be available.	• $ • Targets a socially vulnerable population. • This could also be considered a preparedness activity, but should identify and emphasize reduction of vulnerabilities. • May be eligible for FEMA HMGP grant funding (i.e., a 5% project). • Churches and schools are key partners.

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
3. MULTI-HAZARD – Encourage plan consistency and coordination. Integrate natural hazard risks, climate trends, and hazard mitigation priorities into future updates of the Eau Claire County Comprehensive Plan, the County Climate Action & Resiliency Plan, the County Integrated Preparedness Plan, and the Public Health Emergency Preparedness Plan. Continue to update these plans to reflect available climate trend data.	High ongoing	County Zoning and Planning & Zoning Committee	As part of County operational/program budget for plan update.	• $ • Limited inclusion of mitigation in existing comprehensive plan. • Explore opportunities to integrate mitigation plan priorities into the County Strategic Plan.
4. MULTI-HAZARD - Conduct a special workshop or outreach initiative that educates local communities on the relationships between local codes/code enforcement and potential hazard mitigation opportunities.	Medium-to-Low; long-range	WCWRPC and/or WI DSPS	May be eligible for FEMA HMGP grant funding	• $ • Minimal local familiarity with options; State rules limit some opportunities. • Could be a regional-level or web-based workshop series. • Should incorporate BCEGS and encourage confirmation with ISO if not certain, including if County is participating; very low familiarity with this program.
5. MULTI-HAZARD – Collaborate with the Eau Claire River Watershed Coalition to promote regenerative agriculture and soil health best practices that can help reduce flash flooding and erosion while making cropland more resilient to drought as well as related crop insurance programs.	Medium-to-Low; ongoing and Watershed Plan being updated in 2025-2026	County Land Conservation, NRCS, Extension	Collaborative efforts with many different potential funding sources	• $-$$ • Consistent with County's Land & Water Conservation Plan. • Supports continuing efforts; these best practices are typically promoted for water quality and economic reasons. • Increasing demands on Federal crop insurance programs may not be sustainable. • Can incorporate watershed-level planning and producer-led efforts.

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
6. COMMUNICABLE DISEASE/MULTI-HAZARD - Conduct outreach or specialized workshops with the agricultural community (e.g., farmers, farmland owners, cooperatives, agronomists) on preparedness, mitigation, and continuity planning for ag-related hazard risks, including long-term power loss, avian flu, and radiological release.	Medium-to-Low; revisit if there is interest or funding source	County Land Conservation, Emergency Management, NRCS, Extension	Operational budgets, unless special grant funding or private sponsor available	• $-$$ • May be an initiative of or in partnership with a producer-led group, Farmer's Union, RC&D, etc. • Eau Claire River Watershed Coalition could be a key partner
7. HAZ MAT SPILLS – Utilize the findings of the updated Commodity Flow Study to customize training/exercises and other preparedness efforts to reflect the types of hazardous materials on the major highways and railroads in Eau Claire County.	Medium; short-range, then continuing	County Emergency Management	U.S. DOT HazMat Emergency Planning Grant (WisDOT administers)	• $-$$ • Updated study nearly complete. • Transportation-based spills on highways and by rail were a greater concern than fixed facilities. • Identifying HazMat commodity flow based solely on placards has limitations, but can provide some general insights. • During training/exercises, discuss expectations regarding response times for HazMat Team support.
8. HAZ MAT SPILLS – Continue groundwater testing programming and encourage households with potable wells to adopt recommended well testing. Continue educational efforts on the risks to private wells from contamination sources, including PFAs, as well as the importance of well testing and mitigation alternatives (e.g., reverse osmosis systems).	Medium-to-High; ongoing	Public Health County Groundwater Committee	Various	• $ • Recommended testing varies by potential contaminant.
9. ACTIVE THREATS - Continue to conduct active shooter/active threat building assessment, training, and reunification planning for government facilities, area businesses, community lifeline facilities, and other gathering places. Encourage annual exercises at educational institutions as part of their mandatory drills.	High; ongoing Priority suggests additional attention desired	Facility owner; Educational Institutions County Emgy Mgmt & Public Health Law Enforcement	County Emgy Mgmt available to provide classes or exercises upon request	• $ ($$-$$$, if security hardening) • Continuing, but greater regularity for some facilities recommended. • May reduce vulnerability through recommended security hardening or improved procedures. • Encourage sharing of after-action reports from exercises among law enforcement. • Some County staff suggested regular de-escalation training is needed, especially for service departments interacting regularly with the public.

2025 Plan Strategy Alternative	Priority & Timeframe	Lead Party(s)	Funding	Analysis
10. COMMUNICABLE/LIVESTOCK DISEASE – Work with livestock producers, processors, veterinarians, and DATCP to educate on and evaluate current procedures for the monitoring, reporting, response, and quarantine for livestock viral/disease outbreaks and animal mass casualty incidents. Share the procedures widely, including in the Plain Community. Exercise the procedures.	Medium; long-range	City-County Public Health Extension Agents WI DATCP	Not determined	• $ • Some animal deaths may be occurring but are not being reported. • During a past incident in Clark County, a processor was key to identifying a disease outbreak. • County Land Conservation can be a key resource for outreach to Plain Community
11. COMMUNICABLE/LIVESTOCK DISEASE – Encourage the State of Wisconsin and Federal government to conduct a regional event discussing Avian Flu threats, response procedures, and mitigation options.	Medium-to-Low priority reflects that the timeline is driven by State or Federal agencies	WI DATCP and/or USDA	Federally funded	• $ • Avian Flu is a significant threat to the County's agricultural economy and is a zoonotic disease. • Outbreaks are largely handled by the State & Federal government; there is limited local government engagement on the issue, which leads to questions and uncertainty. • Include policies, procedures, and best practices related to bio-security, disease monitoring/reporting, quarantine, workforce practices, and proper disposal. • More insight into options to mitigate or prevent the spread would be valuable.
12. COMMUNICABLE DISEASE - Encourage residents & livestock owners to report sick or dead animals for which the cause may be a disease (e.g., West Nile, Avian Flu) and related practices to prevent the exposure or spread of such diseases.	Medium-to-High; short-range	County Public Health and partners	Uses existing staff or volunteer support.	• $ • Supports Public Health's current activities. • Special messaging may target farm workers (livestock), households with bird feeders, hunters, etc.
13. CYBERATTACK – Continue efforts to educate the public, businesses, and local governments on good cybersecurity/cyber-hygiene practices to reduce vulnerabilities. For organizations, include related resources and continuity planning (e.g., cyber insurance, assessment & response resources, back-up, restoration).	High; ongoing Priority suggests additional attention desired	Establish a special team? ADRC for seniors	Uses existing staff or volunteer support. State & Local Cybersecurity Grant Program.	• $ • ADRC provides related outreach to seniors (socially vulnerable population) via its newsletter. • Local ISPs may be good partners. • Promote availability of CISA and State Cyber Response team resources • DRCV as partner for business outreach. • Perhaps a regional effort spearheaded by the West Central WI Broadband Alliance.

D. RECOMMENDED PREPAREDNESS ACTIONS

While this mitigation plan focuses on long-term solutions and preventative actions that will reduce disaster vulnerabilities (losses), it is only natural that potential preparedness strategies are also identified during the mitigation planning process. Preparedness (vs. mitigation) is focused more on shorter-term effects and responses, which can include:

- planning (e.g., emergency action plans, continuity plans, evacuation plans)
- monitoring, communication systems, & crisis communications
- training, drills, & exercises
- education & awareness programs
- emergency response/recovery tools, supplies, equipment, & resources

There is not a "bright line" between mitigation and preparedness, and preparedness activities can also help to save lives or mitigate losses. As such, the plan update steering committee determined that it was important to include the following recommended preparedness activities within this mitigation plan, which can serve as a guide for programming and integrated preparedness planning. However, since preparedness activities are not required to be included in a mitigation plan, additional implementation details are not provided for each; a variety of organizations and collaborative partnerships would have roles. Nevertheless, these preparedness priorities can be very helpful in guiding the County's *Integrated Preparedness Plan* (IPP) and other local preparedness initiatives.

It is also very important to note that **the following list of preparedness strategies is not comprehensive and, generally, does not include current plans, programs, and initiatives.** These are potential recommendations in addition to existing County plans and programs, such as the County's *Emergency Operations Plan* and the *Public Health Emergency Preparedness Plan* as well as the preparedness activities of many other public, private, and nonprofit partners.

Preparedness Strategy Alternatives	Priority
Planning	
1. Assess and inventory equipment, facilities, critical resources, and capabilities needed to respond to and stabilize an emergency situation (e.g., What are the resource barriers to responding to and managing a haz mat spill, active shooter event, tornado event, etc.? What private resources are available and are committed to providing response support?).	**HIGH**
2. Conduct training/outreach that assesses the emergency and continuity plans of assisted living facilities, nursing homes, and group homes to share expectations and confirm feasibility.	**HIGH**
3. Update the Eau Claire County Continuity of Government (CoG) Plan for essential services and critical business functions. Identify what services/staff are essential during recovery and a long-term pandemic. Consider moving towards the consolidation of County emergency management protocols into a single Eau Claire County Comprehensive Emergency Management Plan.	**MEDIUM**
4. Collaborate with Disaster Ready Chippewa Valley to encourage local businesses and organizations to create preparedness and continuity of operations plans, including efforts to encourage employee preparedness at home.	**MEDIUM**
5. Advocate for regional workshops on strategies and available resources for replacing aging fire/EMS equipment and addressing volunteer staffing challenges.	**MEDIUM**

6. County Emergency Management should continue to maintain a current status list of city, village, and town Emergency Operations Plans (EOPs) and encourage communities to practice or drill their EOPs regularly.	**MEDIUM**
7. Encourage local units of government and emergency response agencies to: (1) adopt equipment billing rates or the WDOT rates; (2) ensure that existing mutual aid agreements contain necessary language to qualify for FEMA grant reimbursement; (3) engage local fire and law enforcement during community planning and site plan review; and (4) adopt written mutual aid agreements for public works support. As an alternative to #4, a countywide public works mutual aid agreement could be discussed.	**MEDIUM**
8. Review the County Emergency Operations Plan for opportunities to address the needs of individuals with household pets and service animals following a major disaster or emergency as required by the 2006 PETS Act. Related strategies may include: (i) provide guidance to municipalities for incorporation of related policies into their emergency plans, (ii) inventory which Red Cross shelters will allow pets and associated conditions (e.g., co-located vs. cohabitate); (iii) explore the need for a stand-alone pet shelter; and (iv) encourage partnerships with Red Cross to recruit a volunteer group that is trained and designated to provide needed support for pets as part of Red Cross shelters.	**MEDIUM**
9. Collaborate with communities to evaluate emergency and evacuation planning, sheltering/centers, insurance, and security requirements for festivals and larger gathering and events, including for the lease of the Expo Center. Update requirements and revisit related regulations if necessary.	**MEDIUM**
10. Review County emergency plans and regulations for communications, response, and the disposal of carcasses due to a mass animal casualty event. Identify potential locations of disposal or acceptable characteristics of such locations.	**LOW**
Communications	
1. With various partners and community lifeline facilities, create a coordinated crisis communications infrastructure plan. Include an approach for large-scale public information sharing (i.e., how will County, local responders, etc. provide non-emergency information to the general public?, review & test Joint Information Center capabilities). Conduct annual team training to test and strengthen the plan, including a long-term power outage scenario.	**HIGH**
2. Continue to strengthen emergency communications infrastructure, coverage, and interoperability. Strive to increase 911 Communications Center staffing so that levels are more in-line with National Emergency Number Association (NENA) standards.	**HIGH**
3. Create pre-made templates and public messaging strategies for crisis communications by public information officer use.	**MEDIUM**
4. Engage in a discussion with partners regarding the best mix of mass notification approaches for Eau Claire County as an alternative to RAVE.	**MEDIUM**
5. Provide guidance to towns, camps, and lake groups that are interested in the installation of weather/emergency warning sirens. Explore grant and fundraising options. For areas with Amish, consider alternatives to a siren (e.g., solar-powered pole with warning light that alerts the community to reach out to an emergency contact). Should grant funding become available, consider adding sirens that can be activated by dispatch at County campgrounds (about $25,000 each).	**MEDIUM**
6. Continue to engage with local ARES/RACES (ham radio operators) members during exercises and through crisis communications planning.	**MEDIUM**
7. Through relationship building activities and frequent, shared communications, work to strengthen public trust in recommended immunizations and Public Health messaging. This may require working with trusted local partners for outreach to the Amish community.	**MEDIUM**
8. Increase the capacity of command vehicles to establish temporary communications through additional mobile equipment/infrastructure (e.g., tower, base station).	**MEDIUM**
9. Clarify roles and responsibilities between various committees and partner organizations, such as the LEPC and the Public Health Emergency Preparedness Committee.	**LOW**
10. Collaborate with DRCV to encourage large employers to consider becoming a member of the Wisconsin Business Emergency Operations Center (WI BEOC).	**LOW**

Education & Outreach	
1. Foster personal and household resilience by continuing to provide accurate information to the public on hazard risks, shelter/center availability, and other important preparedness information. Conduct outreach in conjunction with Severe Weather Awareness Month, National Preparedness Month, and community events. Provide an "outreach kit" with materials for use by municipalities, schools, and major employers.	**MEDIUM**
2. With County Emergency Management, Health Dept/PHEP Coordinator, and electric provider support, continue to utilize the ADRC newsletter and community meal sites as key tools for outreach to seniors and special needs populations on preparedness education (e.g., risks, center/shelter availability, warning systems, cyber-security, electric provider sign-up lists, preparedness measures).	**MEDIUM**
3. Working with major employers, schools, and communities, increase public awareness of emergency- or disaster-related volunteer needs/opportunities (e.g., firefighters, EMS, Red Cross Disaster Action Team, general support).	**MEDIUM**
4. In collaboration with Extension, establish an educational outreach program focused hazard awareness, preparedness, and mitigation for the agricultural community.	**MEDIUM**
5. Encourage households with persons having special needs that may be uniquely at risk during a power outage or disaster (e.g., oxygen, dialysis, seniors living alone) to develop an emergency contact plan. Encourage these households to notify their electric provider so they are on a critical client list	**MEDIUM**
6. Eau Claire County Emergency Management will continue to provide regular presentation(s) to the Eau Claire County Unit of the Towns' Association and to cities and villages on available resources, mitigation grant opportunities, and hazard event reporting. Offer elected officials training every 2-4 years on NIMS/ICS, responsibilities, reporting, lessons learned, etc.	**MEDIUM**
7. Collaborate with school districts and youth organizations to engage and educate younger residents on emergency management, preparedness, and mitigation topics. Promote the use of the Student Tools for Emergency Planning (STEP) curriculum.	**MEDIUM**
8. Continue collaboration between County Land Conservation, City-County Public Health, lake groups, the agricultural community, and the Eau Claire River Watershed Coalition regarding monitoring, educational, and outreach efforts related to blue-green algae blooms, sedimentation, and invasive species, including related health risks and related best practices.	**MEDIUM**
9. Encourage ADRC and Public Health clients to create a basic personal or household preparedness plan with emergency contact information.	**LOW**
10. Increase awareness of and participation in Wisconsin 211.	**LOW**
Training & Exercises	
1. Conduct a robust, multi-organization/agency long-term power outage exercise (or exercise series) covering key logistical and critical needs, such as road clean-up, mutual aid and lodging for ROPE crews, public messaging, impacts to communications systems, coordination with road crews (e.g., snow removal, tree/debris clean-up), oxygen-dependent populations, center/shelter activation, and emergency fuel/generator availability. Include discussions on using available datasets and conducting welfare checks. Prepare an after-action report with strategic priorities. Could potentially include a high voltage emergency training unit demonstration by local electric provider(s). Increase awareness of geomagnetic storms as a possible cause of power loss.	**HIGH**
2. Increase awareness of incident command system and public information officer training opportunities for local government officials and school districts, including the relationship of such training to local emergency plans.	**MEDIUM**

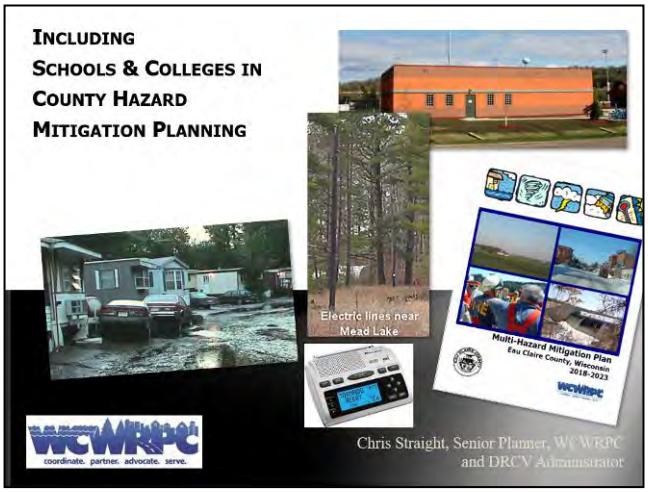
3. Continue to provide training and tabletop exercises to cities, villages, and towns on emergency action planning, emergency declarations, and post-disaster procedures. Consider regular meetings where municipalities and roads/public works departments can share lessons learned. Include education on debris management, volunteer management, and existing plans for critical facilities as well as clarifying relationships with VOADs and other support agencies. County Emergency Management will continue quarterly lunch-n-learns with local governments subject to their participation.	**MEDIUM**
4. In partnership with Chippewa Valley Technical College, OSHA, and Red Cross, support shared training for businesses, the public sector, and other employers to meet employment or operational requirements.	**MEDIUM**
5. Continue to involve Volunteer Organizations Active in Disaster (VOADs), such as the Red Cross, Salvation Army, and Medical Reserve Corps, to be part of County emergency exercises and planning. Integrate with the WEAVR State volunteer management system.	**MEDIUM**
6. Continue to conduct emergency and active threats exercises for County facilities and staff. Generally, County departments seek to clarify and better understand their potential roles during different emergency or disaster events, and some have resources and skills that are valuable to response and recovery that may not have been considered.	**MEDIUM**
7. Conduct a tabletop exercise or facilitated discussion on the challenges and lessons learned from the COVID-19 pandemic with key County agencies and partners so each organization can plan for such an event in the future (e.g., How did COVID-19 influence the way in which law enforcement interacted with persons "on the street" and within the County Jail?).	**MEDIUM**
8. Offer shared risk management training with towns, cities, and villages to help avoid liabilities and preventable expenses. Incorporate discussion on the Building Code Efficiency Grading Schedule as it relates to hazard mitigation and commercial insurance rates.	**MEDIUM**
9. Invite partners to participate in post-disaster damage assessment training and clarify roles. Explore ways in which newer tools and GIS data may be helpful. Include County ARES/RACES as a potential resource.	**MEDIUM**
	MEDIUM
11. Continue to increase Incident Command System (ICS) familiarity for public health emergencies among Public Health Emergency Preparedness Committee representatives, contingency personnel, and other partners.	**MEDIUM**
Patient Care, Mass Care, & Sheltering	
1. Create a single GIS-based database of all emergency centers/shelters and similar designated sites in the County (e.g., safe rooms, heating/cooling centers, Red Cross shelters, reunification, medical points of distribution, Family Assistance Centers), including basic resources (e.g., power generators, cots, kitchen supplies, AEDs) and operational information (e.g., agreements, availability limitations, responsibilities, contacts). Prioritize actions to address any needs and gaps. Share appropriate heating/cooling center and emergency shelter information with municipalities, Wisconsin 2-1-1, and partners.	**HIGH**
2. Update, maintain, and share emergency center lists, with available basic resources (e.g., power generators, cots, kitchen, AEDs) and operational information (e.g., availability limitations, responsibilities, contacts) **for warming and cooling centers**. Identify whether the center is available as a long-term sheltering option and what additional resources are needed, if any. *(see related mitigation strategies)*	**HIGH**
3. Update, maintain, and share emergency shelter lists, with available basic resources (e.g., power generators, cots, kitchen, AEDs) and operational information (e.g., availability limitations, responsibilities, contacts) for short-term and long-term shelters.	**HIGH**
4. With partners such as transit providers and ADRC, inventory and plan for emergency transportation and temporary sheltering options, especially for seniors, should a large-scale evacuation be needed. Include pets in such plans and policies. Test and refine the plan as part of a future exercise scenario and incorporate any lessons learned into the County's emergency operations plan.	**MEDIUM**

5. Support Public Health and Family Advisory Council efforts to create a multi-jurisdictional family assistance/reception center approach, including client tracking & reunification, and the implementation of the EMTrack system.	**MEDIUM**
Other Threat-Specific Preparedness Actions	
1. Power Outage - Assess needs, logistics, and supply chains regarding the availability of generators/alternative power supply for essential services during a long-term power outage. *(see related mitigation strategy)*	**HIGH**
2. Active Threats – Initiate a "see-something, say something" campaign that offers systems to report active threat concerns and increases public and private awareness and comfort in reporting such concerns.	**MEDIUM**
3. Fuel Shortage - Assess needs, logistics, and supply chains regarding the availability of emergency fuel supply for essential services during regional fuel shortages. (see related mitigation strategy)	**MEDIUM**
4. Wildfire - Eau Claire County, municipalities, and fire departments in the Intensive Fire Protection areas should continue to advocate for and participate in WDNR wildland training exercises.	**MEDIUM**
5. HazMat - Encourage continued local fire department participation in HazMat incident training coordinated by Eau Claire County Emergency Management. • Regularly rotate HazMat exercises and training throughout Eau Claire County with a particular focus on those chemicals commonly transported by rail or highways or at fixed facilities within the local host community. • Consider training in more advanced HazMat response techniques and co-training with a contracted HazMat Team. • Include local industry, Public Health, and other response agencies in training. • Include resources for river/lake spill events. • Invite EHS facilities to give presentations on their hazardous materials, facilities, and plans at fire chiefs' meetings.	**MEDIUM**
6. HazMat – Continue to work with local communities to increase public awareness of available "Clean Sweep" programs, dispel misinformation, and methods for the proper disposal of hazardous waste.	**MEDIUM**
7. Communicable Disease Outbreak - Conduct a multi-agency tabletop exercise for points-of-distribution (PODs) for vaccines and consider the implications should a Category 2 high-consequence disease outbreak occur given current capabilities of area hospitals.	**MEDIUM**

E. CITY, VILLAGE, & EDUCATION INSTITUTION SUB-PLANS

Appendices K & L are sub-plans or "mini-plans" for the participating cities, villages, and educational institutions. The sub-plans are part of the County's overall mitigation plan, including its community profile, hazard assessment, capacity assessment, and mitigation goals. Many of the county-level mitigation and preparedness strategies Sections VI.C & VI.D. are also multi-jurisdictional in nature. However, this sub-plan approach provides each participant with a more focused assessment of the hazard threats and mitigation solutions for their specific community or facilities, which is more convenient and accessible for these communities and schools for monitoring plan implementation and future plan updates.

As described in Section I.C., the cities and villages actively participated in the planning process through: individual meetings with the plan facilitator (WCWRPC) and, often Eau Claire County Emergency Management; completion of a capabilities assessment survey; and review of their draft sub-plans. Due to its size, participation by the City of Eau Claire also included multiple work group meetings and staff interviews. The participating educational institutions were invited to participate in a web-based mitigation planning virtual webinar and completed a comprehensive, web-based survey that was used to create their draft sub-plans, which were then reviewed and modified as needed.



When identifying the recommended strategies in the sub-plans, the same criteria and general approach were considered as described in Section VI.B., though the method of review and prioritization was at the discretion of each city, village, and educational institution.

In addition to mitigation strategies, each sub-plan includes:

- A recognition of economically disadvantaged rural communities and socially vulnerable populations.
- A risk assessment, including past events and potential vulnerabilities
- A capabilities assessment.
- Any key barriers to plan implementation, which were considered when identifying strategies and resources to overcome or lessen these barriers.
- A plan maintenance, update, and adoption approach.

Each mitigation plan participant is expected to approve and/or adopt the updated mitigation plan as a whole. It is understood that, prior to the next full mitigation plan update, any individual plan participant may modify/amend their own sub-plan without requiring approval/adoption of the full plan by Eau Claire County or any other participant.

F. PLAN IMPLEMENTATION

The mitigation strategies in Section VI.C. and the sub-plans include recommended priorities & timelines, a primary responsible party(s) who would normally take the lead in initiating or implementing each recommendation, and potential funding or other resources for each. The prioritization of the strategies offers guidance in the implementation of this plan based on available resources and potential to reduce losses. The countywide strategies in Section VI.C. also include additional implementation guidance.

Appendix I includes a synopsis of some commonly used hazard mitigation grant funding sources with a focus on natural hazards. Additional information on Federal grant funding can be found at www.cfda.gov. FEMA maintains an informative webpage describing their mitigation grant assistance programs. Some infrastructure improvements may also be funded locally through the establishment of a stormwater utility district or ordinance fee system, tax incremental financing (TIF), general obligation bonds, and developer contributions. Capital improvements planning can be a valuable tool to assist communities in the planning and prioritizing of major infrastructure investments and identifying the best financing approach. Additional sources of financial support are also often available following a disaster event, such as U.S. Small Business Administration (SBA) loans for the repair or replacement of property. The U.S. Department of Agriculture, through its local Farm Service Agency office, provides disaster assistance for crop losses and livestock emergencies. Grant funding for additional emergency measures, such as the rehabilitation of flood control works may be available through the U.S. Army Corps of Engineers. Non-natural hazards such as pandemics, school-based terrorism, nuclear accident, and hazardous materials spills typically have their own unique supportive services and funding resources, which are not included in Appendix I. In the event of an impending or recent disaster, municipalities and County Emergency Management offices are encouraged to contact WEM and the agencies identified in Appendix I for potential assistance, since available resources and related requirements frequently change, and this list is not all-inclusive.

This Mitigation Plan is a guide.

- Actions should be prioritized based on need, potential of loss reduction, benefits-costs, and availability of resources (e.g., funding, staff).
- Actions and priorities may change as threats and opportunities change.
- Some recommended actions may require additional feasibility analysis.
- Individual municipalities may have different priorities.
- Partnerships and collaboration are encouraged to leverage resources and maximize results.
- It is recognized that not all strategies will be completed prior to the next plan update in five years.

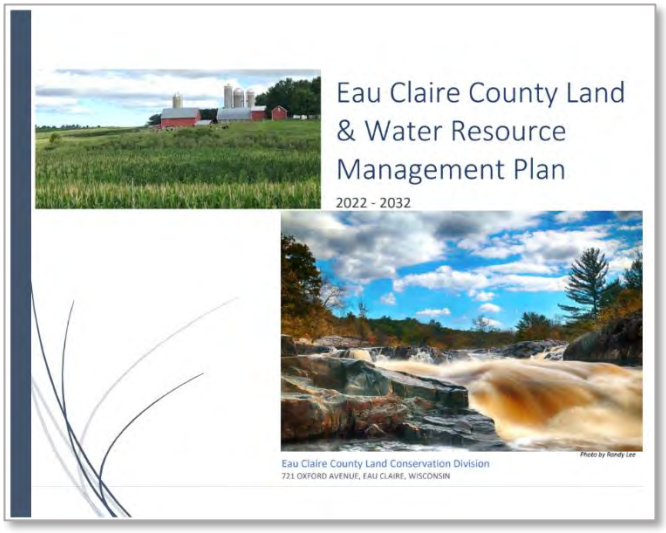
Due to the involvement of key stakeholders and County departments during the planning process, the strategy recommendations are known to these stakeholders and can be integrated into, or coordinated with, other work programs and planning efforts.

Like many municipalities, Eau Claire County and its communities are facing fiscal challenges and resources are limited. **The recommended strategies will be implemented as resources (e.g., funding, staffing) and as other priorities allow.** Further, because of such limitations, there is not an expectation that all strategy recommendations will be fully implemented between now and the next update of this plan.

G. PLAN COORDINATION AND INTEGRATION

Section IV summarizes how Eau Claire County and its communities have integrated mitigation actions into other planning tools to date. Further, many of the mitigation and preparedness strategies in Sections VI and the sub-plans reference other planning mechanisms that are vital to successful implementation, such as:

- Comprehensive & land use plans Though they vary, most comprehensive plans typically include discussion on related topics, including vulnerable populations, flooding, emergency services, and other community lifelines. The mitigation recommendations in Section VI.C. and many of the sub-plans specifically advocate for integration of this mitigation plan into future comprehensive plan updates. Section VI.C. also recognizes the important roles that the County's *15-Year Comprehensive Forest Land Use Plan* and *Land & Water Resource Management Plan* have in addressing wildfire, stormwater management/flooding, and drought.



- Regulations, agreements, & related procedures This includes floodplain ordinances/management, subdivision ordinances, burning permits, and stormwater management ordinances.
- Local capital improvements plans & other budget documents Most notable are infrastructure projects, such as those related to stormwater systems, water supplies, weather sirens, generators, and communications equipment, which must be considered as part of local budgets. Many of the stormwater and flash flooding hotspots in the previous mitigation plans were addressed by including these projects in the road improvement or capital improvement and stormwater management plans at the County or local level.
- Emergency preparedness & response plans Mitigation and preparedness recommendation reference County, community, and dam Emergency Action Plans, the County's Public Health Emergency Preparedness Plan, continuity of government planning, and other related efforts. Some local municipalities need to update their emergency operating plans, and Eau Claire County Emergency Management is taking the lead to encourage these updates. County Emergency Management and also works cooperatively with stakeholders regarding plans, procedures, and grant applications related to long-term power outage, storm shelters and sirens, highway closures, communications systems, incident command, dams, etc. Eau Claire County Emergency Management has also used the discussions on mitigation and preparedness strategies to guide the County's Integrated Preparedness Plan (IPP), training considerations, and working planning. The IPP provides the most significant, new way to improvement plan coordination.
- Climate adaptation & resiliency Eau Claire County created a *Climate Action & Resilience Plan* (CARP) in 2019 that recognizes climate change and the trends discussed previously in Section III.C.

The CARP champions actions to reduce greenhouse gas emissions (sources of climate change) while encouraging community resiliency, which is a goal of this mitigation plan. It is expected that there will be even greater coordination between the mitigation plan and other climate-related or resiliency plans in the future.

To date, integrating the strategies and recommendations found in past hazard mitigation plan into local comprehensive plans has been inconsistent. Some planning consultants working with local communities are unfamiliar with the details of the hazard mitigation plan, and the State comprehensive planning law includes no specific reference to mitigation or resiliency planning, though such a State law is being considered. Further, mitigation planning is on a different schedule than comprehensive planning, with most comprehensive plans likely to be updated no more frequently than once per decade.

As the mitigation plan strategies reflect, WCWRPC and Eau Claire County staff will continue to work with local municipalities to encourage coordination and consistency between the hazard mitigation plan, and other community plans, and provide guidance on how to incorporate mitigation strategies into their comprehensive plans and other planning mechanisms. When made aware of local comprehensive planning efforts and updates, WCWRPC will contact municipalities to encourage them to consider the strategies found within the *Eau Claire County Multi-Hazard Mitigation Plan.*

Continued, active involvement of key county staff, local jurisdictions, and other stakeholders during hazard mitigation plan updates is critical to ensuring incorporation of mitigation strategies into other planning mechanisms.

Since key County staff were actively involved in the development and update of the County mitigation plan, many of the mitigation strategies are based on staff recommendations and provide confidence that a high level of coordination between these various planning efforts will continue.

SECTION VII.
PLAN ADOPTION & MAINTENANCE PROCESS

A. PLAN ADOPTION

Each participating municipality and educational institution, including Eau Claire County, considered and adopted this plan. Governmental jurisdictions in Wisconsin are required to take such actions during a properly noticed, public meeting; public and stakeholder attendees are typically provided an opportunity to comment during these meetings. Section I.B. at the beginning of this plan includes additional information on the County's plan adoption process. Eau Claire Energy Cooperative also actively participated in and approved the 2025 Mitigation Plan update. Copies of the adopting documents are included in **Appendix A**.

B. PLAN MAINTENANCE & CONTINUED PUBLIC PARTICIPATION

Past reviews of the County's mitigation plan were primarily limited to a periodic internal review by the County Emergency Manager. No special plan reviews or plan amendments were needed. The Steering Committee for this plan update (2025 Mitigation Plan) discussed continued plan maintenance and ways in which the public and other stakeholders can actively contribute, which are summarized below.

i. Plan Monitoring and Annual Plan Reviews

In accordance with Chapter 2.4 of the Eau Claire County Code of Ordinances, the County Emergency Manager has the duty to "monitor and recommend any revisions to the county emergency operations plan, all hazards mitigation plan, and the integrated preparedness plan for county board action.

Each year, starting in Fall 2026, Eau Claire County, through its Emergency Manager, will complete an annual review of the Mitigation Plan, unless a plan update is already in progress. This review may be performed concurrently with other work planning, such as Integrated Preparedness Plan (IPP) updates. The annual plan review should consider aspects such as:

- Progress on mitigation plan recommendations, including the suggested timelines and the pursuit of related mitigation grant funding. Regularly, update the IPP to reflect any changes in needed education, training, and outreach. See Subsection IV.B.iv below.
- Any significant changes in vulnerabilities, priorities, or trends, including to vulnerable populations, community lifelines, and weather/event patterns.
- Any significant changes in capabilities or barriers to plan implementation.
- Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms).
- Potential new mitigation and preparedness strategies, projects, or grant opportunities.

- Any new mandates, rules, etc. as well as any input received from Wisconsin Emergency Management (WEM) and the Department of Homeland Security--Federal Emergency Management Agency (FEMA) regarding plan implementation.
- Any comments or discussion with the public, partners, or other stakeholders.

If any critical issues or potential plan amendments are noted during the Emergency Manager's annual review of the plan, the Emergency Manager will provide a brief report to the County Planning & Development Committee. The Committee will recommend any revisions to the plan, if necessary, which would then be forwarded to the County Board for its consideration and action. The Emergency Manager may also need to follow up with participating jurisdictions, various County offices, and other stakeholders during this process. West Central Wisconsin Regional Planning Commission (WCWRPC) is available to aid if needed at any time during this process.

Public involvement and comments will be welcomed during this plan maintenance process. The Planning & Development Committee and County Board meetings are subject to the Wisconsin Open Meeting Law and will be properly noticed as required by State Statute, including at the County's website. Through these public notices, the public, local communities, and other stakeholder organizations are invited to attend and actively participate. Public announcements (e.g., press releases, social media posts) are encouraged when mitigation projects are implemented and the mitigation plan used. County Emergency Management has also created a Hazard Dashboard that offers the public a user-friendly interface with major components of the mitigation plan.

ii. Special Plan Reviews (Post-Disaster or New Project)

Disaster events, emergency trends/needs, and funding opportunities may also necessitate plan amendments. Within six months following a significant disaster event, the Emergency Manager, at their discretion, may conduct a special post-disaster review for consistency with the mitigation plan. A municipality or the County Board may also request a special plan review for the consideration of a plan amendment to introduce or modify a mitigation project or strategy that was not included in the original plan, perhaps due to unforeseen circumstances, changes in resources, or a changing hazard risk. The special review may occur concurrently with the annual review described previously.

Information regarding the recent disaster or new project will be collected and considered by the Emergency Manager. If a mitigation plan amendment is potentially needed, this information will be provided to the County Planning & Development Committee for their review and recommendation during a public meeting. As appropriate, recommended changes to the plan will be forwarded to the County Board and potentially the municipal contacts of the participating jurisdictions for their action and consideration.

iii. Plan Updates

Every five years, the hazard mitigation plan will be comprehensively reviewed, current data collected, and the plan updated. It is recommended that the plan update process begin no later than November 2028 to allow for completion and adoption prior to the expiration of the 2025 Mitigation Plan. This plan update effort should be robust and incorporate opportunities for public involvement to meet all requirements of 44 CFR Part 201.6 and/or any applicable planning guidelines, requirements, or

regulations developed or updated in the interim. Overall, the plan update process is expected to be similar to the process used for this mitigation plan update described in Section I, with the "mitigation & preparedness committee" serving as the plan update steering committee.

Each update of Eau Claire County's mitigation plan has strengthened weaknesses or incorporated opportunities since the previous plan. Some potential changes for the next County mitigation plan update include:

- The 2025 Mitigation Plan was significantly restructured within Sections II.C., III.D, IV, VI.D. and the city/village/school subplans in particular. While this required additional time for this update, this is anticipated to "streamline" and simplify future plan updates.
- Strive to include additional private-sector and smaller community participation on the plan update steering committee. Include lunch or snacks as part of steering committee meetings if needed.
- There was low participation among the school districts and fire chief's survey for this plan update; additional efforts will be made to increase participation rates, potentially in concert with County Public Health outreach efforts.
- Potentially coordinate the update of the County *Mitigation Plan* with the update of the County's *Climate Action & Resilience Plan*.
- As part of the next plan update, the steering committee will be asked to identify specific sub-group meetings and public outreach activities targeting certain vulnerabilities (e.g., ESL, seniors), threats (e.g., ag/avian flu, cybersecurity), community organizations/VOADs (e.g., Western Dairyland, Hmong Mutual Assistance, ARES/RACES, Medical Reserve Corps), or mitigation measures (e.g., nature-based solutions, low impact development, code enforcement).
- Work with the plan update steering committee to identify additional ways to engage the public, community lifelines, and vulnerable populations as part of the mitigation planning process.
- Increase the use of digital capabilities and web-based tools during the plan update for data analysis, sharing key information, and obtaining public/stakeholder input.

iv. Evaluating Plan Effectiveness

As part of plan reviews and future plan updates, the effectiveness of the County's Hazard Mitigation Plan will be evaluated based on:

- Did the Plan anticipate the hazards of significant risk? Are the probabilities and vulnerabilities for each hazard reasonably accurate?
- What was the progress on implementing the strategy recommendations, with a particular emphasis on high priority strategies.
- If a mitigation project is proposed in the future or a mitigation funding opportunity become available, did the Mitigation Plan already contemplate or support a proposed project.
- For mitigation projects that are implemented, what were the benefits vs. costs?

APPENDIX A.

ADOPTING RESOLUTIONS AND ELECTRIC COOPERATIVE LETTER

INSERT ONCE ADOPTED

RESOLUTION 6A-25

A RESOLUTION APPROVING AN ALL-HAZARD MITIGATION PLAN FOR THE CITY OF ALTOONA

WHEREAS, hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people, businesses, infrastructure, and property from hazards and their effects; and,

WHEREAS, Eau Claire County has updated and prepared the *Eau Claire County Multi-Hazard Mitigation Plan, 2025-2030* (hereafter "the Plan") to assess the magnitude of hazard risks and develop strategies for minimizing or reducing these risks; and,

WHEREAS, the City of Altoona recognizes the threat that natural hazards pose to people and property and actively participated in the Plan update process through meetings and interviews with City staff as well as through a capacity assessment survey and the review of draft plan materials; and,

WHEREAS, the Plan will be reviewed by Wisconsin Emergency Management as meeting the requirements of the Federal Disaster Mitigation Act of 2000 and applicable Code of Federal Regulations, including the updated Local Hazard Mitigation Plan Guidance, effective April 2023; and,

WHEREAS, adoption of the Plan by the City Council will meet prerequisite requirements that enable the City of Altoona to apply for FEMA grant dollars for hazard mitigation projects;

NOW, THEREFORE BE IT RESOLVED, the Altoona City Council adopts the *Eau Claire County Multi-Hazard Mitigation Plan, 2025-2030* with the intent of implementing the Plan recommendations and advancing the Plan goals as funding and resources allow. While Plan content related to Eau Claire County and the City of Altoona may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City of Altoona to re-adopt any further iterations of the Plan. Subsequent plan updates following the approval period for this Plan will require separate adoption resolutions.

Adopted this 12th day of June, 2025.

CITY OF ALTOONA, WISCONSIN

Brendan Pratt, Mayor

ATTEST:

Cindy Bauer, City Clerk

Adopted: 6/12/2025
Approved: 6/12/2025
Published: No

RESOLUTION

A RESOLUTION APPROVING AN ALL HAZARD MITIGATION PLAN FOR THE SCHOOL DISTRICT OF ALTOONA

WHEREAS, hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people, businesses, infrastructure, and property from hazards and their effects; and,

WHEREAS, Eau Claire County has updated and prepared the *Eau Claire County Multi-Hazard Mitigation Plan, 2025-2030* (hereafter "the Plan") to assess the magnitude of hazard risks and develop strategies for minimizing or reducing these risks; and,

WHEREAS, the School District of Altoona recognizes the threat that natural hazards pose to people and property and actively participated in the Plan update process through communication with School District staff as well as through a capacity assessment survey and the review of draft plan materials; and,

WHEREAS, the Plan will be reviewed by Wisconsin Emergency Management as meeting the requirements of the Federal Disaster Mitigation Act of 2000 and applicable Code of Federal Regulations, including the updated Local Hazard Mitigation Plan Guidance, effective April 2023; and,

WHEREAS, adoption of the Plan by the School District will meet prerequisite requirements that enables the School District of Altoona to apply for FEMA grant dollars for hazard mitigation projects;

NOW, THEREFORE BE IT RESOLVED, the School District of Altoona Board of Education adopts the *Eau Claire County Multi-Hazard Mitigation Plan, 2025-2030* with the intent of implementing the Plan recommendations and advancing the Plan goals as funding and resources allow. While Plan content related to Eau Claire County and the School District of Altoona may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the School District to re-adopt any further iterations of the Plan. Subsequent plan updates following the approval period for this Plan will require separate adoption resolutions.

Adopted

July 28, 2025

Jeremy Zook, Board President — Date

July 28, 2025

Nathan Simonson, Board Clerk — Date

RESOLUTION 6A-25

A RESOLUTION APPROVING AN ALL-HAZARD MITIGATION PLAN FOR THE CITY OF ALTOONA

WHEREAS, hazard mitigation planning is the process of developing a set of actions designed to reduce or eliminate long-term risk to people, businesses, infrastructure, and property from hazards and their effects; and,

WHEREAS, Eau Claire County has updated and prepared the *Eau Claire County Multi-Hazard Mitigation Plan, 2025-2030* (hereafter "the Plan") to assess the magnitude of hazard risks and develop strategies for minimizing or reducing these risks; and,

WHEREAS, the City of Altoona recognizes the threat that natural hazards pose to people and property and actively participated in the Plan update process through meetings and interviews with City staff as well as through a capacity assessment survey and the review of draft plan materials; and,

WHEREAS, the Plan will be reviewed by Wisconsin Emergency Management as meeting the requirements of the Federal Disaster Mitigation Act of 2000 and applicable Code of Federal Regulations, including the updated Local Hazard Mitigation Plan Guidance, effective April 2023; and,

WHEREAS, adoption of the Plan by the City Council will meet prerequisite requirements that enable the City of Altoona to apply for FEMA grant dollars for hazard mitigation projects;

NOW, THEREFORE BE IT RESOLVED, the Altoona City Council adopts the *Eau Claire County Multi-Hazard Mitigation Plan, 2025-2030* with the intent of implementing the Plan recommendations and advancing the Plan goals as funding and resources allow. While Plan content related to Eau Claire County and the City of Altoona may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City of Altoona to re-adopt any further iterations of the Plan. Subsequent plan updates following the approval period for this Plan will require separate adoption resolutions.

Adopted this 12th day of June, 2025.

CITY OF ALTOONA, WISCONSIN

Brendan Pratt, Mayor

ATTEST:

Cindy Bauer, City Clerk

Adopted: 6/12/2025
Approved: 6/12/2025
Published: No

Eau Claire Energy Cooperative

Your Touchstone Energy® Cooperative

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www.ecec.com

August 14, 2025

Tyler Esh, Emergency Management Coordinator
Eau Claire County Department of Planning & Development
721 Oxford Avenue, Room 334
Eau Claire, WI 54703

RE: *Eau Claire County Multi-Hazard Mitigation Plan 2025-2030*

Dear Mr. Esh:

Eau Claire Energy Cooperative thanks Eau Claire County and your office for providing us the opportunity to participate in the County's hazard mitigation plan update. In particular, we commend the County for its attention to the long-term power outage threat in the region due to ice storms, high winds, and other such weather-related events.

We have reviewed the plan and concur with the strategy recommendations pertaining to mitigation and preparedness for power outage events, such as the pursuit of grant funding to bury electric lines in areas most prone or at-risk of outages.

We look forward to working cooperatively with Eau Claire County during implementation of the plan and future plan updates.

Sincerely,

Patrick Bethke
Operations Manager

APPENDIX B.

STAKEHOLDER INTERVIEWS AND MEETINGS

Eau Claire County Multi-Hazard Mitigation Plan
Key Stakeholder Interview List

The following constitute the key stakeholders who were interviewed and provided input during the development of the draft plan. Municipalities, the Steering Committee, and other stakeholders also provided additional input during the review of the draft plan strategies and plan adoption process.

Interviewee	Title/Notes	Date
Village of Fairchild	8 attendees; w/ Town of Fairchild also represented	10/2/24
Village of Fall Creek	3 attendees	5/21/24
City of Altoona	6 attendees	9/11/24
City of Augusta	3 attendees	10/1/24
City of Eau Claire	Meeting #1: 7 attendees	6/27/24
City of Eau Claire	Meeting #2: 8 attendees	5/12/25
Town's Association	meeting + every town sent a follow-up survey	4/29/24
Fire Chief's/EMS	brief presentation & distributed survey	9/11/24
County Steering Cmte	Steering Committee meeting #1	3/6/24
County Steering Cmte	Steering Committee HVA/Risk Survey	Mar-Apr 2024
County Steering Cmte	Steering Committee meeting #2	6/15/23
County Steering Cmte	Steering Committee mitigation alternatives survey	Dec'24-Jan'25
County Steering Cmte	Steering Committee meeting #3	7/9/25
Public Health Emgy Preparedness Cmte	16 attendees	4/25/24
Tyler Esh	Eau Claire County Emergency Management	various dates
ARES/RACES	3 County ARES/RACES members/leadership	5/30/24
Eau Claire Energy Cooperative	Patrick Bethke & Ben Bella; plus follow-up data via email	1/9/25
Jon Johnson	County Highway Commissioner	12/6/24
Greg Rosno	City-County Comm Center Manager	12/9/24
Matt Theisen	County Facilities Manager	12/10/24
Chad Berge	County Conservationist	12/10/24
Regan Watts	County Recycling & Sustainability Coordinator	12/10/24
Linda Struck, Betsy Henck, Lisa Riley	County ADRC Management	12/10/24
Josh Pedersen	County Parks & Forest Director	12/10/24
Peter Strand	County GIS Administrator	12/16/24
Rod Eslinger	County Planning & Development Director	12/16/24
Matt Michels	County Senior Planner, P&D	12/16/24
Ben Bublitz	County Land Use Manager	12/16/24
Matt Steinbach	City-County Environmental Health Division Manager	12/17/24
Marisa Stanley	City-County Health Dept – Assistant Director	12/17/24
Nicole Kragness	City-County Health Dept – Environ Health	12/17/24
Joe Kalscheur	City-County Health Dept – Emgy Preparedness Coor	12/17/24

Greg Daschel	County Information Services Director	
Jed Kaurich	WDNR Fire Warden – Augusta Station	10/4/24
Amy Penn	WDNR Wildland Urban Interface Specialist	10/4/24
Disaster Ready Chippewa Valley		2/24/24
Jenny Legaspi	American Red Cross	8/7/23
Forrest Van Asten	Water Reg. & Zoning Engineer, WisDNR	1/8/25
Adjacent County Emgy Mgmt and WEM	Emergency Management Directors of adjacent counties were contacted for input as well as Lisa Olson-McDonald at the Regional WEM Office	Dec 2024
Xcel Energy Staff	email exchange on risks, LTPO, dams, etc.	Jan 2024

Additional Documentation

The following additional documentation is attached for reference:

- agendas and sign-in sheets for Plan Steering Committee meetings & Public Health Emergency Preparedness Committee meeting.
- sign-in sheets for meetings with the municipalities

Most of the above meetings were informal and did not include a quorum of elected officials. As such, official minutes were typically not maintained or later approved. This was also a cost-savings measure since keeping official notes or detailed minutes for every meeting is time consuming.

Instead, the planning consultant would often take notes and make needed corrections directly onto materials used during the meetings. This approach was very effective and efficient because this was a plan update. For instance, during the community meetings, key sections from the previous plan (i.e., list of strategies, current mitigation activities table, hazard risk table, meeting notes) were printed, along with a map of the community with key features shown. Then during the community meetings, the consultant and community discussed the community's risks, activities, and strategies noted in the previous plan, then made corrections and additions directly to these documents.

Eau Claire County
Multi-Hazard Mitigation Plan Steering Committee
Meeting #1 – Plan Update Kick-Off Meeting

March 6, 2024 9:00 AM - 10:30 AM
Eau Claire County Government Center
721 Oxford Ave, Eau Claire, WI
Room 3312

AGENDA

I. Welcome & Introductions

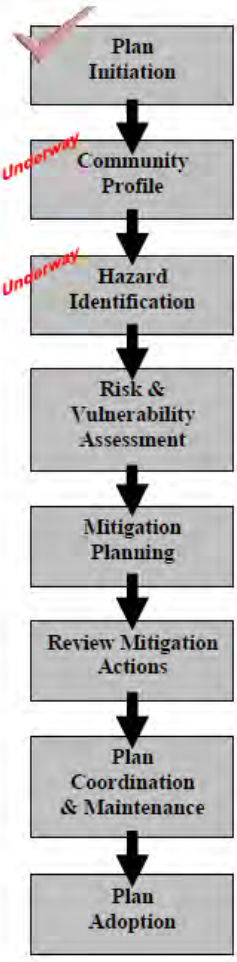
II. Hazard Mitigation Planning & Related Grants

III. Review Plan Update Scope & Planning Process
- New FEMA planning guidelines
- Example plan table of contents
- Tentative timelines & Steering Committee role
- Participant & stakeholder engagement
- Other engagement, public participation, or outreach
- Coordination with IPP, PHEPP, & THIRA-EMAP
- Other related plans, studies, GIS data, etc.
- Project brochure

IV. Hazard Trends & Vulnerabilities
- Presidential Disaster Declarations
- Storm Event Data & National Risk Index
- NWWIHERC Health Vulnerability Assessment
- Other hazard events since 2019 Plan?
- **Underserved** communities & socially vulnerable populations
- Community Lifelines
- Issues & Opportunities Exercise

V. Risk Prioritization Survey Homework

VI. Next Steps in the Process
- Homework deadline - March 15
- Discuss preferred Committee meeting dates



	Name (Print)	Organization	Title
1	Chris Straight	WCWRPC	Sr Planner
2	Valerie Desio	EC Co	Emg Mgmt
3	Peter Strand	ECCo	GIS Coord
4	Ben Bublitz	EC Co	Land Use
5	Tyler Esh	EC Co	EM Coordinator
6	JED KAUBICH	WI DNR - DIV. OF FORESTRY	AUG. Forester Ranger
7	Josh Pedersen	EC Co Parks + Forest	Director
8	Matt Michels	ECC P&D	SR. Planner
9	Joe Kalscheur	ECCCHD	Emergency Preparedness
10	Marisa Stanley	ECCCHD	Asst. Director
11	Jon Johnson	ECCO	Highway Commissioner
12	Nancy Parker	Township 70	clerk
13	Robert Heller	ECFD	Deputy Chief
14			

Eau Claire County
Multi-Hazard Mitigation Plan Steering Committee
Meeting #2 – Plan Update Kick-Off Meeting

December 3, 2024 9:00 AM - 11:30 AM
Eau Claire County Government Center
721 Oxford Ave, Eau Claire, WI
Room 3312

AGENDA

I. **Welcome & Introductions**

II. **Review Plan Purpose & Plan Update Progress**

III. **Hazard Identification – Threat Survey Results**

IV. **Brief Highlights from Meetings & Input to Date**
- City & Village Meetings
- Town Surveys
- Other Meetings & Input

V. **Review & Update Plan Goals** *(see back for 2018 Goals)*

VI. **Mitigation vs. Preparedness Strategies**

VII. **Criteria for Evaluating & Prioritizing Mitigation Actions**

VIII. **Opportunities for Plan Coordination**

IX. **Plan Maintenance & Update Approach**

X. **Next Steps in the Process**
- Complete Interviews & Sub-Plans; Other Input?
- Complete Risk & Vulnerability Assessment
- Progress Evaluation
- Mitigation & Preparedness Alternatives Homework
- Draft to WEM, Staff, & Committee for Pre-Review
- Meeting #3 – Finalize Plan
- Public Comment Period



Note: Steering Committee Meeting #3 was conducted virtually to finalize the plan strategies; a formal agenda and sign-in sheet were not prepared.

Name	Title	Department/Agency
Peter Strand	GIS Admin	Planning + Development
Joe Kalscheur	Public Health Emerg. Prep. Specialist	Eau Claire City-County Health Dept
Rod Eslinger	Planning and Development Director	Planning & Development
Ben Bublitz	P+D Land Use Manager	Planning + Development
Bob Haller	Deputy Chief ECFD	City of Eau Claire Fire Dept.
Tyler Esh	Emergency Manager	Eau Claire Co
JASmine Dutton	Risk management	cityofEC
Olive Ellringer	Recycling LTE	P+D
Regan Watts	Recycling + Sustainability Coordinator	P+D
Chris Straight	Sr Planner	WCWRPC

MEETING SIGN-IN LOG

Name Of Meeting:	Eau Claire City-County Public Health Emergency Preparedness (PHEP) Committee	**Length of meeting:**	2.0
Meeting Date:	4/25/2024	**Meeting Facilitator:**	Joe Kalscheur
Meeting Time:	3 - 5 p.m.	**Agency hosting meeting:**	ECCC Health Department

	Name (Please print)	Agency	Signature
1	Chris Straight	West Central WI Regional Plan Comm	
2	Valerie Desio	ECCEM	
3	Brian Marks	ECASD	
4	Kristin Walukas	CAP*/WDEOC	
5	Tyler Esh	ECC EM	
6	Marcus Walder	Marshfield Clinic HS	
7	Allison Gosbin	ECCCHD	
8	Jason Lay	Mayo clinic EPAC	
9	Autumn Cernohous	WWPHRC	
10	Marisa Stanley	ECCCHD	
11			
12	Virtual:		
13	Bobby King	MCHS	
14	Aimee Wollman	HERC	
15	Greg Dachel		
16	Chris Kirchman	Oakleaf	EM specialist
17	Sonja Leenhouts		
18	Ian Fisher	Marshfield	EM
19			

DATE(S)	SIGNATURE (please be legible)	TITLE	ACTIVITY
		Sr Planner WCWRPC	Fall Creek
5/21/24	Jared McKee	Village admin	Mtg
		Emergency Manager	Eau Claire Co
9/11/24		Sr Planner WCWRPC	City of
9/11/24		Police Chief	Altoona
9/11/24	Mike Golat	City Administrator	Mtg
9-11-24	SCOTT KWICK	PUBLIC WORKS DIRECTOR	COG MEETING
9/11/24	Tyler Esh	Emergency Manager	Eau Claire Co
9/11/24	ROSS PIETRZAK	SR PLANNER WCWRPC	CITY OF ALTOONA
10/1/24		Interim Supt. Augusta Schools	City of
10/1/24	Gordon OBrien	CHIEF OF POLICE	Augusta
10/1/24	Cynthia Anderegg	City Clerk	Meeting

DATE(S)	SIGNATURE (please be legible)	TITLE	ACTIVITY
10/2/24			Village of Fairchild
			w Town + Fire
	Chris Straight	WCWRPC	Meeting
10/2/24	TODD MEYER	COMMUNITY VOLUNTEER	EMER. MGT MEETING
10/2/24	Michelle Schaan	Village trustee	Emer Mgt Meeting
10/2/24	Billie Waugh	Clerk/Treasurer	Emer mgt. Meeting
10/2/24		Village president	Emer Mgt meeting
10/2/24			Emergency Mgt Mtg
10/2/24		FIRE TRAINING OFFICER	EMER. MGT MEETING
10/2/24		Town chair Fairchild	Emrgy Mgt Meeting
1/9/25		Operations Manager	Eau Claire Energy
1/9/25		SAFETY MGR	Coop

Meeting/Contribution: City of Eau Claire Meeting #1

DATE(S)	SIGNATURE (please be legible)	TITLE	ACTIVITY
6/27/24	Chris Straight	Sr. Planner	City Mtg #1
6/27/24	Tyler Esh	Emergency Manager	
6/27/24	[illegible]	EC Risk mngr	
6/27/24	Leah Ness	CEC Engrng	
6/27/24	~~Peter Bauer~~ Pete Bumgarner	CEC Associate Planner	
6/27/24	Ned NOEL	PLANNING MANAGER	
6-27-24	Coy Tietz	CEC Operations Coordinator	

Date: 5/12/25

Meeting: City of Eau Claire Mitigation Plan Work Group

Location: Eau Claire City Hall

Time Start: 10:00 AM Time Ending: _____

Name	Title	Department/Agency
Chris Straight	Sr Planner	WCWRPC
Tyler Esh	Emergency Manager	Eau Claire County
Brendan Osborne	Park Supervisor	City of Eau Claire
Ty Fadness	Operations Manager	City of Eau Claire
JASMINE Dutton	Risk Manager	City of Eau Claire
Lily Strehlow	City SAC	UWEC
Bob Hebler	Deputy Chief	ECFD
NED NOEL	PLANNING MANAGER	CITY OF EC

APPENDIX C.

PUBLIC INFORMATIONAL NOTICE

July 22, 2025

PUBLIC NOTICE

PLEASE TAKE NOTICE that Eau Claire County Emergency Management is inviting comments and input from residents, businesses, area organizations, and communities regarding the draft *Eau Claire County Multi-Hazard Mitigation Plan, 2025-2030* and any needed projects to reduce or eliminate hazard risks to residents and property.

Eau Claire County has recently completed a draft update of the County's Multi-Hazard Mitigation Plan, which is a pre-requisite for certain FEMA grant funding. Hazard mitigation actions are essential to creating a disaster-resilient community and breaking the disaster cycle of damage, reconstruction, and repeated damage, thus saving taxpayer dollars. Example mitigation activities include the community safe room (storm shelter) at the Northern Wisconsin State Fairgrounds in Chippewa Falls and the past buyout of floodprone properties within the City of Eau Claire but can also include actions such as the distribution of weather radios and burying power lines in areas prone to outages.

A copy of the draft plan is available for review at the County Emergency Management offices within the County Government Center (721 Oxford Avenue, Suite 3344, Eau Claire, WI) or is available for download at: https://www.wcwrpc.org/hazard-mitigation-planning

The public is invited to provide comment as the draft plan is finalized. Comments may be submitted online at: https://www.surveymonkey.com/r/ECCoHazMit through August 15, 2025. Any questions or written comments on the draft plan may also be directed to Tyler Esh, Eau Claire County Emergency Management, at 715-839-4736.

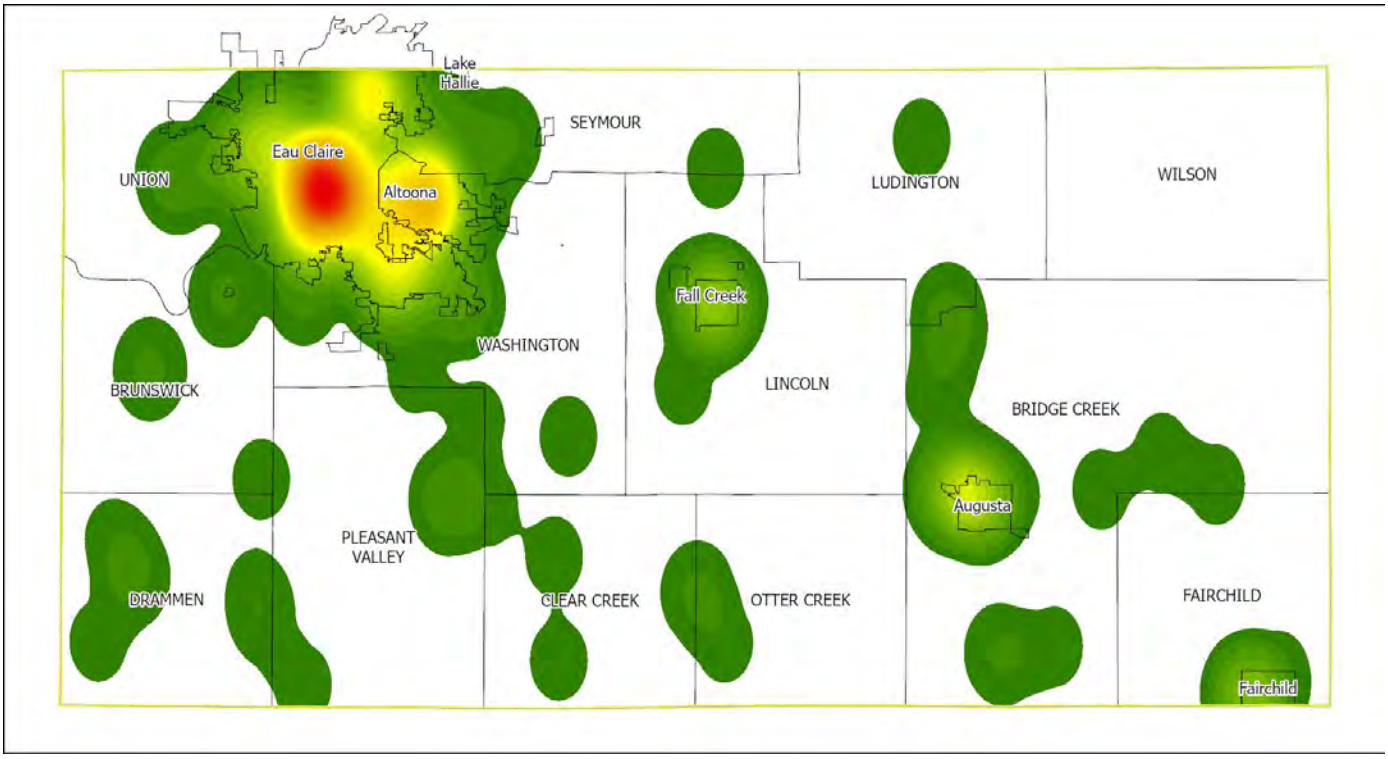
_____
Tyler Esh
Eau Claire County Emergency Management Manager

cc: News Media
Public Bulletin Board/County Clerk's Office

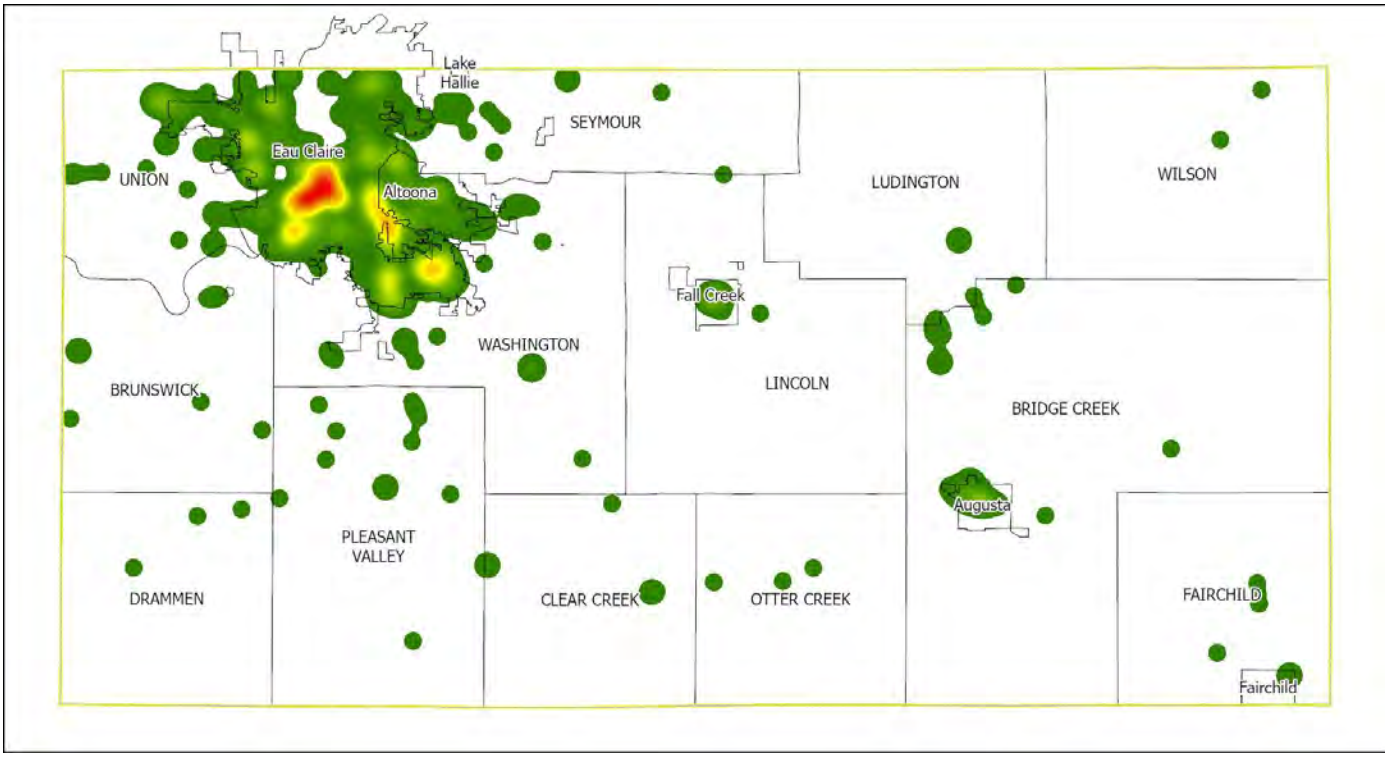
APPENDIX D.

DISTRIBUTION OF COMMUNITY LIFELINES

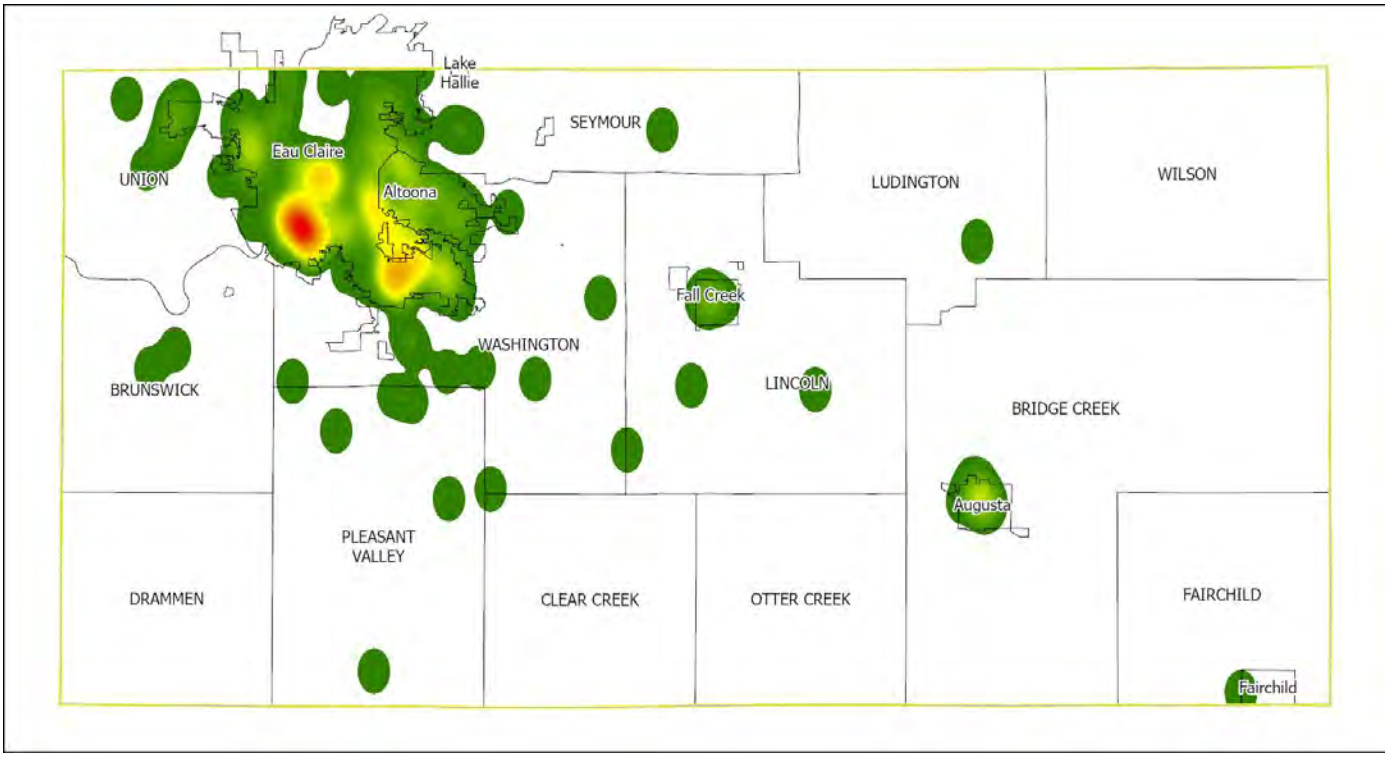
Distribution of Safety & Security Lifelines



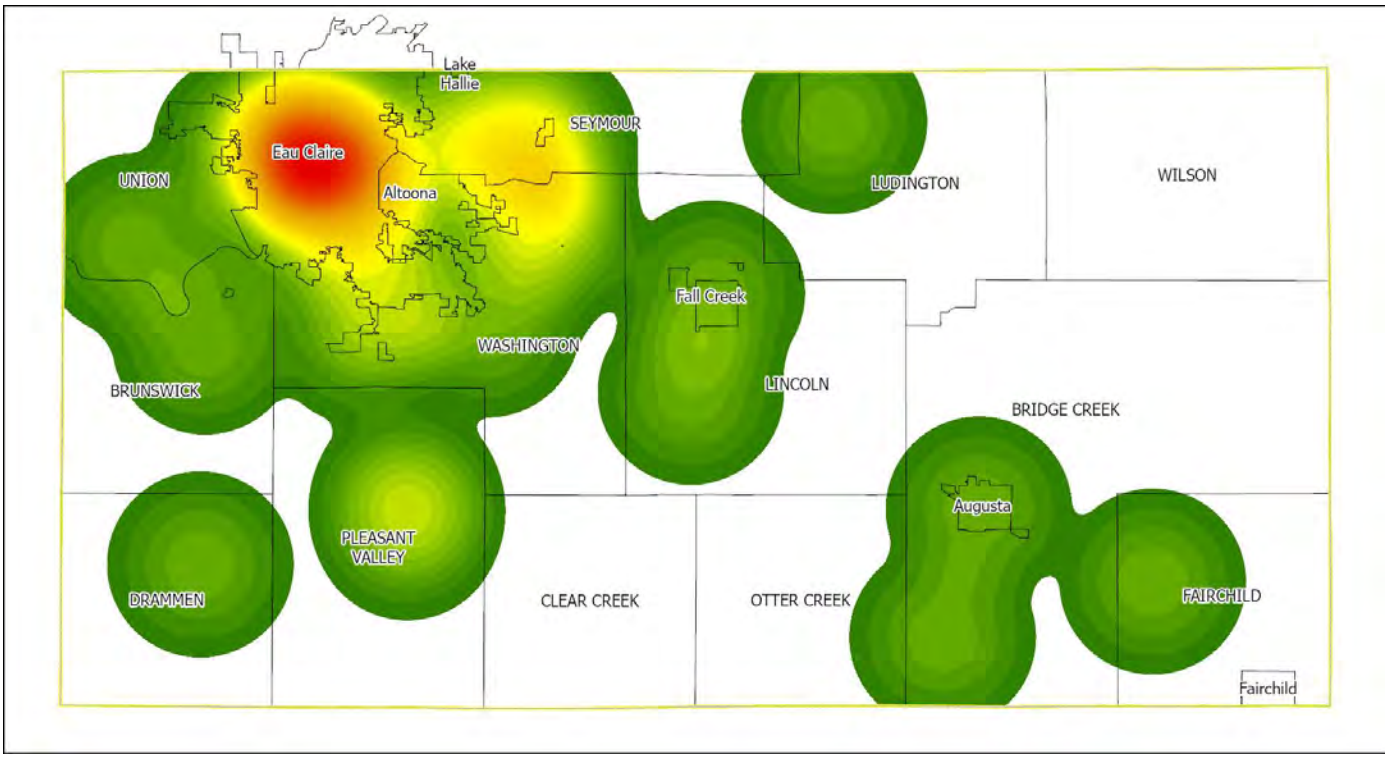
Distribution of Food, Hydration, & Shelter Lifelines



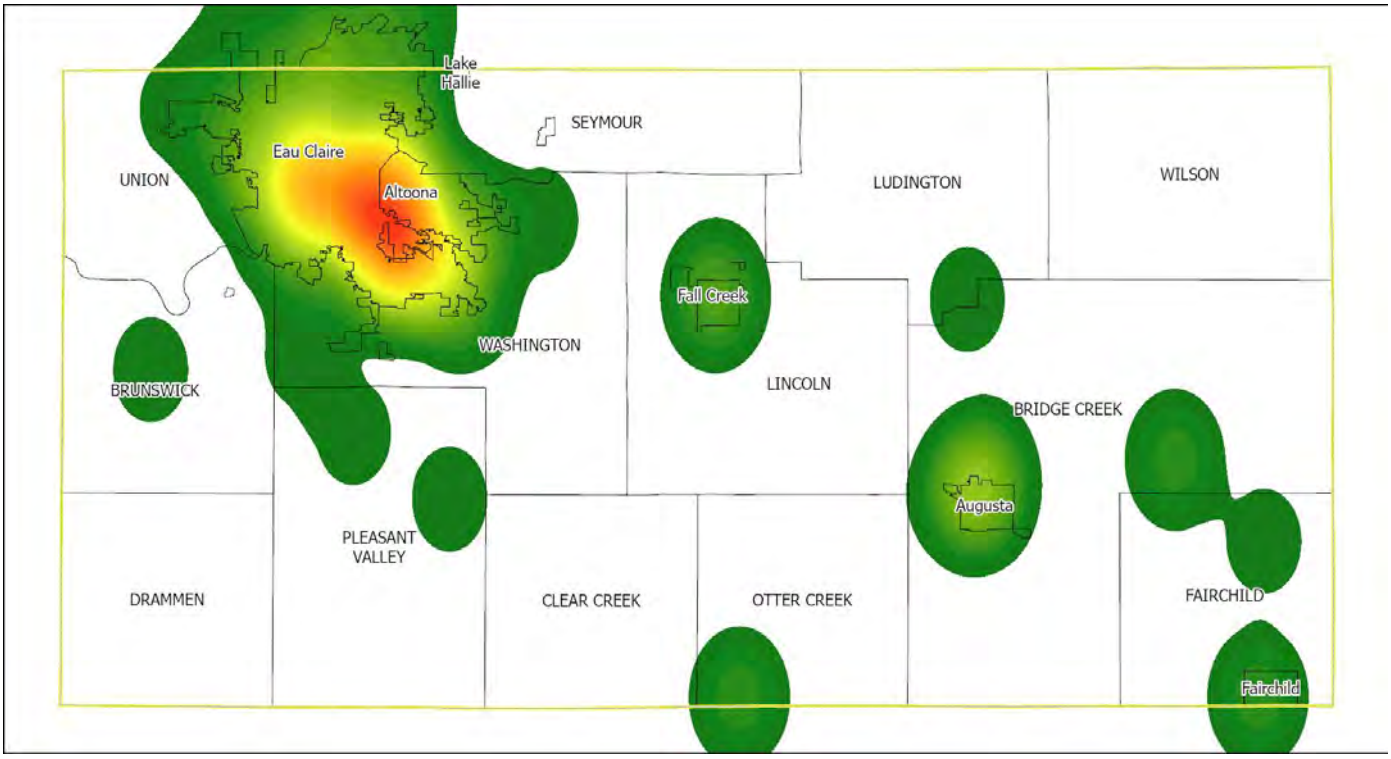
DISTRIBUTION OF HEALTH & MEDICAL LIFELINES



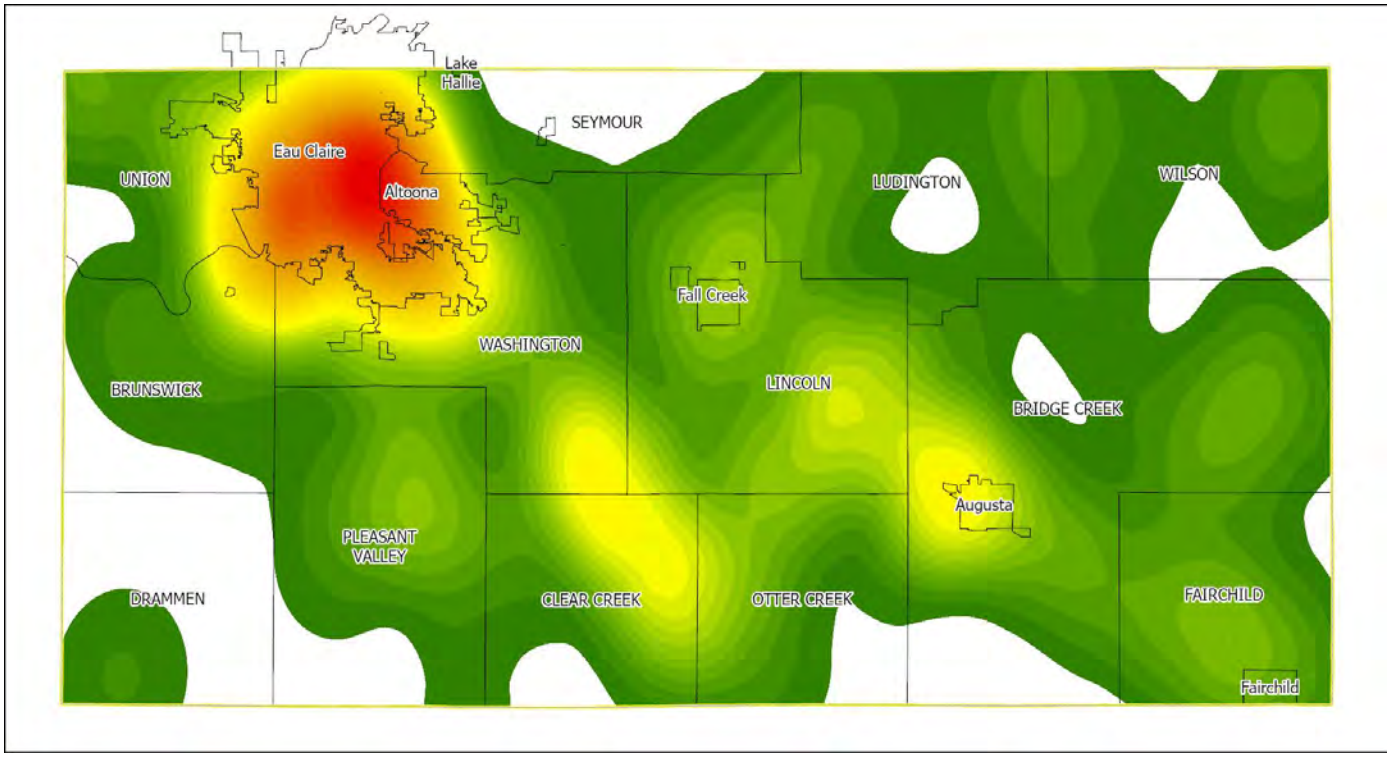
DISTRIBUTION OF ENERGY LIFELINES



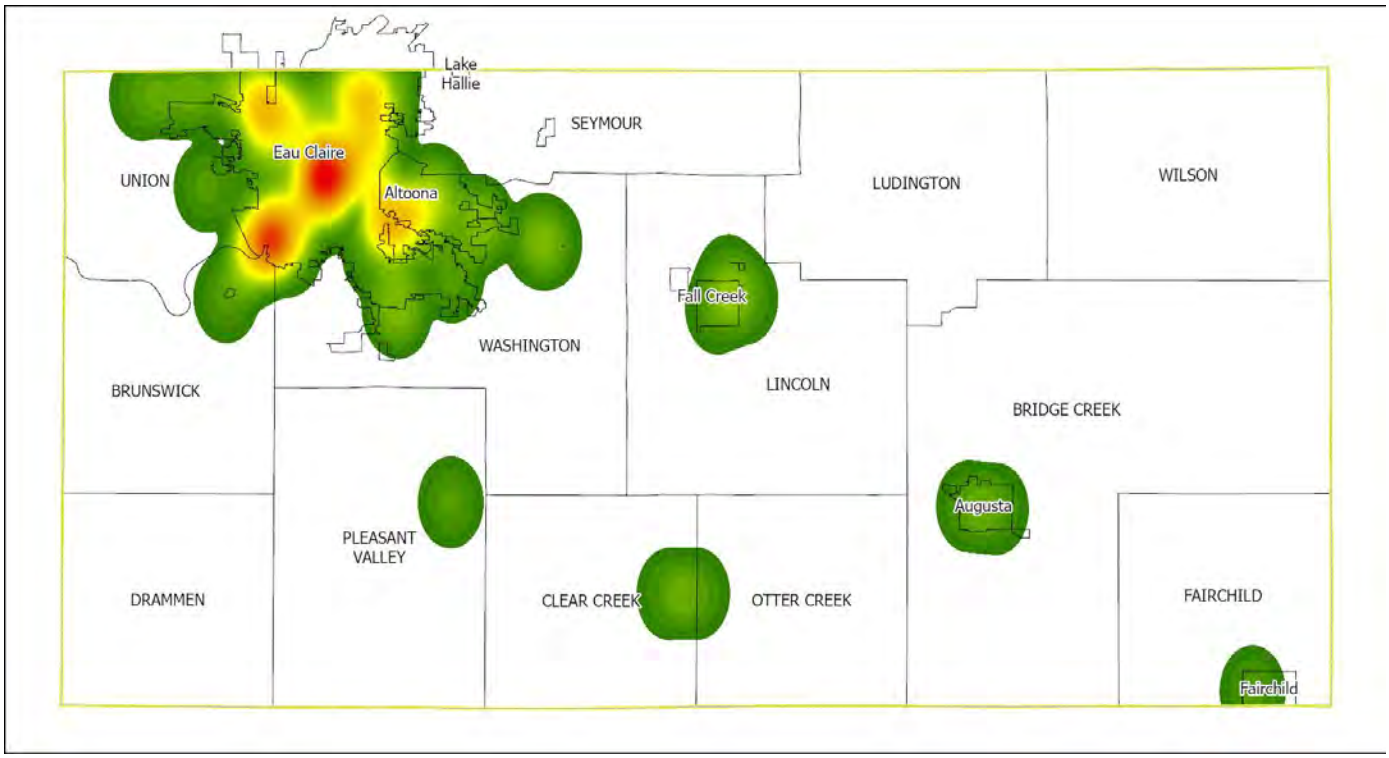
DISTRIBUTION OF COMMUNICATIONS LIFELINES



DISTRIBUTION OF TRANSPORTATION LIFELINES

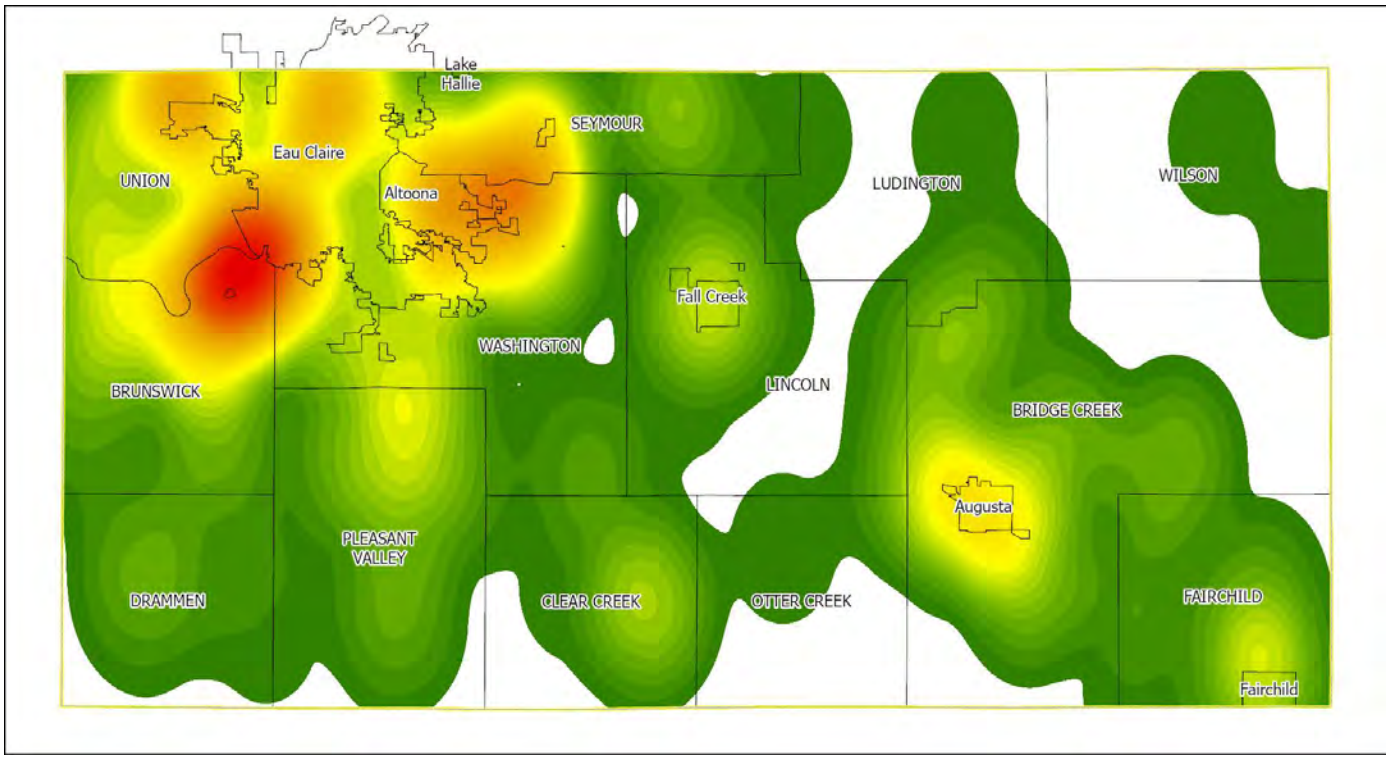


Distribution of Hazardous Materials Lifelines (fixed sites)



Distribution of Water Systems Lifelines

(includes source water protection areas & groundwater withdrawals/high-capacity wells)



.

APPENDIX E.

NATURAL HAZARD EVENT HISTORY

(INCLUDING NCDC DATA THROUGH DECEMBER 2023)

1. **Tornado & High Wind Events**
2. **Winter Storm & Extreme Cold Events**
3. **Thunderstorm, Heavy Rain, Lightning, & Hail Events**
4. **Flooding Events, including a June 1993 Flood Summary**
5. **Drought & Extreme Heat Events**

Appendix E is largely limited to National Climate Center Data (NCDC) for reported severe weather events posing a significant risk for Eau Claire County, with the exception of tornado events for which there is some additional regional context and a summary of the June 1993 flooding. Not all severe weather events are reported in the NCDC database. Key events, especially if recent, are further discussed in Section III.

At the time of this plan's completion, NOAA provided data through October 2024. There were 12 additional storm events reported to the NCDC for 2024 that are not included in the data tables in Appendix E:

- 2 winter storms (January and March)
- 2 winter weather events (January and February)
- 2 hail events on May 18th, 2024
- 1 EF1 tornado on May 21st, 2024
- 5 thunderstorm wind events (May (x3) and August (x2))

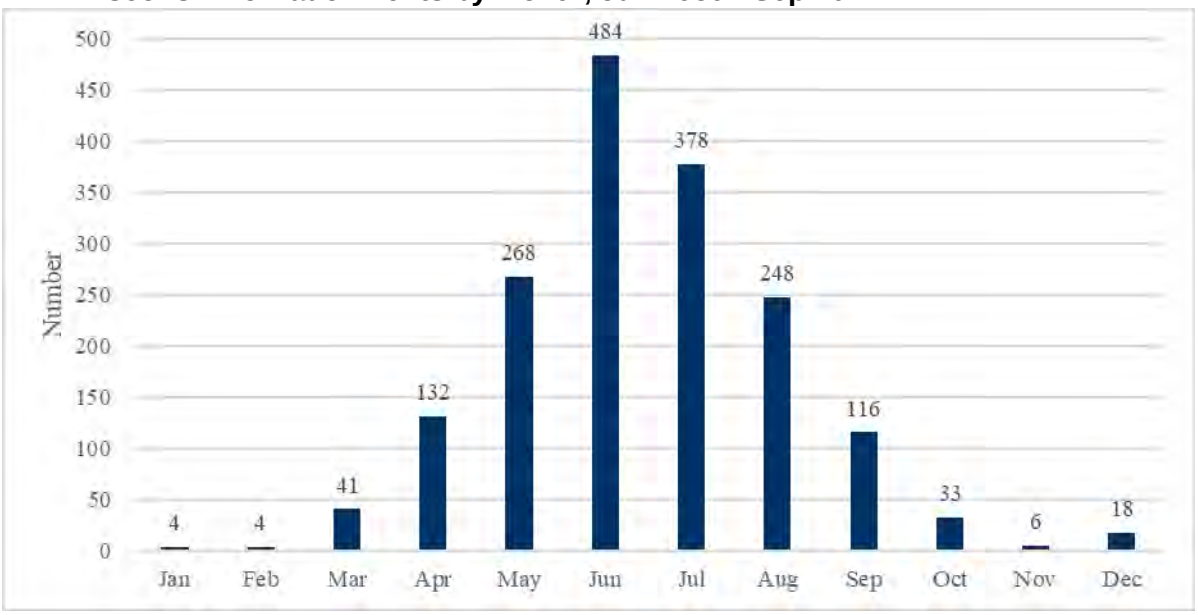
Reporting for recent events can lag behind and some of the reports may not be complete. There were no deaths, injuries or property damage reported for the above reports in 2024.

1. Tornado & High Wind Event History

Regional Trends

Wisconsin lies along the northern edge of the nation's maximum frequency belt for tornadoes (known as "tornado alley") which extends northeastward from Oklahoma into Iowa and then across to Michigan and Ohio. Generally, the frequency and severity of tornado events decreases as one travels north. Tornadoes have occurred in Wisconsin in every month except February, as shown in the below:

Wisconsin Tornado Events by Month, Jun 1950 - Sep 2024



source: NOAA NCEI Storm events dataset

Wisconsin's tornado season runs from the beginning of April through September. The most severe tornadoes typically occur during April, May, and June. Many tornadoes strike in late afternoon or early evening. However, tornadoes have occurred during other times of the day. Personal property damage, deaths, and injuries have and will continue to occur in Wisconsin.

Event data is available through October 2024 for this planning cycle. From 1980 to 2024, Wisconsin experienced 46 significant tornado events, including thirty-seven F-3 / EF-3, six F-4 / EF-4, and 3 F-5 / EF-5 tornadoes. Eau Claire County has had a lower-than-average number of tornadoes with 19 reported tornadoes between 1950 and 2024. The county ranks 28th out of 72 for reported events.

There have been two recent and substantial tornado events in the region around Eau Claire County. On May 15, 1998, an F3 tornado with a 9-mile path hit Buffalo and Pepin counties approximately fifteen miles to the west, resulting in 6 injuries and 2 destroyed homes. More recently, about seven miles north of Eau Claire County, an EF3 tornado hit the Town of Howard on September 24, 2019, injuring 3 and resulting in over $3 million in damage. The most devastating day in the area occurred on June 4, 1958. On this day, six tornado events occurred across Chippewa, Dunn, and Eau Claire counties. They caused 27 deaths, 110 injuries, and over $57 million in damage (not adjusted for inflation).

The deadliest tornado in Wisconsin history (and 9th deadliest in U.S. history) occurred about fifty miles west of the county line. On June 12, 1899, a strong storm with heavy rain and hail hit the City of New Richmond in St. Croix County. Hundreds of visitors were in town that day for the circus that ended around 4:30 pm, just when the storm began. A powerful tornado struck close to 6 pm. Passing through the very center of town, the tornado leveled buildings and sent debris flying. Damage was extensive and 117 people were killed. This tornado originated on Lake St. Croix, about five miles south of Hudson. The tornado moved to the northeast, east of Hudson, in the direction of New Richmond, leveling farms near Burkhardt and Boardman. Over 300 buildings were damaged or destroyed. While not a massive tornado, the combination of time and position was unfortunate.



Local Events

The following tables show tornado and high wind events reported for Eau Claire County in the National Climate Data Center (NCDC) database. With one exception, all tornadoes occurred during the months of April through September. The majority of the events occurred between the hours of 2:00 PM and 9:00 PM. Similarly, most high wind events occurred during the spring and summer months.

The type of damage from each event can vary greatly. Most events occur with minimal damage to structures and no deaths or injuries. But impacts can also be devastating. Property damage of $2.5 million or more has been reported six separate times since reporting began. The amount of damage per tornadic event has been trending down, however, damage is often under-reported. For example, the December 2021 tornado and high wind event caused extensive damage throughout Eau Claire County, but no damage is included in the NCDC database.

We have to go back into historical records to find documentation of any tornado-related deaths in Eau Claire County prior to 2017. A record search yielded four different “killer tornados” which included Eau Claire County in their paths. They occurred in 1930, 1958, 1971, and 1980.

Eau Claire County Tornado Events (1952 – 2023)

Location	Date	Time	Event	Mag.	Deaths	Inj.	Property Damage ($)	Crop Damage ($)
Eau Claire County	5/10/1953	6:55 PM	Tornado	F4	0	5	28,854,317	-
Eau Claire County	6/4/1958	7:30 PM		F4	4	3	27,108,682	-
Eau Claire County	9/21/1970	4:00 AM		F2	0	0	20,532	-
Eau Claire County	7/18/1971	4:30 PM		F2	1	2	1,953,215	-
Eau Claire County	6/9/1974	4:45 PM		F1	0	0	17,234	-
Eau Claire County	6/16/1979	3:10 PM		F1	0	0	11,683,343	-
Eau Claire County	7/15/1980	8:25 PM		F3	1	10	10,420,711	-
Eau Claire County	7/15/1980	8:40 PM		F1	0	0	104,207	-

Eau Claire County	7/15/1980	8:50 PM		F2	0	0	1,042,071	-
Eau Claire County	7/15/1980	11:08 PM		F1	0	0	-	-
Eau Claire County	9/12/1982	3:18 PM		F2	0	0	8,173,326	-
Eau Claire County	9/12/1982	6:27 PM		F2	0	0	8,173,326	-
Eau Claire County	7/3/1983	4:10 PM		F2	0	0	781,286	-
Eau Claire County	7/3/1983	4:20 PM		F2	0	0	78,129	-
Augusta	4/10/2011	3:57 PM		EF1	0	0	279,531	-
Augusta	4/10/2011	4:04 PM		EF1	0	0	349,414	-
Augusta	7/22/2013	3:45 PM		EF0	0	0	6,650	13,300
Fairchild	12/15/2021	9:00 PM		EF0	0	0	-	-
Funnel Cloud Reports								
Fall Creek	6/30/1997	11:05 AM	Funnel Cloud		0	0	-	-
Fall Creek	7/26/2000	1:50 PM			0	0	-	-
Forest	4/10/2011	3:41 PM			0	0	-	-
Cleghorn	5/9/2022	7:25 PM			0	0	-	-
TOTALS	**15 Days**		**22 Events**		**6**	**20**	**99,045,974**	**13,300**

source: National Climatic Data Center (NCDC)
Damage estimates adjusted to 2023 dollars based on U.S. Bureau of Labor Statistics CPI Inflation Calculator

Eau Claire County High Wind Events (1993 – 2023)

Location	Date	Time	Event	Mag.	Property Damage ($)	Crop Damage ($)
Eau Claire	8/9/1993	7:15 PM	Thunderstorm Wind	0	10,813	10,813
Eau Claire	7/5/1994	6:00 AM	Thunderstorm Wind	0	105,506	10,551
Eau Claire	7/22/1995	12:10 AM	Thunderstorm Wind	0	-	-
Eau Claire	7/22/1995	12:10 AM	Thunderstorm Wind	0	-	-
Eau Claire	8/12/1995	9:09 PM	Thunderstorm Wind	0	-	-
Eau Claire	8/12/1995	9:09 PM	Thunderstorm Wind	0	-	-
Eau Claire	5/19/1996	2:00 AM	Thunderstorm Wind	67	1,000,991	-
Augusta	5/19/1996	2:25 AM	Thunderstorm Wind	60	-	-
Cleghorn	6/29/1996	2:57 PM	Thunderstorm Wind	55	-	-
Allen	6/29/1996	3:00 PM	Thunderstorm Wind	55	-	-
Eau Claire	6/15/1997	3:00 PM	Thunderstorm Wind	50	-	-
Eau Claire	6/15/1997	3:25 PM	Thunderstorm Wind	50	-	-
Augusta	6/15/1997	3:35 PM	Thunderstorm Wind	50	-	-
Augusta	6/15/1997	3:35 PM	Thunderstorm Wind	50	-	-
Eau Claire	6/28/1997	4:13 PM	Thunderstorm Wind	50	-	-
Eau Claire	7/1/1997	9:36 PM	Thunderstorm Wind	55	-	-
Ludington	7/1/1997	10:30 PM	Thunderstorm Wind	55	-	-
Eau Claire	7/5/1997	6:25 PM	Thunderstorm Wind	55	-	-
Fall Creek	10/6/1997	8:40 AM	Thunderstorm Wind	50	1,925	-
Eau Claire	5/15/1998	5:45 PM	Thunderstorm Wind	55	138,933	-
Eau Claire	5/30/1998	11:05 PM	Thunderstorm Wind	61	888,792	-

Eau Claire	6/25/1998	1:45 AM	Thunderstorm Wind	52	-	-
Fall Creek	6/25/1998	2:10 AM	Thunderstorm Wind	55	-	-
Eau Claire	6/27/1998	9:45 PM	Thunderstorm Wind	50	-	-
Eau Claire	6/5/1999	9:47 PM	Thunderstorm Wind	52	-	-
Forest	6/5/1999	9:47 PM	Thunderstorm Wind	52	-	-
Forest	6/5/1999	9:47 PM	Thunderstorm Wind	52	-	-
Augusta	6/5/1999	10:07 PM	Thunderstorm Wind	52	-	-
Augusta	6/5/1999	10:07 PM	Thunderstorm Wind	52	-	-
Eau Claire	6/6/1999	5:10 PM	Thunderstorm Wind	50	-	-
Eau Claire	7/30/1999	7:20 PM	Thunderstorm Wind	52	-	-
Augusta	6/11/2001	5:50 PM	Thunderstorm Wind	55	26,511	-
Eau Claire	6/11/2001	6:15 PM	Thunderstorm Wind	52	-	-
Eau Claire	6/18/2001	9:35 PM	Thunderstorm Wind	55	-	-
Eau Claire	7/28/2002	6:55 PM	Thunderstorm Wind	52	-	-
Altoona	7/28/2002	7:10 PM	Thunderstorm Wind	52	-	-
Eau Claire	7/30/2002	5:00 PM	Thunderstorm Wind	52	-	-
Eau Claire County	4/18/2004	1:00 PM	High Wind	52	-	-
Eau Claire	7/31/2004	11:45 PM	Thunderstorm Wind	52	-	-
Eau Claire County	12/12/2004	8:00 AM	Strong Wind	35	165	-
Eau Claire	6/7/2005	5:55 PM	Thunderstorm Wind	52	-	-
Fall Creek	6/7/2005	6:00 PM	Thunderstorm Wind	55	-	-
Fall Creek	6/7/2005	6:05 PM	Thunderstorm Wind	52	-	-
Ludington	6/7/2005	6:15 PM	Thunderstorm Wind	52	-	-
Eau Claire	6/20/2005	2:15 PM	Thunderstorm Wind	52	-	-
Eau Claire	6/29/2005	11:05 PM	Thunderstorm Wind	52	-	-
Eau Claire	7/17/2005	10:08 PM	Thunderstorm Wind	52	-	-
Eau Claire County	7/23/2005	11:00 AM	Thunderstorm Wind	55	952,394	-
Eau Claire	7/24/2006	5:32 PM	Thunderstorm Wind	52	-	-
Ludington	7/3/2007	3:26 PM	Thunderstorm Wind	55	-	-
Eau Claire	7/18/2007	6:31 PM	Thunderstorm Wind	55	-	-
Eau Claire	7/26/2007	4:46 PM	Thunderstorm Wind	50	-	-
Forest	7/19/2008	5:20 PM	Thunderstorm Wind	54	-	-
Eau Claire	7/17/2010	9:10 PM	Thunderstorm Wind	56	-	-
Strader	4/10/2011	3:55 PM	Thunderstorm Wind	78	139,766	-
Augusta	4/10/2011	4:05 PM	Thunderstorm Wind	68	-	-
Eau Claire County	5/9/2011	10:30 AM	High Wind	52	-	-
Shawtown	6/18/2011	6:55 PM	Thunderstorm Wind	52	6,990	-
Eau Claire	7/19/2011	8:30 PM	Thunderstorm Wind	56	-	-
Forest	7/19/2011	8:45 PM	Thunderstorm Wind	50	-	-
Eau Claire	7/23/2011	9:45 AM	Thunderstorm Wind	52	-	-
Eau Claire	5/24/2012	3:25 PM	Thunderstorm Wind	65	337,113	-

Eau Claire	6/19/2012	4:50 AM	Thunderstorm Wind	52	-	-
Fall Creek	5/19/2013	5:55 PM	Thunderstorm Wind	50	-	-
Altoona	5/29/2013	3:44 PM	Thunderstorm Wind	52	-	-
Fairchild	5/29/2013	3:50 PM	Thunderstorm Wind	52	-	-
Altoona	5/29/2013	3:55 PM	Thunderstorm Wind	52	-	-
Cleghorn	6/21/2013	4:25 AM	Thunderstorm Wind	52	-	-
Augusta	6/21/2013	4:40 AM	Thunderstorm Wind	52	-	-
Forest	7/7/2014	2:40 PM	Thunderstorm Wind	56	-	-
Eau Claire	7/12/2015	11:10 PM	Thunderstorm Wind	52	-	-
Fall Creek	7/12/2015	11:35 PM	Thunderstorm Wind	52	-	-
Augusta	7/12/2015	11:37 PM	Thunderstorm Wind	52	-	-
Ludington	7/12/2015	11:40 PM	Thunderstorm Wind	52	-	-
Eau Claire	7/18/2015	1:20 AM	Thunderstorm Wind	61	127,892	-
Eau Claire	6/10/2016	3:08 PM	Thunderstorm Wind	52	-	-
Eau Claire	6/10/2016	3:10 PM	Thunderstorm Wind	56	127,684	-
Altoona	6/10/2016	3:20 PM	Thunderstorm Wind	60	6,384	-
Augusta	9/21/2016	4:30 PM	Thunderstorm Wind	52	-	-
Forest	5/17/2017	7:35 PM	Thunderstorm Wind	61	126,838	-
Eau Claire	5/25/2018	6:40 PM	Thunderstorm Wind	52	-	-
Eau Claire	8/27/2018	5:50 PM	Thunderstorm Wind	50	-	-
Eau Claire	6/14/2019	4:40 PM	Thunderstorm Wind	56	120,919	-
Eau Claire	7/20/2019	8:10 AM	Thunderstorm Wind	52	-	-
Eau Claire	5/25/2020	9:09 AM	Thunderstorm Wind	56	59,491	-
Augusta	7/14/2020	3:18 PM	Thunderstorm Wind	52	-	-
Augusta	7/18/2020	3:40 AM	Thunderstorm Wind	52	-	-
Altoona	6/17/2021	5:19 PM	Thunderstorm Wind	52	-	-
Fall Creek	6/17/2021	5:25 PM	Thunderstorm Wind	56	-	-
Fall Creek	6/17/2021	5:30 PM	Thunderstorm Wind	52	-	-
Allen	7/6/2021	1:44 PM	Thunderstorm Wind	52	1,176	-
Forest	7/6/2021	1:48 PM	Thunderstorm Wind	52	3,528	-
Wilson	7/28/2021	8:36 PM	Thunderstorm Wind	56	3,528	-
Fairchild	7/28/2021	9:05 PM	Thunderstorm Wind	56	3,528	-
Eau Claire	7/28/2021	9:18 PM	Thunderstorm Wind	52	3,528	-
Forest	7/28/2021	9:35 PM	Thunderstorm Wind	52	1,176	-
Eau Claire County	12/16/2021	12:00 AM	High Wind	39	-	-
Altoona	5/31/2022	12:26 AM	Thunderstorm Wind	43	5,659	-
Eau Claire	8/3/2022	1:05 AM	Thunderstorm Wind	52	-	-
Eau Claire	7/3/2023	7:15 PM	Thunderstorm Wind	50	-	-
TOTALS	**66 Days**		**100 Events**		**4,201,228**	**21,363**

source: National Climatic Data Center (NCDC)

Damage estimates adjusted to 2023 dollars based on U.S. Bureau of Labor Statistics CPI Inflation Calculator

2. Winter Storms and Extreme Cold (including blizzards and ice storms)

Since 1993, there have been 92 reported events. Of the reported events, three were ice storms, 13 were heavy snow, 12 were wind chill events, seven were classified as "winter weather", 54 were for winter storms, and three were blizzard events. Wind chill events include both "cold / wind chill" events and "extreme cold / wind chill" events.

Events occurred generally between the months of November and April. Events were most common between December and March, with 12 to 25 events occurring each month. Three early winter events in Octobers of 2009, 2020, and 2023 as well as a late winter storm in May of 2013 are the only outliers.

Eau Claire County Winter Storms and Extreme Cold Events (1993 – 2023)

Location	Date	Time	Type	Deaths	Inj.	Property Damage ($)
Eau Claire County	1/17/1996	9:00 PM	Ice Storm	0	0	
Eau Claire County	1/18/1996	5:00 AM	Heavy Snow	0	0	
Eau Claire County	1/26/1996	2:00 PM	Blizzard	0	0	
Eau Claire County	1/29/1996	5:00 AM	Blizzard	0	0	
Eau Claire County	1/31/1996	5:00 AM	Cold/Wind Chill	0	0	
Eau Claire County	2/1/1996	12:00 AM	Cold/Wind Chill	1	0	
Eau Claire County	2/8/1996	12:00 AM	Winter Weather	0	0	
Eau Claire County	3/24/1996	1:00 AM	Heavy Snow	0	0	
Eau Claire County	11/15/1996	1:00 AM	Ice Storm	0	0	
Eau Claire County	11/20/1996	6:00 AM	Heavy Snow	0	0	
Eau Claire County	11/23/1996	12:00 AM	Heavy Snow	0	0	
Eau Claire County	12/23/1996	9:00 AM	Heavy Snow	0	0	
Eau Claire County	1/15/1997	5:00 PM	Cold/Wind Chill	0	0	
Eau Claire County	2/4/1997	11:00 AM	Heavy Snow	0	0	
Eau Claire County	3/13/1997	1:00 AM	Winter Storm	0	0	
Eau Claire County	1/4/1998	5:00 PM	Ice Storm	0	0	
Eau Claire County	3/8/1999	8:00 AM	Winter Storm	0	0	
Eau Claire County	1/12/2000	10:00 AM	Heavy Snow	0	0	
Eau Claire County	1/29/2001	7:00 PM	Winter Storm	0	0	
Eau Claire County	2/7/2001	7:00 AM	Heavy Snow	0	0	
Eau Claire County	3/12/2001	12:00 AM	Heavy Snow	0	0	
Eau Claire County	1/31/2002	12:00 PM	Winter Storm	0	0	
Eau Claire County	2/1/2002	12:00 AM	Winter Storm	0	0	
Eau Claire County	3/8/2002	6:00 PM	Winter Storm	0	0	
Eau Claire County	3/14/2002	8:00 AM	Winter Storm	0	0	
Eau Claire County	1/26/2004	12:00 AM	Winter Storm	0	0	
Eau Claire County	2/1/2004	2:00 AM	Winter Storm	0	0	
Eau Claire County	3/5/2004	12:00 AM	Winter Storm	0	0	

Eau Claire County	1/1/2005	2:00 PM	Winter Storm	0	0	
Eau Claire County	1/21/2005	2:00 PM	Winter Storm	0	0	
Eau Claire County	2/19/2005	9:00 PM	Winter Storm	0	0	
Eau Claire County	3/18/2005	6:00 AM	Winter Storm	0	0	
Eau Claire County	2/16/2006	7:00 AM	Winter Storm	0	0	
Eau Claire County	11/10/2006	1:00 AM	Heavy Snow	0	0	
Eau Claire County	1/14/2007	5:00 PM	Heavy Snow	0	0	
Eau Claire County	2/23/2007	3:00 PM	Winter Storm	0	0	
Eau Claire County	3/1/2007	12:00 AM	Winter Storm	0	0	
Eau Claire County	12/1/2007	10:15 AM	Winter Storm	0	0	
Eau Claire County	12/22/2007	8:00 PM	Winter Storm	0	0	
Eau Claire County	2/10/2008	2:00 AM	Cold/Wind Chill	0	0	
Eau Claire County	2/19/2008	10:00 PM	Cold/Wind Chill	0	0	
Eau Claire County	1/15/2009	12:00 AM	Cold/Wind Chill	0	0	
Eau Claire County	10/12/2009	6:00 AM	Winter Weather	0	0	
Eau Claire County	12/8/2009	11:00 AM	Winter Storm	0	0	
Eau Claire County	12/10/2010	11:00 PM	Winter Storm	0	0	705,494
Eau Claire County	2/20/2011	11:00 AM	Winter Storm	0	0	
Eau Claire County	3/22/2011	6:00 PM	Winter Storm	0	0	4,200,251
Eau Claire County	12/9/2012	4:00 AM	Winter Storm	0	0	
Eau Claire County	12/19/2012	11:00 PM	Winter Storm	0	0	
Eau Claire County	3/10/2013	6:00 PM	Winter Storm	0	0	
Eau Claire County	4/10/2013	3:00 AM	Winter Storm	0	0	
Eau Claire County	5/2/2013	6:00 AM	Winter Storm	0	0	
Eau Claire County	1/5/2014	10:00 PM	Extreme Cold/Wind Chill	0	0	
Eau Claire County	1/14/2014	6:00 AM	Winter Storm	0	0	
Eau Claire County	1/27/2014	4:00 AM	Extreme Cold/Wind Chill	0	0	
Eau Claire County	1/30/2014	6:00 AM	Winter Storm	0	0	
Eau Claire County	2/20/2014	4:00 PM	Winter Storm	0	1	65,621
Eau Claire County	11/10/2014	4:00 AM	Winter Storm	0	0	
Eau Claire County	1/17/2016	6:00 AM	Extreme Cold/Wind Chill	0	0	
Eau Claire County	2/2/2016	11:00 AM	Winter Storm	0	0	
Eau Claire County	3/23/2016	12:30 PM	Winter Storm	0	0	
Eau Claire County	12/16/2016	5:00 PM	Winter Storm	0	0	
Eau Claire County	2/23/2017	11:00 PM	Winter Storm	0	0	
Eau Claire County	1/22/2018	6:30 AM	Winter Storm	0	0	
Eau Claire County	4/3/2018	5:00 AM	Winter Storm	0	0	
Eau Claire County	4/14/2018	2:00 AM	Winter Storm	0	0	

Eau Claire County	1/27/2019	9:00 PM	Winter Storm	0	0	
Eau Claire County	1/29/2019	5:00 PM	Extreme Cold/Wind Chill	0	0	
Eau Claire County	2/5/2019	2:00 PM	Heavy Snow	0	0	
Eau Claire County	2/7/2019	9:00 AM	Heavy Snow	0	0	
Eau Claire County	2/10/2019	9:00 AM	Winter Storm	0	7	
Eau Claire County	2/11/2019	11:00 PM	Winter Storm	0	0	
Eau Claire County	2/24/2019	8:00 AM	Blizzard	0	0	
Eau Claire County	3/9/2019	5:00 PM	Winter Storm	0	0	
Eau Claire County	4/10/2019	2:00 PM	Winter Storm	0	0	
Eau Claire County	11/26/2019	9:00 PM	Winter Storm	0	0	
Eau Claire County	12/30/2019	12:00 AM	Winter Storm	0	0	
Eau Claire County	1/17/2020	3:00 PM	Winter Storm	0	0	
Eau Claire County	2/9/2020	5:30 AM	Winter Storm	0	0	
Eau Claire County	4/12/2020	8:00 AM	Winter Storm	0	0	
Eau Claire County	10/20/2020	11:30 AM	Winter Storm	0	0	
Eau Claire County	2/14/2021	3:00 AM	Extreme Cold/Wind Chill	0	0	
Eau Claire County	2/15/2021	12:00 AM	Extreme Cold/Wind Chill	0	0	
Eau Claire County	12/10/2021	1:30 PM	Winter Storm	0	0	
Eau Claire County	12/21/2022	1:00 PM	Winter Storm	0	0	
Eau Claire County	12/23/2022	12:00 PM	Winter Weather	0	0	
Eau Claire County	1/19/2023	12:00 AM	Winter Weather	0	0	
Eau Claire County	2/27/2023	5:00 AM	Winter Weather	0	0	
Eau Claire County	2/21/2023	4:00 PM	Winter Storm	0	0	
Eau Claire County	4/16/2023	5:00 AM	Winter Storm	0	0	
Eau Claire County	3/9/2023	7:00 AM	Winter Weather	0	0	
Eau Claire County	10/30/2023	10:00 PM	Winter Weather	0	0	
TOTALS	**92 Days**		**92 Events**	**1**	**8**	**4,971,366**

source: National Climatic Data Center (NCDC)
Damage estimates adjusted to 2023 dollars based on U.S. Bureau of Labor Statistics CPI Inflation Calculator

3. Thunderstorms, Lightning, and Hail

Thunderstorm events are the most reported event in Eau Claire County. It is important to note that a single storm could create multiple hazards. Hail, lightning, heavy rain, and heavy winds could all occur within a single storm cell. Since 1993, there have been 103 days during which storms were reported, which included 207 separately reported events. Of the reported events, 96 were thunderstorm wind events, 103 were hail events, two were lightning, and six were for heavy rain.

High winds are discussed in the previous section. The event “Thunderstorm Wind” indicates both a high wind event and a thunderstorm event. To emphasis the focus on the thunderstorm component,

"Thunderstorm Wind" events have been modified to "Thunderstorm" events for this data table. Events occurred generally between the months of April and September. Events were most common between May and July, with 32 to 61 events occurring each month.

Eau Claire County Thunderstorms & Severe Storm Events (1993 – 2023)

Location	Date	Time	Type	Mag.	Deaths	Inj.	Property Damage ($)	Crop Damage ($)
Eau Claire	8/9/1993	7:15 PM	Thunderstorm	0	0	0	10,813	10,813
Eau Claire	7/5/1994	6:00 AM	Thunderstorm	0	0	0	105,506	10,551
Eau Claire	7/22/1995	12:10 AM	Thunderstorm	0	0	0	-	-
Eau Claire	7/22/1995	12:10 AM	Thunderstorm	0	0	0	-	-
Eau Claire	8/12/1995	9:09 PM	Thunderstorm	0	0	0	-	-
Eau Claire	8/12/1995	9:09 PM	Thunderstorm	0	0	0	-	-
Eau Claire	5/19/1996	2:00 AM	Thunderstorm	67	0	0	1,000,991	-
Augusta	5/19/1996	2:25 AM	Thunderstorm	60	0	0	-	-
Cleghorn	6/29/1996	2:57 PM	Thunderstorm	55	0	0	-	-
Allen	6/29/1996	3:00 PM	Thunderstorm	55	0	0	-	-
Eau Claire	8/25/1996	5:01 PM	Hail	1.75 in	0	0	-	-
Eau Claire	8/25/1996	5:37 PM	Hail	0.75 in	0	0	-	-
Eau Claire	8/25/1996	6:10 PM	Hail	1.75 in	0	0	-	-
Fall Creek	6/5/1997	12:30 PM	Hail	0.88 in	0	0	-	-
Eau Claire	6/15/1997	3:00 PM	Thunderstorm	50	0	0	-	-
Eau Claire	6/15/1997	3:25 PM	Thunderstorm	50	0	0	-	-
Augusta	6/15/1997	3:35 PM	Thunderstorm	50	0	0	-	-
Augusta	6/15/1997	3:35 PM	Thunderstorm	50	0	0	-	-
Eau Claire	6/28/1997	4:13 PM	Thunderstorm	50	0	0	-	-
Eau Claire	7/1/1997	9:36 PM	Thunderstorm	55	0	0	-	-
Ludington	7/1/1997	10:30 PM	Thunderstorm	55	0	0	-	-
Eau Claire	7/5/1997	6:20 PM	Hail	0.88 in	0	0	-	-
Eau Claire	7/5/1997	6:25 PM	Thunderstorm	55	0	0	-	-
Eau Claire	10/6/1997	8:35 AM	Hail	1.75 in	0	0	-	-
Fall Creek	10/6/1997	8:40 AM	Thunderstorm	50	0	0	1,925	-
Eau Claire	3/29/1998	5:34 PM	Hail	0.75 in	0	0	-	-
Eau Claire	3/29/1998	5:53 PM	Hail	1.75 in	0	0	-	-
Eau Claire	5/15/1998	5:38 PM	Hail	1. in	0	0	-	-
Eau Claire	5/15/1998	5:45 PM	Thunderstorm	55	0	0	138,933	-
Eau Claire	5/30/1998	11:05 PM	Thunderstorm	61	0	0	888,792	-
Eau Claire	6/25/1998	1:45 AM	Thunderstorm	52	0	0	-	-
Fall Creek	6/25/1998	2:10 AM	Thunderstorm	55	0	0	-	-
Eau Claire	6/27/1998	9:45 PM	Thunderstorm	50	0	0	-	-
Eau Claire	9/25/1998	11:45 PM	Hail	1.75 in	0	0	-	-
Eau Claire	6/5/1999	9:47 PM	Thunderstorm	52	0	0	-	-

Forest	6/5/1999	9:47 PM	Thunderstorm	52	0	0	-	-
Forest	6/5/1999	9:47 PM	Thunderstorm	52	0	0	-	-
Augusta	6/5/1999	10:07 PM	Thunderstorm	52	0	0	-	-
Augusta	6/5/1999	10:07 PM	Thunderstorm	52	0	0	-	-
Eau Claire	6/6/1999	5:06 PM	Hail	0.75 in	0	0	-	-
Altoona	6/6/1999	5:10 PM	Hail	0.75 in	0	0	-	-
Eau Claire	6/6/1999	5:10 PM	Thunderstorm	50	0	0	-	-
Eau Claire	7/30/1999	7:20 PM	Thunderstorm	52	0	0	-	-
Fall Creek	8/12/1999	10:34 PM	Hail	0.75 in	0	0	-	-
Allen	6/1/2000	3:55 PM	Hail	1. in	0	0	-	-
Eau Claire	9/10/2000	8:17 PM	Hail	1. in	0	0	-	-
Eau Claire	9/10/2000	8:28 PM	Hail	0.88 in	0	0	-	-
Eau Claire	9/10/2000	8:50 PM	Hail	1.75 in	0	0	-	-
Cleghorn	9/10/2000	9:30 PM	Hail	0.88 in	0	0	-	-
Eau Claire	9/10/2000	9:30 PM	Hail	0.75 in	0	0	-	-
Eau Claire	9/10/2000	9:30 PM	Hail	0.75 in	0	0	-	-
Eau Claire	9/11/2000	3:12 PM	Hail	1.75 in	0	0	-	-
Eau Claire	4/23/2001	9:23 AM	Hail	1. in	0	0	-	-
Augusta	6/11/2001	5:50 PM	Thunderstorm	55	0	0	26,511	-
Eau Claire	6/11/2001	6:15 PM	Thunderstorm	52	0	0	-	-
Augusta	6/18/2001	7:41 PM	Hail	0.88 in	0	0	-	-
Eau Claire	6/18/2001	8:47 PM	Hail	0.75 in	0	0	-	-
Eau Claire	6/18/2001	9:35 PM	Thunderstorm	55	0	0	-	-
Eau Claire	4/18/2002	3:10 PM	Hail	1. in	0	0	-	-
Eau Claire	4/18/2002	3:45 PM	Hail	0.75 in	0	0	-	-
Eau Claire	4/18/2002	3:52 PM	Hail	1. in	0	0	-	-
Altoona	4/18/2002	3:55 PM	Hail	0.75 in	0	0	-	-
Eau Claire	4/18/2002	4:35 PM	Hail	2.5 in	0	0	-	-
Fall Creek	4/18/2002	4:40 PM	Hail	2. in	0	0	-	-
Ludington	4/18/2002	4:50 PM	Hail	1.25 in	0	0	-	-
Forest	4/18/2002	5:10 PM	Hail	0.75 in	0	0	-	-
Augusta	4/18/2002	5:30 PM	Hail	1. in	0	0	-	-
Allen	5/8/2002	6:27 PM	Hail	0.75 in	0	0	-	-
Eau Claire	7/28/2002	6:55 PM	Thunderstorm	52	0	0	-	-
Altoona	7/28/2002	7:10 PM	Thunderstorm	52	0	0	-	-
Eau Claire	7/30/2002	5:00 PM	Thunderstorm	52	0	0	-	-
Cleghorn	7/31/2003	7:25 PM	Hail	0.88 in	0	0	-	-
Augusta	5/9/2004	7:12 PM	Hail	0.75 in	0	0	-	-
Forest	6/23/2004	4:53 PM	Hail	0.75 in	0	0	-	-
Eau Claire	7/31/2004	11:45 PM	Thunderstorm	52	0	0	-	-
Eau Claire	6/7/2005	5:47 PM	Hail	1.75 in	0	0	-	-

Eau Claire	6/7/2005	5:55 PM	Thunderstorm	52	0	0	-	-
Fall Creek	6/7/2005	6:00 PM	Thunderstorm	55	0	0	-	-
Fall Creek	6/7/2005	6:05 PM	Thunderstorm	52	0	0	-	-
Ludington	6/7/2005	6:15 PM	Thunderstorm	52	0	0	-	-
Eau Claire	6/20/2005	2:15 PM	Thunderstorm	52	0	0	-	-
Eau Claire	6/29/2005	11:05 PM	Thunderstorm	52	0	0	-	-
Eau Claire	7/17/2005	10:08 PM	Thunderstorm	52	0	0	-	-
Eau Claire County	7/23/2005	11:00 AM	Thunderstorm	55	0	0	952,394	-
Eau Claire	7/23/2005	11:05 AM	Hail	1.25 in	0	0	-	-
Eau Claire	8/9/2005	3:02 PM	Lightning		0	1	-	-
Augusta	6/24/2006	12:10 PM	Hail	0.75 in	0	0	-	-
Fall Creek	7/24/2006	4:25 PM	Hail	0.75 in	0	0	-	-
Eau Claire	7/24/2006	5:27 PM	Hail	1. in	0	0	-	-
Eau Claire	7/24/2006	5:32 PM	Thunderstorm	52	0	0	-	-
Eau Claire	7/24/2006	5:45 PM	Hail	0.75 in	0	0	-	-
Eau Claire	8/24/2006	4:10 PM	Hail	1.5 in	0	0	-	-
Cleghorn	10/3/2006	7:20 PM	Hail	1.25 in	0	0	-	-
Eau Claire	10/3/2006	7:21 PM	Hail	1. in	0	0	-	-
Ludington	7/3/2007	3:26 PM	Thunderstorm	55	0	0	-	-
Eau Claire	7/18/2007	6:31 PM	Thunderstorm	55	0	0	-	-
Eau Claire	7/26/2007	4:46 PM	Thunderstorm	50	0	0	-	-
Eau Claire	7/26/2007	4:48 PM	Hail	0.75 in	0	0	-	-
Eau Claire	9/13/2007	12:03 PM	Hail	0.75 in	0	0	-	-
Eau Claire	5/17/2008	4:45 PM	Hail	1. in	0	0	-	-
Shawtown	5/25/2008	6:30 PM	Hail	1. in	0	0	-	-
Eau Claire	5/25/2008	6:35 PM	Hail	1. in	0	0	-	-
Eau Claire	5/25/2008	6:37 PM	Hail	0.75 in	0	0	-	-
Brackett	5/25/2008	6:45 PM	Hail	1. in	0	0	-	-
Cleghorn	5/25/2008	6:45 PM	Hail	1. in	0	0	-	-
Augusta	5/25/2008	6:51 PM	Hail	1. in	0	0	-	-
Forest	7/19/2008	5:20 PM	Thunderstorm	54	0	0	-	-
Porters Mills	4/24/2009	4:00 PM	Hail	0.88 in	0	0	-	-
Altoona	4/24/2009	4:07 PM	Hail	0.88 in	0	0	-	-
Porters Mills	4/24/2009	4:17 PM	Hail	0.88 in	0	0	-	-
Altoona	4/24/2009	4:35 PM	Hail	1.25 in	0	0	-	-
Fairchild	4/24/2009	5:25 PM	Hail	0.75 in	0	0	-	-
Altoona	8/7/2009	11:30 PM	Heavy Rain		0	0	-	-
Lake Eau Claire	8/13/2009	10:00 PM	Heavy Rain		0	0	-	-
Eau Claire	7/17/2010	9:10 PM	Thunderstorm	56	0	0	-	-
Fall Creek	4/10/2011	3:52 PM	Hail	1. in	0	0	-	-
Strader	4/10/2011	3:55 PM	Thunderstorm	78	0	0	139,766	-

Augusta	4/10/2011	4:05 PM	Thunderstorm	68	0	0	-	-
Augusta	4/10/2011	4:09 PM	Hail	1. in	0	0	-	-
Porters Mills	5/9/2011	2:10 PM	Hail	0.75 in	0	0	-	-
Shawtown	6/18/2011	6:55 PM	Thunderstorm	52	0	0	6,990	-
Eau Claire	7/19/2011	8:30 PM	Thunderstorm	56	0	0	-	-
Forest	7/19/2011	8:45 PM	Thunderstorm	50	0	0	-	-
Eau Claire	7/23/2011	9:45 AM	Thunderstorm	52	0	0	-	-
Eau Claire	5/24/2012	3:25 PM	Thunderstorm	65	0	0	337,113	-
Eau Claire	5/26/2012	4:50 PM	Hail	1.75 in	0	0	-	-
Eau Claire	5/26/2012	4:58 PM	Hail	1. in	0	0	-	-
Eau Claire	5/26/2012	5:10 PM	Hail	0.75 in	0	0	-	-
Eau Claire	6/19/2012	4:50 AM	Thunderstorm	52	0	0	-	-
Brackett	9/4/2012	4:23 PM	Hail	0.75 in	0	0	-	-
Fall Creek	9/4/2012	4:46 PM	Hail	1.75 in	0	0	-	-
Fall Creek	5/19/2013	5:55 PM	Thunderstorm	50	0	0	-	-
Altoona	5/29/2013	3:44 PM	Thunderstorm	52	0	0	-	-
Fairchild	5/29/2013	3:50 PM	Thunderstorm	52	0	0	-	-
Altoona	5/29/2013	3:55 PM	Thunderstorm	52	0	0	-	-
Brackett	5/31/2013	3:23 PM	Hail	1. in	0	0	-	-
Fairchild	5/31/2013	4:14 PM	Hail	1.25 in	0	0	-	-
Eau Claire	5/31/2013	6:11 PM	Hail	0.88 in	0	0	-	-
Cleghorn	6/21/2013	4:25 AM	Thunderstorm	52	0	0	-	-
Augusta	6/21/2013	4:40 AM	Thunderstorm	52	0	0	-	-
Eau Claire	6/21/2013	8:30 PM	Hail	1. in	0	0	-	-
Eau Claire	6/21/2013	8:40 PM	Hail	0.75 in	0	0	-	-
Cleghorn	8/6/2013	8:48 PM	Hail	1. in	0	0	-	-
Cleghorn	8/6/2013	8:50 PM	Hail	1. in	0	0	-	-
Augusta	6/17/2014	11:10 PM	Hail	1. in	0	0	-	-
Eau Claire	7/7/2014	2:20 PM	Hail	1. in	0	0	32,610	-
Eau Claire	7/7/2014	2:25 PM	Hail	0.88 in	0	0	-	-
Eau Claire	7/7/2014	2:25 PM	Hail	0.88 in	0	0	-	-
Altoona	7/7/2014	2:27 PM	Hail	0.88 in	0	0	-	-
Forest	7/7/2014	2:40 PM	Thunderstorm	56	0	0	-	-
Cleghorn	7/7/2014	2:45 PM	Hail	1. in	0	0	-	-
Eau Claire	8/18/2014	2:00 PM	Hail	1. in	0	0	-	-
Eau Claire	6/8/2015	1:30 AM	Lightning		0	0	138,069	-
Eau Claire	7/12/2015	11:10 PM	Thunderstorm	52	0	0	-	-
Fall Creek	7/12/2015	11:35 PM	Thunderstorm	52	0	0	-	-
Augusta	7/12/2015	11:37 PM	Thunderstorm	52	0	0	-	-
Ludington	7/12/2015	11:40 PM	Thunderstorm	52	0	0	-	-
Eau Claire	7/18/2015	1:20 AM	Thunderstorm	61	0	0	127,892	-

Eau Claire	6/10/2016	3:08 PM	Thunderstorm	52	0	0	-	-
Eau Claire	6/10/2016	3:10 PM	Thunderstorm	56	0	1	127,684	-
Altoona	6/10/2016	3:20 PM	Thunderstorm	60	0	0	6,384	-
Altoona	9/20/2016	6:40 PM	Hail	0.88 in	0	0	-	-
Augusta	9/21/2016	4:30 PM	Thunderstorm	52	0	0	-	-
Forest	5/17/2017	7:35 PM	Thunderstorm	61	0	0	126,838	-
Fairchild	6/16/2017	6:25 PM	Hail	1.5 in	0	0	-	-
Fairchild	6/16/2017	6:27 PM	Hail	1.25 in	0	0	-	-
Eau Claire	5/25/2018	6:40 PM	Thunderstorm	52	0	0	-	-
Eau Claire	6/15/2018	3:55 PM	Hail	0.75 in	0	0	-	-
Eau Claire	6/15/2018	3:55 PM	Hail	0.88 in	0	0	-	-
Altoona	6/17/2018	3:04 PM	Hail	0.75 in	0	0	-	-
Eau Claire	8/3/2018	10:05 AM	Hail	1. in	0	0	-	-
Eau Claire	8/3/2018	10:20 AM	Hail	0.75 in	0	0	-	-
Altoona	8/3/2018	10:25 AM	Hail	0.88 in	0	0	-	-
Eau Claire	8/27/2018	5:50 PM	Thunderstorm	50	0	0	-	-
Eau Claire	6/14/2019	4:40 PM	Thunderstorm	56	0	0	120,919	-
Eau Claire	7/20/2019	8:10 AM	Thunderstorm	52	0	1	-	-
Forest	8/5/2019	4:26 PM	Hail	1.5 in	0	0	-	-
Fairchild	8/5/2019	4:46 PM	Hail	1.75 in	0	0	-	-
Eau Claire	5/25/2020	9:08 AM	Hail	1.25 in	0	0	-	-
Eau Claire	5/25/2020	9:09 AM	Thunderstorm	56	0	0	59,491	-
Eau Claire	5/25/2020	9:10 AM	Hail	1. in	0	0	-	-
Augusta	6/9/2020	6:00 PM	Heavy Rain		0	0	-	-
Augusta	6/9/2020	6:00 PM	Heavy Rain		0	0	-	-
Augusta	7/14/2020	3:18 PM	Thunderstorm	52	0	0	-	-
Augusta	7/18/2020	3:40 AM	Thunderstorm	52	0	0	-	-
Forest	8/24/2020	10:15 PM	Hail	1. in	0	0	-	-
Altoona	8/24/2020	10:50 PM	Hail	1. in	0	0	-	-
Eau Claire	8/24/2020	10:53 PM	Hail	1. in	0	0	-	-
Altoona	6/17/2021	5:19 PM	Thunderstorm	52	0	0	-	-
Fall Creek	6/17/2021	5:25 PM	Thunderstorm	56	0	0	-	-
Fall Creek	6/17/2021	5:30 PM	Thunderstorm	52	0	0	-	-
Ludington	6/17/2021	5:37 PM	Hail	0.75 in	0	0	-	-
Altoona	6/17/2021	8:01 PM	Hail	1. in	0	0	-	-
Altoona	6/17/2021	8:02 PM	Hail	1. in	0	0	-	-
Altoona	6/17/2021	8:04 PM	Hail	0.75 in	0	0	-	-
Altoona	6/17/2021	8:05 PM	Hail	0.88 in	0	0	-	-
Allen	7/6/2021	1:44 PM	Thunderstorm	52	0	0	1,176	-
Forest	7/6/2021	1:48 PM	Thunderstorm	52	0	0	3,528	-
Wilson	7/28/2021	8:36 PM	Thunderstorm	56	0	0	3,528	-

Fairchild	7/28/2021	9:05 PM	Thunderstorm	56	0	0	3,528	-
Eau Claire	7/28/2021	9:18 PM	Thunderstorm	52	0	0	3,528	-
Forest	7/28/2021	9:35 PM	Thunderstorm	52	0	0	1,176	-
Eau Claire	8/7/2021	7:00 PM	Heavy Rain		0	0	-	-
Eau Claire	8/7/2021	7:00 PM	Heavy Rain		0	0	-	-
Altoona	5/31/2022	12:26 AM	Thunderstorm	43	0	0	5,659	-
Eau Claire	8/3/2022	1:05 AM	Thunderstorm	52	0	0	-	-
Eau Claire	7/3/2023	7:15 PM	Thunderstorm	50	0	0	-	-
TOTALS	**103 Days**		**207 Events**		**0**	**3**	**4,371,742**	**21,363**

source: National Climatic Data Center (NCDC)

Damage estimates adjusted to 2023 dollars based on U.S. Bureau of Labor Statistics CPI Inflation Calculator

4. Flooding

Since 1993, there have been 25 reported events. Of the reported events, 6 were heavy rain events, three were flood events, and 16 were flash flood events. One flash flood, occurring in September of 2000 caused the majority of reported property damage since 1993. Flood events have been increasing in the number of reports since 1993. Between 1993 and 2013, the average number of events was 0.55 annually. From 2013 to 2023, the average increased to 1.4 events annually.

Flood events occurred generally between the months of June and September. Events were most common in June, August and September with 22 of the 25 events occurring in these months.

Eau Claire County Flood Events January 1993 – December 2023

Location	Date	Time	Event	Deaths	Inj.	Property Damage ($)
Eau Claire County	4/3/1997	6:00 AM	Flood	0	0	-
Eau Claire	9/10/2000	9:25 PM	Flash Flood	1	1	5,988,774
Eau Claire County	8/21/2002	2:45 PM	Flash Flood	0	0	171,663
Eau Claire County	6/7/2005	8:10 PM	Flash Flood	0	0	1,606
Eau Claire	7/24/2006	5:45 PM	Flash Flood	0	0	389,843
Altoona	8/7/2009	11:30 PM	Heavy Rain	0	0	-
Lake Eau Claire	8/13/2009	10:00 PM	Heavy Rain	0	0	-
Shawtown	8/13/2009	11:07 PM	Flash Flood	0	0	208,618
Eau Claire	8/11/2010	1:00 AM	Flash Flood	0	0	-
Eau Claire	9/23/2010	3:00 PM	Flood	0	0	-
Eau Claire	6/18/2011	8:00 PM	Flash Flood	0	0	-
Eau Claire	6/21/2013	9:15 PM	Flash Flood	0	0	66,390
Eau Claire	6/26/2013	4:45 PM	Flash Flood	0	0	66,390
Cleghorn	9/6/2015	8:00 PM	Flash Flood	0	0	384,028
Allen	9/8/2015	6:00 AM	Flash Flood	0	0	-
Cleghorn	8/11/2016	4:00 AM	Flash Flood	0	0	-
Eau Claire	9/21/2016	7:00 PM	Flash Flood	0	0	845,166

Ludington	9/21/2016	7:30 PM	Flash Flood	0	0	-
Cleghorn	3/15/2019	12:00 AM	Flood	0	0	-
Augusta	6/9/2020	6:00 PM	Heavy Rain	0	0	-
Augusta	6/9/2020	6:00 PM	Heavy Rain	0	0	-
Allen	6/9/2020	10:30 PM	Flash Flood	0	0	-
Eau Claire	8/7/2021	6:25 PM	Flash Flood	0	0	-
Eau Claire	8/7/2021	7:00 PM	Heavy Rain	0	0	-
Eau Claire	8/7/2021	7:00 PM	Heavy Rain	0	0	-
TOTALS	**19 Days**		**25 Events**	**1**	**1**	**8,122,479**

source: National Climatic Data Center (NCDC)
Damage estimates adjusted to 2023 dollars based on U.S. Bureau of Labor Statistics CPI Inflation Calculator

5. Drought

Drought reporting is rare in the greater west central Wisconsin region. Only eight events have been reported since 1993, with three events occurring in 2001 alone. “Excessive Heat” and “Heat” events are included in this section as they can lead to drought-like conditions or exacerbate existing drought conditions.

Eau Claire County Drought Events (1993 – 2023)

Location	Date	Time	Type
Eau Claire County	7/23/1999	10:00 AM	Heat
Eau Claire County	7/29/1999	3:00 AM	Heat
Eau Claire County	7/31/2001	9:00 AM	Heat
Eau Claire County	8/1/2001	12:00 AM	Heat
Eau Claire County	8/4/2001	12:00 PM	Heat
Eau Claire County	7/31/2006	10:00 AM	Heat
Eau Claire County	7/18/2011	12:00 PM	Excessive Heat
Eau Claire County	7/20/2016	1:00 PM	Excessive Heat
TOTALS	**8 Days**		**8 Events**

source: National Climatic Data Center (NCDC)

June 1993 Flooding in Eau Claire County

The conditions for the flooding which occurred on June 20-21, 1993, were initially set by precipitation which fell over the west central Wisconsin region during the two weeks prior to the 21st of June. One the evening of Saturday, June 19th, extremely heavy rains of more than six inches occurred in eastern Eau Claire and western Clark Counties. This event caused the Eau Claire River to rise to record levels, with a record crest of 19.38 feet recorded at the Highway "K" bridge near Fall Creek on June 20th, which was the 100-year flood event. The water level at the Lake Eau Claire dam rose to its regional flood level on June 20th, which was 10.1 feet over its normal level. Lake Altoona also rose to the regional flood level.

In addition, the Chippewa River began to rise to flood levels. On June 18th (prior to the heavy rains of June 19th), the level of the river was at 764.95 feet MSL, as measured at the Grand Avenue Bridge located near the confluence of the Chippewa and Eau Claire Rivers in downtown City of Eau Claire. By 4:00 P.M. on June 20th, the river had risen above flood stage and continued rising throughout the next day to crest at 778.9 feet at 10:50 P.M. on Monday, June 21st.

In June 1993, Eau Claire County was declared a Federal disaster area due to the damage caused by the 100-year flooding event. The total flood damage suffered in Eau Claire County was estimated at over $10 million, with over $3.1 million in damage to private property, including over 250 homes and over 50 businesses, and $1.75 million in damages to public facilities. Approximately one-half of all reported damages were agricultural losses estimated at $5.3 million. Accounting for inflation, the total flood damages are nearly $14 million in today's dollars.

Damage to public facilities in the County included the washout of some smaller dams, erosion of recreational trails, damage to parks, road washouts, and damage to culverts and bridges. These infrastructure damages resulted in serious health and safety concerns as they impeded police, fire, and rescue personnel from getting to the scene of emergency situations. In addition to the direct damage to public facilities, flooded areas also had concerns for the inundation of water and sewage treatment facilities. Flooded water and sewage treatment facilities can lead to pollution of potable water sources and the promotion and transmission of disease.



The primary damage to individual residences in Eau Claire County included those structures located in the floodplain along parts of the Chippewa River, on the Eau Claire River around Lake Eau Claire and Lake Altoona, and in areas with saturated ground in and near the City of Augusta. The main concern was for the health and safety of residents who were unwilling or unable to evacuate their premises and no longer had dry land access for emergency assistance personnel.

The agricultural industry experienced the greatest impact. The flooding affected an already depressed agricultural economy by destroying crops and causing very poor crop production for the surviving crops in some areas.

However, beyond direct crop production losses, other agricultural-related damages also resulted, such as:

- Farmers harvested lower-quality forage crops due to continued wet weather. Very little hay or haylage was harvested at the optimal growth stage. Dairy farmers found it difficult to maintain milk production on this forage.
- Beyond lost alfalfa production, additional damages to perennial forage stands resulted from harvesting on wet soils. This not only damaged the crowns of alfalfa and red clover plants causing stand losses, but also caused soil compaction that was expected to reduce yields in subsequent years.

- Alfalfa establishment suffered due to prolonged saturated soil conditions. This resulted in many farmers being forced to reestablish stands in the following years.
- The several heavy rains caused a considerable amount of soil erosion on unprotected soils. According to the Natural Resource Conservation Services (NRCS), formerly the Soil Conservation Service (SCS), severe erosion of greater than 10 tons per acre occurred on 7,500 acres in Eau Claire County. The topsoil that was lost was among the most fertile, which results in reduced production for the future.

Damages sustained by businesses in the County are primarily a direct reflection of the agricultural production losses. Farming supports a variety of farm- and non-farm-related businesses ranging from implement dealers and feed stores to local grocery stores and banking institutions. The 1993 flooding not only affected farmers, but also many businesses that support farmers.

Among the areas suffering flood damages were the Cities of Eau Claire and Augusta and the Village of Fairchild. Also flooded were areas adjacent to Lakes Altoona and Eau Claire, and the floodplain of the Chippewa River southwest of the City of Eau Claire. In the eastern half of the County, flooding also damaged numerous County and town roads. Shown in **Figure 16** are the areas of Eau Claire County that experienced substantial flooding in June 1993 and where significant road damages occurred. A description of the damages from the June 1993 flooding for each of the primary flooded areas follows:

City of Eau Claire
This was the third highest flood of record for the City. Much of the flood damage occurred along First Avenue next to Owen Park and along Forest Street. Several businesses suffered flooding along Graham Avenue downtown, in the East Madison Street area, and along the north bank of the Eau Claire River where it enters the Chippewa River. In all, 75 structures had river water in their basements and the estimated cost to the City in damages and flood fighting was $750,000. In 1995, the City of Eau Claire was awarded a hazard mitigation grant totaling $3.7 million to acquire properties in the floodplain. The grant resulted in the acquisition of 50 properties and the floodproofing of two additional properties, thereby reducing the risk and vulnerability of flooding in the City. Since the completion of the grant project in December 1998, the City has acquired two additional properties through the use of general tax dollars.

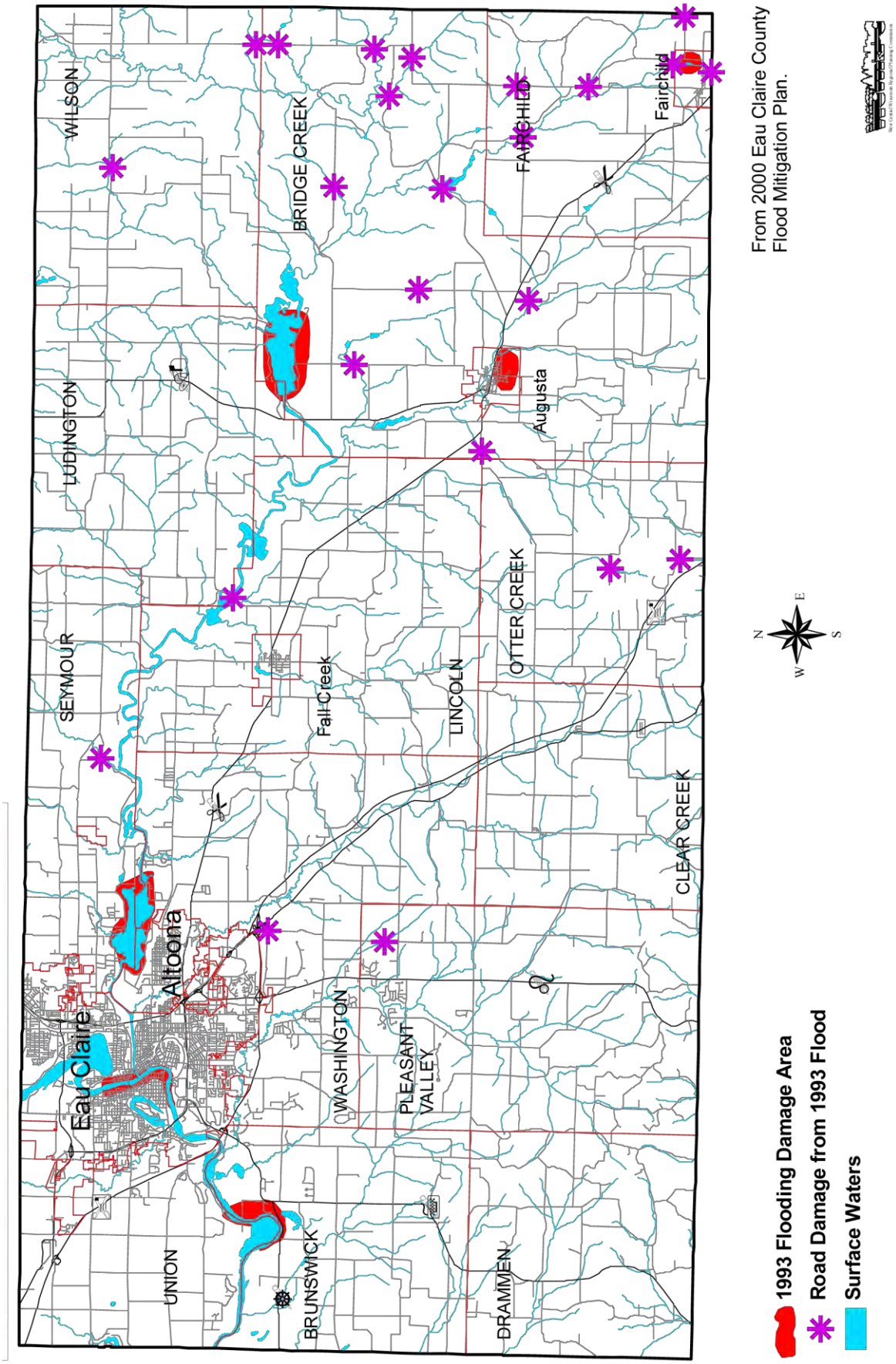
City of Augusta
Overland runoff, due to heavy rains, surcharged the City's storm and sanitary sewer systems and caused water to back up into basements in much of the City. Over 60 homes and at least 21 businesses were flooded, resulting in over $550,000 in damages. As a result of the 1993 flood, the City of Augusta applied for and received Economic Development Administration (EDA) flood recovery funding to construct a larger storm drainage system. The system included upgrading 1,300 feet of existing storm sewer as well as re-grading and diking the existing drainageway in order to properly divert runoff.

Village of Fairchild
U.S. Highway 10/12 was washed out on the south side of the Village. A dike was overtopped near the Fairchild Pond dam and washed out an adjacent road. Basements throughout the Village were flooded with one-half to two feet of water. Total damages were approximately $45,000.

Eau Claire River - Lake Altoona and Lake Eau Claire
Numerous homes suffered flood damage along Lake Altoona and Lake Eau Claire. The Lake Eau Claire dam suffered damage during efforts to raise the mud gate during the flood and allow more water through. The Lake rose to within 2.5 inches of the top of the dam. If the dam had been overtopped, the sandstone abutting the dam could have been seriously eroded and the dam threatened. Since that time the dam has been repaired to proper operating standards.

Chippewa River - Town of Brunswick and Town of Union
Several homes were flooded in the Chippewa River floodplain, and a portion of U.S. Highway 85 was temporarily closed. In 1993, $1,217,277 in hazard mitigation grant funding was received by the County to acquire 17 floodprone properties and to perform floodproofing on two others. Since the completion of this grant project, flood vulnerabilities in this area have decreased dramatically.

Figure 16. 1993 Flood Damaged Areas
Eau Claire County



County and Town Roads

A total of $248,000 in damages was caused to the local transportation system as a result of the 1993 storm. Much of the damage was sustained as shoulder erosion and washouts. However, as repairs to the system were reviewed and evaluated, only one of the areas was in need of major rehabilitation. In this instance, one of the washed-out culverts was replaced with a much larger bridge structure. All road rehabilitation projects are designed based on the State's design criteria. Where possible, the County works to ensure that these rehabilitation projects meet 100-year flood capacities.

While the 1993 flood demonstrated potential flooding impacts, it was not generally considered a 100-year flood for much of the County. On the Chippewa River south of Interstate 94 for instance, the 1993 flood had an estimated discharge rate of 85,000 to 90,000 cubic feet per second. By comparison, a 50-year flood in this area would have an estimated discharge rate of 100,000 c.f.s. and a 100-year flood would have a discharge rate of 112,000 c.f.s. That is a difference of approximately 165,000 gallons of water discharged per second (or about a 25% difference) between the 1993 flood and a 100-year event. Based on the 1993 experience, damages would certainly be significant if a true County-wide 100-year flood event should occur, though significant action has been taken in the interim to mitigate future flood impacts.

APPENDIX F.

HAZARD VULNERABILITY ASSESSMENT

1. **Flooding**
2. **Winter Storms & Extreme Cold**
3. **Tornadoes & High Winds**
4. **Lightning & Hail**
5. **Wildfire**
6. **Extreme Heat**
7. **Drought**
8. **Long-Term Power Loss**
9. **Active Threats**
10. **Cyberattack**
11. **Hazardous Materials Spills**

For each hazard above, Appendix F is organized by general vulnerabilities applicable to the hazard, the eight community lifeline categories, disadvantaged populations (if any), and the vulnerability to future assets.

For more details and numbers regarding the population, demographics, economy, and development, see Section II.C. The number and distribution of community lifeline facilities are identified in Section II.D. and Appendix D. Transportation systems and historical resources are described in Section II.E. & F. Generally, these numbers are not repeated within this appendix.

1. Vulnerability Assessment— Flooding

Note: Except for roads and highways, and occasional infiltration of wastewater systems in some communities, no significant flood history of community lifeline facilities was noted.

General Vulnerabilities	
Underground Structures	• No specific concerns noted, but at greater risk of taking on water during flood events. • Prolonged exposure to flood conditions can result in structural defects or other property damage.
Mobile Homes	• Unanchored homes are at risk of being swept away during flood events. At least one mobile home park is partially located within a 100-year floodplain.
Campgrounds, Cabins, & Resorts	• Typically located near a water source, these sites are at an increased risk of being inundated with water during a flood event. At least one campground is located within 100-year floodplain and a dam shadow.
Individuals	• Individuals in flooded areas may drown or be cut off from critical life-saving services.
Local Economy	• Property damage from flood events may cause business closures. No specific concerns from riverine flooding noted, though some communities have reported stormwater flooding problems that can impact access or cause damage.
Natural, Historic, & Cultural Resources	• Resources located along waterways have a higher risk of damage during flood events. No specific concerns noted.
Community Lifelines	
Safety & Security	• Personnel are exposed to life-threatening conditions when serving individuals caught in flooded areas.
Food, Water, Shelter	• Crop failure if fields are under prolonged flood conditions.
Health & Medical	• Flooded roads may limit access to essential medical services.
Energy	• Hydroelectric dams are exposed to increased pressures during flood events. • Dam failures can be the cause of flood events and may impact additional facilities downstream. See Dam analysis in Section III.D.iv.
Communications	• None known.
Transportation	• The washout of roads, culverts, bridge abutments, etc., have been the primary storm-related damage in recent decades. • Travelers in the region (not Eau Claire County) have died in recent decades when attempting to cross flooded areas or when encountering an unmarked road washout at night.
Hazardous Materials	• No specific concerns noted. Flooding in areas with hazardous materials may allow unencapsulated materials to flow downstream or leach into the groundwater.
Educational Institutions	• See subplans in Appendix L.
Disadvantaged or Socially Vulnerable Populations	
	• No unique vulnerabilities identified.
Vulnerability to Future Assets	
Population Growth & Development	• Shoreland zoning and other restrictions prohibit development in floodways or require flood mitigation activities. • Populations located in low lying areas or near water bodies are more vulnerable than those in higher elevations or outside the floodplain.
Other Assets	• During heavy rains, some communities have problems with stormwater entering the wastewater system through manholes, lift stations, or basements. These problems will increase as additional impervious surface is added through development.

	• Of the community lifeline facilities listed as mapped in Section III.D., 16 were identified as potentially being located, in whole or part, within the 100-year floodplain, not including roads, bridges, and dams. Of these, 14 were located in the City of Eau Claire and two located near Foster, including: o 3 government buildings, including the County Government Center/Jail and a County Highway Building near Foster o 4 University of Wisconsin buildings o 4 private businesses with hazardous materials on site o 2 emergency sirens, 1 electric substation, 1 food bank, and 1 health clinic No flooding history or unique vulnerabilities were reported for any of these locations. The above flood vulnerabilities do not include the potential losses due to dam failure, which are discussed at the end of the flooding hazard assessment in Section III. For most dams, the potential vulnerabilities would be similar to those of the associated 100-year floodplain downstream of the dam. However, flooding due to a full dam failure at the Lake Wissota dam in particular would be dramatic, though the potential risk (probability) is very low.

2. Vulnerability Assessment — Winter Storms & Extreme Cold

General Vulnerabilities	
Above-Ground Utilities & Emergency Communications Infrastructure	• Ice and heavy snow can damage electric infrastructure and topple trees, which can take down power lines. • Ice and frost can accumulate on, damage, and sever overhead power lines and above ground communications lines and towers. • A 2,000-foot television tower collapsed near Fairchild as a result of sleet, freezing temperatures, ice accumulation, and strong winds in 2011. Damage from the storm was estimated to be over $4 million when adjusted to 2023 dollars.
Underground Utilities	• Underground utility lines can freeze and / or burst.
Large or Clear Span Structures	• Buildings with large spans (e.g., airport hangars, pole barns, gyms, factories) have a higher structural vulnerability during heavy snowfall events. • Roof damage may occur on any roof due to ice damming. However, these events are isolated and typically go unreported, making them difficult to track and quantify.
Individuals	• All residents and visitors are at-risk of injury or death from winter storms and extreme cold events, especially those that: (1) are associated with the previously mentioned facilities and (2) lack access to properly insulated and heated homes. • Prolonged exposure to the cold can result in hypothermia, frostbite, or death. • Snow accumulation on roads may cause delays in delivery of medical supplies and / or eliminate access to medical facilities and treatment centers. • Death may occur from over-exertion when clearing or shoveling snow.
Mobile Homes	• Section II.C.i. and Section II.D.i. document the number of mobile homes and distribution of mobile home parks. • Mobile homes or temporary structures that may lack adequate insulation or heating systems, making them more vulnerable to extreme cold temperatures. Frozen or burst pipes due to prolonged exposure to extreme temperatures. Potentially leading to water damage or water supply issues. • The number of mobile homes as full-time residences and licensed mobile home parks have been decreasing.

Local Economy	• Winter storm events make commercial activity difficult due to travel restrictions.
Natural, Historic, & Cultural Resources	• None known.
Community Lifelines	
Safety & Security	• Facilities lacking emergency power generators are vulnerable to power outages caused from down power lines. Many government buildings, EOCs, fire halls, and police departments lack emergency power generators. Not all communities have continuity plans for these services, though mutual aid for emergency services is relatively strong. • Emergency response resources could be strained, including medical services, fire departments, and law enforcement, due to increased incidents, accidents, and challenges in access and mobility. • During interviews, State Highway 53 was noted as an area of concern due to multiple accident reports occurring after an initial incident near the City of Altoona.
Food, Water, Shelter	• Crops and animals are vulnerable to cold temperatures. • Resident populations may be vulnerable to exposure / cold temperatures due to power outages. • Outdated or insufficiently buried watermains can freeze and rupture causing water supply issues. Posing health and safety risks to citizens. 2014 Polar Vortex caused some breaks of water lines and laterals • Sewer system backups can occur during extreme cold events due to freezing. Blockages and overflows in the municipal sewer system can impact homes, businesses and public areas. Posing serious health hazards and causing potentially costly repairs and cleanups. • Unexpected early fall/winter and late spring/summer cold weather events can impact crop yields. Winter crops, such as alfalfa, are vulnerable to winter kill during periods of extreme cold without sufficient snow on the ground to help act as an insulator. In 2002-2003, some counties in the region lost 50 percent or more of the hay crop, which drove up costs for producers causing supplemental feed needing to be purchased for livestock. Some amount of winter kill is fairly frequent and can be expected almost annually; more substantial winter kill events can be expected to occur one or two seasons each decade on average (about a 10% to 20% chance per year) based on recent trends. • Grain and milk production are significant contributors to Eau Claire County's economy and play a very important role in the food supply chain.
Health & Medical	• The County's three hospitals in Altoona and Eau Claire (x2) were identified as being a significant concern due to their potentially vulnerable population, emergency response functions, and importance to the community. • Hospitals and larger facilities have emergency plans and generators. • Hazardous road conditions can also impair the function of these critical facilities if workers are unable to reach their place of work. • Senior care facilities and group homes have a high vulnerability. Most of these structures serve a vulnerable population and would be severely impacted during a power outage and extreme cold event. Some, but not all, have generators and/or fuel agreements. Most are believed to now have emergency plans addressing such circumstances.
Energy	• Ice and heavy snow can topple trees and take down power lines and communications infrastructure. See *Long-Term Power Outage* section.
Communications	• Ice and heavy snow can topple trees and take down power lines and communications infrastructure.

	• A 2,000 foot television tower collapsed near Fairchild as a result of sleet, freezing temperatures, ice accumulation, and strong winds in 2011.
Transportation	• Roadways, bridges, and transportation systems that may be affected by icy conditions, snow accumulation, or reduced visibility, resulting in hazardous driving conditions, accidents, and restricted mobility. Ice and snow can result in accidents and restrict travel, especially on State Highway 53 and I-94 due to speeds and traffic volumes. • Eau Claire has an airport (in Chippewa County) with hangars, structures, and aircraft that can be particularly vulnerable to winter storms. • Sudden freezing and thawing events can deteriorate roadways.
Hazardous Materials	• No specific concerns noted.
Educational Institutions	• During severe winter and extreme cold events, most educational institutions will be cancelled or moved to online due to a decreased amount of mobility. • Typically multiple buildings at any single campus. All above-ground structures are vulnerable, especially gyms or theaters. • Public primary and secondary schools are most frequently identified as having a high vulnerability due to the presence of school-age children and concentrations of students and staff. Indoor- and outdoor-event visitors are also vulnerable.
Disadvantaged or Socially Vulnerable Populations	
Seniors	• Prolonged exposure to extreme cold temperatures can result in hypothermia, frostbite, and death. • Dangerous travel conditions may limit or prevent access to treatment centers and other medical facilities. • Slipping on ice can cause serious injury or death.
Economically Disadvantaged	• Excessive cold spells drive up energy expenses, which could be a financial challenge for low-income households and seniors on fixed incomes. • Residents of mobile home parks are often economically disadvantaged; see previous mobile home discussion.
Unhoused	• Eau Claire County has a notable number of unhoused individuals who are exposed to extreme weather events which can lead to illness, injury, and death.
Vulnerability to Future Assets	
Population Growth & Development	• As reflected in **Section II.C. Community Profile**, Eau Claire County continues to grow in terms of population and new development, thus increasing overall exposure to winter storms. • Eau Claire County is aging, so the vulnerabilities to this population and community lifelines serving this population are expected to increase.
Other Assets	During the mitigation planning process, participants and stakeholders were asked to identify any planned or anticipated future assets that may be particularly or uniquely vulnerable to Winter Storm events. No such future assets were identified.

3. Vulnerability Assessment—Tornadoes & High Winds

General Vulnerabilities	
Above-Ground Structures	• Tornadoes caused over $7 million of damage in 1953, 1958, 1979, 1980, and 1982. ($94,413,704 in total damages when costs are adjusted to 2023 values). • Nearly all structures are vulnerable to damage. As of 2023, Eau Claire County has over **$9.1 billion in assessed improvements and personal property**, not including tax-exempt buildings, such as city halls, fire stations, churches, and certain utilities.

	• The total Value of Improvements by jurisdiction type are as follows. o Towns: **$2,726,092,400** o Villages: **$117,643,000** o Cities: **$6,262,977,000** • Damaged buildings may pose additional safety concerns due to structural instability, damage to electrical systems, or gas leaks. • Building with large spans (e.g., airport hangars, pole barns, gyms, factories) have a higher structural vulnerability.
Mobile Homes	• Mobile homes, especially those that are unanchored, are the most frequently mentioned vulnerability. • According to the National Weather Service, between 1995 and 2022, there were 1,702 tornado fatalities in the United States. **Fifty-three percent (53%) of these fatalities occurred in mobile homes**, which constitute less than ten percent of the nation's housing supply. • The County is estimated to have **1,306 mobile homes in 2023, constituting about 2.8% of the total housing supply**, a ratio that has been decreasing over the past several years. • As of June 2023, Eau Claire County had **18 licensed manufactured/mobile home parks**, though some of these parks may be used for recreational or seasonal purposes. 9 of the parks are licensed for less than 51 units, while 6 are licensed for 51-100 units and 3 for more than 100 units. Most of the parks are located within proximity of the City of Eau Claire. • The number of mobile homes as full-time residences and licensed mobile home parks have been slowly decreasing in Eau Claire County. • It is not known whether older mobile homes are anchored. Most communities do not require mobile homes to be anchored or tied down unless the mobile homes are newer and fall under more recent State installation codes. • Nearly all mobile home parks do not offer an on-site safe room. Most communities do not require new mobile home parks or slab-on-grade development to construct or designate a safe room, though this may be possible as part of a conditional use permit.
Slab-on-Grade Construction	• Residents in slab-on-grade homes and homes with crawlspaces (elevated and susceptible to lift) have a higher vulnerability than homes with basements. • Plan participants noted that a high proportion of the new construction occurring in the County is slab-on-grade in some areas.
Campgrounds, Cabins, & Resorts	• The Summer 2010 windstorm that struck Cumberland's municipal campground in nearby Barron County provides an excellent example of this elevated vulnerability. • The **County owns and operates three campgrounds** with no on-site safe room: o Coon Fork Campground (6 miles east of Augusta) – 108 camping sites. o Expo Center Campground (City of Eau Claire) – 36 sites. o Harstad Park (6 miles east of Fall Creek and northwest of Augusta) – 27 sites • Most public and private campgrounds and resorts do not offer an on-site safe room or have formal emergency plans, though emergency information is typically posted. Block restrooms can offer some protection, but very limited size capacity. County campgrounds lack sirens, though caretakers are equipped with NOAA all hazards radios. • In most cases, campgrounds or resorts are not required to construct or designate a safe room or develop emergency plans, though this may be possible as part of conditional use permitting in zoned municipalities.

Individuals	• As reflected in the community profile, Eau Claire County's population (and development) continues to grow, thus increasing overall exposure to tornados and high winds. • All residents and visitors are at-risk of injury or death from tornado and high wind events, especially those that: (1) are associated with the previously mentioned facilities and (2) lack access to a storm shelter or safe room. • Volunteer management and storm clean-up poses its own challenges. 20 injuries and 6 deaths have been reported since 1953.
Local Economy	• Manufacturing, warehousing, and commercial businesses that are large span structures noted as having a higher vulnerability. • Economic losses can be experienced when a business sustains direct damage from a tornado or high wind event or when supporting infrastructure (e.g., utilities, services) or supply chains are not available for extended periods. • A business closure may be temporary, but could have large impacts on the local economy and related services, while some smaller or struggling businesses may fail.
Natural, Historic, & Cultural Resources	• There are no natural areas or environmental characteristics within Eau Claire County that are uniquely less or more vulnerable to tornadoes or high winds. • All above ground historic or cultural structures are vulnerable to tornado and high wind events. These structures have a high social value to the local community, but no unique vulnerabilities or concerns were identified.
Community Lifelines	
Safety & Security	• All above ground structures, including government buildings, EOCs, fire halls, and police departments are vulnerable. • Many such facilities lack emergency power generators. Not all communities have continuity plans for these services, though mutual aid for emergency services is relatively strong.
Food, Water, Shelter	• All above-ground structures are vulnerable. • Grain and milk production are significant contributors to Eau Claire County's economy and play a very important role in the food supply chain.
Health & Medical	• All above-ground structures are vulnerable. • The County's three hospitals in Altoona and Eau Claire (x2) were identified as being a significant concern due to their potentially vulnerable population, emergency response functions, and importance to the community. • Hospitals and larger facilities have emergency plans and generators. • Senior care facilities and group homes are frequently mentioned as having a higher vulnerability. Most of these structures serve a vulnerable population and are single-story, slab-on-grade for ADA accessibility. Eau Claire County has **5 nursing homes and 114 licensed assisted living facilities.**
Energy	• Above-ground utilities are especially vulnerable in wooded areas due to falling trees or limbs. • See *Long-Term Power Outage* section.
Communications	• Tornados and high winds can destroy above-ground communications infrastructure, including emergency communications towers. Strong winds during a winter storm in 2015 helped cause a TV tower to collapse. • Also see the Capability Assessment in **Section IV**, which discusses the status of current emergency communications infrastructure and systems. The tornado assessment in **Section III.D.** discusses and maps the cmmunity-owned warning sirens for tornado and severe weather

	warnings. **Appendix L** describes the siren status for each city and village.
Transportation	• The City of Eau Claire has an airport (Chippewa County) with hangars, structures, and aircraft that can be particularly vulnerable to tornadoes and high winds; it was not confirmed if all aircraft kept on site are tied-down when not in use.
Hazardous Materials	• All above-ground structures are vulnerable, but no specific concerns noted.
Educational Institutions	• There are **4 public school districts with school facilities** in Eau Claire County, in addition to the **University of Wisconsin-Eau Claire and Chippewa Valley Technical College campuses** in the City of Eau Claire. • Often multiple buildings at a single campus. All above-ground structures are vulnerable, especially gyms or theaters if not hardened to withstand high winds. • Public primary and secondary schools are most frequently identified as having a high vulnerability due to the presence of school-age children and concentrations of students and staff. Indoor- and outdoor-event visitors also vulnerable. • Eau Claire County also has **19 smaller private schools**, typically lacking larger span structures. • The following public educational institutions chose to be full participants in this mitigation plan update and are anticipated to adopt the plan: the Altoona, Eau Claire, and Fall Creek school districts and the University of Wisconsin-Eau Claire. A "mini-plan" for each is included in **Appendix M**.
Disadvantaged or Socially Vulnerable Populations	
Residents of Mobile Home Parks	• Most frequently identified vulnerable population. Most mobile home park residents believed to lack access to safe rooms. • Often lower-income and, sometimes, a higher-than-average proportion of seniors.
Residents of Slab-on-Grade Construction and ESL Residents	In particular, the following if lacking safe room access: • Lower-income apartments and facilities/apartments for seniors, including CBRFs and nursing homes, and other group homes • Apartments with a high proportion of ESL residents. These populations may also be less familiar with the extent of local hazard risks, warning systems, resources, and appropriate actions.
Vulnerability to Future Assets	
Population Growth & Development	As reflected in **Section II.C. Community Profile**, Eau Claire County continues to grow in terms of population and new development, thus increasing overall exposure to tornados and high winds. • All existing and future populations and development in the County are equally at risk of experiencing a tornado or high wind event: • Growth has been greatest in the western half of the county area, in and around the City of Eau Claire. • A high proportion of recent residential and commercial development is slab-on-grade construction without basements to serve as a safe room. This trend is expected to continue. • While mobile home development has been decreasing, the growing number of campgrounds and resorts with cabins is expected to continue. • Eau Claire County's growing immigrant population was discussed throughout the planning process as a unique vulnerable population.
Other Assets	During the mitigation planning process, participants and stakeholders were asked to identify any planned or anticipated future assets that may be particularly or uniquely vulnerable to tornado or high wind events. No such future assets were identified.

4. Vulnerability Assessment — Lightning & Hail

General Vulnerabilities	
Above-Ground Structures	• A home was struck by lightning in 2015 causing extensive damage to the building.
Campgrounds	• Limited shelter in the event of a thunderstorm or hailstorm.
Individuals	• On average 28 people die each year from lightning strikes.
Local Economy	• Power outages may disrupt or shutdown electronic business transactions / communications.
Natural, Historic, & Cultural Resources	• Lightning strikes can ignite older, wood structures. • Heavy rains and hail may cause damage to older structures and historic sites.
Community Lifelines	
Safety & Security	• Many of these facilities do not have storm shelters or emergency power generation.
Food, Water, Shelter	• Lightning strikes and related power surges also pose threats to utilities, lift stations, communications equipment, and airport runway lights. • Hail can cause defoliation of crops and result in financial losses for farmers. • Lightning can trigger wildfires in agricultural areas. See *Wildfire* section.
Health & Medical	• Vulnerability to potential loss of power mitigated through availability of on-site generators at hospitals
Energy	• Lightning strikes can cause power outages. • Hail exceeding 1" in diameter has the potential to damage solar panels / arrays.
Communications	• Lightning strikes can cause power outages. • Lightning strikes can cause damage to telecommunication equipment.
Transportation	• Hail can impact travel conditions and shatter windshields, causing accidents or delays.
Hazardous Materials	• None known.
Educational Institutions	• None known.
Disadvantaged or Socially Vulnerable Populations	
Unhoused	• Lack sufficient shelter during lightning and hail events.
Vulnerability to Future Assets	
Population Growth & Development	• Additional structures will increase the property damage impacts of hail events. • Additional development increases the impact of power outages on the community. • Taller and/or metallic structures are more susceptible to lightning strikes.
Other Assets	• During the mitigation planning process, participants and stakeholders were asked to identify any planned or anticipated future assets that may be particularly or uniquely vulnerable to thunderstorms and hail. No such future assets were identified.

5. Vulnerability Assessment — Wildfire

General Vulnerabilities	
Above-Ground Structures	• All structures and personal property have varying vulnerabilities to wildfire depending on proximity to woodlands, structure building materials, and whether mitigation actions (e.g., defensible spaces) have been taken. The Wildfire assessment section evaluates what areas of the County have higher wildfire risks and vulnerabilities, including the vulnerability to structures and highly valued assets. Over $1.5 billion in assessed improvements are located within communities under intensive fire protection.
Local Economy	• Wildfires can damage businesses and cause closures or evacuations in nearby areas. • The logging and tourism industries would be affected the most within the local economy, were a

	wildfire to occur. • Eau Claire County Forest is over under 52,000 acres, the 15th largest county forest in Wisconsin. The largest blocks are in the east. The County sells lumber, which supports its general fund. • Recreationally, the County Forest supports many businesses in the County. The loss of related tourism would reduce revenues for Eau Claire County campgrounds, parks, and other businesses, though no current study on the extent of potential financial impacts is available. Forest landowners would also incur significant costs associated with salvage and restoration following a large forest fire event.
Natural, Historic, & Cultural Resources	• Forested areas, grassland, and agricultural areas are important economic assets and are susceptible to wildfires. • Historic, non-masonry structures are vulnerable to fire.
Individuals	• All residents and visitors are at-risk of injury or death from wildfire events.
Community Lifelines	
Safety & Security	• Personnel are exposed to hazardous conditions when combating wildfires or assisting residents in wildfire areas. • If a very large wildfire was to occur within the County, fire departments and local EMS could potentially be stretched thin; delayed response times might occur.
Food, Water, Shelter	• All above-ground structures are vulnerable. However, structures located in pine plantations, forested areas, or adjacent to grasslands are potentially at risk from wildfires. • Livestock could be at risk if a wildfire starts in a grassland area, however the risk is minimal to food sources. • Large scale wildfires can impact water quality, but this scenario is of low concern. • Farms and other croplands are at high risk of wildfire ignition and spread.
Health & Medical	• Hospitals and other in-patient care facilities may need to be evacuated during wildfire events, but the risk is very low for cities and villages.
Energy	• Above-ground utilities are vulnerable in wooded areas; see Long-Term Power Outage section. • Ash and debris from wildfires can damage solar panels / arrays. • Natural gas lines and storage facilities are vulnerable to prolonged heat exposure and combustion.
Communications	• All above-ground structures are vulnerable, but no specific concerns noted.
Transportation	• Exposure to high amounts of heat from wildfires can damage road infrastructure. • Chemicals, smoke and airborne debris from wildfires create dangerous travel conditions. • Road closures due to wildfires. • Trains are a cause of wildfire ignition. Railway materials (steel beams, wood supports) are susceptible to damage from wildfire.
Hazardous Materials	• All above-ground structures are vulnerable, but no specific concerns noted. • Combustion of materials can create hazardous materials spills or releases. • Hazardous materials may be flammable and can be spread through wildfire smoke/winds.
Educational Institutions	• None known. Evacuations due to nearby wildfires may be necessary. Most educational facilities have large, maintained grounds that would protect buildings from being impacted by a wildfire.
Disadvantaged or Socially Vulnerable Populations	
Migrant Populations	• May lack community resources / social network to efficiently relocate and rebuild during and after wildfire events. • Language barriers can prevent life-saving information / orders / alerts from being efficiently dispersed within the community.
Vulnerability to Future Assets	
Population Growth & Development	• As reflected in the community profile, Eau Claire County continues to grow in terms of population, thus increasing overall exposure to wildfires. • Developments and populations within the Wildland Urban Interface (WUI) are at a higher risk of exposure to wildfire events. • Agricultural fields contain high levels of surface fuels that can start or spread wildfires.

6. Vulnerability Assessment— Extreme Heat

General Vulnerabilities	
Mobile Homes	• Mobile homes can become very hot if there is a lack sufficient air conditioning / HVAC systems.
Campgrounds, Cabins, & Resorts	• Facilities may lack sufficient cooling stations.
Individuals	• Prolonged exposure to high temperatures can result in dehydration, heat stroke, and death. • The Extreme Heat section (Section III.D.vi) identifies individuals most vulnerable, including seniors, persons on certain medications, pregnant women, children, and outdoor workers.
Local Economy	• No significant impacts identified.
Natural, Historic, & Cultural Resources	• Long periods of extreme heat can stress vegetation and wildlife.
Community Lifelines	
Safety & Security	• Personnel face increased health risks while operating under high temperatures.
Food, Water, Shelter	• No unique vulnerabilities noted.
Health & Medical	• Increased demand on services during periods of extreme heat due to dehydration, heat stroke, and other related health risks.
Energy	• Increased demand on services can result in "brown outs" or other power outages. • Most communities lack cooling shelters with emergency power generators.
Communications	• None known.
Transportation	• Prolonged exposure to extreme heat can cause buckling in pavement.
Hazardous Materials	• None known.
Educational Institutions	• None known.
Disadvantaged or Socially Vulnerable Populations	
Unhoused/Homeless	• Lack access to air-conditioning and shelter.
Economically Disadvantaged	• Prolonged periods of high temperatures increase energy consumption / costs.
Vulnerability to Future Assets	
Population Growth & Development	• Exposure / impact from extreme heat is consistent throughout the County but will grow as the County's population increases and due to the County's aging population. • Additional development will increase demand on energy and water supply during extreme heat events. • Additional development may increase the "heat island" effect if it increases the amount of paved surfacing and removes green space / canopy.

7. Vulnerability Assessment — Drought

General Vulnerabilities	
Agriculture (Crops)	• Agriculture plays a critical role in Eau Claire County's economy, as previously stated in section II. C iv. Drought in Wisconsin therefore has the greatest impact on agriculture. • Since the severity of drought can vary, determining its financial impacts on crop and livestock operations is difficult. • Even in low drought conditions crop yields can dramatically decrease crops and become more susceptible to pests and disease. More substantial events can decimate croplands and result in total loss. • The loss of vegetation due to drought can result in flooding, even from an average rainfall. • The Drought assessment section provides example crop losses.

Agriculture (Livestock)	• Livestock, especially those kept in close quarters, can experience decreased milk production or even death. • Typically, farmers will supplement feed before allowing a drop in milk production due to drought. These additional feed purchases can be devastating, depending on the drought severity and length. • Drought conditions can also result in the build-up of nitrates in feed and silage to levels that are toxic to cattle. • Extreme heat and drought can also result in the build-up of toxic gases within grain silos to lethal levels or result in fires or explosions.
Water Supply	• Drought causes water shortages, drying up private wells and ponds, and increasing the demand for irrigation, putting strain on water supplies and raising concerns about future availability. • Ponds previously used by farmers may dry up, causing farmers to drill new wells and pump groundwater for their stock. • High-capacity wells have the potential to impact groundwater and nearby surface waters, especially during drought periods. • As of 2024, Wisconsin DNR database identified 161 active high-capacity wells within Eau Claire County.
Ground Water & Surface Water	• Drought lowers groundwater and surface water levels, affecting private wells and ponds, impacting habitat and recreational value, and potentially concentrating contaminants and nutrients in surface waters. • Decreased surface water makes shoreline areas more vulnerable to erosion, water temperatures can change, and contaminants and nutrients become concentrated; contributing to toxicity, eutrophication, and fish kills.
Forest & Vegetation	• Drought stresses forest vegetation, making it more vulnerable to pests and diseases, while increasing the risk of wildfires due to extreme dryness. Further risk is discussed in the Wildfire section.
Community Lifelines	
Safety & Security	• Drought conditions increase the likelihood of wildfires; leaving the resources strained for fire suppression and emergency response. • When extreme heat events and drought conditions occur at the same time, rural fire departments assisting farmers to keep livestock cool could increase response time and put additional stress on an already over-taxed water system. • Water scarcity during droughts can impact firefighting capabilities and limit the availability of water for other emergency response activities.
Food, Water, Shelter	• Drought can lead to crop failures and reduced agricultural production, resulting in food scarcity, increased food prices, and potential food insecurity. • Water scarcity during droughts can impact drinking water supplies, necessitating conservation measures and alternative sources for safe and sufficient water. This is not a significant concern in Eau Claire County at this time.
Health & Medical	• Drought-related conditions, such as heatwaves and poor air quality from wildfires, can have adverse health effects on vulnerable populations, including respiratory issues, heat-related illnesses, and exacerbation of chronic conditions.
Energy	• No unique drought concerns for Eau Claire County noted.
Communications	• No drought specific concerns noted.

Transportation	• Drought conditions can lead to soil instability, increasing the risk of road and highway damage.
Hazardous Materials	• No drought specific concerns noted.
Educational Institutions	• No drought specific concerns noted.
Disadvantaged or Socially Vulnerable Populations	
	• No unique vulnerabilities for Eau Claire County noted, though a prolonged drought can be especially hard on small farmers that are many times already finding it challenging to make ends meet.
Vulnerability to Future Assets	
Population Growth & Development	• No unique vulnerabilities noted.

8. Vulnerability Assessment — Long-Term Power Loss

General Vulnerabilities	
Energy Utilities	• Power outages can overload the remaining, functioning portions of the power grid. • Damage to electrical infrastructure may necessitate substantial repair costs. • Extensive power outages (in terms of area) can stretch resources thin to repair systems and restore power.
Structures without Back-up Power Systems	• Structures without generators will be unable to operate until power is restored. • Maintenance systems, such as sump pumps and air filtration systems, will fail resulting in additional risks to structures and individuals. • Most commercial facilities have installed backup generators but may still be vulnerable if the duration of the power loss exceeds the capabilities of the generators and fuel supply is limited.
Community Lifelines	
Safety & Security	• Criminal activity becomes more difficult to identify and respond to when security systems are inoperable. • Emergency services experience increased demands as vulnerable populations lose access to lifelines (see Disadvantaged and Socially Vulnerable populations in this section).
Food, Water, Shelter	• Food supplies may diminish during the outage as storage systems fail. • Pumps and wells will not operate without a backup power system. • HVAC systems will not operate without a backup power system, potentially exposing occupants to extreme weather (heat and cold).
Health & Medical	• Most medical facilities have backup power installed. • Clinics and offices may not have backup power, limiting their ability to serve the community. • In-home services may not be able to operate
Energy	• Failure in one section of the power grid can overload adjacent, operational sections, increasing the potential for additional outages.
Communications	• Internet and land-line telecommunications systems may be inoperable during the outage.
Transportation	• No specific concerns noted.
Hazardous Materials	• Monitoring and control systems may be incapacitated, though most facilities with hazardous materials have backup power systems in place.
Educational Institutions	• Most institutions have backup systems installed. • No specific concerns noted.
Disadvantaged or Socially Vulnerable Populations	
Individuals Reliant on Medical Equipment and Seniors	• Individuals that are oxygen dependent or rely on in-home medical equipment are vulnerable, especially if they lack backup power systems or reserves in medical supplies. • Tele-health and in-home medical care options may be limited during the power outage. • Vulnerabilities may be compounded if the power outage occurs during periods of extreme weather (heat and cold), especially for seniors who are living alone that may lack a support network.

Vulnerability to Future Assets	
Population Growth & Development	• Eau Claire County's population is increasing, thus increasing the vulnerability to power outages. • Additional development increases the demand on energy infrastructure, increasing the potential for "domino-effect" outages as the grid is overextended.

9. Vulnerability Assessment — Active Threats

General Vulnerabilities	
Gathering Places, Parades, & Festivals	• Locations with increased populations and transient populations face have an increased potential for active threat events.
Individuals	• All individuals are at risk of experiencing active threat events.
Local Economy	• Active threat events may result in shutdowns or closures.
Natural, Historic, & Cultural Resources	• None known.
Community Lifelines	
Safety & Security	• Emergency services and law enforcement personnel are required to respond to active threat events, placing these individuals in harm's way.
Food, Water, Shelter	• Utility infrastructure is a potential target in threat events. • Crops and livestock are potential targets for biological attacks.
Health & Medical	• Healthcare infrastructure is a potential target in a threat events. See also *Cyberattack* section.
Energy	• Utility infrastructure is a potential target in threat events. See also *Cyberattack* section.
Communications	• Infrastructure is a potential target in a threat events. See also *Cyberattack* section.
Transportation	• Public transit has an increased potential for active threat events. • Bridges, roads, and other infrastructure are potential targets in active threat events.
Hazardous Materials	• Sites containing hazardous materials are potential targets in active threat events.
Educational Institutions	• Facilities are at an increased risk of active threat events. See also *Cyberattack* section. • Most systems / organizations have increased preparedness to address active threat events.
Disadvantaged or Socially Vulnerable Populations	
	• No unique vulnerabilities noted.
Vulnerability to Future Assets	
Population Growth & Development	• Increases in population increase the potential intensity and exposure of active threat events. • All people and areas are at an equal risk of experiencing an active threat event. • Gathering places or population centers have an increased probability of events occurring.
Other Assets	• Mental health facilities and services will be strained during and after active threat events. Additional capacity may be needed as the population grows.

10. Vulnerability Assessment — Cyberattack

General Vulnerabilities	
Individuals	• Any personal electronic device that connects to a network is at risk of a cyber-attack. • Almost 8,000 reported events occurred within Wisconsin in 2022. • Almost $109 million was lost to cyber-crime in 2022.
Local Economy	• Cyber-attacks can cripple networks and shut down businesses at any time.
Natural, Historic, & Cultural Resources	• None known.
Community Lifelines	

Safety & Security	• Personal information and records can be accessed in an attack. • Criminal records and other law enforcement information are stored digitally. This information is at risk of access and manipulation during a cyber-attack. • Most systems are required to follow mandated security controls to prevent breaches.
Food, Water, Shelter	• Utility infrastructure can be accessed and manipulated in a cyber-attack. There is growing discussion of this vulnerability throughout the planning process as reflected in the main text and the community subplans. • Services can be terminated due to an attack.
Health & Medical	• Networks contain large volumes of personal data that can be targeted in a cyber-attack. • HIPPA laws increase the risk and exposure health systems experience with cyber-crime.
Energy	• Network can be accessed and manipulated in a cyber-attack. • Power can be redirected or terminated remotely.
Communications	• Network can be accessed and manipulated in a cyber-attack. • 911 communications centers are increasingly the target of ransomware and denial-of-service attacks.
Transportation	• Public transit networks can be accessed and manipulated. • Traffic control systems can be accessed and manipulated. • Delays, outages, or accidents can result from manipulated control systems.
Hazardous Materials	• Sites managing hazardous material storage systems via remote networks are vulnerable to cyber-attacks. • Materials can be released at toxic levels during an attack.
Educational Institutions	• Networks contain large volumes of personal data that can be targeted in a cyber-attack.
Disadvantaged or Socially Vulnerable Populations	
Elderly	• The 60+ year old age group experienced the highest percentage of reported cyber-crime in 2022. This trend is consistent with past years.
Vulnerability to Future Assets	
Population Growth & Development	• There are no areas of higher or lower risk to cyber-attack. • As the population in Eau Claire County increases, the probability of a cyber-attack occurring increases.

11. Vulnerability Assessment — Hazardous Material Spills

General Vulnerabilities	
Individuals	• Exposure to toxic levels of hazardous materials can result in medical ailments and or death.
Local Economy	• Areas identified as hazardous waste sites are expensive to clean up and difficult to market. • Hazardous sites within a community can negatively alter the perceived economic potential throughout the area. • Most hazardous material spills occur in warehouses and industrial sites.
Natural, Historic, & Cultural Resources	• None known.
Community Lifelines	
Safety & Security	• Special equipment is needed to investigate hazardous material spills.

	• Personnel are at an increased risk of exposure to hazardous chemicals when responding to spills.
Food, Water, Shelter	• Hazardous material spills can infiltrate groundwater, soils, and livestock that are later used to create products for human consumption. • Shelters near hazardous spill sites can increase the risk of exposure to toxic chemicals. • Chemical storage at individual farms may be decreasing.
Health & Medical	• Exposure to hazardous materials can cause medical ailments, potentially increasing demand for healthcare facilities.
Energy	• None known.
Communications	• None known.
Transportation	• Railroads and highways are at risk of hazardous material spills • Transportation-related spills were of greater concern than spills at fixed sites during the planning process due to the related uncertainties and lack of site-specific plans. • Some highways and railroad travel through residential areas.
Hazardous Materials	• Compounded effects.
Educational Institutions	• None known.
Disadvantaged or Socially Vulnerable Populations	
Economically disadvantaged	• No unique vulnerabilities noted.
Vulnerability to Future Assets	
Population Growth & Development	• Increased industrial development increases the probability of hazardous materials being located in the area, increasing the potential for hazardous material spills.

APPENDIX G.

FLOOD ASSESSMENT METHODOLOGY

Eau Claire County Flood Assessment Methodology

Note: This methodology only describes the flood assessment approach for those areas of Eau Claire County located outside the City of Eau Claire. The City of Eau Claire methodology is described in the City's natural hazard mitigation subplan and takes advantage of more detailed topographic data.

Significant Changes Since the 2018 Hazard Mitigation Plan

Comparing floodplain structure estimates between mitigation plans is discouraged given changes in data accuracy over time. For the County's 2012 mitigation plan, the Flood Insurance Rate Maps (D-FIRM) for Eau Claire County had been recently updated and were in digital format, thereby increasing accuracy and usability overall. However, LIDAR-produced, detailed topographical data was not available when the maps were being updated, so **local officials continue to point out inaccuracies in the new floodplain maps.** For the 2025 mitigation plan update, the County has made dramatic improvement in the accuracy of their address points due to the implementation of NextGen 911.

Remaining Flood Assessment Data Challenges

1. G.I.S. data for individual structures is not available for most of Eau Claire County and no geographic database exists which identifies the characteristics of individual improvements and structures (e.g., basements, number of stories, base flood elevation) in the county.

   As a result, the flood assessment methodology uses a top-down, "birds-eye" perspective which does not account for site-specific topographic variation. A structure might appear to be located within the 100-year floodplain on a map, but could it have been landscaped or otherwise elevated above the base flood elevation.

2. Assessed values for improvements and tax records are linked to the parcel database, but are not linked to building point data. Based on orthophotography, we are able to identify which buildings may potentially be located in a 100-year floodplain, but the use and value of each individual building are not available. Since our assessment information is for the entire parcel, this becomes a problem in cases where not all of the improvements within a single parcel are within or intersect the 100-year floodplain or in case where only a portion of a building may intersect the floodplain boundary.

3. Estimated values of improvements are not available for all parcels. Tax data does not include a value of improvements for municipal buildings (e.g., town halls, fire stations), public infrastructure (e.g., wastewater treatment plants, water towers), and other non-taxable structures (e.g., churches, public housing, electric cooperatives, non-profits).

4. Local topographic variation exists and floodplains change over time. It is important to keep in mind that a serious flood could exceed the estimated 100-year limits, as well as being impacted by other factors which may change over time, such as reduced flood storage or increased stormwater runoff.

5. Related to #4, most designated 100-year floodplain areas in Eau Claire County fall within Zone A which have no base flood elevations (BFEs) established, making it more difficult to determine the actual vulnerability to individual structures.

Flood Assessment Methodology

It is cost prohibitive to perform the detailed survey work of structural characteristics and attaching tax assessment data to the individual structures (versus parcel) necessary to make definitive conclusions in many cases. And structural footprint data is not available at time. However, it is critical to remember that the purpose of this assessment is to identify potential flooding risks to structures during a 100-year flood event for general mitigation planning. The assessment methodology used here is sufficient to identify those structures which may be most at risk of flood damage and those areas which may be a priority for flood mitigation activities.

For the assessment of riverine and lake flooding in Eau Claire County the following methodology was used:

1. The D-FIRM G.I.S. shapefiles were used to identify the 100-year floodplain boundaries (shown by the green shading and green line on the map below).



2. The G.I.S. parcel data, including improvement values, were taken from the 2024 assessment roll, thus providing information on municipality, assessed uses, and assessed values for those areas were parcel mapping was complete.

3. Those improved parcels that were within or intersected the 100-year were identified for guidance. This made it easier to determine where improvements may potentially lie within the floodplain.

4. Over the past several years, Eau Claire County has dramatically improved its address point data in preparation for NextGen911. This included a large effort to move address points onto the primary structure. These address points were then intersected with the floodplain, and used to select parcels with primary structures within the floodplain. The principal structures were identified by visual inspection of 2023 orthophotography overlaid with the 100-year floodplain. Structures (e.g., garages, barns, boat houses) were excluded if it could be reasonably determined that they were not the principal structure on the parcel.

   This approach was used to create a G.I.S. point data layer of all principal structures, taxable and exempt, which intersect or are contained within the 100-year floodplain (shown as the orange dots on the previous map). As the previous map demonstrates, it can be difficult to determine if a building intersects the floodplain or if a building is the principal structure. The point file includes structures which partially intersect the floodplain. WCWRPC staff used their best judgment and buildings were marked if in doubt.

5. By overlaying the parcel and building point G.I.S. data, an estimated value of improvements for buildings potentially in the floodplain was identified. However, situations with multiple structures on a single parcel can be a challenge as noted previously. In such cases, the assessed value of all improvements was used, rather than attempting to further assign values to individual structures. In many cases, those ancillary structures on a parcel which are likely outside the 100-year floodplain boundary are still close enough to the boundary to potentially be vulnerable to flooding should a large event occur. For non-taxable parcels, improvement estimates are not available.

   Though it has its weaknesses, this approach provides a good picture of which principal structures are most likely to be impacted by a 100-year flood in Eau Claire County. However, this should not be relied upon as an accurate indicator of flood depth or damages during flood events since elevation, flood depth, and assessed value for each individual structure is not currently valued. Many of the structures likely have no recent flood history and may not have a significant vulnerability to a flood event. In some case, local action (e.g., sandbagging, backflow prevention) can prevent flooding.

6. Utilizing key informant interviews, discussions with local officials, a survey to each Town Board, and available records (e.g., NFIP flood insurance claims), floodprone areas and hotspots were also identified in the plan where infrastructure or improvements may be vulnerable to riverine or lake flooding.

Taken together, this approach provides an understanding of the overall flooding risks and vulnerabilities in Eau Claire County, while providing insight into the distribution of potentially vulnerable structures within the county and the location of past flooding events.

APPENDIX H.

EAU CLAIRE COUNTY DAM INVENTORY

Official Name	Popular Name	Owner Name	Hazard Rating	Size	Normal Storage (Acre Ft)	Max Storage (Acre Ft)
Altoona		Eau Claire County	High	Large	720	14000
Eau Claire River	Augusta	Eau Claire County	High	Large	870	17000
Dells Lake	Dells Millpond	Borntreger, Herman	Low	Large	75	560
Johnson	Diamond Valley Watershed	City of Augusta	Low	Large	0	150
Dells		City of Eau Claire	Low	Large	739	16000
Half Moon Lake		City of Eau Claire	Low	Large	132	1500
Coon Creek		Eau Claire County	Low	Large	75	1200
Fairchild		Village of Fairchild	Low	Large	18	80
Vogler Flour Mill		Village of Fall Creek	Low	Large	17.3	50
Desprez, Louis		Desprez, Louis	Low	Small	1	6
Eau Claire County Youth Camp	Eau Claire County	Eau Claire County	Low	Small	0.3	1
Pea Creek Flowage		Eau Claire County	Low	Small	6	20
Eau Claire Rod And Gun Club		Eau Claire Rod And Gun Club	Low	Small	0	2
Gilbertson		Gilbertson, Ray	Low	Small	3.2	44.7
Hart, Robert		Hart, Robert	Low	Small	1	10
Kirchoff, Ray		Kirchoff, Ray	Low	Small	1	20
Dietz, Harold		N/A	Low	Small	1	10
Everts, James		N/A	Low	Small	1	1
Stanek, Ronald		Stanek, Ronald	Low	Small	1	2
Strumness, Woodrow		Strumness, Woodrow	Low	Small	1	3
Flour Mill	Flour Mill	City of Augusta	Low	Unknown		
Julson	Julson-Beaver Creek Dam	Julson, Alfred	Low	Unknown		

APPENDIX I.

POTENTIAL STATE AND FEDERAL GRANT PROGRAMS FOR MITIGATION PROJECTS

The following is a list of grant programs that are most commonly available for natural hazard mitigation in Wisconsin. This list was used when identifying potential grant sources for the mitigation projects identified in Section VI.C of this plan as well as the local community/school sub-plans. It is not intended to be comprehensive or all-encompassing, and grant programs, opportunities, and requirements frequently change.

In 2020, the U.S. Department of Energy issued a *Mitigation & Resilience Federal Funding Sources* document as part of the U.S. Climate Resilience Toolkit website. This 11-page document includes additional information on many of these federal programs referenced in this appendix as well as provides additional potential funding sources.

	Federal or State Agency & Grant Program	Contact Information	Eligible Activities	Eligibility & Cost Share	Other Notes	Application Deadline
1	Federal Emergency Management Agency, Hazard Mitigation Grant program (HGMP)	Wisconsin Emergency Management P.O. Box 7865 2400 Wright Street Street, Madison, WI 54707-7865	Flood proofing, acquisition and relocation of flood prone properties, elevation of flood prone properties, wind resistant or retrofit, storm water improvements, education and awareness, All Hazards Mitigation Planning efforts	Federal - 75% State - 12.5% Local - 12.5% 90/10 for economic disadvantaged rural communities	Local government must be in compliance with the National Flood Insurance Program to be eligible. Projects must be cost-effective, environmentally sound and solve a problem.	After a Presidential Disaster Declaration
2	Federal Emergency Management Agency, Building Resilient Infrastructure & Communities (BRIC) Program *(replaced PDM Program)*	Wisconsin Emergency Management P.O. Box 7865 2400 Wright Street Street, Madison, WI 54707-7865	Grants can be used for various mitigation projects, information dissemination, planning, technical assistance, etc.	Federal - 75% Local - 25% 90/10 for economic disadvantaged rural communities	Must have an approved hazard mitigation plan.	Typically, pre-applications due abt. Nov/Dec and application due abt. Jan/Feb
3	Federal Emergency Management Agency, Flood Mitigation Assistance (FMA) Program	Wisconsin Emergency Management P.O. Box 7865 2400 Wright Street Street, Madison, WI 54707-7865	Acquisition, relocation, elevation and flood-proofing of flood-prone insured properties, flood mitigation planning	Federal - 75% Local - 25% 90/10 for economic disadvantaged rural communities	Repetitive loss properties given a high priority. Must have an approved hazard mitigation plan.	Typically, pre-applications due abt. Nov/Dec and application due abt. Jan/Feb
4	Federal Emergency Management Agency, Public Assistance (PA) program	Wisconsin Emergency Management P.O. Box 7865 2400 Wright Street Street, Madison, WI 54707-7865	Repair of infrastructure damaged during a flood that results in a Presidential Disaster declaration. Cost effective mitigation measures may be eligible during the repair of damaged facilities	Federal - 75% State - 12.5% Local - 12.5%		After a Presidential Disaster Declaration
5	Economic Development Administration, Economic Adjustment Program (see CFDA 11.307)	United State Department of Commerce, Economic Development Administration, 111 North Canal Street, Suite 855, Chicago, IL 60606-7204 312-353-7148	Improvements and reconstruction of public facilities after a disaster or industry closing. Research studies designed to facilitate economic development.	Federal - 50%-70% Local - 30%-50%	Documenting economic distress, job impact and proposing a project that is consistent with a Comprehensive Economic Development Strategy are important funding selection criteria	Anytime
6	Economic Development Administration, Public Works and Development Facilities (see CFDA 11.300)	United State Department of Commerce, Economic Development Administration, 111 North Canal Street, Suite 855, Chicago, IL 60606-7204 312-353-7148	Water and sewer, industrial access roads, rail spurs, port improvements, technological and related infrastructure.	Federal - 50%-70% Local - 30%-50%	Documenting economic distress, job impact and proposing a project that is consistent with a Comprehensive Economic Development Strategy are important funding selection criteria	Anytime
7	Wisconsin Department of Commerce, Community Development Local Grant, Public Facilities Emergency Program	Wisconsin Department of Commerce, 201 West Washington Avenue, PO Box 7970, Madison, WI 53707-7970 608-266-8934	Repair of water, sewer, street, curb and gutter, police and fire stations	Federal - 75% Local - 25% Must be a LMI community or serve a vulnerable population	Available after a state and/or Presidential Disaster declaration. these funds can be used towards the local match to receive FEMA public assistance and HMGP funds	After a Disaster event
8	Wisconsin Department of Commerce, Community Development Block Grant, Public Facilities Program	Wisconsin Department of Commerce, 201 West Washington Avenue, PO Box 7970, Madison, WI 53707-7970 608-266-8934	Water, sewer, street, curb and gutter, libraries, fire stations and community centers	To receive maximum points $1.5 of local match to every $1 of state Community Development Block Grant Must be a LMI community or serve a vulnerable population	A community's economic distress score influences funding determination. These funds can be used as a local match to receive FEMA Public Assistance and HMGP funds.	Anytime
9	Wisconsin Department of Transportation (DOT), Flood Damage Aid	Wisconsin Department of Transportation, 4802 Sheboygan Avenue, Madison, WI 53707 608-267-5254	Replacement and improvement costs for major flood damage to a road or road structure under local jurisdiction. To help defray costs of repairing major flood damage to any pubic street, alley, or bridge not located on the State Trunk Highway System	State - 75% of replacement costs and 50% of improvement costs, reimbursed by local	Repairs or replacements can includes resign to prevent or reduce future flood damage. If Federal Disaster Aid is received, community is ineligible for State Federal Disaster Aid.	Applicant must submit final costs within 2 years following flood damage
10	Wisconsin Department of Transportation (DOT), Transportation Enhancement funds	Wisconsin Department of Transportation, 4802 Sheboygan Avenue, Madison, WI 53707 608-267-5254	Activities that "enhance" the surface transportation infrastructure "above and beyond" basic highway projects, can include: landscaping and scenic beautification, acquisition of scenic easements, and scenic or historic sites.	Federal - 80% Local - 20%	Can provide scenic vista and runoff areas, parking and landscaping along flood-prone riverways. Can acquire flood-prone areas along roads for green corridors. Food damage reduction potential is not the primary purpose of the program.	Even-numbered years. Application forms available in January. Must be submitted by April. Funds granted competitively.

11	Wisconsin Department of Commerce, Division of Housing and Community Development CDBG - Emergency Assistance Program	Wisconsin Department of Commerce, 201 West Washington Avenue, PO Box 7970, Madison, WI 53707-7970 608-267-3682	Assists local governments in response to a natural or manmade disaster. Can be used to address damage to housing, public infrastructure, businesses, community buildings, etc.	Varies, depending upon whether the community is already an entitlement community for CDBG funding.	Must give preference to households at or below 80% of the county median income.	After a disaster event.
12	Wisconsin Housing and Economic Development Agency Temporary Housing Grants	WHEDA 201 W. Washington Ave, Ste. 700 Madison WI, 53703 608-266-7884 800-334-6873	WHEDA has provided grant support to communities in the past following a disaster event for housing needs.	contact WHEDA for more information	contact WHEDA for more information	After a disaster event.
13	Wisconsin Department of Natural Resources, Surface Water Grants	Wisconsin Department of Natural Resources, 101 S. Webster Street, PO Box 7921, Madison, WI 53707-7921 608-266-7555	Cost-sharing grants for a variety of lake and river planning, education, analysis, protection, and restoration projects. Can potentially include some flooding- or bank-related and invasive species projects.	Varies by project type Most planning grants are 67% WDNR Most project/management grants are 75% WDNR	Varies by project type (i.e., $5,000 - $200,000) Local govt's and non-profit organizations may apply.	Pre-applications on Sept 15 and Full Applications on Nov 15
14	Wisconsin Department of Natural Resources, Knowles-Nelson Stewardship Fund	Wisconsin Department of Natural Resources, 101 S. Webster Street, PO Box 7921, Madison, WI 53707-7921 608-266-7555	Encompasses 6 sub-programs usually used for outdoor recreation activities. Can include land acquisition, natural/habitat enhancement, stream bank, & urban rivers projects.	State - 50% Local - 50% very competitive	Most projects must be part of an adopted outdoor recreation plan. Local governmental units may apply. Nonprofit conservation orgs are eligible for acquisition projects.	May 1
15	Wisconsin Department of Natural Resources, Municipal Flood Control Project	Wisconsin Department of Natural Resources, 101 S. Webster Street, PO Box 7921, Madison, WI 53707-7921 608-266-7555	Acquisition, flood proofing, wetland-floodplain restoration, storm water projects, flood insurance studies, and floodplain mapping.	State - 70% Local - 30%	Maximum grant cannot exceed 20% of funding available. Cities, villages, towns, and metropolitan sewer districts are eligible.	15-Mar
16	Wisconsin Emergency Management, Domestic Preparedness Equipment Grant Program	Wisconsin Emergency Management, 2400 Wright Street, Madison, WI 54707-7865 608-242-3232	Some equipment purchased for terrorism readiness may also have valuable emergency response use to mitigate impacts should an event occur.			
17	Wisconsin Department of Natural Resources, Targeted Runoff Management (TRM) Grant Program		Develop stormwater management facilities to control non-point source pollution , primarily in urban or developing areas.	May be able to leverage with Wisconsin DOT funds.		
18	U.S. Army Corp of Engineers Section 14-Emergency Streambank and Shoreline Protection	regional contact: Detroit District 477 Michigan Avenue Detroit, Michigan 48226 313-226-6764	Provide bank protection of highways, bridges, essential public works, and critical facilities endangered by flood-caused erosion.	Federal - 75% Local - 25%	Must meet U.S. Army Corps of Engineers economic feasibility and other criteria Maximum $500,000 per project.	
19	U.S. Army Corps of Engineers Section 22-Water Resources Planning Assistance to States	regional contact: Detroit District 477 Michigan Avenue Detroit, Michigan 48226 313-226-6764	This program can be used to obtain technical assistance from the Army Corps to study, analyze, and/or plan for a water-related challenge. The Corps will consider using some funds to sub-contract if needed.	Federal - 50% Local - 50%	Must meet U.S. Army Corps of Engineers economic feasibility and other criteria	
20	U.S. Army Corps of Engineers Section 205-Small Flood Control Projects (CFDA 12.106)	regional contact: Detroit District 477 Michigan Avenue Detroit, Michigan 48226 313-226-6764	Provision of specialized services through projects not specifically authorized by Congress.	First $100,000 is federally funded, with remainder split 50% Federal/50% Local.	Must meet U.S. Army Corps of Engineers economic feasibility and other criteria Maximum $7 million per project, though this may change.	
21	U.S. Army Corps of Engineers Section 208-Clearing Channels for Flood Prevention (CFDA 12.108)	regional contact: Detroit District 477 Michigan Avenue Detroit, Michigan 48226 313-226-6764	Provision of specialized services. Non-federal sponsor must provide all lands, easements, and rights-of-way.	Federal - 75% Local - 25%	Must meet U.S. Army Corps of Engineers economic feasibility and other criteria Maximum $500,000 per project.	
22	U.S. Department of Agriculture, Farm Service Agency Emergency Conservation Program (ECP)	contact local Farm Service Agency	Perform emergency conservation measures to control wind erosion on farmlands and rehabilitate farmlands damaged by natural disasters; includes water conservation	Cost-sharing determined by County committees , following USDA guidelines.	Farm operator or landlord/owner in a disaster area or impacted by drought.	following a natural disaster event; eligibility determined by county FSA cmte
23	U.S. Department of Agriculture, Natural Resources Conservation Service, Watershed Protection and Flood Prevention	Wisconsin Natural Resources Conservation Service - NW Area 1304 N. Hillcrest Altoona, WI 54720 715-832-6547	Project grants and technical assistance to protect and utilize land and water resources in small watersheds. Emphasizes interdisciplinary planning teams.	Varies depending on nature of the project. Federal funding may be incorporated within other State Programs; check with WisDNR.	Agricultural related enterprises must account for at least 20% of the total benefits.	

24	U.S. Department of Agriculture, Natural Resources Conservation Service, Emergency Watershed Protect - Floodplain Easement	Wisconsin Natural Resources Conservation Service - NW Area 1304 N. Hillcrest Altoona, WI 54720 715-832-6547	Purchase floodplain easements as an emergency measure in floodplain areas which are impaired or have a history of repetitive flooding	Easement compensation varies by site and location. NRCS pays 100% of restoration costs.	Voluntary program to restore floodplain functions. Easements are permanent. Easement compensation based on offer, rate cap, and area market.	Sign-up period is in March.
25	U.S. Department of Agriculture - Rural Development, Housing & Community Facilities Programs	Rural Development Business & Community Programs 4949 Kirschling Court Stevens Point, WI 54481 Phone: 715-345-7610	Has been used for a wide variety of projects, including early warning systems, sirens, fire equipment, EMS buildings, shelters, radios, etc. Additional USDA programs available for larger projects.	Varies by community size, local household incomes, and funding availability	Counties and small communities; must work with USDA Rural Development officials from project start. One of the few grant sources that may fund sirens and generators.	
26	Wisconsin Department of Natural Resources, Forest Fire Protection (FPP) Grant	FFP Grant Manager Department of Natural Resources P.O. Box 7921 Madison, WI 53707-7921 (608) 267-0848	Equipment, training, prevention materials, communication equipment, mapping/rural numbering systems, ATVs, dry hydrants	For individual fire depts: min. $750; max. $10,000 For County Fire Assoc: min. $5,000; max. $25,000	Fire departments and County Fire Associations	varies; usually May, June or July
27	U.S. Homeland Security Assistance to Firefighters Grant Program	U.S. Dept. of Homeland Security 800 K Street NW Washington DC 20472-3620 1-866-274-0960	For Fire Departments and EMS organizations to enhance fire-related capabilities.	Varies by population served, but 5% - 10% for small communities	Applicants serving less than 500,000 population may not receive over $1 mil in funding.	April or May
28	U.S. Department of Interior Rural Fire Assistance Outreach	U.S. Dept of Interior check up-to-date application materials for contact info.	Training, personal protective equipment, basic gear, limited communications equipment, basic tools, and other activities.	Minimum 10% local match.	Max. award of $20,000 per fiscal year. Need to serve DOI lands.	April
29	U.S. Department of Homeland Security, Emergency Operations Centers (CFDA 97.052)	Department of Homeland Security 245 Murray Drive, SW. Washington, DC 20528 202-282-8000	Improve local capabilities to respond to emergencies and disasters	Phase 1 for assessment Phase 2 requires a 50% nonfederal cost share.	Local governments can be sub-grantees under the State.	
30	Federal Emergency Management Agency, Interoperable Communications Equipment (CFDA 97.055)		Explore uses of equipment and technologies to increase the interoperability among fire services, law enforcement, and emergency medical services.	Funding is discretionary. Max. Federal share is $6 million. 25% nonfederal cost-share.	Local governments are nominated by the State to submit an application.	Contact FEMA headquarters.
31	U.S. Department of Transportation Promoting Reslient Operations for Transformative, Efficient, & Cost-Saving Transportation (PROTECT) Program		For planning and implementing projects to improve transportation resiliency, including vulnerability assessments, evacuation, or other infrastructure enhancement	Grant funding is discretionary. In 2023, $848m available. May also support cooperative agreements with U.S. DOT.	State, Tribal, and local units of government including MPOs and multi-jurisdictional groups.	2023 deadline was Sept 18
32	Wisconsin Emergency Management Pre-Disaster Flood Resilience Grant Program	Wisconsin Emergency Management, 2400 Wright Street, Madison, WI 54707-7865 608-242-3232	Assessment & Infrastructure components to identify flood vulnerabilities, study options to improve resilience, restore hydrology/reduce risks & damages in flood-prone communities	2024 announcement is the first year of funding with $2 million available; future funding not guaranteed	Units of government; non-profits & consultants may apply on behalf of a govt unit with documentaiton of commitment	2024 deadline was Nov 30

APPENDIX J.

SUMMARY OF CHANGES SINCE THE 2019 PLAN

The 2025 *Eau Claire County Multi-Hazard Mitigation Plan* was a complete review and update of the 2019 Plan. Changes to the 2025 Plan update were also required to meet FEMA's latest mitigation planning guidance that went into effect in April 2023, though the 2019 Plan met most requirements and some changes were largely semantic. This section highlights some of the major changes since the 2019 Plan by plan section, including a brief description of how the Plan Update Steering Committee reviewed and analyzed each section.

Section I. Introduction

- The project brochure was updated and distributed to encourage participation.
- Stakeholder and community interviews included review of the 2019 Plan recommendations.
- Town surveys were customized for each town and incorporated aspects of the 2019 Plan to encourage input.
- Section I.E. in the 2025 Plan identifies some new data sources that were not available at the time of the previous plan update.
- Like the 2019 Plan, meetings were held with each city and village. A major change in this plan was the creation of sub-plans for each city and village (Appendix K); this makes it easier for the communities to consider their respective risks, vulnerabilities, capabilities, and strategies. This should also make it easier to update the plan in the future.
- New to this plan update was the invitation to public educational institutions to be full participants. Participants participated in a web-based presentation and survey, then a sub-plan was created for each (Appendix L).
- Steering Committee Analysis & Review: The planning process, which is summarized in Section I, was the focus of the first Plan Update Steering Committee meetings, including a review of the process used during the 2019 plan and recommended changes for the plan update.

Section II. Community Profile

- Demographics and other data were updated. A new table-based and infographic format was incorporated for many key data points, which is easier to evaluate and will save time for future mitigation plan updates.
- G.I.S. data for critical facilities continues to be improved and the list of critical facilities was expanded and refocused on FEMA's new community lifelines. A corresponding appendix with heat maps showing the distributions of each lifeline was added (Appendix D).
- A new Underserved Communities & Socially Vulnerable Populations sub-section was added, which incorporated national indices.
- Steering Committee Analysis & Review: The highlights of the community profile were reviewed and discussed during the second Steering Committee meeting. Particular attention was paid to identifying socially vulnerable populations and related emergency management implications.

Section III. Assessment of Hazard Conditions

- The assessment for each hazard of significant risk was reorganized and expanded to be consistent with the latest FEMA mitigation planning guidance.
- Throughout this section, NCDC statistics, NFIP participation information, and other data were updated and, for many risks, further supplemented. This includes integrating data and maps available in the *State of Wisconsin Homeland Security Council THIRA & SPR*, which was updated January 2018. It also includes incorporating input from the Steering Committee, stakeholders, newspaper articles, and other plan participants.
- A new appendix (Appendix E) was created, moving the NCDC data for past natural hazard events out of the main text. Similarly, a more robust vulnerability assessment for key assets and community lifelines was created as a new Appendix F.
- The Steering Committee re-assessed the risks and vulnerabilities facing Eau Claire County. Due to similar impacts/vulnerabilities, high winds were combined with tornadoes.
- Steering Committee Analysis & Review: An overview of hazard trends, issues, and mitigation opportunities were discussed by the Committee during their first and second meetings. Following the first meeting, committee members completed a survey assessing hazard risks and vulnerabilities. The survey results were discussed at the committee's second meeting. The analysis of the key results of the assessment and interview process was the focus of the Steering Committee's second meeting.

Section IV. Capabilities Assessment

- This section was amended to consider barriers to implementation and updated to reflect changes in mitigation activities and capabilities.
- Steering Committee Analysis & Review: Current mitigation activities and capabilities were discussed during interviews and the Committee's second and third meetings.

Section V. Progress on the 2019 Mitigation Plan Strategies

- During stakeholder interviews, lead parties for each strategy from the 2019 Plan were asked to provide an update on progress, which was integrated into this section.
- Steering Committee Analysis & Review: Progress on 2019 strategies was discussed by the Steering Committee during its second and third meetings, including some discussion on potential strategy alternatives.

Section VI. Mitigation Goals and Strategies

- The mitigation strategies were updated to reflect changes in priorities, which are discussed in this section. Some strategies also placed greater emphasis on nature-based solutions.
- After discussion with the Steering Committee, mitigation and preparedness strategies are separated in the 2025 Plan update with additional implementation guidance for the mitigation strategies.
- A subsection was added discussing the city, village, and participating school/technical college subplans.
- The plan coordination subsection was moved into Section VI with a greater emphasis on describing how the mitigation plan can/will be integrated into other planning mechanisms.
- The mitigation grant resources list in Appendix I was updated.
- Steering Committee Analysis & Review: Plan goals were reviewed and discussed as part of the second Steering Committee meeting. Mitigation and preparedness strategy alternatives were discussed during the second and third Steering Committee meetings as well as identifying criteria on which to evaluate and prioritize strategy alternatives. A strategy alternatives survey was distributed to all Steering Committee members; the survey results yielded relative priority of the mitigation and preparedness alternatives and guided the selection of which strategies would be recommended in the final plan.

Section VII. Plan Adoption & Maintenance Process

- This section was amended to include more emphasis on public participation.
- Section VII.B.iii. identifies some potential changes for the next plan update.
- Steering Committee Analysis & Review: The plan adoption and maintenance process were discussed and determined by the Steering Committee during its second and third meetings. Committee members were challenged to identify opportunities to continue to engage the public during plan maintenance as well as future plan updates.

APPENDIX K1.

CITY OF EAU CLAIRE HAZARD MITIGATION SUB-PLAN

CITY OF EAU CLAIRE HAZARD MITIGATION SUB-PLAN

This sub-plan identifies past hazard events, risks, trends, capabilities, and strategies unique to or specific to the community and is part of the overall *Eau Claire County Multi-Hazard Mitigation Plan*. The Eau Claire County mitigation plan provides broader context and contains hazard assessment, capabilities, and strategies that are countywide or multi-jurisdictional.

Primary Contact:	City Risk Manager
Planning Meetings:	• Two planning meetings were conducted with an ad hoc City work group on 9/11/24 and 5/12/25 with WCWRPC and Eau Claire County Emergency Management staff at the City Hall; sign-in sheet excerpt in Appendix B identifies participants. • City participated in a mitigation/preparedness capabilities assessment in Fall 2024. • City staff conducted a GIS-based flood vulnerability assessment. • City staff participated in the ad hoc County plan update steering committee and Public Health Emergency Preparedness Committee as well as during stakeholder interviews as documents in Appendix B. • Resolution adopting the Hazard Mitigation Plan and Sub-Plan will be approved by City Council at a public meeting. Resolution included in Appendix A.

Community Profile

This table provides a brief overview of key community characteristics that are important to assessing capacity and vulnerabilities. For example, the entire population and all above-ground structures in the community are vulnerable to a tornado event, while mobile homes have an elevated vulnerability.

Multi-County Community: The City of Eau Claire is a multi-county community with lands located within Eau Claire and Chippewa counties. This sub-plan represents the City as a whole, including that portion in Chippewa County, and the City of Eau Claire only adopts the Eau Claire County mitigation plan. The City participates in Chippewa County mitigation planning efforts if intergovernmental issues or opportunities arise, but does not adopt the Chippewa County mitigation plan.

Community Description: The City of Eau Claire is the largest city within west-central Wisconsin and is an urban employment center and service hub. This larger population, with more assessed improvements and community lifeline facilities, substantially elevates the City's vulnerabilities to disaster threats. Due to its location at the confluence of the Chippewa and Eau Claire Rivers, plus the amount of urban hardscape, the City has a long flood history compared to many communities. For these reasons, the City of Eau Claire's mitigation sub-plan is lengthier than the sub-plans for other cities and villages within this plan.

Population	73,011 (2024 WDOA est.); 70,871 (2024 ESRI est.)
Median Age (2023 est.)	Abt. 33 years, in part reflecting the UW-Eau Claire & CVTC student populations
Underserved, disadvantaged, or uniquely vulnerable populations	Seniors; about 16.6% of the City's population is ages 65+. Low-income households; about 22% of City households have an income less than $35,000. ESL, including Hmong, populations Significant homeless population. Student populations at UW-Eau Claire and CVTC. Also see infographic on next page.
Assessed Improvements (2024)	Residential: $3.64 bil; Commercial: $1.83 bil; Manuf.: $157 mil
# of Housing units (2024 est.)	16,604 owner-occupied; 13,252 renter-occupied
# of Mobile Homes (2022 est.)	417
Notable Community Lifelines or Critical Facilities	See maps later in sub-plan. The community lifeline heat maps in Appendix D and vulnerabilities assessment in Appendix F show that the City of Eau Claire has the highest numbers and concentrations of Eau Claire County's community lifeline/critical facilities. Particularly notable facilities include: Eau Claire County Government Center with associated services, 911 communications, and law enforcement; Eau Claire City Hall; fire stations, municipal water & wastewater facilities; City Central Maintenance Facility; UW-Eau Claire & CVTC campuses; large public school district; hospitals & clinics; many assisted living facilities and group homes; Sojourner House & Beacon House; regional commercial shopping areas; regional financial

	institutions; industrial parks; Chippewa Valley Regional Airport, and infrastructure (e.g., wells, wastewater system, Xcel substation) that supports the community.



Language Spoken (ACS)	Age 5-17	18-64	Age 65+	Total
English Only	7,954	42,296	11,011	61,261
Spanish	395	915	64	1,374
Spanish & English Well	386	823	64	1,273
Spanish & English Not Well	9	91	0	100
Spanish & No English	0	1	0	1
Indo-European	49	316	115	480
Indo-European & English Well	49	302	115	466
Indo-European & English Not Well	0	14	0	14
Indo-European & No English	0	0	0	0
Asian-Pacific Island	323	2,237	105	2,665
Asian-Pacific Isl & English Well	310	2,045	73	2,428
Asian-Pacific Isl & English Not Well	13	193	2	208
Asian-Pacific Isl & No English	0	0	30	30
Other Language	0	63	6	69
Other Language & English Well	0	63	6	69
Other Language & English Not Well	0	0	0	0
Other Language & No English	0	0	0	0

Hazard Risk Assessment

This table describes past hazard events impacting the community and any unique vulnerabilities to each event. This assessment is supplemented by the risk assessment map included at the end of this Mitigation Sub-Plan for the community. Also see the Risk Assessment in Section III of the main text of the Eau Claire County mitigation plan for general risks and vulnerabilities applicable to most or all communities.

Hazard	History & Past Impacts	Vulnerabilities & Potential Impacts
Tornado & High Winds	Eau Claire County has a long history of tornados, including some that have occurred nearby, but no tornado history in the City of Eau Claire. July 15, 1980 "The Big Wind" and May 24, 2012, high wind events discussed in Tornado & High Wind section of main plan. Some areas of City without power for 7-9 days in 1980; 1 death and at least 10 injuries associated with the storm.	• Due to the concentration of residents, critical facilities, and improvements, the City has a very high vulnerability should a tornado or straight-line wind strike. • Over half of all residential improvements in the County are located within the City. • The City also has six licensed manufactured home communities; it is not known if these communities have designated storm shelters. • Two nursing homes and 55 assisted living facilities & group homes have an Eau Claire address. Many of these are slab-on-grade structures with particularly vulnerable populations. • Also the highest concentrations of commercial, industrials, and community lifeline facilities in the region are located in the City. The many large-span structures, such as big box stores, warehousing, and gyms, are particularly vulnerable.

		• There are no public campgrounds within the City, though there are numerous City parks and recreational facilities where large groups of people occasionally congregate. • Storm and lightning emergency action plans are required for events within the City. • The City of Eau Claire does not have a public storm shelter or community safe room.
Hail & Lightning	No unique history noted. Some repetitive lighting strikes at wellfield.	No unique or repetitive concerns noted.
Winter Storm, Ice, & Extreme Cold	• Accidents and power loss have been the primary impacts. • Some water line freeze-ups and breakage during Winter 2014-2015 Polar Vortex. • During 2010 heavy snow, furnace vents on some homes were blocked and some illnesses reported. • City has a sizable homeless population without a sufficient number of beds. • Snow removal in some neighborhoods, such as areas with concentrations of student housing, can be challenging due to vehicles parked on streets; snow emergency ordinance has helped with enforcement.	• Dangerous travel conditions and power loss, especially during extreme cold, are the greatest threats. • City noted the findings of the 2025 Midwest Reliability Organization's *Regional Risk Assessment*, which gave electric generation outages during extreme cold weather a High Priority. The report states that electric producers "have experienced much higher incremental and unexpected outages during extreme cold temperatures due to equipment freezing and inadequate natural gas fuel supply." • Interstate 94 and USH 53, especially at bridge crossings, are the greatest travel concerns due to travel speeds, traffic volumes, and the elevated potential of deadly accidents. • City's aging water infrastructure makes it more susceptible to freeze-ups and breakage. The City has over 300 miles of water pipes with only 10-15 breaks in an average year; breaks are more a function of soil and pipe conditions, rather than freezing. However, the City's infrastructure is aging, which increases the risk of potential water or sewer main/lateral freeze-ups and breakage, like during the 2014-2015 Polar Vortex. No neighborhoods or areas were identified as being particular prone to water main or lateral breakage. • Carbon monoxide illness or death due to blocked vents or improper generator use. Extreme cold vulnerabilities are highest for homeless and those living in poorly insulated homes.
Extreme Heat	A growing concern. The City of Eau Claire experiences a small urban heat island effect compared to more rural areas of the County but, overall, it's event history is not unique.	Homeless population. Mobile home sites can be dangerous if not equipped with air-conditioning. Some buckling of roads due to heat. Vulnerabilities to people and critical facilities would be greater during times of power loss. The City does not have formally designated cooling centers with air conditioning.
Long-Term Power Outage	• No areas of the City of Eau Claire were identified as being uniquely or particularly prone to weather-related power loss. • Extended outages for portions of the City in 1980, 2007, 2010, and 2012 due to high winds, though recent events exceeding 48 hours are very rare and limited to a relatively small number of customers.	• One of the greatest natural hazard threats for the City. See previous winter/extreme cold discussion. • Nearly all of the City of Eau Claire is provided electric service by Xcel Energy. A small portion of the City is served by the Eau Claire Electric Cooperative. Since the mid-1970's, the City of Eau Claire has required electrical lines in new subdivisions to be buried. Xcel also has significant redundancy built into their transmission network, and can many times re-route if needed. This, combined with a strong tree-trimming program by Xcel, has significantly

	• For example, the May 2010 wind storm caused the wastewater plant to lose power for three days; generators are now in place. • The 1980 "Big Wind" was the City's largest power outage event in the past 50 years with some areas without power for 7-9 days.	mitigated the potential for long-term power loss in many areas of the City. • City Hall/Fire Station #2/Data Center, Library, Central Maintenance, wastewater treatment plant & the four City radio towers have generators. Acquisition of a replacement generator at water plant underway. Carson Park has a small generator that could use replacement. Fire Hall #5 has generator and safe room. Most Fire Halls lack fixed generators; some portables available. Hobbs also lacks a generator, which attracts crowds up to 2,000 and could be a recovery site. Most existing generators use natural gas, which mitigates potential fuel concerns. Parking ramps have generators for elevators. Exploring formal agreements for emergency fuel and back-up generators for redundancy. During an extended power outage, the water system could operate at half capacity with the current generator once the reservoir was emptied. The City is also assessing onsite solar power for some critical facilities, which would increase resiliency. Fire Hall #8 has solar and considering adding to all fire halls. • The hospitals and many educational facilities have generators. Back-up generator may be needed for School District's Facility Building that is the back-up school EOC and an important distribution center. • The City is also home to the largest concentration of seniors and special needs populations as well as the majority of nursing homes and other licensed long-term care and assisted living facilities; it is uncertain if all long-term care facilities have sufficient back-up power options. Some critical facilities in the City have generators that are powered by natural gas, which mitigates the potential for a weather-related outages or the need for emergency fuel agreements. Some residents are dependents on electric-powered medical devices. • The 2025 Midwest Reliability Organization's *Regional Risk Assessment* identified the region as having an Extreme risk due to uncertain energy availability. • City staff noted that increasing demands on energy could be exacerbated by climate migration as both residents and industries (e.g., data centers) move north to cities in cooler climates.
Drought	No significant impacts within the City from past droughts.	No unique concerns noted. Adequate public water supply exists, though may need to institute use restrictions (e.g., limits on watering lawns) if periods of hot/dry weather until new PFAS facility improvements are completed.
Wildfire	• No significant events in the community in the past 50+ years. • Historically and more recently, the large fire events within the City of Eau Claire involved the burning of buildings, rather than large areas of vegetation. On May 27, 1869, a disastrous fire destroyed two blocks on	• No unique drought or wildfire issues or concerns requiring action were identified, though residential development in forested areas has a higher wildfire risk. • The following areas in the City of Eau Claire were identified by City officials as having the greatest wildfire risks during dry or droughty periods based largely on proximity to vegetative fuel types:

	the west side of Barstow Street between Main and Gibson, and one block on the east side of Barstow. The largest fire in the City of Eau Claire occurred on April 23, 1882, when three blocks of buildings situated along Water Street between Fourth and Sixth Avenues were completely destroyed; in all, at least sixty-three buildings were burned with losses estimated in excess of $5.5 million in today's dollars. Today, large structural fire events consuming multiple blocks within the City of Eau Claire are difficult to imagine given changes in land use patterns, building codes, construction materials, fire-fighting, and emergency response in the last 150 years.
	• Two wildfire events within the City of Eau Claire in recent years were:
	  • About 2004 A wildfire burned brush and pine plantation near the Chippewa Valley Regional Airport. No buildings were damaged.
	  • April 21, 2010 A large fire near Mt. Simon worried area homeowners and destroyed about two acres of woods and grasslands in 2010. The event took about 45 minutes to get under control and no buildings were damaged.
	• A greater wildfire-related concern in recent years is the increasing frequency of air quality advisories (high air quality index) due to wildfire smoke from Canada and western United States.
		▪ Areas to the north, west, and southwest of the Chippewa Valley Regional Airport, some of which are in pine plantation.
		▪ Southern portions of the City including the Lowes Creek area, the Immanuel Lutheran campus, and areas which abut undeveloped unincorporated towns.
		▪ Grasslands and forested areas north of the North Crossing.
		▪ Sherman Creek area on City's west side.
		• The Putnam Park State Natural Area, which consists of 105 acres along Little Niagara Creek and adjacent to residential homes and the University of Wisconsin-Eau Claire, is dominated by wet-mesic hardwoods that reduce the wildfire risks.
		• Restrictions on burn barrels and debris burning reduce the City's wildfire risks, leaving incendiary and accidental ignition sources as the primary potential wildfire risks. The City's Parks Department maintains the City's parks and urban forests to help reduce the potential for wildfire.
		• Adequate water supply for fire protection during times of drought.
		• While WDNR has rated the City of Eau Claire as a wildfire community-of-concern, no targeted wildfire educational efforts or other mitigation activities have been proposed.
		• As the City grows and new development occurs within the wildland-urban interface, the potential risk of wildfire will increase. Under drought conditions, more public educational and awareness may be needed, especially for those neighborhoods mentioned previously.
		• There is some concern that this risk may increase due to climate change

Hazardous Materials Spills	• The City previously had two locations on the Superfund National Priority List, but have since been removed. • The highest number of reported Haz Mat spills in the County have been reported within the City, which is not surprising given the population and development.	• Compared to the rest of Eau Claire County, the City is only unique in terms of hazmat risks and vulnerabilities due to its many hazard materials fixed sites (e.g., industry and hazmat facilities), its proximity to rail lines and heavy travelled trucking routes, and the concentration of residents, businesses, and critical facilities that could be impacted by a Haz Mat spill. • The majority of the County's EHS Planning facilities and Tier Two reporting facilities are located within the City of Eau Claire. • Given required planning and reporting at fixed sites, the uncertainties of transportation-related spills on the railroad, Interstate 94, US Highway 53, and the North Crossing are the highest Haz Mat spill concern. • The City is well prepared for spill response given that the Eau Claire/Chippewa Falls Fire Departments are home to

		one of only two Type I Regional Haz Mat Response Teams in the State of Wisconsin.
Active Threats	No large-scale active threat events have occurred.	• Overall, no unique targets. As a larger city, there are many workplaces and gathering places. The City is only unique in terms of active threat risks and vulnerabilities due to its large population, many businesses, and concentration of critical facilities. • City hall, public schools, University of Wisconsin-Eau Claire, Chippewa Valley Technical College, and the hospitals were mentioned as being targets of greatest concern. • Due to national trends, there is growing concern with community gatherings (e.g. Phoenix Park), sporting events (e.g., Carson Park), and festivals as potential targets. The number of such events and gatherings within the City has been increasing exponentially.
Cyber-Attack	No significant events impacting municipal facilities or services.	The City recognizes that cyber-attacks can potentially target city departmental data and software, communications systems, 911 Center, utilities (e.g. sewer, water, electric), river level monitoring systems, election systems, etc. Even snowplows use GPS. Growing concern as more mobile and digital; no longer need direct access. The City has strong cyber-security policies, skilled in-house IT staff, and cyber-attack insurance coverage. City and County closely coordinates IT-related planning, including some apps and data back-up off site, which provides continuity while reducing any ransomware threat. Public Wi-Fi is available on a separate network than the network used for governmental functions. Public Wi-Fi also provides redundancy option if cell service not available.
Flooding - The following are summaries of the flood-related events and vulnerabilities for the City of Eau Claire. At the end of this sub-plan is a more detailed City of Eau Claire Flood Assessment, which includes three parts: (1) City of Eau Claire Flood history; (2) 100-year Flood Assessment; and (3) Flood mitigation projects since 2000 & Planned Projects.		
Flooding – Riverine or Overbank	The City has a long history of river flooding as detailed at the end of this sub-plan. A very strong commitment to floodplain acquisition, floodproofing, stormwater system improvements, and floodplain management has combined to significantly reduce flood vulnerabilities within the City. Since the mitigation efforts of the 1990s and 2000s, overbank flooding problems in the City have been mostly limited to trails along the river and the bandshell at Owen Park. 2023 flood levels on the Chippewa River was the 8th highest recorded at the Grand Avenue bridge; flood waters only impacted Owen Park and some area roads.	A 100-year flood event would top the Forest Street Levee, which is an aging structure that does not meet current Army Corps of Engineers design standards and was identified as a concern in the local Neighborhood Plan. The City has pursued grant dollars for levee improvement in the past, but has been unsuccessful to date. The City's flood vulnerability assessment at the end of this sub-plan suggests that <summarize>. Following the assessment is a series of tables documenting the actions taken by the City to mitigate flooding since the City's 2000 flood mitigation plan. Also included is a list of remaining areas of flooding concern, additional stormwater system improvements underway or planned, and additional flood acquisitions being considered.
Flooding – Stormwater or Overland	Overland, stormwater, and flash-flooding damage increasingly represents the most frequent flood hazard within the City of Eau Claire given that many of the most vulnerable structures to riverine flooding	• See flood mitigation activities and the more robust flood assessment later in this sub-plan. • The City is concerned over increasing heavy rain events and climate trends that existing stormwater systems may be

	have been addressed through floodproofing or acquisition. About 2016, a heavy rain did flood the lower level of City Hall; additional sealing has been completed, and runoff is being addressed. Stormwater flooding concerns are increasing due to the increasing frequency of extreme rainfall events.	unable to handle. Current stormwater modeling is based on older design standards (Atlas 14) using data from 1900-2010 that doesn't account for more recent trends and Atlas 15 will not be available before 2027.
Dams & Levees	No history of damages related to dam failure within the City in modern times.	• No dam-related issues posing an immediate threat to safety were identified. Portions of the City, especially downtown, are within the dam shadows for the Lake Wissota and Lake Altoona Dams. The dam break analysis for Wissota Dam shows a sunny-day scenario with flooding similar to a 100-year event, though a rainy-day scenario under flood conditions could be much worse. Given the significant amount of existing development and roadways in dam shadows within the City, it is important that Emergency Action Plans (EAPs) and Inspection, Operation, & Maintenances Plans (IOMs) be maintained for the Wissota and Altoona dams. The City continues to participate in related tabletop and functional exercises. • A 100-year flood event would top the Forest Street Levee, which is an aging structure that does not meet current Army Corps of Engineers design standards and was identified as a concern in the local Neighborhood Plan. The City has pursued grant dollars for levee improvement in the past, but has been unsuccessful to date.

Notable Trends or Changing Priorities

Have any hazard-related priorities changed since the previous mitigation plan?	• Growing safe rooms interest; a mobile home park owner and private educational institution both expressed interest in safe room projects during the plan update.
Are there any other trends influencing these concerns, such as changes in development, demographics, or weather patterns/climate?	• Climate change has been resulting in increasing heavy rain (stormwater flooding) and extreme heat events.

Capabilities Assessment

The following is a general assessment of the community's resiliency and capabilities to mitigate, respond to, and recover from a disaster event. It also notes if mitigation or preparedness has been integrated into planning mechanisms. This assessment was completed by the community through the 2023 web-based survey, with some supplemental information from the community meeting and other sources (e.g., fire department survey, NFIP Community Status Book). The list of potential plans, policies, and other actions is not exhaustive, and it is not expected that the community has undertaken all actions listed or will undertake all actions in the future.

Planning Activities	
Community Emergency Operations or Response Plan (EOP)	Adopted; does incorporate mitigation or preparedness
Community Evacuation Plan and/or Exercises	Outdated plan; will consider mitigation or preparedness when updating

Continuity of Government Plan	Outdated plan; will consider mitigation or preparedness when updating
Comprehensive Plan	Adopted; does incorporate mitigation or preparedness. Includes sustainability and health chapters.
Stormwater Management Plan	Adopted; does incorporate mitigation or preparedness
Historic Preservation Plan or Ordinance	Adopted; does incorporate mitigation or preparedness
Capital Improvements Plan or Similar Budget	Adopted; does incorporate mitigation or preparedness
Involve Fire & Law Enforcement in planning & development plan review	Yes.
Special emergency notification procedures or preparedness plans for vulnerable populations	Not at the City level. The City-County Public Health Department has an at-risk populations plan, which is working to address vulnerable populations.
Policies, Codes, & Ordinances	
Building Codes	Adopted; no unique rules regarding mitigation or preparedness. City has an Inspections Division
Building Code Efficiency Grading Schedule	Outdated; will consider mitigation or preparedness when updating
Zoning Ordinance	Adopted; no mitigation or preparedness
Subdivision Ordinance	Adopted; no mitigation or preparedness
Site Plan Review Requirements	Adopted; no mitigation or preparedness
Floodplain Management	
Initial Flood Hazard Boundary Map:	09/20/74
Initial FIRM Identified:	06/01/77
Current Effective FIRM Date:	04/16/14
Date Community First Joined NFIP (Reg-Emer)	06/01/77
NFIP Participation Status (and reason if not participating):	Participant
Floodplain Regulations w/ NFIP standards:	Adopted; does incorporates mitigation or preparedness
Designated position or committee for floodplain management, floodplain zoning, & NFIP compliance:	City Engineering. Floodplain manager has ASFPM Certified Floodplain Manager (CFM) certification.
Community Rating System (CRS) participation:	Participating since 10/01/91 with current effective date 05/01/20. Current Class 9 w/ 5.0% discount. Previous score of 7 and City was hoping to improve.
Other floodplain management activities	The City enforces floodplain zoning and stormwater regulations. Site-specific surveys with elevations are reviewed as part of site plan review. Like most of west-central Wisconsin, the City has serious concerns over the accuracy of NFIP 100-year floodplain boundaries in certain areas. Elevations and/or floodproofing are required if any new development/redevelopment must occur within the floodplain. Additional plans and policies important to floodplain management and mitigation include: • City of Eau Claire Comprehensive Plan • City of Eau Claire Storm Water Comprehensive Plan • City of Eau Claire Waterways Plan • various City neighborhood plans • Chippewa Falls-Eau Claire Urban Sewer Service Area Plan The City is commencing with an update to its Stormwater Management Study/Model in 2025.
Stormwater Management Ordinance	Adopted; does incorporates mitigation or preparedness.

Stormwater Utility	Adopted; no unique mitigation or preparedness activities.
Winter Emergency Policies	The City has identified ice control routes, which receive priority attention to prevent ice and snow accumulations if possible. A lesson learned from the December 2010 event was to pair a plow with emergency vehicles (e.g., police, fire, ambulance) as needed. Law enforcement has since purchased some four-wheel drive vehicles. Snow removal in older neighborhoods and areas with concentrations of rental properties with on-street parking can be problematic. A Snow Emergency Ordinance has been adopted, and modifications have been made to alternate side parking to better accommodate snow removal. City staff noted that the effectiveness of declaring a snow emergency may be limited since a portion of the public will often not heed such warnings and will still attempt to travel.
Mitigation & Preparedness Actions for Facilities	
Debris Site identified for storm debris disposal (not just woody debris)	No, but are considering this.
Emergency Operations Center designated with generator/back-up power	Yes
Public Storm Shelter/Community Safe Room designated	No public community safe rooms exist within the City. All City municipal buildings have designated shelter areas and procedures for severe weather as well as NOAA All Hazards Radios. Likewise, most critical facilities have shelter areas and severe weather procedures, including the hospitals, school district, CVTC, and UW-Eau Claire. Public safe room needs most acute at Phoenix Park, soccer fields, and other such gathering places. Emergency action plans with severe weather procedures and sheltering are required for public events in the City, such as activities at Phoenix Park, though a safe room/shelter is not always available.
Public Heating/Cooling Centers/Shelters designated with generator/back-up power	No. Red Cross shelters and possible heating/cooling centers have been identified but a full inventory of capabilities, back-up power, etc. not completed.
Storm/warning siren on back-up power	Yes
Storm/warning siren that can be activated remotely	Yes.
Active shooter/threat plans and/or security hardening for municipal buildings	No, but are considering this.
Other Mitigation & Preparedness Actions	
Review EOP at least annually	Yes
Individuals in EOP have ICS/NIMS training	Yes
Public Information Officer designated & trained	Yes
Municipal officials and staff participate in regular disaster or emergency response exercises	Yes
Community-level efforts to improve hazard preparedness among residents	Yes
Adopted billing rates for public works labor & equipment use during emergencies	No, but are considering this.
Adopted mutual aid agreements for public works equipment/personnel support	No, but are considering this.
Adopted emergency contracting and purchasing policies	No, but are considering this.
Cyber-security systems, off-site/cloud back-up, and recovery policies or plans for municipal records	Yes

Cyber-security systems and policies for municipal utilities	Yes
Municipal buildings/staff have NOAA All Hazards Radios or signed-up for Code Red	No, but are considering radios. City has the Alert Eau Claire system.
Other Flood Mitigation projects or activities	• The City's most pressing overbank/riverine and overland/stormwater flooding problems have also been addressed over the past 10-20 years. In the 1990s and 2000s, the City used mitigation grant funding for flood acquisition and floodproofing projects, most typically with floodprone land preserved as park or public open space. In some cases, deed restrictions have been used to limit floodplain development on non-public land. This City is continuing to explore flood acquisition and removal as an alternative to engineered solutions during benefit-cost analysis of flooding concerns. Flooding of property in the Riverview Drive area may be one such future acquisition opportunity. • See planned flood mitigation and stormwater management projects at the end of this sub-plan. • The City is considering the replacement of pneumatic plugs with backflow prevention for those storm sewer outlets that lie below the regional flood elevation. • The City periodically updates its Flood Emergency Response Plan and has significant water level monitoring infrastructure. The gauge at the Grant Street Bridge is now linked to NWS for automated monitoring and cameras have been added at some bridges in the City to allow remote viewing. • The City is working to improve its NFIP Community Rating System (CRS) score; rating. Additional public education is planned (e.g., flyers, website, mailings to realtors & bankers). Improved site plan review data and floodplain mapping are being explored. • The City continues to be an active member of Rain to Rivers of Western Wisconsin as part of required MS4 stormwater management educational outreach. • A tabletop exercise was conducted in June 2015 with Xcel Energy to test the emergency plan for the unlikely failure at Wissota Dam. • Stormwater flooding challenges exist for which additional hydraulic analysis could inform the stormwater management plan update and City's capital improvements plan.
Municipal Dam-related planning or actions	No municipal dam.
Barriers to mitigation or preparedness actions	Communication with all population groups.
Other Emergency Communications:	• The Eau Claire Emergency Communications (9-1-1) Center was established as a joint venture between the city and the county in 1970. The Eau Claire Emergency Center handles dispatching duties for the entire population of Eau Claire County, which includes the City of Eau Claire. • City is continuing to partner with Eau Claire County on the update (and exercise) of the City-County Risk Communications Plan. PIO templates have been developed and are available. • Social media is used to encourage family emergency preparedness and inform the public. A designated City-level social media group has received ICS training. • The City has an employee reference guide of Emergency Action Procedures, including topics such as severe weather, active threats, fire, chemical spills, medical emergencies, and evacuations.

	• The City has been encouraging employees and residents to sign-up for the City's mass notification system. • The City has 20 warning sires. Most sirens are aging (20+ years) and do not have voice capability. Xcel Energy has installed 9 sirens with voice capability along the Chippewa River in Chippewa and Eau Claire counties, including one in the City of Eau Claire at the water plant. Additional siren coverage desired near airport. Phoenix Park may benefit from the installation of a P.A. system for use during emergencies.
Other HazMat:	• The City participates on the County's Local Emergency Planning Committee (LEPC). • The Eau Claire and Chippewa Falls Fire Departments provide Type I Haz Mat response service for the region. • The City has dedicated significant funding for the remediation of contaminated brownfield sites.
Other:	• The City has strong coordination with Eau Claire County Emergency Management and City-County Health Department with participation on various emergency planning committees and groups. • The City has made an ongoing commitment to collaboration and planning to support people experiencing homelessness including participation on the Eau Claire Area Homeless Task Force. • Excellent coordination also exists among area law enforcement and emergency responders. Past response concerns for USH 53 bypass (transects multiple communities) were addressed in early 2018. • The City has a "special events team" that provides boots-on-the-ground support for special events security. • The City was a key partner in the formation of Disaster Ready Chippewa Valley and continues to be an active member in this private-public partnership. • City IT staff participate on the Regional Cyber Response Team and the Government Information Processing Association of Wisconsin (GIPAW).

Mitigation Strategy Recommendations

The overall mitigation goal statements in Section VI.A. of the Eau Claire County mitigation plan are shared by all participating communities.

The City will strive to implement the following mitigation actions/projects as resources and funding allows, though priorities could change due to a variety of fiscal, technical, or other factors, including changes in hazard risks. Sections VI.C. and D. of the Eau Claire County mitigation plan include additional mitigation and preparedness actions that are intergovernmental in nature and not specific to the community but may suggest coordination and funding opportunities.

The following recommended actions/projects are specific to the City of Eau Claire:

Action/Project	Priority & Timeline	Primary Responsible Party	Potential Resources
1. Adopt billing rates for public works equipment use during emergencies. Evaluate the benefits of executing more formal mutual aid agreements for the sharing of public works equipment and personnel with area communities following a disaster event.	High; 1-2 years	City Manager & Community Services Dept; City Council	WCWRPC and WEM may have model agreements. County Emergency Management may also be able to obtain examples.
2. Collaborate with City-County Public Health, Red Cross, and facility owners to inventory and update agreements for heating/cooling centers and Red Cross emergency shelters within the City. Evaluate and work to enhance capacities to: offer centers during extended hours if needed, provide centers/shelters with emergency power, address sheltering for pets, and increasing public awareness of sheltering opportunities.	High; 1-3 years	City-County Public Health working with Red Cross See related County-level mitigation and preparedness strategies, which are ranked as a HIGH priority.	
3. Continue to maintain and exercise the City's Flood Emergency Action Plan. Protect the function of and restore sensitive natural resources such as streams floodplains, wetlands, shorelines, and riverbanks through regulation, plan review, and/or City investment. Work with Wisconsin DNR to protect the banks and floodplain of the Chippewa and Eau Claire Rivers, as well as Sherman, Lowes, and Otter Creeks by enforcing its current floodplain regulations, using natural stream edge protection techniques, and by acquiring additional land for public open space.	High; ongoing	City Community Development Department & Engineering; City Plan Commission and/or City Waterways & Parks Committee	FEMA Flood Mitigation Assistance and WEM Pre-Disaster Flood Resilience grant programs may be available to assist with project funding.
4. Continue to monitor, plan for, and address critical overland (stormwater) and overbank (riverine/lake) flooding issues as identified in the flood assessment. Explore flood acquisition, floodproofing, flood/stormwater storage, and other such mitigation efforts when needed and feasible. Assess the impacts of future land use changes and new development on stormwater runoff, drainage systems, and flood storage, including upstream outside the community; then plan accordingly. Consider the increasing frequency of heavy rain events as part of stormwater modeling; if the	High; ongoing	City Community Development Department & Engineering; City Plan Commission and/or City Waterways & Parks Committee	WEM, WCWRPC, and County Emergency Management are resources if mitigation grant funding is being considered. FEMA Flood Mitigation Assistance and WEM Pre-Disaster Flood Resilience grant programs may be available to assist with project funding.

updated NOAA Atlas 15 precipitation data is not available by 2028, consider modifying the City's erosion control and stormwater management ordinance to require peak rate control based on more than the 100-year storms used in the current Atlas 14 data.			Wisconsin Rainfall Project, WDNR and NOAA for stormwater modeling guidance.
5. Continue to enhance the City's flood management programming, including additional public outreach to improve the Community Rating System score so that discounts on flood insurance are available to landowners.	High; ongoing	City Community Development Department & Engineering; City Plan Commission and/or City Waterways & Parks Committee	FEMA Flood Mitigation Assistance and WEM Pre-Disaster Flood Resilience grant program.
6. Complete an engineering study and improvements for the Forest Street Levee. Explore replacement of pneumatic plugs for storm sewers below the 100-year floodplain elevation with backflow prevention.	High; 2-5 years	City Engineering & Community Services	Include in City's Capital Improvements Plan.
7. Support the efforts of the Eau Claire Area Homeless Task Force. Encourage the Task Force to address the need for additional shelter capacity during winter storms and extreme temperature events and to strengthen shelter resiliency through emergency power generators, emergency/active threats planning, and staff/volunteer training.	Medium-to-High; ongoing	Eau Claire Area Homeless Task Force City-County Public Health Dept Shelter providers	FEMA Hazard Mitigation Grant Programs may be available to assist in some mitigation efforts. County Emergency Management may be able to provide related training support.
8. Continue efforts to enhance the energy resilience of City buildings by exploring micro-grids and/or installing emergency power generators or solar systems.	Medium-to-High; ongoing	City Community Development, Services, Planning, Engineering, and Fire Department	Continue to explore grant funding opportunities; will vary based on building purpose.
9. Partner with the Health Department, Emergency Management, ADRC, area electric providers, and others to plan for and support populations who are dependent on electronic devices and oxygen during power outages.	Medium-to-High; ongoing	City-County Health Department	HHS emPOWER data can be requested during an emergency if needed. See related County strategy and discussion in the long-term power outage element.
10. As the renovation, expansion, or renovation of public buildings are planned, evaluate potential storm hardening or development of one or more community safe rooms (storm shelters). These could be multi-functional safe rooms that support additional community or recreational uses. For public gathering places without protection from wind (e.g., parks), explore MOUs with nearby structures for use as a storm shelter or	Medium-to-Low 3-5 years	City Council	FEMA Hazard Mitigation Grant Programs WCWRPC and Wisconsin Emergency Management can provide grant-related guidance The City may partner with other entities to explore grant opportunities on non-

grant funding for construction of a community safe room. Continue to require Special Events Park users to submit an emergency plan. The City supports the construction of safe rooms and storm hardening for educational facilities and privately owned properties such as mobile home parks and assisted living facilities. If a generator and HVAC system are provided, consider using the safe room space as a heating/cooling shelter and emergency assembly location. For new safe room construction, consider the incorporation of nature-based stormwater management systems (e.g., rain barrels, rain garden) to mitigate site runoff.			City property if deemed in the best interest of the community as a whole.
11. Continue to monitor emergency siren coverage within the community with the goal of maintaining adequate coverage to notify residents who are outdoors that severe weather is approaching. As an alternative to a siren, certain community gathering places (e.g., Phoenix Park), may benefit from installation of a P.A./voice system. If needed, exploring funding options to install battery back-up for existing sirens. Explore funding options for installation of additional cameras on bridges over the Chippewa and Eau Claire Rivers.	Medium; ongoing	Fire Department, Engineering, & Community Services Department	Unless part of a larger mitigation project (e.g., safe room), securing grant dollars for a siren is unlikely. Can integrate into City capital improvements plan and explore private foundation or fundraising options if needed. Potentially, Chippewa Valley Regional Airport.
12. Explore potential changes to City ordinances to require preparedness planning and identification of safe places/shelter strategies for new or expanding mobile home parks and slab-on-grade multi-family residential developments.	Medium-to-Low; 3-5 years	Community Development Dept, Engineering, Plan Commission, and City Council	Check with WCWRPC, League of Wisconsin Municipalities, etc., for model language.
13. As opportunities allow, collaborate with County Emergency Management and other partners (e.g., Public Health, Red Cross, Electric Providers, Hmong Mutual Assistance Association) to increase public awareness of emergency siren use and warning systems, the City's emergency mass notification system (e.g., Alert Eau Claire), and public preparedness in general. Incorporate messaging for ESL households.	High; ongoing	City Manager and Council; Fire Department	County Emergency Management & partners have educational materials Could implement annually during Severe Weather Awareness Week and/or Preparedness Month using social media, posters, utility bill inserts, etc. Outreach could also be combined

Collaborate with Public Health to increase public awareness of health risks associated with extreme heat and wildfire smoke.			with a NOAA radio distribution project and/or flood-related public outreach, and eligible for FEMA Mitigation Grant funds.

Sub-Plan Coordination and Integration

The previous Capacity Assessment section identifies how this Mitigation Sub-plan has been integrated into or coordinated with other municipal plans or planning mechanisms. During the planning process, the following opportunities were identified to integrate the mitigation strategies into other community planning mechanisms:

- The City intends to incorporate the information within this Mitigation Sub-plan into the next comprehensive plan update.
- The City will continue to participate on the Eau Claire City-County Public Health Emergency Preparedness Committee and will continue to collaborate with the Eau Claire County Medical Reserve Corps.
- Municipal mitigation projects, such as the contemplated stormwater management improvements, will also be integrated into the City's Capital Improvements Plan (CIP) and Stormwater Management Plan, including the identification of anticipated funding sources.
- Mitigation Plan findings can be used to help guide strategies as part of the City's Emergency Operations Plan (EOP) and Continuity of Government Plan. For example, a more robust debris management strategy for non-woody debris might be considered as part of the EOP. The preparedness strategies in the County-level plan may be of value when considering training and outreach strategies.
- The next section describes how this Sub-Plan will be maintained, including a periodic review of opportunities to strengthen the coordination and integration with other planning mechanisms.

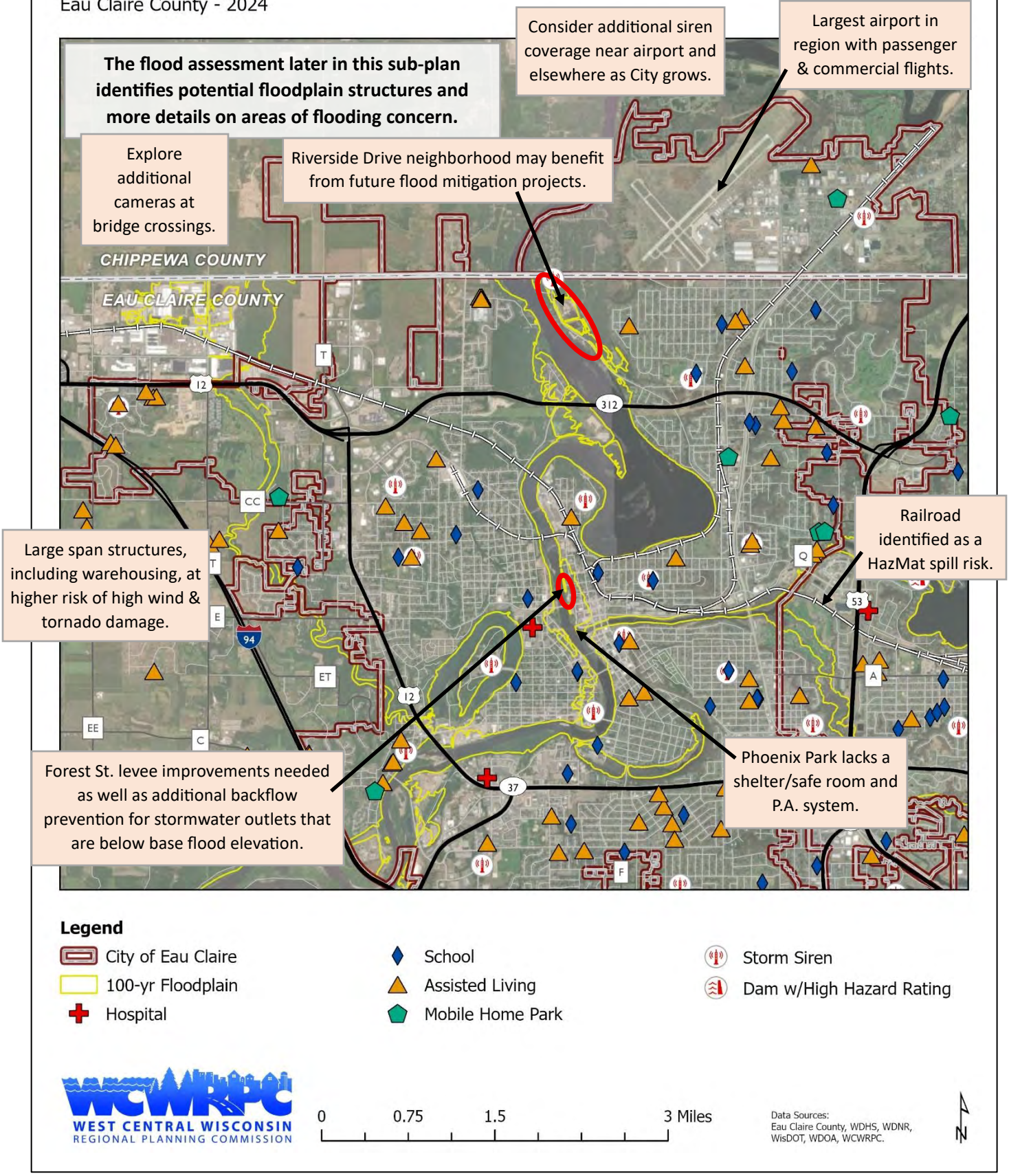
Sub-Plan Adoption and Maintenance

Plan Adoption	Once updated, the community's governing body will adopt the County's overall hazard mitigation plan (and any future revisions/amendments) by resolution during a noticed public meeting in adherence with Wisconsin Open Meetings laws. This community-specific Hazard Mitigation Sub-Plan is an appendix of the County's overall plan. The community may modify and re-adopt its Sub-Plan by resolution during a noticed public meeting at any time at their discretion.
Plan Maintenance	During the second quarter of each year or following a declared disaster event, the primary mitigation plan contact will review this Mitigation Sub-Plan concurrently with (at the same time as) the annual review of the municipal Emergency Operations Plan. Other municipal and agency officials (e.g., Community Services Department, fire department, law enforcement) may be involved in this review or consulted as needed. The Mitigation Sub-Plan will be reviewed for: • Any significant changes in vulnerabilities, priorities, or trends, including to populations, structures, community lifelines, and weather/event patterns. • Any significant changes in capabilities or barriers to plan implementation.

	• Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms). • Potential new mitigation and preparedness strategies, projects, or grant opportunities. • Any comments or discussion with the public, partners, or other stakeholders. If potential changes to the Sub-Plan are being considered, the planning contact will: 1. The community's planning contact will contact County Emergency Management and West Central Wisconsin Regional Planning Commission (WCWRPC) to discuss the proposed changes and any guidance regarding potential resources and next steps. The community may also request that the County consider changes to the County's overall mitigation plan. 2. Provide the suggested changes to the community's emergency planning committee, plan commission, or governing body for consideration. Should it be determined that a Mitigation Sub-Plan change is needed, the governing body will adopt the Sub-Plan as noted previously. Such changes will be limited to this community-specific Mitigation Sub-Plan. Changes to this Sub-Plan may be made in the future without County Board or other participant re-adoption of the County's overall mitigation plan.
Plan Updates	The community intends to be a full participant in five-year updates of the County's overall hazard mitigation plan, which will include reviewing and updating the information provided in this Mitigation Sub-Plan. Changes to Sub-Plan content may be necessitated by applicable mitigation rules and planning guidance in effect at that time.
Continued Public Participation	The community will provide opportunities for public participation throughout its mitigation planning processes, including: (1) all governing body or committee actions regarding the Sub-Plan shall be conducted in adherence with the Wisconsin Open Meetings rules; (2) public comments will be accepted on draft Sub-Plans and Sub-Plan changes prior to adoption; and (3) public input and ideas on potential risks, vulnerabilities, capabilities, or mitigation projects are welcomed and will be considered.

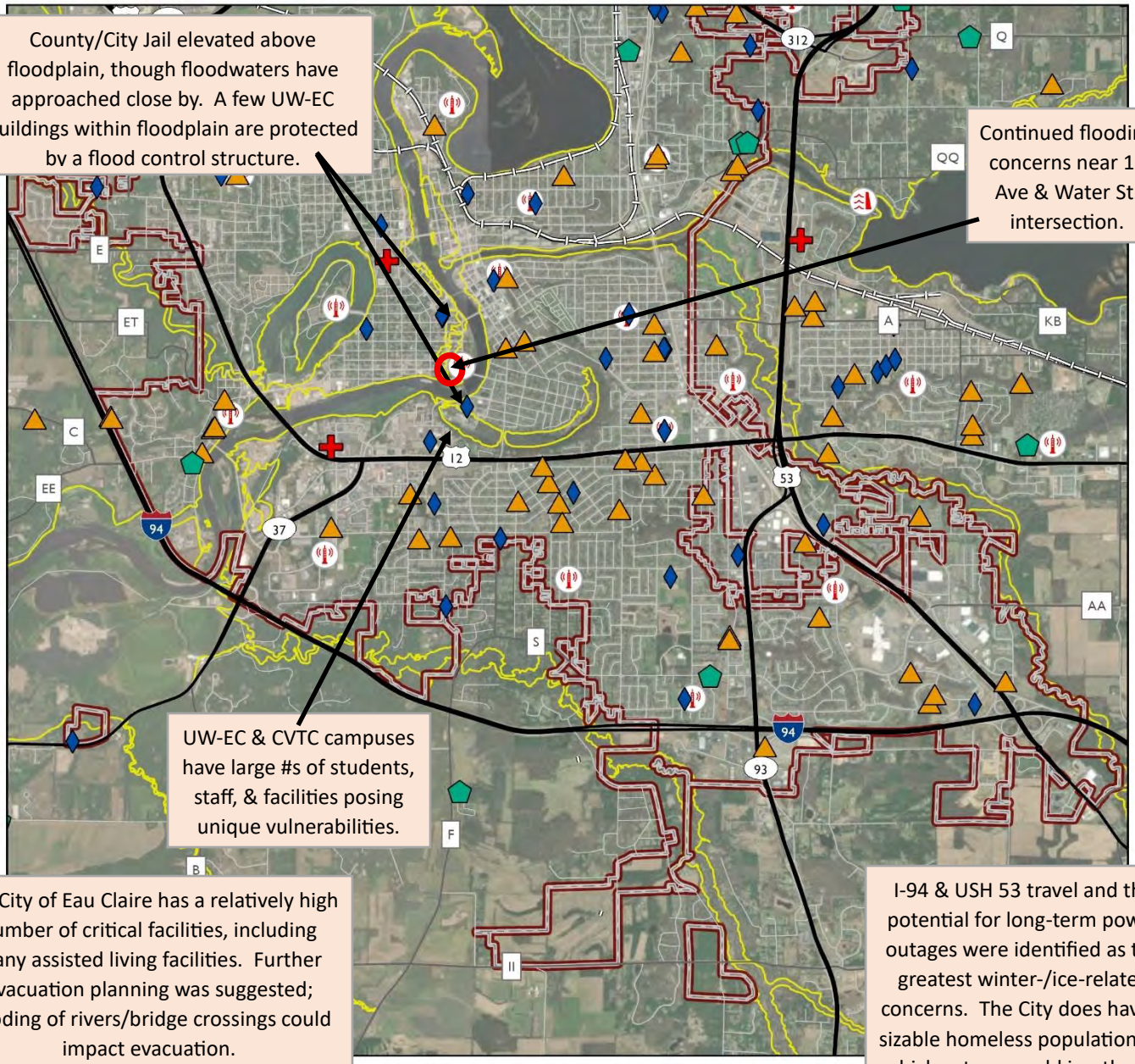
CITY OF EAU CLAIRE (NORTH) - HAZARD ASSESSMENT

Eau Claire County - 2024



CITY OF EAU CLAIRE (SOUTH)- HAZARD ASSESSMENT

Eau Claire County - 2024



County/City Jail elevated above floodplain, though floodwaters have approached close by. A few UW-EC buildings within floodplain are protected by a flood control structure.

Continued flooding concerns near 1st Ave & Water St. intersection.

UW-EC & CVTC campuses have large #s of students, staff, & facilities posing unique vulnerabilities.

The City of Eau Claire has a relatively high number of critical facilities, including many assisted living facilities. Further evacuation planning was suggested; flooding of rivers/bridge crossings could impact evacuation.

I-94 & USH 53 travel and the potential for long-term power outages were identified as the greatest winter-/ice-related concerns. The City does have a sizable homeless population for which extreme cold is a threat.

Legend

- City of Eau Claire
- 100-yr Floodplain
- Hospital
- School
- Assisted Living
- Mobile Home Park
- Storm Siren
- Dam w/High Hazard Rating

WCWRPC WEST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

0 0.75 1.5 3 Miles

Data Sources:
Eau Claire County, WDHS, WDNR, WisDOT, WDOA, WCWRPC.

N

City of Eau Claire Flood Assessment

Part 1: City of Eau Claire Flood History

Part 2: 100-Year Flood Assessment

Part 3: Flood Mitigation Projects Since 2000 and Planned Projects

This sub-section being updated

PART 1: CITY OF EAU CLAIRE FLOOD HISTORY

The City of Eau Claire has a long history of flooding. Based on historical records from the mid-1800s, Eau Claire experienced serious floods in 1838, 1847, 1855, and 1870 on the Chippewa River. As the community began to develop further, more consistent records of flooding were kept based on measurements taken from the Grand Avenue river gauge. Although the method of recording the level of the Chippewa River has changed several times, and official records were not kept before the 1938 flood, the list of flood crest heights since 1880 are shown in **Table 1** and **Figure 1**.

Table 1. Recorded Flood Levels at Grand Ave Gauge City of Eau Claire

Date		Crest Height	Year Flood
June	1880	782.0 (est.)	100 year
September	1884	785.9 (est.)	100+ year
June	1905	781.0 (est.)	50 year
September	1938	777.0	10 year
September	1941	781.6	50-100 year
September	1942	776.1	10 year
June	1943	778.7	10-50 year
April	1951	775.0	5-10 year
May	1954	778.5	10-50 year
April	1967	779.6	10-50 year
April	1971	773.1	0-10 year
March	1973	775.4	0-10 year
April	1976	773.8	0-10 year
April	1986	774.9	0-10 year
June	1993	778.9	10-50 year
April	1996	774.9	0-10 year
April	2001	774.5	0-10 year
April	2002	776.2	10 year
May	2003	773.8	0-10 year
September	2010	777.8	10-50 year
April	2011	771.1	None

Source: National Weather Service flood levels taken at the Grand Avenue river gauge. Flood stage is 773 feet mean sea level (MSL). Year flood levels from FEMA Flood Insurance Study for Eau Claire, 2/18/2009.

NOTE ON FLOOD LEVELS:

Approximate FEMA Year Flood Levels at the Grand Avenue gauge:

10 year = 776 feet

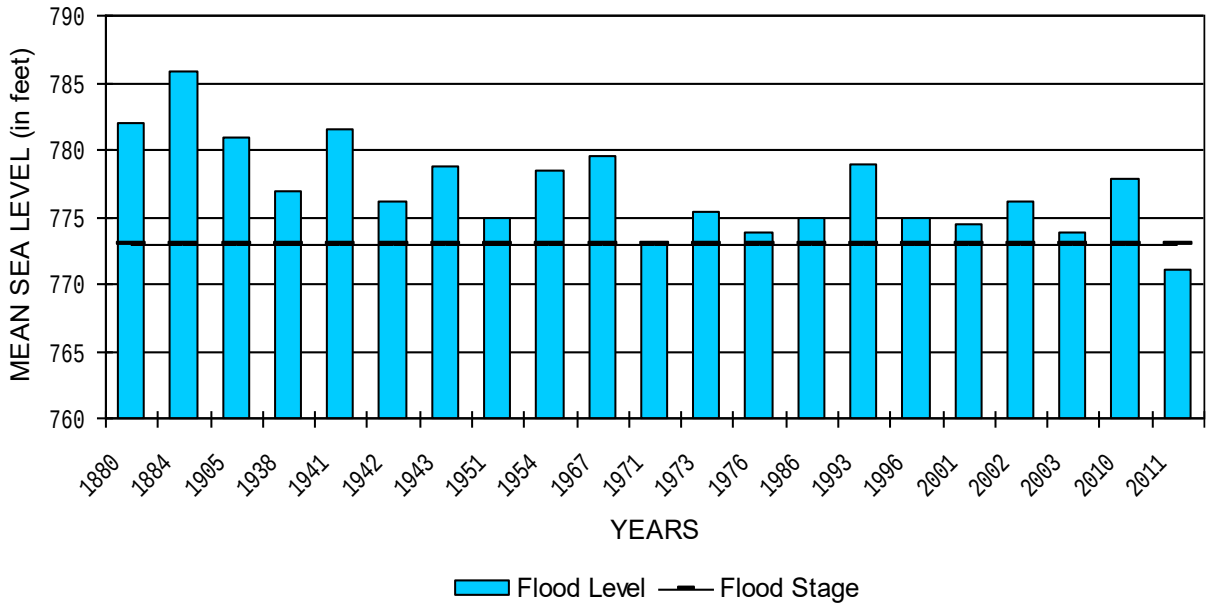
50 year = 780 feet

100 year = 781.7 feet

500 year = 787+ feet

The floods of 1880, 1884, and 1905 were made more severe due to the logging industry's use of the rivers in the region to carry logs to sawmills on the rivers. Logs along with other debris destroyed bridges and often formed jams that raised the level of the river behind them.

Figure 1. Recorded Flood Levels at Grand Ave Gauge



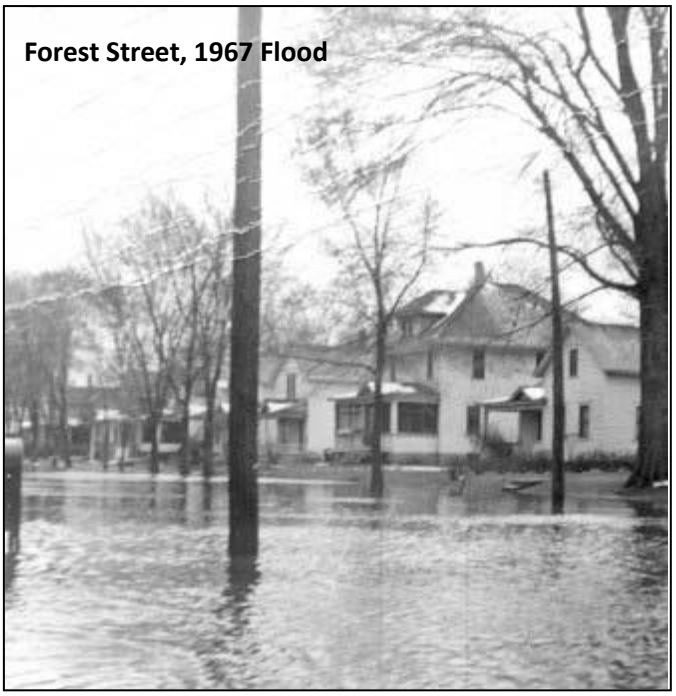
1880 Flood—A 1929 Eau Claire Telegram article described the 1880 flood as the most destructive in the City's history. "Bridges and dams on the Chippewa River, which went on a sudden rampage after a long period of rain, were carried away, and a large section of the city, including many industrial plants [and] scores of houses were inundated by the flood waters, great damages resulting". The article states that a fifth of the City was flooded. Even back then some residents were reluctant to leave their homes as the article describes an "an old Irish woman…refused to leave the shanty, which was flooded, and threatened the policeman who came to remove her with an axe."

1884 Flood—The 1884 flood was likely the largest in the City's history if unofficial records are included. It is uncertain if it was a devastating within the City of Eau Claire as the 1880 flood four-years earlier, but it did cause tremendous destruction throughout the region. Heavy rains in September 1884 resulted in the destruction of all but one bridge within the City, washed out three miles of rail lines, ruined crops, and resulted in some loss of life. Log booms broke at numerous mills releasing an estimated forty million feet of logs down the river which swept everything in their path. Homes, tenement houses, mills, businesses blocks, and landmarks were flooded, floated away, or were destroyed. The east side of the City was described as "one immense lake" and one report states that 150 homes in the City were destroyed. In today's dollars, the estimated damages in the Chippewa Valley were as high as $96 million based on an 1884 New York Times article. A 1914 history of Eau Claire County estimated damages within the City of Eau Claire at $12 million in today's dollars.

1941 Flood—The highest flood of official record occurred on September 1, 1941. The flood was caused by extremely heavy rains that fell over the region. In Hayward, fourteen inches of rainfall was recorded over 36 hours. Approximately 30 homes in the City of Eau Claire were flooded, and heavy damages occurred to businesses downtown. Industrial properties, the University, and the old wastewater treatment plant also flooded. The approaches to the Water Street and Madison Street bridges were flooded and the bridges closed. State Highway 85 was also closed.

1954 Flood—Heavy spring rains in the Chippewa and Eau Claire watersheds between April 24, and May 1, 1954 resulted in the flooding of hundreds of homes in the City of Eau Claire and flooded basements downtown. The Wisconsin State College (University of Wisconsin – Eau Claire) grounds were also flooded and Highway 85 was closed south of the city from Highway 37 to Rock Falls.

1967 Flood—The "Big Flood of 1967" was caused by unseasonably warm weather in April that resulted in extremely fast snow melting. The second highest flood recorded in the City's history, it damaged 367 homes and caused $1.5 million in damages. Flood waters covered First Avenue and flooded basements on Second Avenue; Forest and East Madison Streets were flooded; and basements were flooded in downtown businesses and on the university campus. Forty-six families were evacuated from the Forest Street area. In 1968, the Forest Street levee was constructed in an attempt to reduce future flooding in that neighborhood.



Forest Street, 1967 Flood

The Big Flood of 1967 was the last significant flood event to back-up Little Niagara Creek resulting in flooding of the University of Wisconsin-Eau Claire campus and southern parts of the Third Ward neighborhood east of the Chippewa River. Since that time, UW-EC has installed a pump and a levee/bulkhead at Little Niagara followed by a more recent bank stabilization about 2003. These efforts resulted in a great reduction in the flood risks for the area.

1980 Flood—This flood was notable due to the runoff impacts to residents along Sherman Creek, rather than along the Chippewa or Eau Claire rivers. Heavy rainfalls on June 5 and 7 produced an estimated 71-year flood on Sherman Creek. It is reported that debris build-up at bridges may have been the cause of flooding on Clairemont Avenue.

1993 Flood—The conditions for the flooding which occurred on June 20-21, 1993 were initially set by precipitation that fell over the western Wisconsin during the two weeks prior to the 21st of June. On the evening of Saturday, June 19th, extremely heavy rains of more than six inches occurred in eastern Eau Claire and western Clark Counties. This event caused the Eau Claire River to rise to record levels, with a record crest of 19.38 feet recorded at the Highway K bridge near Fall Creek on June 20th, which was the 100-year flood event. The water level at the Lake Eau Claire dam rose to its regional flood level on June 20th, 10.1 feet over its normal level. Lake Altoona also rose to the regional flood level.

The flooding in June 1993 brought a new realization that the Eau Claire River could also cause significant flooding problems in Eau Claire. Previously it was generally believed that the Chippewa River was the primary river of concern. The event is estimated to have been a 100-year flood on the Eau Claire River, but only a 40-year flood on the Chippewa River.

In addition, the Chippewa River also began to rise to flood levels. On June 18th the level of the river was at 764.95 feet MSL, as measured at the Grand Avenue Bridge located near the confluence of the Chippewa and Eau Claire Rivers. By 4:00 p.m., June 20th, the river had risen above flood stage and continued rising throughout the next day to crest at 778.9 feet at 10:50 p.m. on Monday, June 21st.

The 1993 flood would be third highest official flood on record. Residents nicknamed it the "Great Flood". The total flood damage suffered in Eau Claire County was estimated at over $10 million, with $3.1 million in damage to private property, including over 250 homes and over 50 businesses, $1.75 million in damages to public facilities, and $5.3 million in agricultural losses. The County was declared a Federal disaster areas. Flooding in the city affected nearly 200 residential and commercial properties with basement flooding in 75 structures. In addition, the city experienced damage to various public properties including local streets, bike trails, park facilities, and water and sewer facilities. Estimated damages and flood fighting costs within the City was estimated at about $1.2 million in today's dollars.

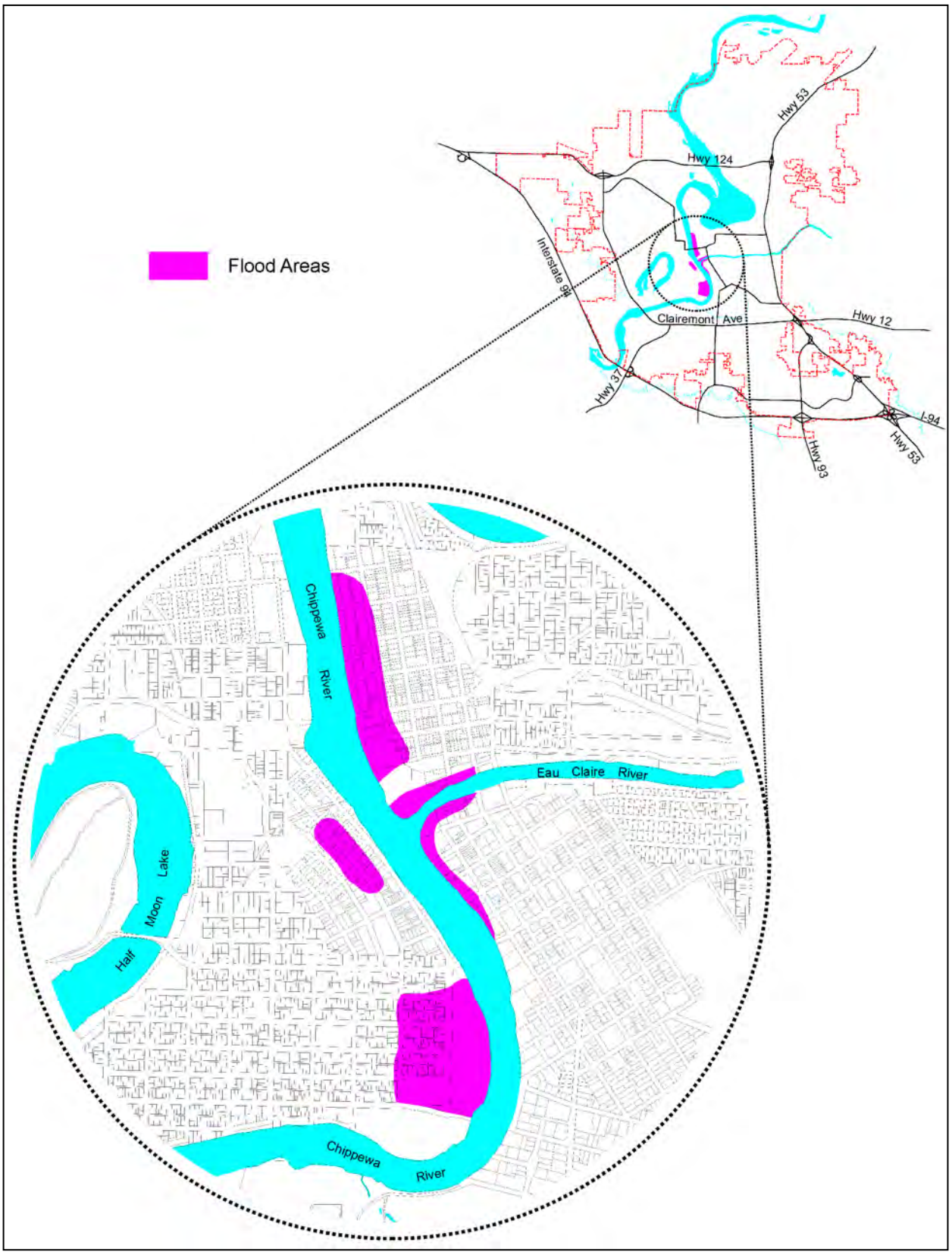
Much of the 1993 flood damage in the City occurred along First Avenue next to Owen Park and along Forest Street, shown in **Figure 26**. Several businesses suffered flooding along Graham Avenue downtown, in the East Madison Street area, and along the north bank of the Eau Claire River where it enters the Chippewa River.

The City began concerted flood mitigation efforts following the 1993 flood when it acquired 50 properties in the five-block Forest Street neighborhood with FEMA mitigation grant financial support and in the context of a downtown revitalization strategy. The Forest Street neighborhood had been flooded on a near annual basis and many of the homes were deteriorating from successive flooding and age. The City also chose to focus on this area due to the 100-percent participation of the property owners.

Madison Street looking east from bridge, 1905 Flood



Figure 26. June 1993 Flood Damaged Areas



2000 Flood—The September 10-11, 2000 flood event was somewhat unique in that it was not riverine flooding, but was overland flooding due to heavy rains that were unable to drain properly due to a lack of natural drainage and/or adequate public facilities. The flooding resulted in damage to more than 50 locations throughout the City, shown in **Figure 27**. Three homes were destroyed, nineteen received major damage, and 351 received minor damage. There was one motorist fatality and about $5 million in personal property damage. Weather data from the Chippewa Valley Regional Airport show that this storm event resulted in nearly eight inches of total rainfall in a 24-hour period, of which approximately six inches fell in a four-hour period before midnight, shown in **Table 17**. Because the City received at least six inches of rain within a 24-hour period, this storm is considered a 100-year rainstorm. September 10th is the City's single calendar-day rainfall record with 5.98 inches.

Figure 27. September 2000 Flood Damaged Areas (shown in purple)

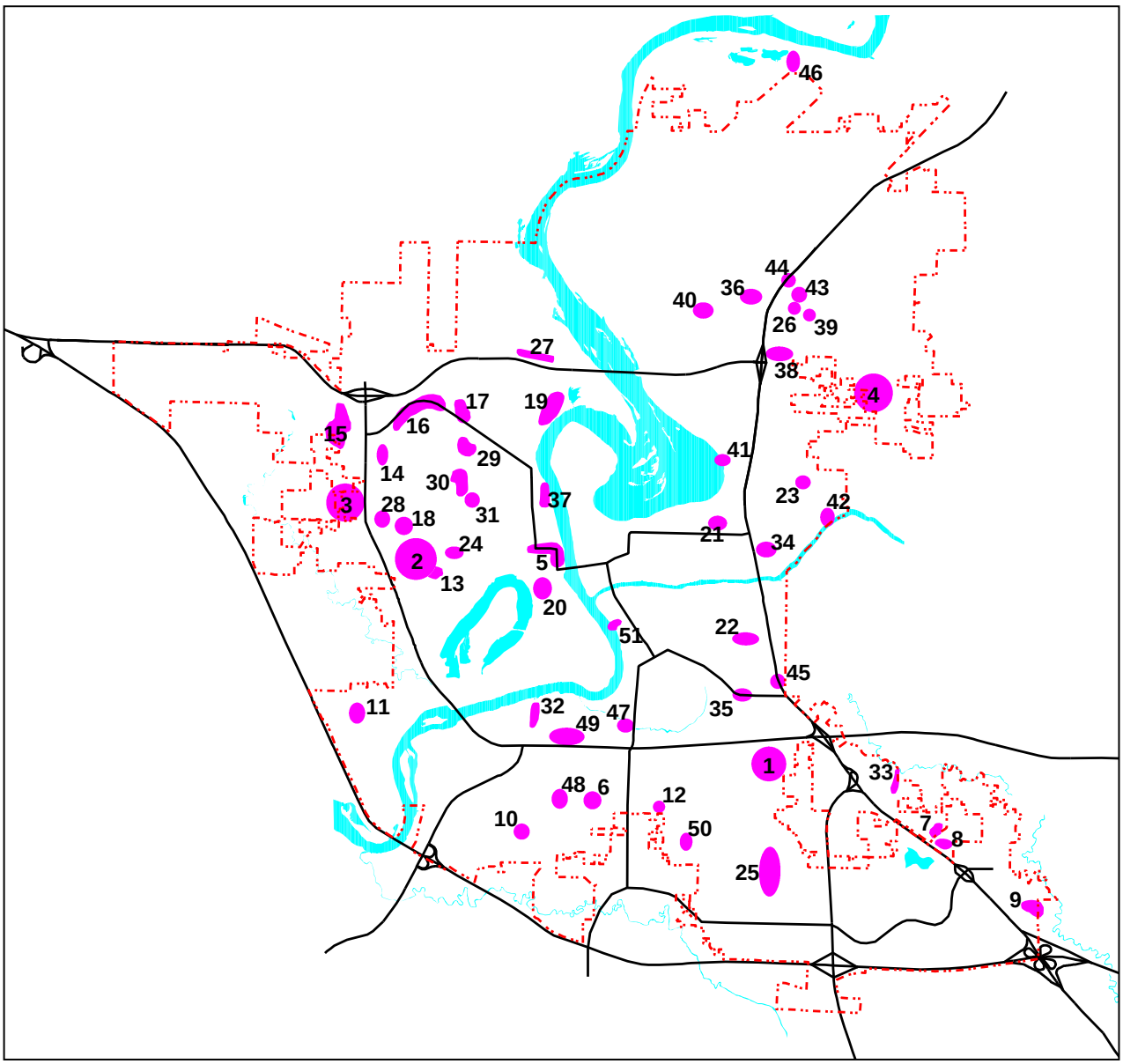


Table 17. Recorded Precipitation • September 10-11, 2000 Chippewa Valley Regional Airport

Date	Time	Rainfall (inches)	Cumulative Rainfall
September 10, 2000	7:00 – 8:00 p.m.	0.01	0.01
	8:00 – 9:00 p.m.	1.65	1.66
	9:00 – 10:00 p.m.	1.04	2.70
	10:00 – 11:00 p.m.	2.08	4.78
	11:00 – 12:00 a.m.	1.20	5.98
September 11, 2000	12:00 – 1:00 a.m.	0.03	6.01
	1:00 – 2:00 a.m.	0.93	6.94
	2:00 – 3:00 a.m.	0.65	7.59
	3:00 – 4:00 a.m.	0.01	7.60
	3:00 – 4:00 p.m.	0.30	7.90
Total Rainfall (24-hour period)		7.90	

Source: Chippewa Valley Regional Airport, September 10-11, 2000

Although this storm affected property throughout Eau Claire, there were four main areas that were identified as having significant amounts of damage and the highest priority for making improvements. Two of these areas were located on the west side of Eau Claire near the intersections of Kohlhepp/Dorret (#3) and Florence/Necessity/Bell (#2), another in the southeast around the intersection of Taft/Kay streets (#1), and the fourth around the intersection of LaSalle/Gooder (#4) in northeast Eau Claire. To address the drainage issues in these areas, the City hired a consulting firm to analyze the problems and recommend solutions for each of the areas which produced the Barr engineering report. In addition, the City reviewed each of the remaining areas.

Based on this analysis and review the City prepared a report of proposed mitigation projects for each of the areas which was incorporated into the City's 2002 flood mitigation plan. Recommended mitigation projects included floodplain acquisition, floodproofing, and stormwater system improvements. These projects are discussed a little later in this section.

2010 Floods—The City of Eau Claire experienced both overland and riverine flooding events in 2010. In June, heavy rains in northern Wisconsin caused the Chippewa River to swell, though flooding within the City of Eau Claire was minimal. Heavy rains on July 14 dislodged manhole covers and flooded streets in low lying areas. Flash flooding due to heavy rains struck the region on August 11th. Nearly ten inches of water on Hastings Way was reported. The most significant flooding of the year occurred on September 26th when a swollen Chippewa River crested at 777.5 feet making it the sixth highest of record. Rising water and backed-up storm sewers led to street



Riverside Park, September 2010

closures and flooding in a number of areas, such as along First Avenue and Chippewa Street, Bowles an 11th Street, and Brackett Avenue and Hastings Way.

The 2010 flooding event would prove the effectiveness of the City's past mitigation efforts. Though the flood was the sixth highest on record, there were no widespread damage and no buildings were underwater. After assessing the flood, the National Weather Service raised the major flood stage at the Grand Avenue gauge from 777 to 778. A true mitigation success story!

2011 Flood—Four inches of rain in two hours drenched the City on June 18th resulting in widespread overland flooding. As the rain continued and a flash flood warning issued, several streets were flooded leaving some drivers stranded. A mudslide on Interstate 94 in the Town of Union caused three accidents, though no injuries were reported. The roof of a commercial strip mall collapsed under the sudden weight of the water. Manhole covers were blown off by the rushing water in several areas, including the 200 block of North Clairemont Avenue, South Farwell and Main streets, and Omaha and Churchill streets. The flooding on Clairemont backed up into the basement of Chippewa Valley Technical College's administrative/business building. Though floodwaters did not exceed 6 inches, significant damage occurred to office contents, walls, carpets, and the bookstore.

September 2016—Thunderstorms produced very heavy rainfall (5" to 8" in areas) resulting in flash flooding across the region. A mudslide also occurred near Highway 53 on the north side of Eau Claire. Within the City of Eau Claire, 45 homes and businesses sustained minor damage and 5 major damage due to flood waters. The Red Cross assisted those displaced in the City of Eau Claire and surrounding communities.

PART 2: 100-YEAR FLOOD ASSESSMENT

The City of Eau Claire flood assessment was performed by the City of Eau Claire GIS Administrator in close consultation with WCWRPC staff. The City of Eau Claire flood assessment methodology was similar to the county-level assessment explained in Appendix B, with the following notes or differences:

- The City of Eau Claire now has more accurate topographical data available based on a 2013 flight and has produced a flood inundation analysis based on these contours. The City considers the City's digital terrain model (DTM) to be more accurate than the elevation data used for the D-FIRMs and has relied on its own flood analysis using the FIRM flood elevations and the City's DTM to provide a more accurate representation of flood vulnerabilities.
- The City of Eau Claire has more detailed GIS data for buildings, including building footprints and structure characteristics (e.g., basement, # of stories). The City also benefits from engineered floodplain boundaries (Zone AE) for most of the community.
- For improved parcels intersecting the 100-year floodplain, principal structures intersecting the floodplain were identified, excluding 27 parcels/structures for which LOMRs have been approved. Due to flood control measures, LOMRs, and more accurate data, the 100-year floodplain effectively has "pockets in the polygon" compared to past flood assessments for the City.
- For potential floodplain structures, a one-foot buffer was created around all principal structures then using LIDAR-based contour intervals, an average elevation of the structure was determined. This ground floor elevation was then compared to the base flood elevation to determine flood depth.
- Flood depths, building characteristics (e.g., with/without basement, # of stories), and assessed improvement values were then used to estimate % structure damage using the general depth-damage tables within the October 10, 2003, Army Corps of Engineers Economic Guidance Memorandum. When using the tables, depths were rounded to the nearest foot. These tables were used regardless of building type (e.g., residential, commercial, manufacturing). Consistent with FEMA's HAZUS approach, content damage was estimated at 50% of the structure damage/replacement value.
- For the City of Eau Claire, WCWRPC provided damage estimates in the following table for the exempt properties based on the specific type of exempt structure (e.g., office, school, health care), the square footage of the structure, and 2006 R.S. Mean cost per square foot adjusted for inflation.

A total of 302 structures potentially located within the 100-year floodplain were identified using the above approach and are reflected in the following table. The summary results of this table, including a map showing the locations of these structures, are included in Section III.B.i. of the main report. This excludes structures, such as the concentration in the Third Ward, that are protected from flooding by stormwater system management, such as the University of Wisconsin – Eau Claire Flood Gate on Little Niagra Creek and using hydraulic plugs to prevent the backflow of floodwaters through the storm water conveyance system. If these preventative measures are taken, many of these structures would not experience flooding during a typical 100-year riverine flood event.

INDEX NO.	GENERAL LAND USE	NO. OF STORIES	BASEMENT?	BASE FLOOD ELEVATION	GROUND FLOOR ELEVATION	FLOOD DEPTH (IN FT)	ASSESSED IMPROVEMENTS	% STRUCTURE DAMAGE	% CONTENT DAMAGE	STRUCTURE DAMAGES	CONTENT DAMAGES	TOTAL DAMAGES
1	COMMERCIAL		No	773.8	781.35	-7.55	$1,230,000	0	50	$0	$0	$0.00
2	COMMERCIAL		No	774.5	778.69	-4.19	$1,750,000	0	50	$0	$0	$0.00
3	COMMERCIAL		No	774.5	778.58	-4.08	$1,750,000	0	50	$0	$0	$0.00
4	COMMERCIAL		No	774.5	777.8	-3.3	$1,750,000	0	50	$0	$0	$0.00
5	COMMERCIAL		No	775	776.53	-1.53	$470,000	0	50	$0	$0	$0.00
6	COMMERCIAL		No	774.5	779.25	-4.75	$1,750,000	0	50	$0	$0	$0.00
7	COMMERCIAL		No	774.5	778.93	-4.43	$1,750,000	0	50	$0	$0	$0.00
8	MANUFACTURING		No	775	780	-5	$856,200	0	50	$0	$0	$0.00
9	EXEMPT	2	No	778	780.78	-2.78	$7,607,789	0	50	$0	$0	$0.00
10	EXEMPT	4	No	778	779.87	-1.87	$5,905,183	0	50	$0	$0	$0.00
11	COMMERCIAL		No	781	780.55	0.45	$145,000	13.4	50	$19,430	$9,715	$29,145.00
12	COMMERCIAL		No	781	777.69	3.31	$625,000	40.1	50	$250,625	$125,313	$375,937.50
13	COMMERCIAL		No	781	779.87	1.13	$314,000	23.3	50	$73,162	$36,581	$109,743.00
14	COMMERCIAL		No	781	779.3	1.7	$760,000	32.1	50	$243,960	$121,980	$365,940.00
15	COMMERCIAL		No	781	781.14	-0.14	$315,000	13.4	50	$42,210	$21,105	$63,315.00
16	RESIDENTIAL	2	Yes	782.3	780.64	1.66	$67,400	27	50	$18,198	$9,099	$27,297.00
17	COMMERCIAL		No	781	778.12	2.88	$328,000	40.1	50	$131,528	$65,764	$197,292.00
18	COMMERCIAL		No	781	781.93	-0.93	$495,000	2.5	50	$12,375	$6,188	$18,562.50
19	RESIDENTIAL	2	Yes	778	778.71	-0.71	$97,200	13.9	50	$13,511	$6,755	$20,266.20
20	COMMERCIAL		No	778	777.93	0.07	$310,000	13.4	50	$41,540	$20,770	$62,310.00
21	COMMERCIAL		No	780.4	779.3	1.1	$68,000	23.3	50	$15,844	$7,922	$23,766.00
22	COMMERCIAL		No	780.4	779.04	1.36	$68,000	23.3	50	$15,844	$7,922	$23,766.00
23	COMMERCIAL		No	780.4	779.14	1.26	$68,000	23.3	50	$15,844	$7,922	$23,766.00
24	COMMERCIAL		No	780.4	779.38	1.02	$68,000	23.3	50	$15,844	$7,922	$23,766.00
25	RESIDENTIAL	1	Yes	780.4	779.41	0.99	$73,100	32	50	$23,392	$11,696	$35,088.00
26	RESIDENTIAL	2	Yes	780.5	779.46	1.04	$310,100	22.3	50	$69,152	$34,576	$103,728.45
27	COMMERCIAL		No	780.5	779.35	1.15	$68,000	23.3	50	$15,844	$7,922	$23,766.00
28	RESIDENTIAL	2	Yes	780.5	779.64	0.86	$310,100	22.3	50	$69,152	$34,576	$103,728.45
29	RESIDENTIAL	2	Yes	780.5	776.64	3.86	$190,000	36.9	50	$70,110	$35,055	$105,165.00
30	RESIDENTIAL	1H	Yes	780.5	777.12	3.38	$123,000	45.5	50	$55,965	$27,983	$83,947.50
31	RESIDENTIAL	1H	Yes	780.5	777.48	3.02	$98,000	45.5	50	$44,590	$22,295	$66,885.00
32	RESIDENTIAL	1	Yes	780.5	779.94	0.56	$167,000	32	50	$53,440	$26,720	$80,160.00
33	RESIDENTIAL	2	Yes	780.5	779.05	1.45	$123,000	22.3	50	$27,429	$13,715	$41,143.50
34	RESIDENTIAL	2	Yes	780.5	778.92	1.58	$139,000	27	50	$37,530	$18,765	$56,295.00
35	RESIDENTIAL	2	Yes	780.5	779.08	1.42	$139,000	22.3	50	$30,997	$15,499	$46,495.50
36	RESIDENTIAL	1H	Yes	780.5	778.91	1.59	$105,000	38.7	50	$40,635	$20,318	$60,952.50
37	RESIDENTIAL	2	Yes	780.5	781.2	-0.7	$169,000	13.9	50	$23,491	$11,746	$35,236.50
38	RESIDENTIAL	2	Yes	780.5	782.22	-1.72	$105,000	10.2	50	$10,710	$5,355	$16,065.00
39	RESIDENTIAL	2	Yes	780.5	779.62	0.88	$160,000	22.3	50	$35,680	$17,840	$53,520.00
40	COMMERCIAL		No	780.5	778.23	2.27	$302,000	32.1	50	$96,942	$48,471	$145,413.00
41	RESIDENTIAL	2	Yes	780.5	780.17	0.33	$104,000	17.9	50	$18,616	$9,308	$27,924.00
42	RESIDENTIAL	2	Yes	780.5	779.79	0.71	$175,000	22.3	50	$39,025	$19,513	$58,537.50
43	RESIDENTIAL	1	Yes	780.5	779.92	0.58	$73,700	32	50	$23,584	$11,792	$35,376.00
44	RESIDENTIAL	2	Yes	780.5	779.82	0.68	$120,000	22.3	50	$26,760	$13,380	$40,140.00
45	RESIDENTIAL		No	780.5	780	0.5	$180,000	23.3	50	$41,940	$20,970	$62,910.00
46	RESIDENTIAL	1H	Yes	780.5	777.41	3.09	$110,000	45.5	50	$50,050	$25,025	$75,075.00
47	RESIDENTIAL	1	Yes	780.5	776.63	3.87	$120,000	52.2	50	$62,640	$31,320	$93,960.00
48	RESIDENTIAL	1	Yes	780.5	777.51	2.99	$72,700	45.5	50	$33,079	$16,539	$49,617.75
49	COMMERCIAL		No	780.5	781.9	-1.4	$308,000	2.5	50	$7,700	$3,850	$11,550.00
50	RESIDENTIAL	1	Yes	780.5	778.49	2.01	$70,000	38.7	50	$27,090	$13,545	$40,635.00
51	RESIDENTIAL	1	Yes	780.5	778.95	1.55	$70,000	38.7	50	$27,090	$13,545	$40,635.00
52	RESIDENTIAL	2	Yes	780.6	778.6	2	$120,000	27	50	$32,400	$16,200	$48,600.00
53	RESIDENTIAL	2	No	780.6	779.84	0.76	$159,000	15.2	50	$24,168	$12,084	$36,252.00
54	RESIDENTIAL	2	Yes	780.6	779.76	0.84	$117,000	22.3	50	$26,091	$13,046	$39,136.50
55	RESIDENTIAL	2	Yes	780.6	779.3	1.3	$117,000	22.3	50	$26,091	$13,046	$39,136.50
56	RESIDENTIAL	1	Yes	780.8	780.14	0.66	$86,600	32	50	$27,712	$13,856	$41,568.00
57	RESIDENTIAL	1A	Yes	780.8	779.9	0.9	$113,000	32	50	$36,160	$18,080	$54,240.00
58	RESIDENTIAL	1H	Yes	780.8	779.9	0.9	$107,000	32	50	$34,240	$17,120	$51,360.00
59	RESIDENTIAL	2	Yes	780.8	781.17	-0.37	$100,400	17.9	50	$17,972	$8,986	$26,957.40
60	RESIDENTIAL	2	Yes	780.8	780.65	0.15	$179,000	17.9	50	$32,041	$16,021	$48,061.50
61	RESIDENTIAL	1H	Yes	780.8	778.62	2.18	$125,000	38.7	50	$48,375	$24,188	$72,562.50
62	RESIDENTIAL	2	Yes	780.8	779.14	1.66	$157,000	27	50	$42,390	$21,195	$63,585.00
63	RESIDENTIAL	2	Yes	780.8	779.34	1.46	$230,800	22.3	50	$51,468	$25,734	$77,202.60
64	RESIDENTIAL	1	Yes	781	778.85	2.15	$35,000	38.7	50	$13,545	$6,773	$20,317.50
65	RESIDENTIAL	2	Yes	781.5	779.53	1.97	$155,000	27	50	$41,850	$20,925	$62,775.00
66	RESIDENTIAL	1	Yes	781	779.28	1.72	$150,000	38.7	50	$58,050	$29,025	$87,075.00
67	RESIDENTIAL	1A	Yes	780.8	778.57	2.23	$94,000	38.7	50	$36,378	$18,189	$54,567.00
68	RESIDENTIAL	2	Yes	780.8	779.2	1.6	$150,000	27	50	$40,500	$20,250	$60,750.00
70	RESIDENTIAL	2	Yes	781.5	779.85	1.65	$119,900	27	50	$32,373	$16,187	$48,559.50
71	RESIDENTIAL	2	Yes	781.5	779.35	2.15	$116,100	27	50	$31,347	$15,674	$47,020.50
72	RESIDENTIAL	1H	Yes	781.5	779.11	2.39	$116,100	38.7	50	$44,931	$22,465	$67,396.05
73	RESIDENTIAL	1H	Yes	781.5	779.53	1.97	$125,000	38.7	50	$48,375	$24,188	$72,562.50
74	RESIDENTIAL	2	Yes	781.5	780.02	1.48	$125,000	22.3	50	$27,875	$13,938	$41,812.50
75	RESIDENTIAL	2	Yes	781.5	780.85	0.65	$108,000	22.3	50	$24,084	$12,042	$36,126.00

INDEX NO.	GENERAL LAND USE	NO. OF STORIES	BASEMENT?	BASE FLOOD ELEVATION	GROUND FLOOR ELEVATION	FLOOD DEPTH (IN FT)	ASSESSED IMPROVEMENTS	% STRUCTURE DAMAGE	% CONTENT DAMAGE	STRUCTURE DAMAGES	CONTENT DAMAGES	TOTAL DAMAGES
76	RESIDENTIAL	2	No	781.4	782.47	-1.07	$185,000	3	50	$5,550	$2,775	$8,325.00
77	RESIDENTIAL	2	Yes	781.4	780.53	0.87	$130,000	22.3	50	$28,990	$14,495	$43,485.00
78	RESIDENTIAL	1A	Yes	781.4	780.86	0.54	$163,000	32	50	$52,160	$26,080	$78,240.00
79	RESIDENTIAL	1A	Yes	781.5	780.15	1.35	$145,000	32	50	$46,400	$23,200	$69,600.00
80	RESIDENTIAL	1	Yes	781.5	779.78	1.72	$120,000	38.7	50	$46,440	$23,220	$69,660.00
81	RESIDENTIAL	1H	Yes	781.5	780.18	1.32	$128,500	32	50	$41,120	$20,560	$61,680.00
82	RESIDENTIAL	2	Yes	781.5	780.46	1.04	$142,500	22.3	50	$31,778	$15,889	$47,666.25
83	RESIDENTIAL	2	Yes	781.5	780.46	1.04	$117,700	22.3	50	$26,247	$13,124	$39,370.65
84	COMMERCIAL		No	781	776.56	4.44	$1,490,000	47.1	50	$701,790	$350,895	$1,052,685.00
85	RESIDENTIAL	2	Yes	781.8	782.13	-0.33	$72,000	17.9	50	$12,888	$6,444	$19,332.00
86	COMMERCIAL		No	781.5	783.99	-2.49	$385,000	0	50	$0	$0	$0.00
87	EXEMPT	2	No	781	782.16	-1.16	$137,000	2.5	50	$3,425	$1,713	$5,137.50
88	RESIDENTIAL	2A	Yes	782	784.24	-2.24	$194,300	13.8	50	$26,813	$13,407	$40,220.10
89	RESIDENTIAL	2	Yes	782	780.27	1.73	$142,300	27	50	$38,421	$19,211	$57,631.50
90	RESIDENTIAL	2	Yes	782	779.98	2.02	$191,300	27	50	$51,651	$25,826	$77,476.50
91	RESIDENTIAL	1H	No	782	779.25	2.75	$81,600	17.4	50	$14,198	$7,099	$21,297.60
92	RESIDENTIAL	1H	Yes	782	780.33	1.67	$63,900	38.7	50	$24,729	$12,365	$37,093.95
93	RESIDENTIAL	2	Yes	782	779.29	2.71	$135,200	31.9	50	$43,129	$21,564	$64,693.20
94	COMMERCIAL		No	781.6	780.81	0.79	$1,015,000	23.3	50	$236,495	$118,248	$354,742.50
95	RESIDENTIAL	1	Yes	782	780.04	1.96	$76,800	38.7	50	$29,722	$14,861	$44,582.40
96	RESIDENTIAL	1H	Yes	782	780.08	1.92	$118,000	38.7	50	$45,666	$22,833	$68,499.00
97	RESIDENTIAL	1H	Yes	782	780.38	1.62	$90,000	38.7	50	$34,830	$17,415	$52,245.00
98	RESIDENTIAL	2	Yes	782	780.54	1.46	$171,800	22.3	50	$38,311	$19,156	$57,467.10
99	RESIDENTIAL	1A	Yes	782	780.42	1.58	$85,800	38.7	50	$33,205	$16,602	$49,806.90
100	RESIDENTIAL	1A	Yes	782	781.21	0.79	$93,300	32	50	$29,856	$14,928	$44,784.00
101	RESIDENTIAL	2	Yes	782	780.33	1.67	$82,500	27	50	$22,275	$11,138	$33,412.50
102	RESIDENTIAL	2	Yes	782	783.32	-1.32	$148,000	13.9	50	$20,572	$10,286	$30,858.00
103	RESIDENTIAL	2	Yes	782	783.18	-1.18	$68,800	13.9	50	$9,563	$4,782	$14,344.80
104	COMMERCIAL		No	781.8	779.34	2.46	$830,000	32.1	50	$266,430	$133,215	$399,645.00
105	COMMERCIAL		No	781.7	784.51	-2.81	$10,300	0	50	$0	$0	$0.00
106	RESIDENTIAL	2	Yes	782	780.86	1.14	$96,200	22.3	50	$21,453	$10,726	$32,178.90
107	RESIDENTIAL	2	Yes	782	780.4	1.6	$136,000	27	50	$36,720	$18,360	$55,080.00
108	RESIDENTIAL	2	Yes	782	780.65	1.35	$160,000	22.3	50	$35,680	$17,840	$53,520.00
109	RESIDENTIAL	1H	Yes	782	782.1	-0.1	$125,000	25.5	50	$31,875	$15,938	$47,812.50
110	RESIDENTIAL	2	Yes	782	781.01	0.99	$120,900	22.3	50	$26,961	$13,480	$40,441.05
111	RESIDENTIAL	2	Yes	782	781.53	0.47	$91,600	17.9	50	$16,396	$8,198	$24,594.60
112	RESIDENTIAL	1H	Yes	782	781.69	0.31	$68,800	25.5	50	$17,544	$8,772	$26,316.00
113	RESIDENTIAL	2	Yes	782	782.32	-0.32	$75,500	17.9	50	$13,515	$6,757	$20,271.75
114	RESIDENTIAL	2	Yes	782	781.8	0.2	$59,000	17.9	50	$10,561	$5,281	$15,841.50
115	RESIDENTIAL	2	Yes	782	783.1	-1.1	$121,300	13.9	50	$16,861	$8,430	$25,291.05
116	COMMERCIAL		No	782	781.46	0.54	$0	23.3	50	$0	$0	$0.00
117	COMMERCIAL		No	782	783.62	-1.62	$330,000	0	50	$0	$0	$0.00
118	RESIDENTIAL	2	Yes	782	784.62	-2.62	$98,200	7.2	50	$7,070	$3,535	$10,605.60
119	RESIDENTIAL	2	Yes	782	784.39	-2.39	$145,300	10.2	50	$14,821	$7,410	$22,230.90
120	RESIDENTIAL	2	Yes	782	782.99	-0.99	$137,500	13.9	50	$19,113	$9,556	$28,668.75
121	RESIDENTIAL	2	Yes	782	783.75	-1.75	$79,700	10.2	50	$8,129	$4,065	$12,194.10
122	RESIDENTIAL	2	Yes	782	781.64	0.36	$98,300	17.9	50	$17,596	$8,798	$26,393.55
123	RESIDENTIAL	2	Yes	782	781.79	0.21	$78,700	17.9	50	$14,087	$7,044	$21,130.95
124	RESIDENTIAL	2	Yes	782	782.17	-0.17	$78,700	17.9	50	$14,087	$7,044	$21,130.95
125	COMMERCIAL		No	782.6	785.36	-2.76	$218,000	0	50	$0	$0	$0.00
126	EXEMPT	1	No	782.6	786.11	-3.51	$280,279	0	50	$0	$0	$0.00
127	COMMERCIAL		No	782.1	785.07	-2.97	$60,000	0	50	$0	$0	$0.00
128	EXEMPT	1	No	781	787.95	-6.95	$114,260	0	50	$0	$0	$0.00
129	COMMERCIAL		No	783.2	782.13	1.07	$614,000	23.3	50	$143,062	$71,531	$214,593.00
130	RESIDENTIAL	2	Yes	783.2	781.77	1.43	$78,600	22.3	50	$17,528	$8,764	$26,291.70
131	COMMERCIAL		No	783.3	790.71	-7.41	$614,000	0	50	$0	$0	$0.00
132	RESIDENTIAL	1A	Yes	783.3	782.22	1.08	$52,800	32	50	$16,896	$8,448	$25,344.00
133	RESIDENTIAL	1H	Yes	783.3	783.41	-0.11	$89,000	25.5	50	$22,695	$11,348	$34,042.50
134	RESIDENTIAL	1A	Yes	783.1	784.61	-1.51	$130,200	13.8	50	$17,968	$8,984	$26,951.40
135	RESIDENTIAL	1A	Yes	783	786.4	-3.4	$71,700	9	50	$6,453	$3,227	$9,679.50
136	RESIDENTIAL	1A	Yes	782.9	785.79	-2.89	$71,700	9	50	$6,453	$3,227	$9,679.50
137	RESIDENTIAL	1A	Yes	782.9	785.28	-2.38	$68,700	13.8	50	$9,481	$4,740	$14,220.90
138	RESIDENTIAL	1A	Yes	782.8	784.74	-1.94	$85,600	13.8	50	$11,813	$5,906	$17,719.20
139	RESIDENTIAL	1A	Yes	782.8	783.78	-0.98	$82,100	19.4	50	$15,927	$7,964	$23,891.10
140	RESIDENTIAL	1A	Yes	782.8	783.85	-1.05	$82,000	19.4	50	$15,908	$7,954	$23,862.00
141	RESIDENTIAL	1	Yes	782.6	784.38	-1.78	$54,800	13.8	50	$7,562	$3,781	$11,343.60
142	RESIDENTIAL	2	Yes	783	782.38	0.62	$68,900	22.3	50	$15,365	$7,682	$23,047.05
143	RESIDENTIAL	1	Yes	782.9	781.9	1	$59,200	32	50	$18,944	$9,472	$28,416.00
144	COMMERCIAL		No	782.8	782.6	0.2	$218,000	13.4	50	$29,212	$14,606	$43,818.00
145	RESIDENTIAL	1	No	782.8	782.84	-0.04	$58,600	13.4	50	$7,852	$3,926	$11,778.60
146	RESIDENTIAL	1H	Yes	782.9	782.45	0.45	$68,900	25.5	50	$17,570	$8,785	$26,354.25
147	RESIDENTIAL		No	782.9	782.37	0.53	$4,200	23.3	50	$979	$489	$1,467.90
148	RESIDENTIAL	2	Yes	783.1	783.53	-0.43	$73,800	17.9	50	$13,210	$6,605	$19,815.30
149	RESIDENTIAL	2	Yes	783	783.03	-0.03	$73,800	17.9	50	$13,210	$6,605	$19,815.30

INDEX NO.	GENERAL LAND USE	NO. OF STORIES	BASEMENT?	BASE FLOOD ELEVATION	GROUND FLOOR ELEVATION	FLOOD DEPTH (IN FT)	ASSESSED IMPROVEMENTS	% STRUCTURE DAMAGE	% CONTENT DAMAGE	STRUCTURE DAMAGES	CONTENT DAMAGES	TOTAL DAMAGES
225	MANUFACTURING		No	891.5	895.42	-3.92	$2,975,000	0	50	$0	$0	$0.00
226	RESIDENTIAL	2	Yes	801.9	809.65	-7.75	$278,300	0	50	$0	$0	$0.00
227	RESIDENTIAL	BL	No	801.9	812.86	-10.96	$357,700	0	50	$0	$0	$0.00
228	RESIDENTIAL	1	Yes	802	803.03	-1.03	$301,800	19.4	50	$58,549	$29,275	$87,823.80
229	RESIDENTIAL	1	Yes	802	801.14	0.86	$259,100	32	50	$82,912	$41,456	$124,368.00
230	RESIDENTIAL	1	Yes	802	813.67	-11.67	$448,200	0	50	$0	$0	$0.00
231	RESIDENTIAL	2	Yes	802	799.77	2.23	$519,700	27	50	$140,319	$70,160	$210,478.50
232	RESIDENTIAL	BL	No	802.1	802.51	-0.41	$235,600	7.2	50	$16,963	$8,482	$25,444.80
233	RESIDENTIAL	1	No	802.2	799.78	2.42	$272,600	32.1	50	$87,505	$43,752	$131,256.90
234	RESIDENTIAL	SL	Yes	802.2	801.67	0.53	$203,200	23.2	50	$47,142	$23,571	$70,713.60
235	RESIDENTIAL	1	Yes	802.3	800.41	1.89	$247,100	38.7	50	$95,628	$47,814	$143,441.55
236	RESIDENTIAL	1	No	802.3	802.93	-0.63	$274,000	2.5	50	$6,850	$3,425	$10,275.00
237	RESIDENTIAL	1	Yes	802.3	800.3	2	$111,700	38.7	50	$43,228	$21,614	$64,841.85
238	RESIDENTIAL	1	No	802.3	801.85	0.45	$219,300	13.4	50	$29,386	$14,693	$44,079.30
239	RESIDENTIAL	1A	Yes	802.3	801.9	0.4	$86,100	25.5	50	$21,956	$10,978	$32,933.25
240	RESIDENTIAL	1	Yes	802.3	800.84	1.46	$116,900	32	50	$37,408	$18,704	$56,112.00
241	RESIDENTIAL	1	No	802.4	799.39	3.01	$145,700	40.1	50	$58,426	$29,213	$87,638.55
242	RESIDENTIAL	1	Yes	802.5	803.41	-0.91	$202,500	19.4	50	$39,285	$19,643	$58,927.50
243	RESIDENTIAL	1	Yes	802.6	803.13	-0.53	$182,300	19.4	50	$35,366	$17,683	$53,049.30
244	RESIDENTIAL	1	Yes	802.8	806.18	-3.38	$182,300	5.2	50	$9,480	$4,740	$14,219.40
245	RESIDENTIAL	1	Yes	802.4	803.85	-1.45	$129,500	19.4	50	$25,123	$12,562	$37,684.50
246	RESIDENTIAL	BL	No	803.8	805.32	-1.52	$145,400	0	50	$0	$0	$0.00
247	RESIDENTIAL	1	Yes	803	803.65	-0.65	$96,700	19.4	50	$18,760	$9,380	$28,139.70
248	RESIDENTIAL	1	Yes	803.7	803.49	0.21	$171,700	25.5	50	$43,784	$21,892	$65,675.25
249	RESIDENTIAL	1	Yes	803.4	804.13	-0.73	$150,900	19.4	50	$29,275	$14,637	$43,911.90
250	RESIDENTIAL	1	Yes	803	804.35	-1.35	$216,400	19.4	50	$41,982	$20,991	$62,972.40
251	RESIDENTIAL	1	Yes	804	806.18	-2.18	$106,400	13.8	50	$14,683	$7,342	$22,024.80
252	RESIDENTIAL	1	Yes	804	805.53	-1.53	$95,700	13.8	50	$13,207	$6,603	$19,809.90
253	RESIDENTIAL	1	Yes	804	804.17	-0.17	$127,800	25.5	50	$32,589	$16,295	$48,883.50
254	RESIDENTIAL	1	Yes	804	801.18	2.82	$67,900	45.5	50	$30,895	$15,447	$46,341.75
255	RESIDENTIAL	1	Yes	804	800.8	3.2	$83,000	45.5	50	$37,765	$18,883	$56,647.50
256	RESIDENTIAL	1	Yes	804	806.51	-2.51	$110,900	9	50	$9,981	$4,991	$14,971.50
257	RESIDENTIAL	1	Yes	803.8	804.24	-0.44	$71,300	25.5	50	$18,182	$9,091	$27,272.25
258	RESIDENTIAL	1H	Yes	803.8	802.88	0.92	$85,400	32	50	$27,328	$13,664	$40,992.00
259	RESIDENTIAL	2	Yes	803.8	803.41	0.39	$109,200	17.9	50	$19,547	$9,773	$29,320.20
260	RESIDENTIAL	2	Yes	803.8	804.03	-0.23	$109,200	17.9	50	$19,547	$9,773	$29,320.20
261	RESIDENTIAL	1	Yes	803.8	803.41	0.39	$104,600	25.5	50	$26,673	$13,337	$40,009.50
262	RESIDENTIAL	1H	Yes	803.8	803.93	-0.13	$72,400	25.5	50	$18,462	$9,231	$27,693.00
263	RESIDENTIAL	1	Yes	803.8	803.86	-0.06	$213,000	25.5	50	$54,315	$27,158	$81,472.50
264	RESIDENTIAL	1	Yes	804	802.77	1.23	$95,500	32	50	$30,560	$15,280	$45,840.00
265	RESIDENTIAL	1	Yes	804	804.18	-0.18	$82,600	25.5	50	$21,063	$10,532	$31,594.50
266	RESIDENTIAL	1	Yes	804	806.2	-2.2	$110,600	13.8	50	$15,263	$7,631	$22,894.20
267	RESIDENTIAL	1	No	804	807	-3	$103,000	0	50	$0	$0	$0.00
268	RESIDENTIAL	SL	No	804	800.07	3.93	$136,400	22.8	50	$31,099.20	$15,550	$46,648.80
269	RESIDENTIAL	1	Yes	804	799.92	4.08	$99,500	52.2	50	$51,939	$25,970	$77,908.50
270	RESIDENTIAL	1	Yes	804	799.7	4.3	$94,900	52.2	50	$49,538	$24,769	$74,306.70
271	RESIDENTIAL	1	Yes	804	800.07	3.93	$97,600	52.2	50	$50,947	$25,474	$76,420.80
272	RESIDENTIAL	1	Yes	804	799.86	4.14	$116,100	52.2	50	$60,604	$30,302	$90,906.30
273	RESIDENTIAL	1	Yes	804	800.8	3.2	$110,600	45.5	50	$50,323	$25,162	$75,484.50
274	RESIDENTIAL	1	Yes	804	805	-1	$98,400	19.4	50	$19,090	$9,545	$28,634.40
275	RESIDENTIAL	1	Yes	804	800.65	3.35	$110,400	45.5	50	$50,232	$25,116	$75,348.00
276	RESIDENTIAL	1H	Yes	804	805.35	-1.35	$213,200	19.4	50	$41,361	$20,680	$62,041.20
277	RESIDENTIAL	2	Yes	804	803.89	0.11	$127,400	17.9	50	$22,805	$11,402	$34,206.90
278	RESIDENTIAL	1	Yes	804	803.51	0.49	$101,600	25.5	50	$25,908	$12,954	$38,862.00
279	RESIDENTIAL	1	Yes	804	805.4	-1.4	$98,500	19.4	50	$19,109	$9,555	$28,663.50
280	RESIDENTIAL	1	Yes	804	804.35	-0.35	$111,700	25.5	50	$28,484	$14,242	$42,725.25
281	RESIDENTIAL	1	Yes	804	803.96	0.04	$143,800	25.5	50	$36,669	$18,335	$55,003.50
282	RESIDENTIAL	1	Yes	804	803.37	0.63	$201,000	32	50	$64,320	$32,160	$96,480.00
283	RESIDENTIAL	1	Yes	804	805.19	-1.19	$215,300	19.4	50	$41,768	$20,884	$62,652.30
284	RESIDENTIAL	2	Yes	804	805.21	-1.21	$239,800	13.9	50	$33,332	$16,666	$49,998.30
285	RESIDENTIAL	1	Yes	804	805.2	-1.2	$302,700	19.4	50	$58,724	$29,362	$88,085.70
286	RESIDENTIAL	1	Yes	804	805.1	-1.1	$302,700	19.4	50	$58,724	$29,362	$88,085.70
287	RESIDENTIAL	1	Yes	804	804.09	-0.09	$201,000	25.5	50	$51,255	$25,628	$76,882.50
288	RESIDENTIAL	SL	No	804	805.24	-1.24	$133,100	6.4	50	$8,518	$4,259	$12,777.60
289	RESIDENTIAL	1	Yes	804	804.9	-0.9	$112,300	19.4	50	$21,786	$10,893	$32,679.30
290	RESIDENTIAL	1	Yes	804	803.47	0.53	$114,200	32	50	$36,544	$18,272	$54,816.00
291	RESIDENTIAL	1	Yes	804	805.61	-1.61	$93,500	13.8	50	$12,903	$6,452	$19,354.50
292	RESIDENTIAL	1	No	804	800.15	3.85	$73,100	47.1	50	$34,430	$17,215	$51,645.15
293	RESIDENTIAL	1	No	804	799.43	4.57	$78,300	53.2	50	$41,656	$20,828	$62,483.40
294	RESIDENTIAL	1	Yes	804	803.32	0.68	$101,000	32	50	$32,320	$16,160	$48,480.00
295	RESIDENTIAL	1	No	804	804.71	-0.71	$57,200	2.5	50	$1,430	$715	$2,145.00
296	RESIDENTIAL	1H	Yes	790	799.26	-9.26	$139,200	0	50	$0	$0	$0.00
297	RESIDENTIAL	1H	Yes	785	787.37	-2.37	$103,800	13.8	50	$14,324	$7,162	$21,486.60
298	RESIDENTIAL	2	Yes	786	786.94	-0.94	$80,300	13.9	50	$11,162	$5,581	$16,742.55
299	RESIDENTIAL	1	Yes	783.5	783.81	-0.31	$61,400	25.5	50	$15,657	$7,829	$23,485.50
300	RESIDENTIAL	1	Yes	802	800.17	1.83	$144,600	38.7	50	$55,960	$27,980	$83,940.30
301	RESIDENTIAL	1	Yes	802	798.52	3.48	$301,800	45.5	50	$137,319	$68,660	$205,978.50
302	RESIDENTIAL	1	Yes	803.8	803.51	0.29	$202,800	25.5	50	$51,714	$25,857	$77,571.00
302	**TOTALS**						**$81,483,272**			**$9,624,548**	**$4,812,274**	**$14,436,822.64**

PART 3: FLOOD MITIGATION PROJECT SINCE 2000 AND PLANNED PROJECTS

HIGH-PRIORITY MITIGATION PROJECTS

Location	2002 Recommendation	Progress, Plans, & Recommendations
1. Taft & Kay (see Barr Report) • Street and property flooding, sewage backup, property damage, collapsed basement • Low area, pipe outlet	• Alt. TK-1, Remove houses (11) and construct detention pond	**Completed**
2. Florence/Necessity/Bell (see Barr Report) Raedel Road – 1500 Block (Area #13) • Street and property flooding, property damage • Low area pipe outlet	• Alt. FN-1, Remove homes (18) and construct detention pond	**Completed**
3. Dorret/Kohlhepp • Street and property flooding, property damage • Low area, pipe outlet	• Alt. NC-1, Acquire land and construct detention ponds	**Completed**
4. Gooder/LaSalle • Street and property flooding, sewage backup, property damage • Low area, drainage ditch with limited outlet elevation and capacity	• Alt. LG-1, Pursue land acquisition and easements for overland drainage • LG-2 Long Term, Coordinate with WisDOT on USH 53 freeway project	**LG-2 Completed, LG-1 no longer needed**
5. Platt and Oxford • Street and property flooding, collapsed pipe and street • CMP storm sewer replaced with RCP pipe and upgraded to 72" diameter	• Work completed November, 2000	**Completed**
12. E. Hamilton Avenue – 600 Block • Street flooding, property damage • Low spot in roadway, house and driveway below road	• Raise height of first floor or acquire house at 605 E. Hamilton Avenue	House acquired and removed, low areas on both sides of the street have been turned into extreme event runoff overflow storage and the conveyance system in E. Hamilton Avenue has been improved to increase capacity. A project has been included in the CIP to improve the capacity of the conveyance system between E. Hamilton

		Avenue and East Lexington Boulevard.
15. Preston Road @ Truax Blvd. – Sherman Creek Outfall • Street flooding, property damage • Low area, no outlet, runoff pumped to Sherman Creek from September storm	• Construct drainage improvements as recommended (2001 CIP)	**Completed**
19. Wells Road – North Slope • Slope failure • Geotechnical analysis completed by STS Consultants and plans prepared	• Permanent repairs scheduled for Spring, 2001	**Slope stabilized and runoff diverted from face of slope**
20. Luther Hospital Campus • Basement and property flooding • Low areas on site concentrating runoff to entry points into the building with limited pipe outlet capacity	• Work with Mayo/Luther to identify feasible pipe capacity projects • Construct as part of street improvement projects in the area	**Completed**
34. Indianhead Foods/Morningside Dr. • Street and property flooding, property damage and slope erosion • Low area in the street overtopping system and flowing down the steep bank	• Temporary modifications to system and driveways on Morningside Drive • Private property owners improvements and modifications • Galloway Street extension in 2003/2004 to provide additional drainage capacity and outlet to Eau Claire River	Slope improvements and Improvements on Indian Head Foods site **completed**. Galloway Street Improvements and outfall to River **completed.** **Completed**
37. First Street – 2600 Block • Street flooding, low spot in road • Water overtops curb and flows through yard causing property damage and erosion	• Acquire property at 2611 First Street • Construct emergency overflow route to Chippewa River	**Completed**
43. Locust Lane and Abbe Hill Drive • Leslie Lane & Abbe Hill Drive (Area #26) • Eddy Lane & Kilbourne Avenue (Area #36) • S. of Terry Lane(Area #39) • Hastings Way (USH 53) & Landon (Area #44) • Street and property flooding, property damage and basement collapse • Low area, yards below street elevation, pipe outlet • Surface runoff from school fields into limited capacity pipe in the back yards • Property owners working with School District runoff from the play fields	• Acquire property at 3020 Locust Lane • Construct stormwater detention area • Complete XP-SWMM model of watershed area	Property acquired at Locust Lane and Eddy Lane Area #44 Note – The median on Hastings Way between Delbert Rd and Melby St. has flooded during heaving rains causing water over the roadway on northbound lands. This is the same storm sewer that causes issues on Anderson Dr.

46. White Avenue Storm Sewer Outfall – to Campbell Pond		
• On-going erosion problems, see report dated August, 2000	• Reroute outfall, included in 2001 CIP	Acquired Campbell Pond Property
51. Gray Street Outfall to Chippewa River		
• CMP outfall with deteriorating invert	• Replace pipe, 2001 CIP	**Pipe was lined in place**

MEDIUM-PRIORITY MITIGATION PROJECTS

Location	2002 Recommendation	Progress, Plans,& Recommendations
6. Ellis and Fillmore		
• Street flooding, property damage • Low spot in road, pipe outlet	• Flood proof structures • Construct relief storm sewer, included in 2005 CIP	**Completed**
17. Maywood Drive Backyard Drainage		
• Property flooding, property damage • Rear yard drainage ditch overflow into back yard	• Flood proofing and protection	Project **completed** to improve down-stream conveyance
22. Highland and Agnes		
• Street flooding, low spot in road, pipe outlet	• Construct relief storm sewer, included in 2002 CIP	**Projects Completed**. No flooding in past 7 years.
24. 14th Street and Platt Street		
• Street runoff overflows driveway causing property damage • Low spot in road, pipe outlet, driveway below street elevation	• Modify driveway design and elevations, pave driveway	Driveway modified to reduce overflows
29. Nestle and Otis		
• Street flooding, property damage, basement collapse • Low spot in road, pipe outlet	• Street improvements on Otis Street • Construct westside relief storm sewer, 2004 CIP	Otis Street Improvements **completed**
30. 13th Street and Bolles		
• Street and property flooding, property and pipe damage • Low area, pipe outlet, rear yards below street elevation	• Flood proof properties • Construct westside relief storm sewer, 2004 CIP	Projects **Completed**. No flooding since storm sewers were replaced in 2015.
31. St. James Church (11th Street and Marshall)		
• Property flooding and property damage • Low area behind building, pipe outlet with limited capacity, surcharged	• Change building entrance elevation • Flood proof property • Construct westside relief storm sewer, 2004 CIP	Property flood proofed and on-site storm water detention facility constructed. Project **completed** to improve downstream conveyance capacity.
32. University Avenue Outfall Pipe		
• Pipe overflow from hydraulic grade and slope erosion	• Upgrade pipe hydraulics and reinforce overflow route	**Completed**
33. Otter Creek Outfall Pipe		

• Pipe overflow creating overland flow and slope erosion	• Upgrade pipe hydraulics and reinforce overflow route	**Completed**
41. Dells Pond Slope (west of Starr Avenue & Railroad Tracks)		
• Surface water runoff caused bank erosion and incised the slope	• Repair and reinforce bank, 2001	**Completed**
42. Greene Property (south of Birch Street to Eau Claire River)		
• Surface water runoff caused bank erosion and incised the slope from Birch Street (CTH "Q") to the Eau Claire River	• Private property, evaluate repair and upgrade alternatives • Include new outfall in 2003/2004 CIP as part of USH 53 freeway project	**Completed**
52. Hertz Car Lot – Highway 93		
• Low area along highway ditch • Highway 53 freeway project will look at improvements in this area	• Flood proof property • Upgrade drainage ditch as part of USH 53 freeway project, 2004/2005 CIP	**Completed**
53. American Phoenix – Galloway Street		
• Surface water from street into doors of Banbury Place building	• Upgrade drainage as part of Galloway Street project planned for 2001	**Completed**

LOW-PRIORITY MITIGATION PROJECTS

Location	2002 Recommendation	Progress, Plans, & Recommendations
16. Truax Blvd. West of 14th Street		
• Ditch and construction site erosion	• Street construction project scheduled in CIP for 2004	**Completed**
47. State Street Storm Sewer Outfall to Putnam Park		
• Debris and sand in storm sewer outfall	• Clean outfall of sand and debris	**Completed**

NO WORK PLANNED IN 2002

Location	2002 Recommendation	Progress, Plans, & Recommendations
7. Horlacher Lane • Construction site erosion	No worked planned in 2002.	**Corrected** Drainage conveyance system constructed
8. Target/Menards Development Area • Construction site erosion	No worked planned in 2002.	**Corrected**
9. House Road and Otter Creek Court • Flooded street and overflow from detention pond (June storm only)	No worked planned in 2002.	Storm Water Facility modified

• Construction of the House Road project in the summer of 2000, which included storm sewer and expansion of the detention ponds addressed the problem that was encountered from the June storm. No reported problems from the September storm.		
10. Violet Street and Teal Court • Street flooding, low spot in road, pipe outlet	No worked planned in 2002.	Only street flooding during extreme runoff events
11. LaMans Lane and Vienna Terrace • Construction site erosion	No worked planned in 2002.	**Corrected**
14. Folsom Street (Epiphany Lane to North) • Undeveloped site erosion	No worked planned in 2002.	**Corrected**
18. Delong Middle School Pond • Detention pond full • Construction on outfall structure in 1999 improved conditions downstream	No worked planned in 2002.	**Corrected**
21. Omaha and Davis • Street flooding, low spot in road, pipe outlet	No worked planned in 2002.	Only street flooding during extreme runoff events
23. Essex and Brookline • Street flooding, low spot in road, pipe outlet	No worked planned in 2002.	Only street flooding during extreme runoff events
25. Fairfax Park Detention Basins • Construction site erosion from June storm • Minor erosion from September storm, system functioned as planned	No worked planned in 2002.	**Corrected**
27. North Crossing (STH 124) North Ditch • Ditch erosion and washout, repaired by Eau Claire Co for DOT	No worked planned in 2002.	WisDOT right-of-way, Delegated to Eau Claire County
28. Melanie and Mittelstadt • Street flooding, low spot in road, pipe outlet	No worked planned in 2002.	Only street flooding during extreme runoff events
35. Brackett and Agnes • Street flooding, low spot in road, pipe outlet	No worked planned in 2002.	Project **completed** to improve downstream conveyance. Brackett Ave. has not flooded since storm sewers rebuilt.

38. Diane Lane and Jeanne Lane • Street flooding, low spot in road, pipe outlet	No worked planned in 2002.	Only street flooding during extreme runoff events
40. Frisbie and Jupiter • Street flooding, low spot in road, pipe outlet	No worked planned in 2002.	Only street flooding during extreme runoff events
45. Hastings Way (USH 53) and Valmont • Street flooding, low spit in road, pipe outlet	No worked planned in 2002.	**Corrected**
48. Stein and Hamilton • Street and property flooding • Low spot in road, areas of property below street elevation, pipe outlet	No worked planned in 2002.	MacArthur Project **Completed**. Additional project planned to improve overflow route. No flooding on Stein Blvd in past seven years.
49. Sacred Heart Hospital and CVTC • Property flooding and damage • Roof and building drain pipe capacity, pipe outlet	No worked planned in 2002.	Downstream improvements **completed t**o improve conveyance capacity and upstream improvements to divert runoff from system
50. Cummings and Wayne Place • Street flooding • Low spot in road, pipe outlet to detention pond and Lowes Creek outfall	No worked planned in 2002.	Only Floods during extreme runoff events
54. Grissom Drive – Multi Family Property • Preliminary review indicates a private property drainage problem not related to the City system	No worked planned in 2002.	Not a public system
55. Lever Street Condominiums • Preliminary review indicates a private property drainage problem not related to the City system	No worked planned in 2002.	Not a public system – Condominium Association correcting problem

Other Major Projects completed (not included in 2002 Plan)

- South London Road Storm Water Facility – west side of London Road has not been an issue since detention pond was built.
- Shorewood Drive Storm Sewer and Outfall
- Jeffers Road Storm Water Facility
- Phoenix Park Grading
- West Side Relief Storm Sewer (already in CIP)
- Truax Blvd Sewer Extension (Preston Road to N. Clairemont Avenue)
- Folsom Street west of N. Clairemont Avenue had storm sewer installed in 2015.
- The pond at South Hastings Way frontage road and Horlacher Road (just north of Menard's East) flooded in September 2016. Horlacher Road was closed for five days. At the time, the City jetted the discharge pipe, but it still took several days to drain down. A primary cause of the 2016 flooding at this location was debris build-up on the culvert -end section grates. Debris has been cleared and grates continue to be monitored for blockage.

Projects in Planning Stages (not included in 2002)

- Jeffers Road Relief Storm Sewer (valley east of Jeffers Road) Partially Complete
- Mitscher Park Storm Water Facility control structure modifications

City of Eau Claire
2019-2023 Adopted Capital Improvement Plan

Fund 405



Storm Water Improvements

City of Eau Claire, Wisconsin

Capital Improvement Plan

2019 thru **2023**

PROJECTS & FUNDING SOURCES BY DEPARTMENT

Department	Project #	Priority	2019	2020	2021	2022	2023	Total
Fund 405 - Storm Water								
Storm Water: Bond Issue Costs	405-001	3	40,000	50,000	50,000	40,000	10,000	190,000
Storm Water: C/W Storm Water	405-002	3	1,600,000	1,800,000	1,800,000	1,900,000	1,900,000	9,000,000
Storm Water: Jeffers Road Area Storm Sewer	405-003	1	400,000		300,000			700,000
Storm Water: Basin Acquisition/Development	405-004	1	200,000			200,000		400,000
Storm Water: Halsey Street Relief Storm Sewer	405-005	2		600,000				600,000
Storm Water: Levee Reconstruction	405-006	2			500,000			500,000
Fund 405 - Storm Water Total			**2,240,000**	**2,450,000**	**2,650,000**	**2,140,000**	**1,910,000**	**11,390,000**
G.O. Bonds - Self Supported			1,350,000	1,640,000	1,500,000	1,240,000	700,000	6,430,000
Intergovernmental: State Aid					250,000			250,000
Operating Income: Storm Water			890,000	810,000	900,000	900,000	1,210,000	4,710,000
Fund 405 - Storm Water Total			**2,240,000**	**2,450,000**	**2,650,000**	**2,140,000**	**1,910,000**	**11,390,000**
Grand Total			**2,240,000**	**2,450,000**	**2,650,000**	**2,140,000**	**1,910,000**	**11,390,000**

Produced Using the Plan-It Capital Planning Software

Capital Improvement Plan 2019 thru 2023

City of Eau Claire, Wisconsin

Project # 405-001
Project Name Storm Water: Bond Issue Costs

Department Fund 405 - Storm Water
Contact Jay Winzenz
Type Financing
Useful Life n/a
Category Recurring
Priority High

Description

Financing for costs incurred by the City when bonds are issued.

Justification

Project # 405-002
Project Name Storm Water: C/W Storm Water

Department Fund 405 - Storm Water
Contact Dave Solberg
Type Infrastructure - Replacement
Useful Life 50 Years
Category Recurring
Priority High

Description

This program consists of city-wide replacements and upgrades of storm sewer pipes and conveyance systems as part of the street reconstruction program. Installation costs for new sewer pipes, manholes, catch basin inlets and storm drain outfalls are included.

Justification

This project provides for the infrastructure necessary to provide sufficient collection and conveyance of water runoff following storms.

Project # 405-003
Project Name Storm Water: Jeffers Road Area Storm Sewer

Department Fund 405 - Storm Water
Contact Dave Solberg
Type City Facility - New
Useful Life 50 Years
Category Non-recurring
Priority Low

Description

This project provides a comprehensive storm sewer management system in the Jeffers Road area. New conveyance infrastructure, as well as improvements to existing conveyance infrastructure will be completed. Work will be in advance of and in conjunction with the 2021 Jeffers Road Reconstruction Project.

Justification

This project provides the public infrastructure necessary to compliment private storm water infrastructure to provide sufficient collection and conveyance of water runoff following storms in the rapidly developing Jeffers Road area.

Capital Improvement Plan 2019 thru 2023

City of Eau Claire, Wisconsin

Project # 405-004

Project Name **Storm Water: Basin Acquisition/Development**

Department Fund 405 - Storm Water
Contact Dave Solberg
Type City Facility - New
Useful Life 50 Years
Category Non-recurring
Priority Low

Description

Storm water detention basins are designed to reduce peak runoff rates and protect property from flooding. Storm water basins are vital to the efficient functioning of a storm water system.

Justification

This project provides funding to purchase detention basin sites as they become necessary and available with the management and extension of the storm water system.

Project # 405-005

Project Name **Storm Water: Halsey Street Relief Storm Sewer**

Department Fund 405 - Storm Water
Contact Dave Solberg
Type Infrastructure - Upkeep
Useful Life 50 Years
Category Non-recurring
Priority Medium

Description

Localized flooding typically occurs in the vicinity of the the Halsey Street / Hamilton Avenue intersection. The outlet for this storm water is a 72-inch pipe at Lexington Boulevard. This project upgrades the storm sewer main in Halsey Street to adequately convey storm water from Hamilton Avenue to the 72-inch pipe in Lexington Boulevard.

Justification

This project provides the infrastructure necessary to provide adequate storm water collection and conveyance.

Project # 405-006

Project Name **Storm Water: Levee Reconstruction**

Department Fund 405 - Storm Water
Contact Dave Solberg
Type Infrastructure - New
Useful Life 50+ Years
Category Non-recurring
Priority Medium

Description

The east bank of the Chippewa River, from Madison Street to CMF, has an existing levee which is not constructed to modern engineering standards and is inadequate to protect against a 100-year flood of the Chippewa River. The WDNR has a flood protection grant that would provide funding towards the construction cost of an engineered levee. The amount requested is the City's estimated 50% cost participation towards the overall construction cost.

Justification

Protection of public safety and infrastructure through construction of levee to provide flood control.

APPENDIX K2.

OTHER CITY & VILLAGE HAZARD MITIGATION SUB-PLANS

VILLAGE OF FAIRCHILD HAZARD MITIGATION SUB-PLAN

This sub-plan identifies past hazard events, risks, trends, capabilities, and strategies unique to or specific to the Village of Fairchild and is part of the overall *Eau Claire County Multi-Hazard Mitigation Plan*. Also uniquely, representatives from the Town of Fairchild also participated in the creation of this subplan. The Eau Claire County mitigation plan provides broader context and contains hazard assessment, capabilities, and strategies that are countywide or multi-jurisdictional.

Primary Contact:	Clerk-Treasurer
Planning Meetings:	• Primary planning meeting with WCWRPC staff occurred on 10/2/24 at the Village Community Center. Sign-in sheet excerpt in Appendix B identifies participants, which included representation from the Town of Fairchild. • Village participated in a mitigation/preparedness capabilities assessment in October 2024. • Resolution adopting the Hazard Mitigation Plan and Sub-Plan will be approved by Village Board at a public meeting. Resolution included in Appendix A.

Community Profile (Village of Fairchild)

This table provides a brief overview of key community characteristics, primarily from the 2020 U.S. Census, which are important to assessing capacity and vulnerabilities. For example, the entire population and all above-ground structures in the community are vulnerable to a tornado event, while mobile homes have an elevated vulnerability.

Population	452
Median Age	48.8 years
Underserved, disadvantaged, or uniquely vulnerable populations	Economically disadvantaged rural community based on average per capita income. Seniors & senior housing; mobile home park residents
Assessed Improvements (2023)	Residential: $9,512,700; Commercial: $1,050,400; Manuf.: $141,900
# of Housing units	273
# of Mobile Homes	26
Notable Community Lifelines or Critical Facilities	Fire Department, Village Hall/Police Department, Community Center (meal site, EOC), Senior housing, Mennonite School

Hazard Risk Assessment

This table describes past hazard events impacting the community and any unique vulnerabilities to each event. This assessment is supplemented by the risk assessment map included at the end of this Mitigation Sub-Plan for the community. Also see the Risk Assessment in Section III of the main text of the Eau Claire County mitigation plan for general risks and vulnerabilities applicable to most or all communities.

Hazard	History & Past Impacts	Vulnerabilities & Potential Impacts
Tornado & High Winds	Eau Claire County has a long history of tornados, including some that have touched down within the Town of Fairchild as recently as 2021 and 2024. Occasional high winds including damages to trees, roofs, outbuildings, etc.	Most homes have basements. Senior living facility and two apartment complexes lack basements. In the eastern part of the Village is a ballfield, ATV park/campground (with a small shelter), and 13 mobile homes; this area also has high groundwater, so few or no basements available. No public safe room or storm shelter designated. To the north within the Town of Fairchild, growing campground at Black Creek Lodge/Stockyard also lacks storm shelter.

Hail & Lightning	Some significant hail storms in recent years. June 2017 and May 2024 hail storms damaged roofs, siding, and vehicles. Worked with Xcel Energy for new resistors and grounding for liftstation that has been damaged by lightning in the past, so likely resolved.	No unique concerns noted.
Winter Storm, Ice, & Extreme Cold	2011 ice storm with strong winds knocked down large TV tower north of Village, but no other unique issues noted. Heavy snow (18-20") in Winter 2021-2022. A few water main or lateral breaks per year is not uncommon.	Most concerned with senior population during periods of extreme cold and ice, especially if power is lost. Fire Department has generator and could serve as a temporary warming center. Snowmobile Club can provide emergency transportation support if needed.
Extreme Heat	No unique history noted, though such events appear to be increasing in frequency.	Village lacks a designated cooling center. Community Center may be an option but does not have a generator.
Long-Term Power Outage	High winds in 2022 left areas of the Town without power for 36-48 hours. No areas within the Village uniquely vulnerable to outages.	Fire Department has fixed generator. Village Hall/Police Dept/Shop, Community Center (EOC), and Town Hall lack fixed generators. Portable for public works and facilities needed.
Flooding – Riverine or Overbank	Heavy rains in Spring 2015 caused damage and road closures along Schoolhouse Creek, including over U.S. Highway 10 at the railroad bridge, washed out the Humbird St. bridge, and damage to Pond Road. Road and culvert also washed out in 2015 on Tioga Road as well as damage to a nearby business outside the village in Jackson County. Black Creek Campground and County Highway "H" in Town of Fairchild experienced some flooding in 2015, including at one home.	As shown by map at end of this section, 100-year floodplain development within the Village is very limited.
Flooding – Stormwater or Overland	High groundwater contributes to some ponding and water in basements following 3 to 5+" rain events, such as in 2010 and 1993, especially near Pond. 1993 flood damages primarily were road washouts and the dam structure. Stormwater run-off was a factor in the 2015 flooding along Schoolhouse Creek described previously. Some stormwater management challenges and ponding in other areas of the community.	Due to high groundwater and increasing heavy rain events, basements and culverts/roads continue to be the primary stormwater flooding concerns. Some stormwater management improvements planned for downtown.
Dams	Village-owned dam at Fairchild Pond has had washouts and failures in past but none since 1993.	Low-hazard dam with about 18-acre impoundment; no significant development within dam shadow. Dam is in generally in good repair though some maintenance needed.
Drought	No significant impacts within the Village from past droughts.	Well capacity could potentially be a concern during a period of extended drought.
Wildfire	No significant events in the Village. See Wildfire Assessment of main report for risks and vulnerabilities for the Town.	Marsh grasses on east side of Village have elevated risk. Aging dry hydrant at Fairchild Pond is cracked; may need repair/replacement.
Hazardous Materials Spills	Truck diesel spill on Highway "H" within the Town.	US Highways 10/12, railroad, and natural gas pipeline (and feeder line to Village) identified as greatest HazMat spill concerns.

Active Threats	No significant events in the community.	No unique concerns noted. Mennonite school within former elementary school building. Some community events (e.g., Fun Days, activities at the Pond/Sportsmen's Club)
Cyber-Attack	No significant events impacting municipal facilities or services.	Village has internet security, cloud back-up, and municipal cyber-insurance.

Notable Trends or Changing Priorities

Have any hazard-related priorities changed since the previous mitigation plan?	Increasing stormwater runoff concerns related to increasing heavy rainfall events and new development. Also increasing cyber-security threats.
Are there any other trends influencing these concerns, such as changes in development, demographics, or weather patterns/climate?	Increasing frequency and severity of severe weather systems including downpours, wind events (including tornados) and extreme temperatures. Climate may be influencing these trends, including extending the tornado season into the fall and winter months. Potential for increase stormwater flooding, especially along the hillside, as extreme rainfall events increase.

Capabilities Assessment (Village of Fairchild)

The following is a general assessment of the community's resiliency and capabilities to mitigate, respond to, and recover from a disaster event. It also notes if mitigation or preparedness has been integrated into planning mechanisms. This assessment was completed by the community through the 2023 web-based survey, with some supplemental information from the community meeting and other sources (e.g., fire department survey, NFIP Community Status Book). The list of potential plans, policies, and other actions is not exhaustive, and it is not expected that the community has undertaken all actions listed or will undertake all actions in the future.

Planning Activities	
Community Emergency Operations or Response Plan (EOP)	Outdated Plan; will consider mitigation when updating
Community Evacuation Plan and/or Exercises	Outdated Plan; will consider mitigation when updating
Continuity of Government Plan	No
Comprehensive Plan	No
Stormwater Management Plan	No
Historic Preservation Plan or Ordinance	Outdated Plan; will consider mitigation when updating
Capital Improvements Plan or Similar Budget	No
Involve Fire & Law Enforcement in planning & development plan review	Do this as needed.
Special emergency notification procedures or preparedness plans for vulnerable populations	None
Policies, Codes, & Ordinances	
Building Codes	None
Building Code Efficiency Grading Schedule	None
Zoning Ordinance	None
Subdivision Ordinance	None
Site Plan Review Requirements	None
Floodplain Management	
Initial Flood Hazard Boundary Map:	05/31/74
Initial FIRM Identified:	02/18/09
Current Effective FIRM Date:	04/16/14
Date Community First Joined NFIP (Reg-Emer)	Not in Program, Sanction Date 05/31/75

NFIP Participation Status (and reason if not participating):	Non-Participant. Past mitigation plans note that the Village had not adopted an updated floodplain ordinance that incorporates the latest NFIP maps. It needs to be confirmed whether the Village's current ordinance remedies this concern.
Floodplain Regulations w/ NFIP standards:	Adopted; no unique mitigation or preparedness actions.
Designated position or committee for floodplain management, floodplain zoning, & NFIP compliance:	Unknown
Other ongoing floodplain management activities:	None noted
Stormwater Management Ordinance	Adopted; no unique mitigation or preparedness actions.
Stormwater Utility	Adopted; no unique mitigation or preparedness actions.
Winter Emergency Policies	No Policy or Code
Mitigation & Preparedness Actions for Facilities	
Debris Site identified for storm debris disposal (not just woody debris)	Yes
Emergency Operations Center designated with generator/back-up power	None currently, but considering implementation
Public Storm Shelter/Community Safe Room designated	None currently, but considering implementation
Public Heating/Cooling Shelter designated with generator/back-up power	None currently, but considering implementation
Storm/warning siren on back-up power	Yes. 1 siren w/ battery backup.
Storm/warning siren that can be activated remotely	Yes
Active shooter/threat plans and/or security hardening for municipal buildings	None
Other Mitigation & Preparedness Actions	
Review EOP at least annually	Partially complete
Individuals in EOP have ICS/NIMS training	Partially complete
Public Information Officer designated & trained	None currently, but are planning or considering implementation
Municipal officials and staff participate in regular disaster or emergency response exercises	No
Community-level efforts to improve hazard preparedness among residents	Partially complete
Adopted billing rates for public works labor & equipment use during emergencies	Partially complete
Adopted mutual aid agreements for public works equipment/personnel support	Village and Town of Fairchild has a good working relationship and provide mutual support if needed.
Adopted emergency contracting and purchasing policies	Partially complete
Cyber-security systems, off-site/cloud back-up, and recovery policies or plans for municipal records	Partially complete
Cyber-security systems and policies for municipal utilities	Partially complete
Municipal buildings/staff have NOAA All Hazards Radios or signed-up for Code Red	No
Other Flood Mitigation projects or activities	None noted
Municipal Dam-related planning or actions	No dams in the community
Barriers to mitigation or preparedness actions	Funding is the primary barrier; grant assistance needed.
Other:	Concerns expressed over increasing training and equipment requirements for emergency services; it is becoming a hardship for smaller fire/EMS departments.

Mitigation Strategy Recommendations

The overall mitigation goal statements in Section VI.A. of the Eau Claire County mitigation plan are shared by all participating communities.

The community will strive to implement the following mitigation actions/projects as resources and funding allows, though priorities could change due to a variety of fiscal, technical, or other factors, including changes in hazard risks. Sections VI.C. and D. of the Eau Claire County mitigation plan includes additional mitigation and preparedness actions that are intergovernmental in nature and not specific to the community, but may suggest coordination and funding opportunities.

The following recommended actions/projects are specific to the community:

Action/Project	Priority & Timeline	Primary Responsible Party	Potential Resources
1. Continue to monitor and address stormwater management and flooding concerns within the community.	High; ongoing	Village Public Works & Village Board	Village budget; CDBG. If repetitive losses, could explore a FEMA Flood Mitigation Assistance or WEM Pre-Disaster Flood Resiliency Grant.
2. Collaborate with Eau Claire County and local emergency response agencies to conduct local or regional training and exercises on topics such as: • ICS for Elected Officials (at least 100, 200, & 300) • Pipeline safety and spills • HazMat tabletop exercise • Active threats with Mennonite School • Stop the Bleed/CPR for area residents & organizations • Intergovernmental mutual aid	Medium; as resources allow	Local emergency response agencies, interested stakeholders, Village Board & other local municipalities	Eau Claire County Emergency Management; Eau Claire County Medical Reserve Corps; utility providers
3. Address the Village's NFIP-sanctioned status so that landowners may obtain flood insurance if desired. If needed, update the Village's floodplain ordinance for consistency with the latest WDNR model and floodplain maps (D-FIRMs).	High; 1-3 years	Village Board	WDNR and WCWRPC may provide assistance

4. Explore development of one or more community safe rooms (storm shelters), perhaps near the ballfields and/or at area campgrounds. As an alternative, consider the feasibility of storm hardening improvements at the Community Center, including generator. If a generator and HVAC system us provided, consider using the safe room space as a heating/cooling shelter and emergency assembly location. For new safe room construction, consider the incorporation of nature-based stormwater management systems (e.g., rain barrels, rain garden) to mitigate site runoff.	Medium-to-High 2-5 years Funding dependent	Interest would likely be driven by community members, campground owners, etc.	FEMA Hazard Mitigation Grant Programs WCWRPC and Wisconsin Emergency Management can provide grant-related guidance
5. Consider the following projects to enhance the resiliency of the community: • As funding allows, acquire additional emergency power generators for municipal utilities. • Pursue WDNR funding for the replacement of the dry hydrant. • Distribution of NOAA all hazards (weather) radios to community lifeline facilities and seniors.	Medium; 3-5+ years as resources allow	Village Board & Public Works regarding generators Fire Department for the dry hydrant Aging/Facilities/Non-Profits/County for weather radios	See generator-related recommendations in Section VI.C. WDNR has a grant funding to assist with dry hydrant costs A radio distribution project is eligible for FEMA Mitigation Grants.

Sub-Plan Coordination and Integration

The previous Capacity Assessment section identifies how this Mitigation Sub-plan has been integrated into or coordinated with other municipal plans or planning mechanisms. During the planning process, the following opportunities were identified to integrate the mitigation strategies into other community planning mechanisms:

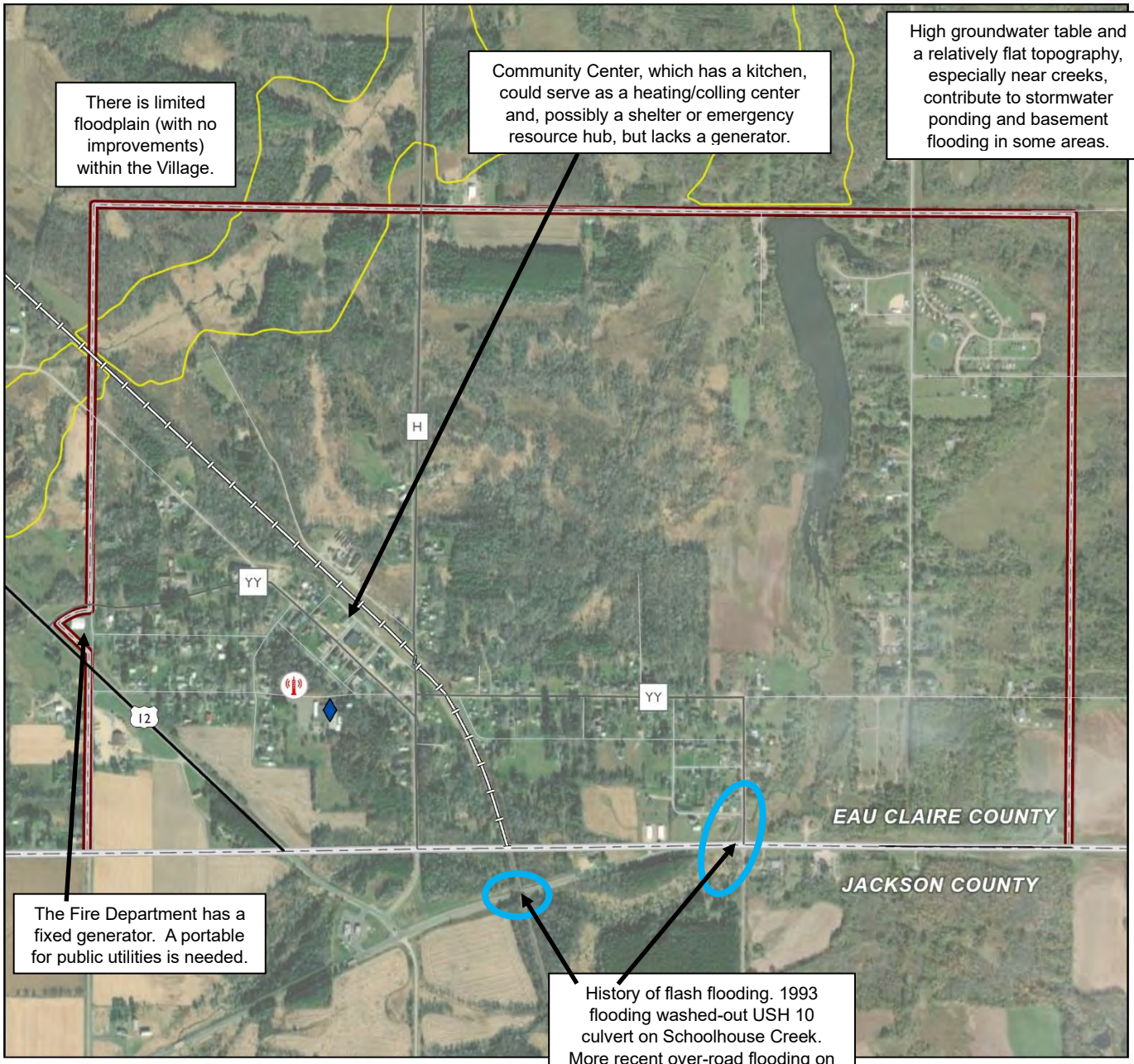
- Stormwater improvements would be added to Village's budget process.
- The Village will consider this sub-plan and integrate mitigation actions into its next comprehensive plan update.
- The next section describes how this Sub-Plan will be maintained, including a periodic review of opportunities to strengthen the coordination and integration with other planning mechanisms.

Sub-Plan Adoption and Maintenance

Plan Adoption	Once updated, the community's governing body will adopt the County's overall hazard mitigation plan (and any future revisions/amendments) by resolution during a noticed public meeting in adherence with Wisconsin Open Meetings laws. This community-specific Hazard Mitigation Sub-Plan is an appendix of the County's overall plan. The community may modify and re-adopt its Sub-Plan by resolution during a noticed public meeting at any time at their discretion.
Plan Maintenance	During the second quarter of each year or following a declared disaster event, the primary mitigation plan contact will review this Mitigation Sub-Plan concurrently with (at the same time as) the annual review of the municipal Emergency Operations Plan. Other municipal and agency officials (e.g., public works, fire department, law enforcement) may be involved in this review or consulted as needed. The Mitigation Sub-Plan will be reviewed for: • Any significant changes in vulnerabilities, priorities, or trends, including to populations, structures, community lifelines, and weather/event patterns. • Any significant changes in capabilities or barriers to plan implementation. • Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms). • Potential new mitigation and preparedness strategies, projects, or grant opportunities. • Any comments or discussion with the public, partners, or other stakeholders. If potential changes to the Sub-Plan are being considered, the planning contact will: 1. The community's planning contact will contact County Emergency Management and West Central Wisconsin Regional Planning Commission (WCWRPC) to discuss the proposed changes and any guidance regarding potential resources and next steps. The community may also request that the County consider changes to the County's overall mitigation plan. 2. Provide the suggested changes to the community's emergency planning committee, plan commission, or governing body for consideration. Should it be determined that a Mitigation Sub-Plan change is needed, the governing body will adopt the Sub-Plan as noted previously. Such changes will be limited to this community-specific Mitigation Sub-Plan. Changes to this Sub-Plan may be made in the future without County Board or other participant re-adoption of the County's overall mitigation plan.
Plan Updates	The community intends to be a full participant in five-year updates of the County's overall hazard mitigation plan, which will include reviewing and updating the information provided in this Mitigation Sub-Plan. Changes to Sub-Plan content may be necessitated by applicable mitigation rules and planning guidance in effect at that time.
Continued Public Participation	The community will provide opportunities for public participation throughout its mitigation planning processes, including: (1) all governing body or committee actions regarding the Sub-Plan shall be conducted in adherence with the Wisconsin Open Meetings rules; (2) public comments will be accepted on draft Sub-Plans and Sub-Plan changes prior to adoption; and (3) public input and ideas on potential risks, vulnerabilities, capabilities, or mitigation projects are welcomed and will be considered.

VILLAGE OF FAIRCHILD - HAZARD ASSESSMENT

Eau Claire County - 2024



Legend

- Village of Fairchild
- 100-yr Floodplain
- School
- Storm Siren

Railroad, highway traffic, and natural gas pipeline identified as the primary HazMat spill risks.

WEST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

0 0.13 0.25 0.5 Miles

Data Sources:
Eau Claire County, WDHS, WDNR, WisDOT, WDOA, WCWRPC.

N

VILLAGE OF FALL CREEK HAZARD MITIGATION SUB-PLAN

This sub-plan identifies past hazard events, risks, trends, capabilities, and strategies unique to or specific to the community and is part of the overall *Eau Claire County Multi-Hazard Mitigation Plan*. The Eau Claire County mitigation plan provides broader context and contains hazard assessment, capabilities, and strategies that are countywide or multi-jurisdictional.

Primary Contact:	Village Administrator
Planning Meetings:	• Primary planning meeting with WCWRPC staff occurred on 5/21/24 at the Village Hall. Sign-in sheet excerpt in Appendix B identifies participants. • Village participated in a mitigation/preparedness capabilities assessment in September 2024. • Resolution adopting the Hazard Mitigation Plan and Sub-Plan will be approved by Village Board at a public meeting. Resolution included in Appendix A.

Community Profile

This table provides a brief overview of key community characteristics, primarily from the 2020 U.S. Census, which are important to assessing capabilities and vulnerabilities. For example, the entire population and all above-ground structures in the community are vulnerable to a tornado event, while mobile homes have an elevated vulnerability.

Population	1,422
Median Age	35.8 years
Underserved, disadvantaged, or uniquely vulnerable populations	Seniors, senior housing, group homes, school students
Assessed Improvements (2023)	Residential: $90,854,400; Commercial: $10,975,000; Manuf.: $6,879,000
# of Housing units	582 + 5 adult family home care facilities
# of Mobile Homes	none
Notable Community Lifelines or Critical Facilities	See map at end of sub-plan

Hazard Risk Assessment

This table describes past hazard events impacting the community and any unique vulnerabilities to each event. This assessment is supplemented by the risk assessment map included at the end of this Mitigation Sub-Plan for the community. Also see the Risk Assessment in Section III of the main text of the Eau Claire County mitigation plan for general risks and vulnerabilities applicable to most or all communities.

Hazard	History & Past Impacts	Vulnerabilities & Potential Impacts
Tornado & High Winds	Has been tornados in area, including one of the longest in Wisconsin history, but no touchdowns within the Village to date. One tornado death less than 10 miles to south in 1994. Summer 2019, high straight-line winds caused roof and other damage and downed trees within the community.	No mobile homes in community. Most homes have basements; only recently began allowing slab-on-grade construction. No camping at park, except workers during FunFest. Highest vulnerabilities include the school (students, teachers, visitors), senior housing, apartments, downtown businesses, and during community festivals and gatherings.

Hail & Lightning	No unique history noted. Some lighting strikes at water tower.	No unique or repetitive concerns noted.
Winter Storm, Ice, & Extreme Cold	No unique history noted.	No unique concerns noted. Will request some residents to leave water dripping to prevent freeze-ups if needed.
Extreme Heat	No unique history noted, but frequency of events appears to be increasing.	No unique vulnerabilities noted. Village Hall has been activated as a cooling shelter and used.
Long-Term Power Outage	No unique history. One lengthy outage was due to a semi-truck hitting power lines. Some shorter outages occur a couple times per year and have impacted municipal utilities. Community official noted that the solar flares have the potential to cause a widespread long-term power outage.	Fire Hall/Police/Village Shop is in need of a generator; this site would serve as EOC/command post during an event. Portable generator available for public works; wells and wastewater plan covered. A portable generator is available for Village Hall if needed, but lacks fixed back-up power; designated as a heating/cooling center and Red Cross shelter. Limited emergency fuel available; uncertain if gas stations have generators for fuel access during outages.
Flooding – Riverine or Overbank	One wet basement in big 1993 storms. 8" rain in 2005 had floodwaters within 10' of one home w/ walkout basement. 10" rain in 2006, but still no structural flooding. Heavy rains in 2015, but still 20'-30' from the home.	No concerns noted. 5 parcels with buildings potentially within 100-year floodplain; 3 parcels are assessed residential and 2 are tax-exempt. Relatively small drainage area decreases the potential for large flooding events.
Flooding – Stormwater or Overland	10" of rain in 2006 storm caused some ponding, but no significant damage. Past flash flooding on streets appear to have been mitigated through stormwater improvements. Continue to monitor stormwater systems and catch basin in school area that has had some ponding and minor flooding due to ice damming, but no significant damage to date.	No unique vulnerabilities noted. Stormwater improvements have addressed the most significant, past problem areas. Site work in 2019 may have remedied past ponding near school.
Dams	Village-owned dam. No recent failures or concerns.	Low-hazard dam is in good repair with limited development within its shadow. Relatively smaller impoundment of 17.3 acres. Recently inspected.
Drought	No significant impacts within the Village from past droughts.	New water tower; Village has good water quantity for fire protection.
Wildfire	No significant events in the community in 75+ years.	Some elevated wildfire concerns in forested area in NW part of community along the railroad tracks, which is a potential source of ignition. Access/egress for large emergency vehicles to homes in this area can be challenging if long driveways in wooded areas.
Hazardous Materials Spills	No significant events in the community. A derailment did occur at old feed mill, but not significant spill.	Highway 12 truck traffic, railroad, and two agricultural product suppliers are primary risks.
Active Threats	No significant events in the community.	School viewed are the primary vulnerability; see School District subplan. Village Police has received training and has worked with area churches and a day care.
Cyber-Attack	No significant events impacting municipal facilities or services.	Village has I.T. contract for Internet security and cloud backup storage of important data.

Notable Trends or Changing Priorities

Have any hazard-related priorities changed since the previous mitigation plan?	Increased interest in a safe room.
Are there any other trends influencing these concerns, such as changes in development, demographics, or weather patterns/climate?	Increasing tornado events in the County. Increasing cyber-attacks on local governments.

Capabilities Assessment

The following is a general assessment of the community's resiliency and capabilities to mitigate, respond to, and recover from a disaster event. It also notes if mitigation or preparedness has been integrated into planning mechanisms. This assessment was completed by the community through the 2023 web-based survey, with some supplemental information from the community meeting and other sources (e.g., fire department survey, NFIP Community Status Book). The list of potential plans, policies, and other actions is not exhaustive, and it is not expected that the community has undertaken all actions listed or will undertake all actions in the future.

Planning Activities	
Community Emergency Operations or Response Plan (EOP)	Adopted; no unique mitigation or preparedness actions.
Community Evacuation Plan and/or Exercises	No. Uncertain if adequate resources are available.
Continuity of Government Plan	No.
Comprehensive Plan	Adopted; no unique mitigation or preparedness actions.
Stormwater Management Plan	Outdated plan; will consider mitigation when updating.
Historic Preservation Plan or Ordinance	Adopted; no unique mitigation or preparedness actions.
Capital Improvements Plan or Similar Budget	Adopted; no unique mitigation or preparedness actions.
Involve Fire & Law Enforcement in planning & development plan review	At times as needed.
Special emergency notification procedures or preparedness plans for vulnerable populations	None.
Policies, Codes, & Ordinances	
Building Codes	Adopted; including mitigation or preparedness actions.
Building Code Efficiency Grading Schedule	Adopted; including mitigation or preparedness actions.
Zoning Ordinance	Adopted; including mitigation or preparedness actions.
Subdivision Ordinance	Adopted; no unique mitigation or preparedness actions.
Site Plan Review Requirements	Adopted; no unique mitigation or preparedness actions.
Floodplain Management	
Initial Flood Hazard Boundary Map:	05/24/74
Initial FIRM Identified:	09/01/86
Current Effective FIRM Date:	04/16/14 (M)
Date Community First Joined NFIP (Reg-Emer)	09/01/86
NFIP Participation Status (and reason if not participating):	Participant
Floodplain Regulations w/ NFIP standards:	Adopted.
Designated position or committee for floodplain management, floodplain zoning, & NFIP compliance:	Zoning Administrator, then Plan Commission
Other ongoing floodplain management activities:	None by municipality.
Stormwater Management Ordinance	No.
Stormwater Utility	No.
Winter Emergency Policies	Adopted; no unique mitigation or preparedness actions.

Mitigation & Preparedness Actions for Facilities	
Debris Site identified for storm debris disposal (not just woody debris)	Partially completed.
Emergency Operations Center designated with generator/back-up power	No.
Public Storm Shelter/Community Safe Room designated	No. Strongly supports the School District's efforts to establish a Safe Room within the Village. During community events, weather is monitored and law enforcement uses P.A. to notify, then opens Village Hall to offer some protection if needed.
Public Heating/Cooling Center designated with generator/back-up power	No. Village Hall can be opened if needed, but lacks fixed back-up power. Village Hall also designated as Red Cross shelter.
Storm/warning siren on back-up power	Siren is in good repair and is remotely activated by County. Good coverage. Has battery backup.
Storm/warning siren that can be activated remotely	
Active shooter/threat plans and/or security hardening for municipal buildings	No.
Other Mitigation & Preparedness Actions	
Review EOP at least annually	Yes
Individuals in EOP have ICS/NIMS training	Yes
Public Information Officer designated & trained	Partially completed.
Municipal officials and staff participate in regular disaster or emergency response exercises	Partially completed.
Community-level efforts to improve hazard preparedness among residents	No
Adopted billing rates for public works labor & equipment use during emergencies	Partially completed.
Adopted mutual aid agreements for public works equipment/personnel support	Yes, including agreement with T. of Lincoln for plowing. Public works mutual aid agreement with Augusta using WI Rural Water model.
Adopted emergency contracting and purchasing policies	No.
Cyber-security systems, off-site/cloud back-up, and recovery policies or plans for municipal records	Yes.
Cyber-security systems and policies for municipal utilities	Partially completed. Opportunities for improvement noted.
Municipal buildings/staff have NOAA All Hazards Radios or signed-up for Code Red	No.
Other Flood Mitigation projects or activities	Wastewater treatment plant previously relocated outside of the floodplain.
Municipal Dam-related planning or actions	No issues regarding the dam noted.
Barriers to mitigation or preparedness actions	Funding for mitigation actions. Emergency services, such as EMS, require equal investments by all communities.
Other:	Previous plan expressed a concern that during a regional disaster event, would most/all resources go to the Eau Claire urban area leaving little support for the smaller communities. Wisconsin Municipal Mutual Insurance Company has emergency equipment and continuity support available.

Mitigation Strategy Recommendations

The overall mitigation goal statements in Section VI.A. of the Eau Claire County mitigation plan are shared by all participating communities.

The community will strive to implement the following mitigation actions/projects as resources and funding allows, though priorities could change due to a variety of fiscal, technical, or other factors, including changes in hazard risks. Sections VI.C. and D. of the Eau Claire County mitigation plan includes additional mitigation and preparedness actions that are intergovernmental in nature and not specific to the community, but may suggest coordination and funding opportunities.

The following recommended actions/projects are specific to the community:

Action/Project	Priority & Timeline	Primary Responsible Party	Potential Resources
1. Continue to collaborate with the School District to address the community safe rooms (storm shelters) needs of the community. The School District is considering such a safe room as part of a future facility expansion. Such a safe room, if provided emergency power, could also potentially serve as a heating/cooling center, emergency shelter, and reunification site.	High; 2-5 years; Subject to grant funding availability	Fall Creek School District	FEMA Hazard Mitigation Grant Programs (BRIC & HMGP) WCWRPC and Wisconsin Emergency Management can provide grant-related guidance
2. Continue to work to strengthen the Village's cyber-security for general administration and municipal utilities. Consider testing and evaluation support through the Cybersecurity & Infrastructure Security Agency (CISA)	High; ongoing	Public Works, Village Administrator	Wisconsin CISA office. County IT staff are part of the Regional Cybersecurity Response Team.
3. As funding allows, install emergency power generators at the Fire Station//Police offices/EOC and at Village Hall to support its use as a heating/cooling center and Red Cross emergency shelter.	High; 3-5+ years as resources allow	Public Works, Village Board, Fire Department	Grants for generators are very limited. See generator-related recommendations in Section VI.C.

4. Consider the following projects to enhance the resiliency of the community: • Continue to annually review and update, as needed, the Village Emergency Operations Plan (EOP). • Consult with the Fire Department to assess Village standards for private driveways and roads for emergency vehicles. Notify landowners of any access/egress concerns. • Consider security and storm hardening and back-up power options as part of the new Library/Community Center design. • Continue to encourage collaboration between the Fire Department, local industry, and County Emergency Management to conduct regular HazMat spill preparedness training, with a particular emphasis on the railroad. • Encourage communities and emergency response entities in the County to consider joint purchasing when possible. • Integrate mitigation plan recommendations into the next comprehensive plan update.	Medium-to-High; Timelines vary with some on-going activities	Overall, Village Administrator working with Fire Department and Village's emergency planning committee.	County Emergency Management can provide guidance and support for many of these activities, or help the Village identify additional resources and contacts.

Sub-Plan Coordination and Integration

The previous Capability Assessment section identifies how this Mitigation Sub-plan has been integrated into or coordinated with other municipal plans or planning mechanisms. During the planning process, the following opportunities were identified to integrate the mitigation strategies into other community planning mechanisms:

- In addition to the creation of a stormwater management plan, the Village intends to incorporate the information within this Mitigation Sub-plan into the next comprehensive plan update.
- Mitigation projects will also be integrated into the Village's Capital Improvements Plan (CIP), including the identification of anticipated funding sources.
- The next section describes how this Sub-Plan will be maintained, including a periodic review of opportunities to strengthen the coordination and integration with other planning mechanisms.

Sub-Plan Adoption and Maintenance

Plan Adoption	Once updated, the community's governing body will adopt the County's overall hazard mitigation plan (and any future revisions/amendments) by resolution during a noticed public meeting in adherence with Wisconsin Open Meetings laws. This community-specific Hazard Mitigation Sub-Plan is an appendix of the County's overall plan. The community may modify and re-adopt its Sub-Plan by resolution during a noticed public meeting at any time at their discretion.
Plan Maintenance	During the second quarter of each year or following a declared disaster event, the primary mitigation plan contact will review this Mitigation Sub-Plan concurrently with (at the same time as) the annual review of the municipal Emergency Operations Plan. Other municipal and agency officials (e.g., public works, fire department, law enforcement) may be involved in this review or consulted as needed. The Mitigation Sub-Plan will be reviewed for: • Any significant changes in vulnerabilities, priorities, or trends, including to populations, structures, community lifelines, and weather/event patterns. • Any significant changes in capabilities or barriers to plan implementation. • Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms). • Potential new mitigation and preparedness strategies, projects, or grant opportunities. • Any comments or discussion with the public, partners, or other stakeholders. If potential changes to the Sub-Plan are being considered, the planning contact will: 1. The community's planning contact will contact County Emergency Management and West Central Wisconsin Regional Planning Commission (WCWRPC) to discuss the proposed changes and any guidance regarding potential resources and next steps. The community may also request that the County consider changes to the County's overall mitigation plan. 2. Provide the suggested changes to the community's emergency planning committee, plan commission, or governing body for consideration. Should it be determined that a Mitigation Sub-Plan change is needed, the governing body will adopt the Sub-Plan as noted previously. Such changes will be limited to this community-specific Mitigation Sub-Plan. Changes to this Sub-Plan may be made in the future without County Board or other participant re-adoption of the County's overall mitigation plan.
Plan Updates	The community intends to be a full participant in five-year updates of the County's overall hazard mitigation plan, which will include reviewing and updating the information provided in this Mitigation Sub-Plan. Changes to Sub-Plan content may be necessitated by applicable mitigation rules and planning guidance in effect at that time.
Continued Public Participation	The community will provide opportunities for public participation throughout its mitigation planning processes, including: (1) all governing body or committee actions regarding the Sub-Plan shall be conducted in adherence with the Wisconsin Open Meetings rules; (2) public comments will be accepted on draft Sub-Plans and Sub-Plan changes prior to adoption; and (3) public input and ideas on potential risks, vulnerabilities, capabilities, or mitigation projects are welcomed and will be considered.

CITY OF ALTOONA HAZARD MITIGATION SUB-PLAN

This sub-plan identifies past hazard events, risks, trends, capabilities, and strategies unique to or specific to the community and is part of the overall *Eau Claire County Multi-Hazard Mitigation Plan*. The Eau Claire County mitigation plan provides broader context and contains hazard assessment, capabilities, and strategies that are countywide or multi-jurisdictional.

Primary Contact:	City Administrator
Planning Meetings:	• Primary planning meeting with WCWRPC staff occurred on 9/11/24 at the City Hall. Sign-in sheet excerpt in Appendix B identifies participants. • City participated in a mitigation/preparedness capabilities assessment in October 2023. • Resolution adopting the Hazard Mitigation Plan and Sub-Plan will be approved by City Council at a public meeting. Resolution included in Appendix A.

Community Profile

This table provides a brief overview of key community characteristics, primarily from the 2020 U.S. Census, which are important to assessing capacity and vulnerabilities. For example, the entire population and all above-ground structures in the community are vulnerable to a tornado event, while mobile homes have an elevated vulnerability.

Population	8,293
Median Age	39.3 years
Underserved, disadvantaged, or uniquely vulnerable populations	Seniors, mobile home park residents, nursing home.
Assessed Improvements (2023)	Residential: $627,010,000; Commercial: $494,403,600; Manuf.: $22,242,800
# of Housing units	3,725
# of Mobile Homes	240
Notable Community Lifelines or Critical Facilities	See map at end of sub-plan

Hazard Risk Assessment

This table describes past hazard events impacting the community and any unique vulnerabilities to each event. This assessment is supplemented by the risk assessment map included at the end of this Mitigation Sub-Plan for the community. Also see the Risk Assessment in Section III of the main text of the Eau Claire County mitigation plan for general risks and vulnerabilities applicable to most or all communities.

Hazard	History & Past Impacts	Vulnerabilities & Potential Impacts
Tornado & High Winds	Eau Claire County has a long history of tornados, including some that have occurred nearby, but no tornado history in the City in 25+ years.	Development containing Woodman's (south of River Prairie) does not have a storm shelter and is a high traffick area. Events at River Prairie. Underground parking in Prairie Place is designated as a storm shelter in the City's Emergency Operations Plan but does not have signage informing the public of the shelter area. Many large apartment developments and senior housing facilities do not have basements, underground shelters or safe rooms.

		560-site mobile home park Hillcrest Estates currently lacks on-site safe room(s); FEMA HMGP funding has been secured to construct a safe room and design underway. Industrial buildings are vulnerable to high winds. Large rail yard near Lake Altoona contains several cars that could be thrown by a tornado; some contain hazardous materials.
Hail & Lightning	No unique history noted. 4-inch hail occurred in the area resulting in damage to vehicles and homes in May 2025; this storm also spawned multiple tornados in the region. 2-3 lightning strikes at River Prairie well.	No unique or repetitive concerns noted.
Winter Storm, Ice, & Extreme Cold	Winter 2014 utility breaks and frozen lines; an individual was trapped under a collapsed awning due to heavy snow accumulation. Multiple accidents on USH 53 due to icy conditions; low visibility resulted in further accidents, backups, and the City implementing a no-tow policy in inclement weather.	Ongoing concerns with traffic impacts during winter and ice, especially on USH 53 near curves; this has been a vulnerability identified in the original and all updates of the County's mitigation plan; fog can also be an occasional problem on USH 53 around the Eau Claire River.
Extreme Heat	Power outages have occurred during periods of extreme heat; described as rolling brown-outs.	Mobile home sites can be dangerous if not equipped with AC. Railroads / railyard can be an ignition site.
Long-Term Power Outage	Rolling brown-outs have occurred, but no significant events reported. Some nearby areas have had outages 1-2 days with heavy snows but very limited outages within the City.	New wells and most City buildings now have generators. Older wells and liftstations without generators; Public Works has two portable generators and is adding another. Uncertain if long-term care facilities have sufficient backup power options. Wells have emergency power. Considering purchase of additional portables. New developments required to bury power lines.
Flooding – Riverine or Overbank	High banks along most of the shoreland areas. About 12 properties (not all in the City) were significantly impacted along lake by flooding on 9/25/2010. Otter Creek outfall failed over time contributing to limited flooding downstream but no significant damage.	Sandbagging used at times in the City. Volunteer management for sandbagging continues to be a challenge. Improvements made along USH 12, but some surcharge continues to occur.
Flooding – Stormwater or Overland	Short term flooding and pooling, but no significant events reported. Areas along USH 12 continue to experience issues. Jeep was flooded out about 2022 near Happy Hollow on Thompson Drive.	Some drainage and ponding problems exist despite stormwater system improvements. Highway 12 has flooded. Debris in basins can be an issue.
Dams	Eau Claire County Dam along Lake Altoona / Eau Claire River provides some flood control.	Dam break could damage the USH 53 bridge and downstream properties.
Drought	No significant impacts within the City from past droughts.	No unique concerns noted. 2 new wells.
Wildfire	No significant events in the community in the past 50+ years.	Rail yard and railroads are a potential ignition source. New brush truck/tender in capital improvements plan.
Hazardous Materials Spills	No events reported. Derailments have occurred but no contamination.	Railyard near downtown, Highways 12 & 53, and some industries are the most significant concerns.

Active Threats	Threats and instances of "swatting" have occurred at schools but no events.	No unique concerns noted. Schools and City Hall identified as primary public facility risks. Training occurs regularly and there is a regional tactical system in place. State grant dollars provided for additional school mapping. School District has doing a lot of planning, mapping, drills, and strengthening of alert systems over past few years, including support through the I Love U Guys Foundation.
Cyber-Attack	No significant events impacting municipal facilities or services.	Annual cyber-security tests are conducted. A third-party assessment is desired.

Notable Trends or Changing Priorities

Have any hazard-related priorities changed since the previous mitigation plan?	Increasing stormwater runoff concerns related to increasing heavy rainfall events. Also increasing cyber-security threats.
Are there any other trends influencing these concerns, such as changes in development, demographics, or weather patterns?	No other trends noted.

Capabilities Assessment

The following is a general assessment of the community's resiliency and capabilities to mitigate, respond to, and recover from a disaster event. It also notes if mitigation or preparedness has been integrated into planning mechanisms. This assessment was completed by the community through the 2023 web-based survey, with some supplemental information from the community meeting and other sources (e.g., fire department survey, NFIP Community Status Book). The list of potential plans, policies, and other actions is not exhaustive, and it is not expected that the community has undertaken all actions listed or will undertake all actions in the future.

Planning Activities	
Community Emergency Operations or Response Plan (EOP)	Adopted; does incorporate mitigation or preparedness. Updated in 2024.
Community Evacuation Plan and/or Exercises	Adopted; does incorporate mitigation or preparedness. Good for school as well.
Continuity of Government Plan	Adopted; does incorporate mitigation or preparedness
Comprehensive Plan	Adopted; does incorporate mitigation or preparedness
Stormwater Management Plan	Adopted; does incorporate mitigation or preparedness
Historic Preservation Plan or Ordinance	Adopted; Outdated and does not incorporate mitigation or preparedness. Incorporation of mitigation and preparedness actions will be considered
Capital Improvements Plan or Similar Budget	Adopted; does incorporate mitigation or preparedness
Involve Fire & Law Enforcement in planning & development plan review	Yes.
Special emergency notification procedures or preparedness plans for vulnerable populations	No, considering implementation.
Policies, Codes, & Ordinances	
Building Codes	Adopted; does incorporate mitigation or preparedness
Building Code Efficiency Grading Schedule	Adopted; does incorporate mitigation or preparedness
Zoning Ordinance	Adopted; does incorporate mitigation or preparedness
Subdivision Ordinance	Adopted; does incorporate mitigation or preparedness
Site Plan Review Requirements	Adopted; does incorporate mitigation or preparedness

Floodplain Management	
Initial Flood Hazard Boundary Map:	01/09/74
Initial FIRM Identified:	02/18/09
Current Effective FIRM Date:	04/16/14
Date Community First Joined NFIP (Reg-Emer)	02/18/09
NFIP Participation Status (and reason if not participating):	Participant
Floodplain Regulations w/ NFIP standards:	Adopted; does incorporates mitigation or preparedness
Designated position or committee for floodplain management, floodplain zoning, & NFIP compliance:	Zoning Administrator
Other ongoing floodplain management activities:	None noted.
Stormwater Management Ordinance	Adopted; does incorporates mitigation or preparedness
Stormwater Utility	Adopted; does incorporate mitigation or preparedness
Winter Emergency Policies	Adopted; does incorporate mitigation or preparedness. "No tow" policy on USH 53 under poor conditions.
Mitigation & Preparedness Actions for Facilities	
Debris Site identified for storm debris disposal (not just woody debris)	Yes
Emergency Operations Center designated with generator/back-up power	Yes
Public Storm Shelter/Community Safe Room designated	Yes
Public Heating/Cooling Shelter designated with generator/back-up power	Yes. School facilities, but low demand to date. H.S. has generator; generator being added to elementary school. City Emergency Services building also available.
Storm/warning siren on back-up power	Yes. Good coverage, but may need a 5th siren if continues to grow to east.
Storm/warning siren that can be activated remotely	Yes
Active shooter/threat plans and/or security hardening for municipal buildings	Yes. Police Department has also been training with community facilities including banks and assisted living facilities.
Other Mitigation & Preparedness Actions	
Review EOP at least annually	Yes
Individuals in EOP have ICS/NIMS training	Yes
Public Information Officer designated & trained	Yes
Municipal officials and staff participate in regular disaster or emergency response exercises	Yes
Community-level efforts to improve hazard preparedness among residents	No, considering implementation
Adopted billing rates for public works labor & equipment use during emergencies	No, considering implementation
Adopted mutual aid agreements for public works equipment/personnel support	Yes
Adopted emergency contracting and purchasing policies	Yes
Cyber-security systems, off-site/cloud back-up, and recovery policies or plans for municipal records	Yes. Considering additional improvements.
Cyber-security systems and policies for municipal utilities	No, considering implementation
Municipal buildings/staff have NOAA All Hazards Radios or signed-up for an emergency notification system.	No, considering implementation
Other Flood Mitigation projects or activities	Significant stormwater improvements made over past two decades have reduced vulnerabilities.
Municipal Dam-related planning or actions	No municipal dam. Dam is owned by Eau Claire County and contributes to flood control.

Barriers to mitigation or preparedness actions	Funding and availability of staff time/resources. Communication with all population groups. City has considered a mobile app, but funding is the primary obstacle. Hospital closures may limit the area's capacity to respond to a mass casualty event.
Other:	Interested in annual team training exercises. Good collaboration with County for overall response to COVID-19 pandemic; new Point of Distribution drive through site at Police Department.

Mitigation Strategy Recommendations

The overall mitigation goal statements in Section VI.A. of the Eau Claire County mitigation plan are shared by all participating communities.

The community will strive to implement the following mitigation actions/projects as resources and funding allows, though priorities could change due to a variety of fiscal, technical, or other factors, including changes in hazard risks. Sections VI.C. and D. of the Eau Claire County mitigation plan includes additional mitigation and preparedness actions that are intergovernmental in nature and not specific to the community but may suggest coordination and funding opportunities.

The following recommended actions/projects are specific to the community:

Action/Project	Priority & Timeline	Primary Responsible Party	Potential Resources
1. Adopt billing rates for public works labor and equipment use during emergencies.	High; 1-2 years	City Administrator & Public Work; City Council	WCWRPC for technical support if needed
2. Using Cybersecurity and Infrastructure Security Agency (CISA) program support, conduct a third-party assessment of cybersecurity infrastructure.	High; 1-3 years	City Administrator & Public Work; City Council	Wisconsin CISA Cybersecuity staff, WI Division of Enterprise Technology (DET) State & Local Cybersecurity Grant Program (SLCGP)
3. Continue to monitor flooding within the community especially in light of the increasing frequency of heavy rain events, sedimentation of surface waters, and growth. Explore mitigation actions, such as hydraulic analysis, additional flood retention, or, if buildings are impacted, considering structural mitigation projects such as floodproofing.	Ongoing; mitigation as needed & feasible	City Public Works	FEMA Flood Mitigation Assistance (FMA) or Wisconsin Pre-Disaster Flood Resilience Grant.
4. Explore designation or development of one or more community safe rooms (storm shelters). Potential locations include the Woodman's area of River	Medium-to-Low 3-5 years, except adding	City Council	FEMA Hazard Mitigation Grant Programs (BRIC & HMGP)

Prairie and Cinder City Park. These could be multi-functional safe rooms that support additional community or recreational uses. If a generator and HVAC system are provided, consider using the safe room space as a heating/cooling shelter and emergency assembly location. For new safe room construction, consider the incorporation of nature-based stormwater management systems (e.g., rain barrels, rain garden) to mitigate site runoff. Install signage indicating locations of safe rooms / storm shelters within the community, such as at River Prairie.	signage is low cost and could be addressed in the short-term		WCWRPC and Wisconsin Emergency Management can provide grant-related guidance
5. Continue planning and joint training for railroad- and highway-related HazMat spills.	Ongoing	City Fire Department	County Emergency Management
6. Consider the following projects to enhance the resiliency of the community: • As funding allows, acquire additional emergency power generators for municipal utilities. • Distribution of NOAA all hazards (weather) radios to community lifeline facilities and seniors. • Encourage residents to accept Wireless Emergency Alerts through their smart phones.	Medium; 3-5+ years as resources allow	City Council & Public Works regarding generators Aging/Facilities/Non-Profits/County for weather radios	See generator-related recommendations in Section VI.C. A radio distribution project is eligible for FEMA Mitigation Grants.
7. Integrate mitigation plan recommendations as part of the next comprehensive plan update.	Medium-to-Low; 3-5 years	Plan Commission and City Council	WDNR for technical support if needed

Sub-Plan Coordination and Integration

The previous Capacity Assessment section identifies how this Mitigation Sub-plan has been integrated into or coordinated with other municipal plans or planning mechanisms. During the planning process, the following opportunities were identified to integrate the mitigation strategies into other community planning mechanisms:

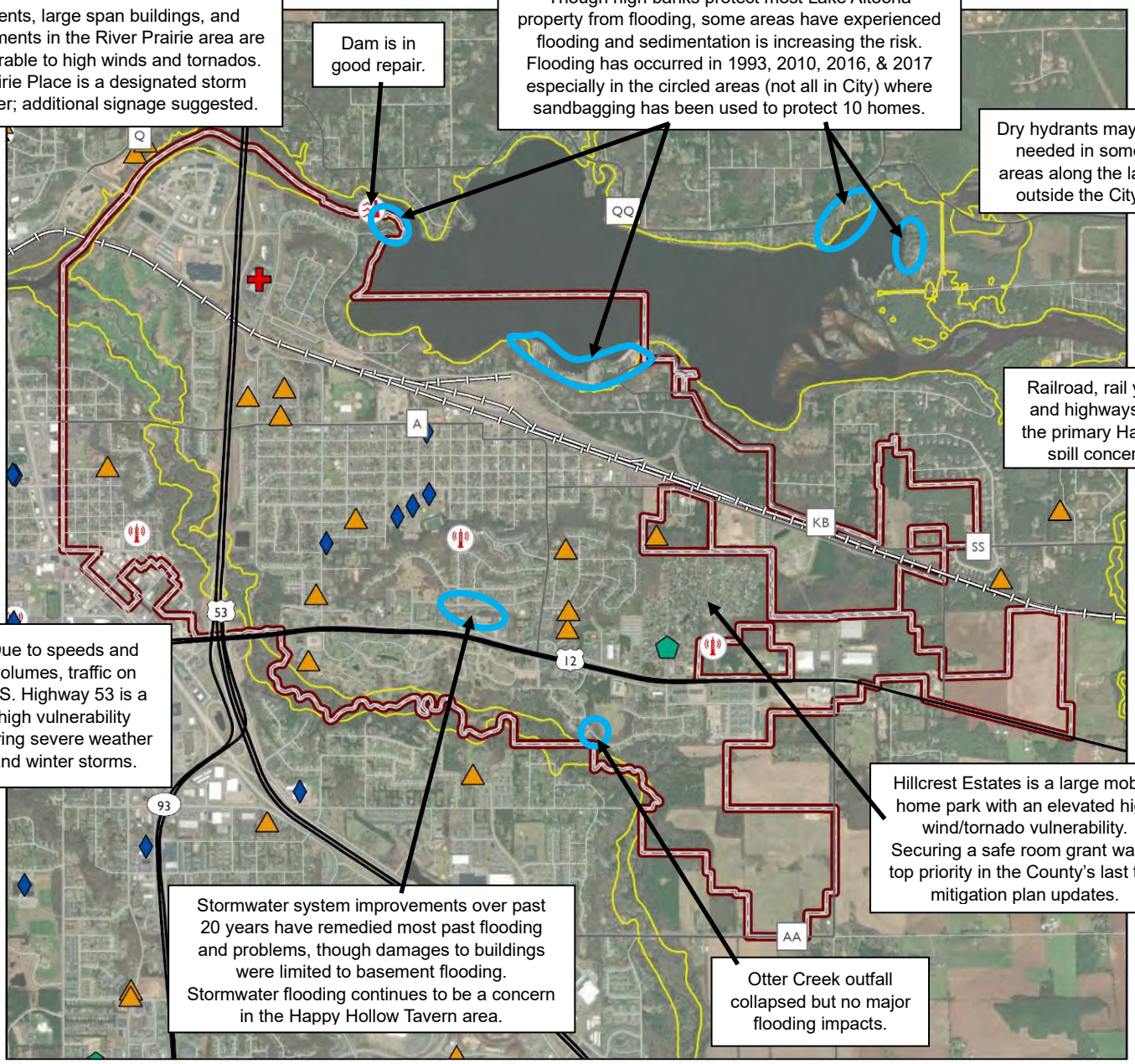
- The City intends to incorporate the information within this Mitigation Sub-plan into the next comprehensive plan update, including obtaining public input on the need for a community safe room.
- Mitigation projects will also be integrated into the City's Capital Improvements Plan (CIP), including the identification of anticipated funding sources.
- The City will consider this mitigation sub-plan when updating its Emergency Operations Plan (EOP).
- Collaborate with Eau Claire County Highway Department for the planning of messaging boards on U.S. Highways 12 & 53 that can be used during emergency situations to warn travelers.
- The next section describes how this Sub-Plan will be maintained, including a periodic review of opportunities to strengthen the coordination and integration with other planning mechanisms.

Sub-Plan Adoption and Maintenance

Plan Adoption	Once updated, the community's governing body will adopt the County's overall hazard mitigation plan (and any future revisions/amendments) by resolution during a noticed public meeting in adherence with Wisconsin Open Meetings laws. This community-specific Hazard Mitigation Sub-Plan is an appendix of the County's overall plan. The community may modify and re-adopt its Sub-Plan by resolution during a noticed public meeting at any time at their discretion.
Plan Maintenance	During the second quarter of each year or following a declared disaster event, the primary mitigation plan contact will review this Mitigation Sub-Plan concurrently with (at the same time as) the annual review of the municipal Emergency Operations Plan. Other municipal and agency officials (e.g., public works, fire department, law enforcement) may be involved in this review or consulted as needed. The Mitigation Sub-Plan will be reviewed for: • Any significant changes in vulnerabilities, priorities, or trends, including to populations, structures, community lifelines, and weather/event patterns. • Any significant changes in capabilities or barriers to plan implementation. • Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms). • Potential new mitigation and preparedness strategies, projects, or grant opportunities. • Any comments or discussion with the public, partners, or other stakeholders. If potential changes to the Sub-Plan are being considered, the planning contact will: 1. The community's planning contact will contact County Emergency Management and West Central Wisconsin Regional Planning Commission (WCWRPC) to discuss the proposed changes and any guidance regarding potential resources and next steps. The community may also request that the County consider changes to the County's overall mitigation plan. 2. Provide the suggested changes to the community's emergency planning committee, plan commission, or governing body for consideration. Should it be determined that a Mitigation Sub-Plan change is needed, the governing body will adopt the Sub-Plan as noted previously. Such changes will be limited to this community-specific Mitigation Sub-Plan. Changes to this Sub-Plan may be made in the future without County Council or other participant re-adoption of the County's overall mitigation plan.
Plan Updates	The community intends to be a full participant in five-year updates of the County's overall hazard mitigation plan, which will include reviewing and updating the information provided in this Mitigation Sub-Plan. Changes to Sub-Plan content may be necessitated by applicable mitigation rules and planning guidance in effect at that time.
Continued Public Participation	The community will provide opportunities for public participation throughout its mitigation planning processes, including: (1) all governing body or committee actions regarding the Sub-Plan shall be conducted in adherence with the Wisconsin Open Meetings rules; (2) public comments will be accepted on draft Sub-Plans and Sub-Plan changes prior to adoption; and (3) public input and ideas on potential risks, vulnerabilities, capabilities, or mitigation projects are welcomed and will be considered.

CITY OF ALTOONA- HAZARD ASSESSMENT

Eau Claire County - 2024



Legend

- City of Altoona
- 100-yr Floodplain
- Hospital
- School
- Assisted Living
- Mobile Home Park
- Storm Siren
- Dam w/High Hazard Rating

WEST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

0 0.38 0.75 1.5 Miles

Data Sources:
Eau Claire County, WDHS, WDNR, WisDOT, WDOA, WCWRPC.

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CITY OF AUGUSTA HAZARD MITIGATION SUB-PLAN

This sub-plan identifies past hazard events, risks, trends, capabilities, and strategies unique to or specific to the community and is part of the overall *Eau Claire County Multi-Hazard Mitigation Plan*. The Eau Claire County mitigation plan provides broader context and contains hazard assessment, capabilities, and strategies that are countywide or multi-jurisdictional.

Primary Contact:	City Clerk-Treasurer
Planning Meetings:	• Primary planning meeting with WCWRPC staff occurred on 10/1/24 at the City Hall. Sign-in sheet excerpt in Appendix B identifies participants. • The City did not complete a capabilities assessment survey; initial responses were based on the 10/1/24 meeting and previous mitigation plan participation, then reviewed/modified by City staff as needed. • Resolution adopting the Hazard Mitigation Plan and Sub-Plan will be approved by City Council at a public meeting. Resolution included in Appendix A.

Community Profile

This table provides a brief overview of key community characteristics, primarily from the 2020 U.S. Census, which are important to assessing capacity and vulnerabilities. For example, the entire population and all above-ground structures in the community are vulnerable to a tornado event, while mobile homes have an elevated vulnerability.

Population	1,567
Median Age	37.3 years
Underserved, disadvantaged, or uniquely vulnerable populations	Economic disadvantaged rural community based on average per capita income. Seniors, Mobile Home Park, School children. Significant Amish population in area may require special outreach efforts.
Assessed Improvements (2024)	Residential: $77,878,000; Commercial: $21,700,900; Manuf.: $18,476,100
# of Housing units	588
# of Mobile Homes	21
Notable Community Lifelines or Critical Facilities	See map at end of sub-plan

Hazard Risk Assessment

This table describes past hazard events impacting the community and any unique vulnerabilities to each event. This assessment is supplemented by the risk assessment map included at the end of this Mitigation Sub-Plan for the community. Also see the Risk Assessment in Section III of the main text of the Eau Claire County mitigation plan for general risks and vulnerabilities applicable to most or all communities.

Hazard	History & Past Impacts	Vulnerabilities & Potential Impacts
Tornado & High Winds	While there have been no direct touchdowns within the City, tornados pass close by fairly frequently and such events seem to be increasing in frequency. A tornado just missed the City in Summer 2011, which downed trees and caused some structural and vehicle damage in the City, along with partial power outage. July 2017	Overall, vulnerabilities are not unique. Most homes have basements. Some mobile homes and one, smaller mobile home park may use the owner's home as a shelter if needed. Senior living facility. Concern expressed over emergency communications with public if cell towers are damaged.

	tornado caused damage near Lake Eau Claire. EF1 tornados in the area in May 2024 and April 2025 damaged cars, homes, farm buildings, and outbuildings and downed trees/branches resulting in some loss of power. Similar impacts, though more limited, have been experienced within the City due to high winds. High winds during the May 2024 resulted in the most damage in recent years, including uprooting trees, damaged the downtown Memorial Park, and caused some minor damage to a few homes.	
Hail & Lightning	No unique history noted. Infrequent, limited hail damage to siding, roofs, and vehicles.	No unique or repetitive concerns noted.
Winter Storm, Ice, & Extreme Cold	Periodic water line breaks, but uses a water dripping program with credit to bills if needed.	No unique vulnerabilities noted. Senior/Community Center available as warming center if needed.
Extreme Heat	No unique history noted.	No unique concerns noted. Senior/Community Center available as cooling center if needed.
Long-Term Power Outage	No recent history of power loss for more than 48 hours for more than a couple homes.	Xcel Energy provides service and does a good job of keeping lines clear and response if needed. However, City Hall/Police Department, Fire Hall/EOC, and Senior Center/Public Emergency Shelter/Heating & Cooling Center lack generators; a portable is available but it is also needed for utilities. Fixed generators at wastewater plant, two wells, and nursing home.
Flooding – Riverine or Overbank	1993 flooding damage to over 60 homes and at least 21 businesses.	Mitigation actions seem to have addressed the worst of past flooding, including the relocation of the wastewater treatment plant out of the floodplain.
Flooding – Stormwater or Overland	Heavy rains in 1993 caused flash flooding damage in many areas of City. Some scattered stormwater flooding/ponding during heavy rain event in 2019 when conveyances couldn't keep up. No significant structural flooding or road/culvert damages from heavy rain events since 1993.	Substantial stormwater management improvements completed since 1993, including storm sewer diversion from Johnson Valley to the east. No culverts, roads, or property identified as floodprone. No large stormwater management projects proposed, unless driven by new development.
Dams	No recent dam failures at City-owned dam.	Dam is low hazard with little development within its shadow.
Drought	No significant impacts within the City from past droughts.	Good water quantity.
Wildfire	No significant events in the community in the past 50+ years.	No unique concerns noted. Good access for emergency vehicles.
Hazardous Materials Spills	No significant events noted.	Railroad is the primary risk. Also natural gas line and substation. School is located near both.
Active Threats	No significant events in the community.	School and Bush Brothers likely largest potential targets. No unique vulnerabilities.
Cyber-Attack	No significant events impacting municipal facilities or services.	No unique vulnerabilities noted.

Notable Trends or Changing Priorities

Have any hazard-related priorities changed since the previous mitigation plan?	Explore additional storm hardening at Senior/Community Center and School, if grant funding available to assist.
Are there any other trends influencing these concerns, such as changes in development, demographics, or weather patterns/climate?	Increasing severe weather events in area (e.g., tornados, heavy rain).

Capabilities Assessment

The following is a general assessment of the community's resiliency and capabilities to mitigate, respond to, and recover from a disaster event. It also notes if mitigation or preparedness has been integrated into planning mechanisms. This assessment was completed by the community through the 2023 web-based survey, with some supplemental information from the community meeting and other sources (e.g., fire department survey, NFIP Community Status Book). The list of potential plans, policies, and other actions is not exhaustive, and it is not expected that the community has undertaken all actions listed or will undertake all actions in the future.

Planning Activities	
Community Emergency Operations or Response Plan (EOP)	Adopted; does incorporate mitigation or preparedness
Community Evacuation Plan and/or Exercises	School does evacuation drills and serves as a reunification site for Bush Beans.
Continuity of Government Plan	No
Comprehensive Plan	Adopted; includes limited mitigation or preparedness
Stormwater Management Plan	No
Historic Preservation Plan or Ordinance	No
Capital Improvements Plan or Similar Budget	Adopted; does incorporate mitigation or preparedness
Involve Fire & Law Enforcement in planning & development plan review	Do this as needed.
Special emergency notification procedures or preparedness plans for vulnerable populations	No.
Policies, Codes, & Ordinances	
Building Codes	Adopted; does not incorporates mitigation or preparedness
Building Code Efficiency Grading Schedule	Not sure.
Zoning Ordinance	Adopted; does not incorporate mitigation or preparedness
Subdivision Ordinance	Adopted; does not incorporate mitigation or preparedness
Site Plan Review Requirements	No unique standards beyond zoning ordinance.
Floodplain Management	
Initial Flood Hazard Boundary Map:	05/10/74
Initial FIRM Identified:	05/04/89
Current Effective FIRM Date:	04/16/14
Date Community First Joined NFIP (Reg-Emer)	05/04/89
NFIP Participation Status (and reason if not participating):	Participant
Floodplain Regulations w/ NFIP standards:	Yes.
Designated position or committee for floodplain management, floodplain zoning, & NFIP compliance:	Zoning Administrator, then Plan Commission
Other ongoing floodplain management activities:	As of 2024, FEMA floodplain maps for Eau Claire County are being updated, including new engineering &

	delineations for all Zone A, and new delineations for Zone AE using the most recent terrain data.
Stormwater Management Ordinance	Adopted; assists with flood mitigation
Stormwater Utility	Yes
Winter Emergency Policies	Adopted; does not incorporates mitigation or preparedness
Mitigation & Preparedness Actions for Facilities	
Debris Site identified for storm debris disposal (not just woody debris)	Yes, for woody debris.
Emergency Operations Center designated with generator/back-up power	Fire Hall, but lacks a generator.
Public Storm Shelter/Community Safe Room designated	Senior/Community Center. Need to increase awareness of availability. Explore additional hardening and remote unlock options if funding available. Mobile home park may have a shelter, but need to confirm.
Public Heating/Cooling Shelter designated with generator/back-up power	Senior/Community Center, but lacks generator.
Storm/warning siren on back-up power	2 sirens in good repair, but lack battery backup.
Storm/warning siren that can be activated remotely	Yes
Active shooter/threat plans and/or security hardening for municipal buildings	City Police and Fire Dept participates in training/exercises with School District, including outreach to parents. City Police also updating active threat plans with Bush Brothers. Working towards mapping of floor plans of key buildings.
Other Mitigation & Preparedness Actions	
Review EOP at least annually	Updated in June 2024. Reviewed regularly.
Individuals in EOP have ICS/NIMS training	Some. Not all elected officials familiar.
Public Information Officer designated & trained	No
Municipal officials and staff participate in regular disaster or emergency response exercises	No
Community-level efforts to improve hazard preparedness among residents	No
Adopted billing rates for public works labor & equipment use during emergencies	No
Adopted mutual aid agreements for public works equipment/personnel support	WI Rural Water mutual aid agreement with Fall Creek; no formal agreement for general public works support.
Adopted emergency contracting and purchasing policies	No
Cyber-security systems, off-site/cloud back-up, and recovery policies or plans for municipal records	Yes
Cyber-security systems and policies for municipal utilities	Some
Municipal buildings/staff have NOAA All Hazards Radios	No. Interest in NOAA radio distribution project.
Other Flood Mitigation projects or activities	Significant stormwater improvements made over past two decades have reduced vulnerabilities (e.g., new culvert on Baldwin St, Bush's new stormwater management system). Wastewater treatment plant was relocated outside of the 100-year floodplain.
Municipal Dam-related planning or actions	No special actions noted.
Barriers to mitigation or preparedness actions	Funding for mitigation actions.
Other:	Emergency radios only available for Fire and Police; could use for Public Works, Shelter, and School District.

Mitigation Strategy Recommendations

The overall mitigation goal statements in Section VI.A. of the Eau Claire County mitigation plan are shared by all participating communities.

The community will strive to implement the following mitigation actions/projects as resources and funding allows, though priorities could change due to a variety of fiscal, technical, or other factors, including changes in hazard risks. Sections VI.C. and D. of the Eau Claire County mitigation plan includes additional mitigation and preparedness actions that are intergovernmental in nature and not specific to the community, but may suggest coordination and funding opportunities.

The following recommended actions/projects are specific to the community:

Action/Project	Priority & Timeline	Primary Responsible Party	Potential Resources
1. Continue to monitor flooding in the City, including maintaining the City's stormwater management plan and enforcing stormwater management regulations. Should repetitive flood losses be experienced, assess the feasibility of mitigation alternatives and update the City's mitigation sub-plan if needed.	Moderate; ongoing	City Public Works; City Council	City budget; stormwater utility. If repetitive flood losses are incurred in the future, explore mitigation grant funding alternatives.
2. Increase outreach to community members on the availability of the Community Center as a storm shelter and heating/cooling shelter. Verify whether mobile home park residents have access to a storm shelter on site.	High; 1-2 years + ongoing	City w/ cooperation of Senior Center	Could include as part of City utility mailings and Severe Weather Awareness Week.
3. Explore remote unlock and the feasibility of storm hardening options for the Senior/Community Center. The School District also expressed interest in a storm hardening options (e.g., "hurricane shutters", roof tie-down systems, emergency back-up power).	Medium; 3-10 years	Eau Claire County & Fairgrounds Association City Council & Mobile Home Park owner	FEMA Hazard Mitigation Grant Programs (BRIC & HMA) WCWRPC and Wisconsin Emergency Management can provide grant-related guidance
4. Explore funding to install battery back-up systems on existing sirens. Continue to monitor emergency siren coverage within the community with the goal of maintaining adequate coverage to notify residents who are outdoors that severe weather is approaching.	Medium-to-Low; 5-10 years	Fire Department & City Council	Unless part of a larger mitigation project (e.g., safe room), securing grant dollars is unlikely. Can integrate into Village capital improvements plan and explore private foundation or fundraising options.

5. Consider the following projects to enhance the resiliency of the community: • As funding allows, acquire additional emergency power generators for the Fire Hall, City Hall, and Senior/Community Center. • Distribution of NOAA all hazards (weather) radios to community lifeline facilities, mobile home owners, and seniors.	Medium; 3-5+ years	City Council & Public Works regarding generators Fire Department for the dry hydrant Aging/Facilities/Non-Profits/County for weather radios	Very limited grant options for generators; see generator-related recommendations in Section VI.C. WDNR has a grant funding to assist with dry hydrant costs A radio distribution project is eligible for FEMA Mitigation Grants.
6. Continue efforts to make the City of Augusta a prepared and resilient community, including: • Annually review and update the City's Emergency Operations Plan (EOP). Consider basic ICS training for staff and elected officials (e.g., ICS/NIMS 100, 200, 700, 800) • Continue to implement the City's stormwater management plan, educate residents on good stormwater practices, and integrate flood mitigation measures into the City's capital improvements plan as needed. • Integrate mitigation plan recommendations into the next City comprehensive plan update. • Continue to strengthen the City's cybersecurity systems, including related training and testing. • Continue to conduct active threat training and exercises for municipal buildings, schools, community events, and large industry. • Continue to encourage collaboration between the Fire Department, Bush's Beans, School District, and County Emergency Management to conduct regular HazMat spill preparedness training, with a particular emphasis on the railroad and natural gas pipeline.	Medium-to-High; Varies with most ongoing	Various, including: City Public Works, Police, etc. Plan Commission and City Council Fire Department School District	Support and guidance are available from various resources, such as: Eau Claire County Emergency Management, Wisconsin Emergency Management, WCWRPC

Sub-Plan Coordination and Integration

The previous Capacity Assessment section identifies how this Mitigation Sub-plan has been integrated into or coordinated with other municipal plans or planning mechanisms. During the planning process, the following opportunities were identified to integrate the mitigation strategies into other community planning mechanisms:

- The City will maintain its Emergency Operations Plan and Stormwater Management Plan.
- It is recommended that the City incorporate the information within this Mitigation Sub-plan into the next comprehensive plan update.
- Mitigation projects should also be integrated into the City's Capital Improvements Plan (CIP), including the identification of anticipated funding sources.
- The next section describes how this Sub-Plan will be maintained, including a periodic review of opportunities to strengthen the coordination and integration with other planning mechanisms.

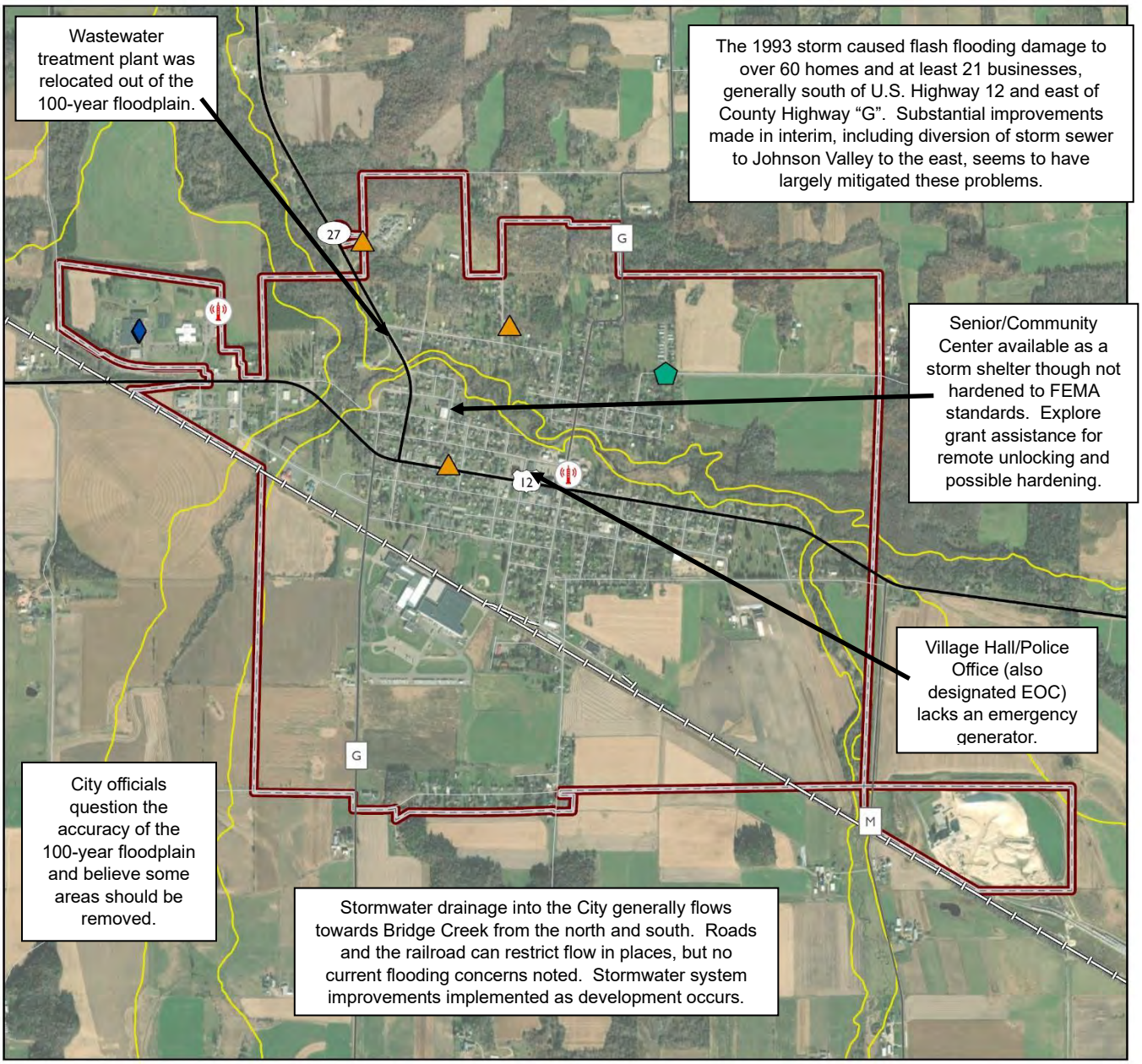
Sub-Plan Adoption and Maintenance

Plan Adoption	Once updated, the community's governing body will adopt the County's overall hazard mitigation plan (and any future revisions/amendments) by resolution during a noticed public meeting in adherence with Wisconsin Open Meetings laws. This community-specific Hazard Mitigation Sub-Plan is an appendix of the County's overall plan. The community may modify and re-adopt its Sub-Plan by resolution during a noticed public meeting at any time at their discretion.
Plan Maintenance	During the second quarter of each year or following a declared disaster event, the primary mitigation plan contact will review this Mitigation Sub-Plan concurrently with (at the same time as) the annual review of the municipal Emergency Operations Plan. Other municipal and agency officials (e.g., public works, fire department, law enforcement) may be involved in this review or consulted as needed. The Mitigation Sub-Plan will be reviewed for: • Any significant changes in vulnerabilities, priorities, or trends, including to populations, structures, community lifelines, and weather/event patterns. • Any significant changes in capabilities or barriers to plan implementation. • Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms). • Potential new mitigation and preparedness strategies, projects, or grant opportunities. • Any comments or discussion with the public, partners, or other stakeholders. If potential changes to the Sub-Plan are being considered, the planning contact will: 1. The community's planning contact will contact County Emergency Management and West Central Wisconsin Regional Planning Commission (WCWRPC) to discuss the proposed changes and any guidance regarding potential resources and next steps. The community may also request that the County consider changes to the County's overall mitigation plan. 2. Provide the suggested changes to the community's emergency planning committee, plan commission, or governing body for consideration. Should it be determined that a Mitigation Sub-Plan change is needed, the governing body will adopt the Sub-Plan as noted previously. Such changes will be limited to this community-specific Mitigation Sub-Plan. Changes to this Sub-Plan may be made in the future without County Council or other participant re-adoption of the County's overall mitigation plan.

Plan Updates	The community intends to be a full participant in five-year updates of the County's overall hazard mitigation plan, which will include reviewing and updating the information provided in this Mitigation Sub-Plan. Changes to Sub-Plan content may be necessitated by applicable mitigation rules and planning guidance in effect at that time.
Continued Public Participation	The community will provide opportunities for public participation throughout its mitigation planning processes, including: (1) all governing body or committee actions regarding the Sub-Plan shall be conducted in adherence with the Wisconsin Open Meetings rules; (2) public comments will be accepted on draft Sub-Plans and Sub-Plan changes prior to adoption; and (3) public input and ideas on potential risks, vulnerabilities, capabilities, or mitigation projects are welcomed and will be considered.

CITY OF AUGUSTA- HAZARD ASSESSMENT

Eau Claire County - 2024



Legend

City of Augusta
100-yr Floodplain
School
Assisted Living
Mobile Home Park
Storm Siren

WEST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

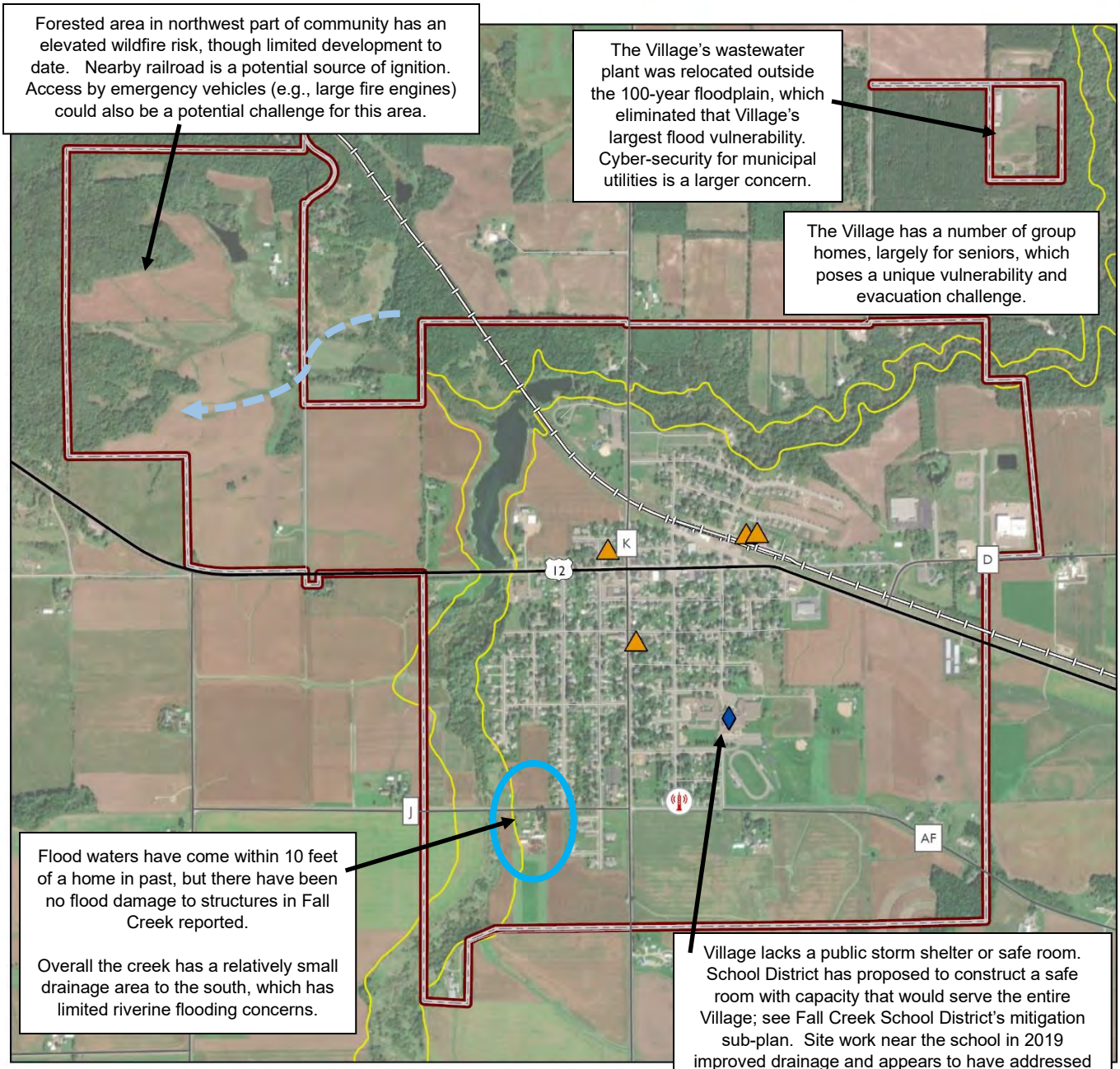
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Data Sources:
Eau Claire County, WDHS, WDNR, WisDOT, WDOA, WCWRPC.

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VILLAGE OF FALL CREEK - HAZARD ASSESSMENT

Eau Claire County - 2024



Legend

- Village of Fall Creek
- 100-yr Floodplain
- School
- Assisted Living
- Storm Siren

WEST CENTRAL WISCONSIN REGIONAL PLANNING COMMISSION

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Data Sources:
Eau Claire County, WDHS, WDNR, WisDOT, WDOA, WCWRPC.

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APPENDIX L.

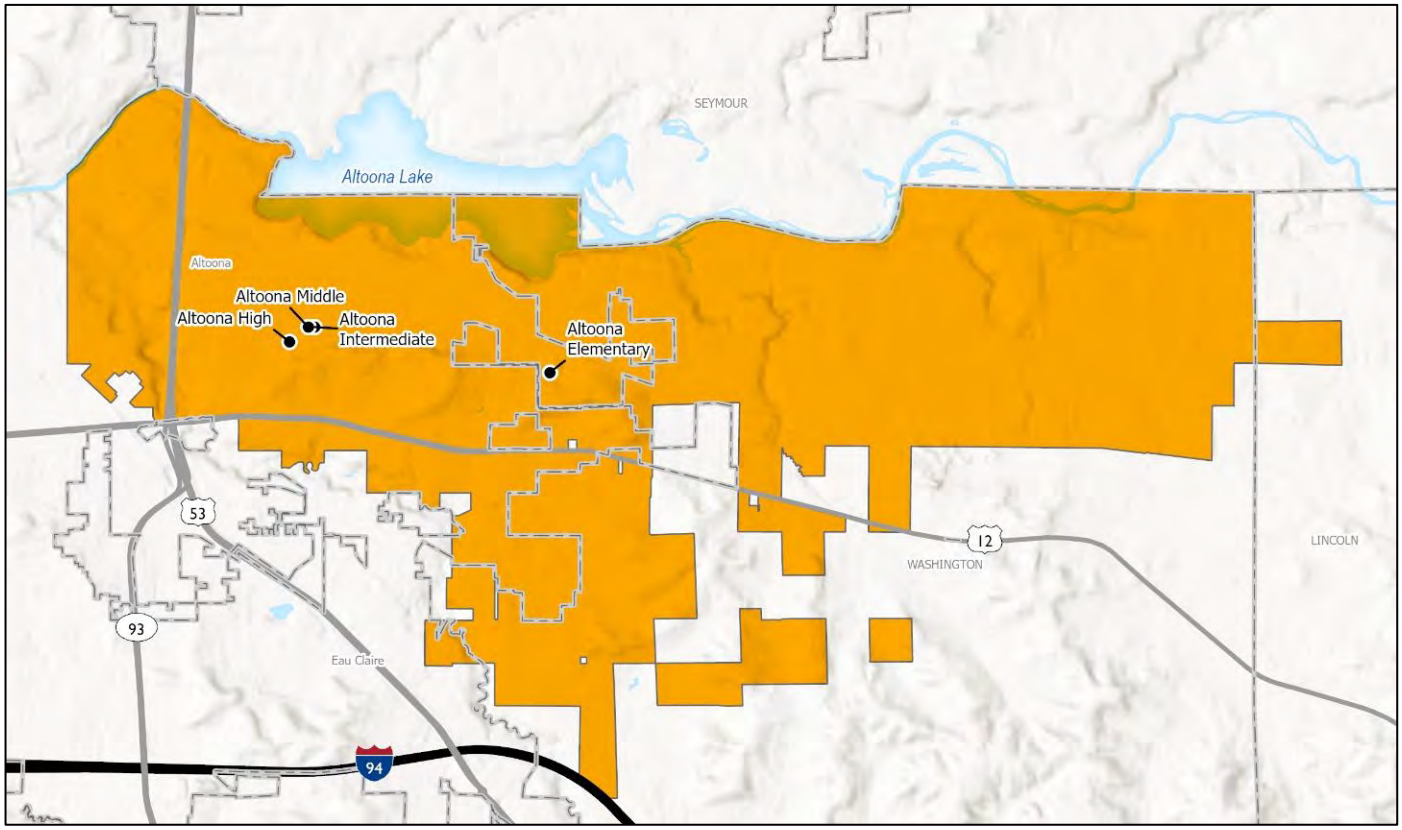
PARTICIPATING SCHOOL & COLLEGE HAZARD MITIGATION SUB-PLANS

SCHOOL DISTRICT OF ALTOONA HAZARD MITIGATION SUB-PLAN

Primary Contact:	Heidi Eliopolous, Superintendent
Planning Process:	• Hazard mitigation webinar conducted by WCWRPC in August 2024. • District completed a comprehensive hazard mitigation survey on September 5, 2024. WCWRPC prepared the draft sub-plan based on the survey results. • District reviewed the draft sub-plan and provided additional input to WCWRPC on sub-plan and strategy alternatives as needed. • Resolution adopting the Hazard Mitigation Plan and Sub-Plan will be approved by School Board at a public meeting. Resolution included in Appendix A.

School District Profile

Institution Type:	Public; K4 through 12 grades primary & secondary school		
Campus/Facility in Eau Claire County	**Address**	**approx. 2022-2023 Enrollment**	**approx. 2022-2023 Staff**
Altoona High School	711 7th St. W, Altoona, WI	573	65
Altoona Middle / Intermediate School	1903 Bartlett Ave., Altoona, WI	649	75
Altoona Elementary School	157 Bartlett Ave., Altoona, WI	515	65
Early Learning Center	745 Bartlett Ave., Altoona, WI	85	10



Hazard Threat Assessment

This table describes past hazard events impacting the District and any unique vulnerabilities to each event. This assessment is supplemented by the risk assessment map included at the end of this Mitigation Sub-Plan for the District. Also see the Risk Assessment in Section III of the main text of the Eau Claire County mitigation plan for general risks and vulnerabilities applicable to most or all districts.

Hazard	History or Probability	Absenteeism	Vulnerability or Potential Impacts
Tornado & High Winds	Moderate	Significant Impact for thunderstorms, 3+ Events	High
Hail & Lightning	High		High
Winter Storm, Ice, & Extreme Cold	High	Significant Impact, 3+ Events	High
Extreme Heat	Moderate	No Significant Impact	High
Long-Term Power Outage	High	Significant Impact, 3+ days	High
Flooding – Riverine or Overbank	None	No Significant Impact	None
Flooding – Stormwater or Overland	Low	No Significant Impact	None
Drought	Moderate	No Significant Impact	Moderate
Wildfire	None	No Significant Impact	None
Hazardous Materials Spills	High	No Significant Impact	High
Active Threats	Moderate	No Significant Impact	Moderate
Cyber-Attack	High	No Significant Impact	High
Pandemic or Infectious Disease	High	Significant Impact, 3+ days	High
Landslides / Sinkholes	None	No Significant Impact	None

Hazard Analysis

Flooding	
1. Flood history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of flooding.	No significant events have occurred and no vulnerabilities identified.
2. Are any existing or planned school buildings or assets located within the 100-year floodplain?	No structures believed to be within or near the 100-year floodplain.
3. Facilities covered by flood the National Flood Insurance Program or other flood insurance.	None. Does not believe it is needed.
4. Existing or needed flood mitigation activities.	None identified.
Tornados, Thunderstorms, Winter Storms, & Extreme Temperatures	
5. Extreme weather event history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	Storms have caused power outages. High winds and heavy rainfall have caused damage and water leaks within facilities. Instruction and activities have been disrupted when facilities have had to be converted to shelters for the community.

6. Facilities with storm shelters or safe rooms.	Yes, school facilities serve as storm shelters.
7. Facilities serving as heating/cooling centers or other emergency/recovery shelters.	The District has agreements in place with the City of Altoona and a number of private organizations to serve as a shelter if needed. School facilities serve as warming / cooling centers. Also has an agreement with Red Cross to serve as an emergency recovery shelter.
8. Unique concerns, vulnerabilities, or resources/support needed to address future severe weather threats.	Additional capacity is needed. The District would like to incorporate safe room space into future facility additions. Installing a backup power generator at Elementary School
Active Threats	
9. Active threat history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	No credible threats or events have occurred.
10. Adopted protocols for training and response to active threats.	The District has adopted "I Love You Guys" protocols.
11. Concerns, strategies, resources, support, or training needed for the District or in partnership with others.	The District trains annually and coordinates training with the Altoona Police Department. Planning and training for off-site reunification during events is on-going and remains a priority.
12. Emergency agencies with access to floor plans for the District's primary buildings.	Yes
13. Does local law enforcement have physical keys or access cards to the District's primary buildings?	Yes
14. Describe preparedness activities.	All staff are trained in the I Love You Guys response protocols. Each school drills their safety plan with staff and students a minimum of twice each year. A comprehensive Emergency Operations Manual and incident command structure is in place. All incident command team members have been trained on the use of the plan and incident command structure. The District has participated in the Critical Response Mapping program through the Department of Justice. Collaborating with County Emergency Management to conduct an Active Threat Tabletop Exercise as part of Safety Plan Training in August 2025.
Other Threats	
15. Wildfire history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	No significant events have occurred.
16. Hazardous material spill history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	No significant events have occurred, however all facilities are located near a railway on which hazardous materials are regularly transported. Response to hazardous material incidents is included in the District's safety plans and the incident command team has been briefed on how to handle hazardous material incidents.

17. Cybersecurity / cyber-attack history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	No significant events have occurred. The District completed an external vulnerability assessment, which resulted in the implementation of safeguards to protect against such attacks. A comprehensive cyber response plan and incident command structure for cyber attacks are in place. The District's insurance policy includes cyber protection.
18. Zoonotic / infections disease history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	The District monitors attendance for patterns / clusters of illness and provides guidance to parents if students should be kept at home. If a pattern is noted, the District collaborates with the Eau Claire County Health Department for additional guidance.
19. Other threat events or strategies of note.	The District has implemented a visitor management software which screens all visitors against violent/sexual offender databases. They have partnered with the Altoona Police Department to have license plate readers installed near their facilities.
Underserved or Socially Vulnerable Communities	
20. Underserved or socially vulnerable populations in the service area.	• 40% of students are considered to have a low socio-economic status. • There is a notable population of students who have English as their second language.
21. Preparedness, planning, mitigation or support recommendations for the above populations.	• Resources such as meals and showering / laundry facilities are available if needed. The District also employs three full-time staff members that are certified social workers to assist students and families. • District is able to translate all messages to the family's preferred language. • District is working with City-County Public Health to offer use of school facilities as a medial point-of-distribution (POD) if needed.

Capabilities Assessment & Plan Coordination

The following is a brief assessment of the District's resiliency and capability needs (or related recommendations) to mitigate, respond to, and recover from a disaster event. It also notes if mitigation or preparedness has been integrated into planning mechanisms.

Capability Needs or Recommendations	
Equipment Needs	Additional safe room / shelter space, backup generators, and Stop the Bleed kits.
Training Needs	Assistance with active intruder tabletop and reunification exercises.
Collaboration Needs	
Communications/Outreach Needs	Continue current partnerships and outreach activities.
County Emergency Management Relationship	The District maintains regular communication with County Emergency Management staff and partnered on railroad hazardous material spill exercises. Additional assistance and training around

	active intruder situations may be useful in the future.
Plan Coordination	
Key Plans & Training related to hazard mitigation	• Emergency Operations Plan • Cyber Security Response Plan • Incident Command Structure • Inclement Weather Closure Plan • I Love You Guys Standard Response Protocol
Additional opportunities to integrate hazard mitigation plan recommendations into the above plans	The District will integrate mitigation plan recommendations into the Emergency Operations Plan as needed and continue to partner with the City and County to expand mitigation and preparedness opportunities.
Other:	The District is familiar with Student Tools for Emergency Planning (STEP) Program and may use it in the future.

Mitigation Strategy Recommendations

The overall mitigation goal statements in Section VI. of the Eau Claire County mitigation plan are shared by all participating communities and school districts. The previous assessment and analysis shows the School District has been very proactive in evaluating and preparing for hazard threats in collaboration with the City and other partners.

The District will strive to implement the following mitigation actions/projects as resources and funding allows, though priorities could change due to a variety of fiscal, technical, or other factors, including changes in hazard risks. Section VI of the Eau Claire County mitigation plan includes additional mitigation projects and actions that are intergovernmental in nature and not specific to the District.

The District will continue to collaborate with the City of Altoona, Eau Claire County, area emergency response providers, Red Cross, and other partners to explore and implement such mitigation and preparedness actions to enhance the safety and disaster resiliency of the District and community.

The following recommended, key actions/projects are specific to the District:

Action/Project	Priority & Timeline	Primary Responsible Party	Potential Resources
1. Continue to collaborate with the City, County, area law enforcement, and other partners to strengthen HazMat spill incident preparedness, active threats prevention/preparedness, evacuation planning, and overall community preparedness, including regular drills and exercises. Regularly update the District's Emergency Operations Plan and other plans/protocols to address emerging	High; Ongoing	District Safety Committee	Local/County law enforcement; CESA and DPI; County Emergency Management; Railroad Also consider how Strategy #4 may influence these other plans.

threats, integrate community mitigation opportunities, and reflect on any lessons learned from exercises.			
2. Explore the potential integration of the Student Tools for Emergency Planning (STEP) Program curriculum for fourth and fifth grade classes.	Medium; 3-5 years	School Board and/or District Administrator to discuss	Curriculum materials available at ReadyWisconsin website
3. As part of future facility remodel, expansion/addition, or new gym, explore the development of a community safe room (storm shelter) for use by District students, staff, and visitors as well as area residents. Include a generator and heating/cooling as part of the project, which will also allow the space to be used as a heating/cooling, emergency shelter, reunification site, and/or public health emergency point of distribution.	High; 3-5 years or as facility expansions are considered	School Board; District Administrator	FEMA Hazard Mitigation Grant Programs WCWRPC and Wisconsin Emergency Management can provide grant-related guidance Note: As of Dec 2024, FEMA may fund generators for emergency lighting, etc., as part of safe room projects, but has considered full HVAC and insulation costs to be ineligible unless otherwise required by code.
4. Collaborate with Red Cross, County Emergency Management, City-County Public Health and other partners to evaluate school facility availability, capacity, and policies for various public use during or following a disaster event (e.g., storm shelters/safe rooms, heating/cooling centers, emergency recovery shelters, reunification site, family assistance/reception centers, medical point of dispensing). Update these policies as necessary and collaborate with the City and County to increase community awareness of shelter/center availability.	High; 1-3 years	Red Cross, City-County Public Health	This strategy would be led by outside agencies. If pursuing mitigation grant funding for safe rooms or storm hardening, incorporate these other facility roles.

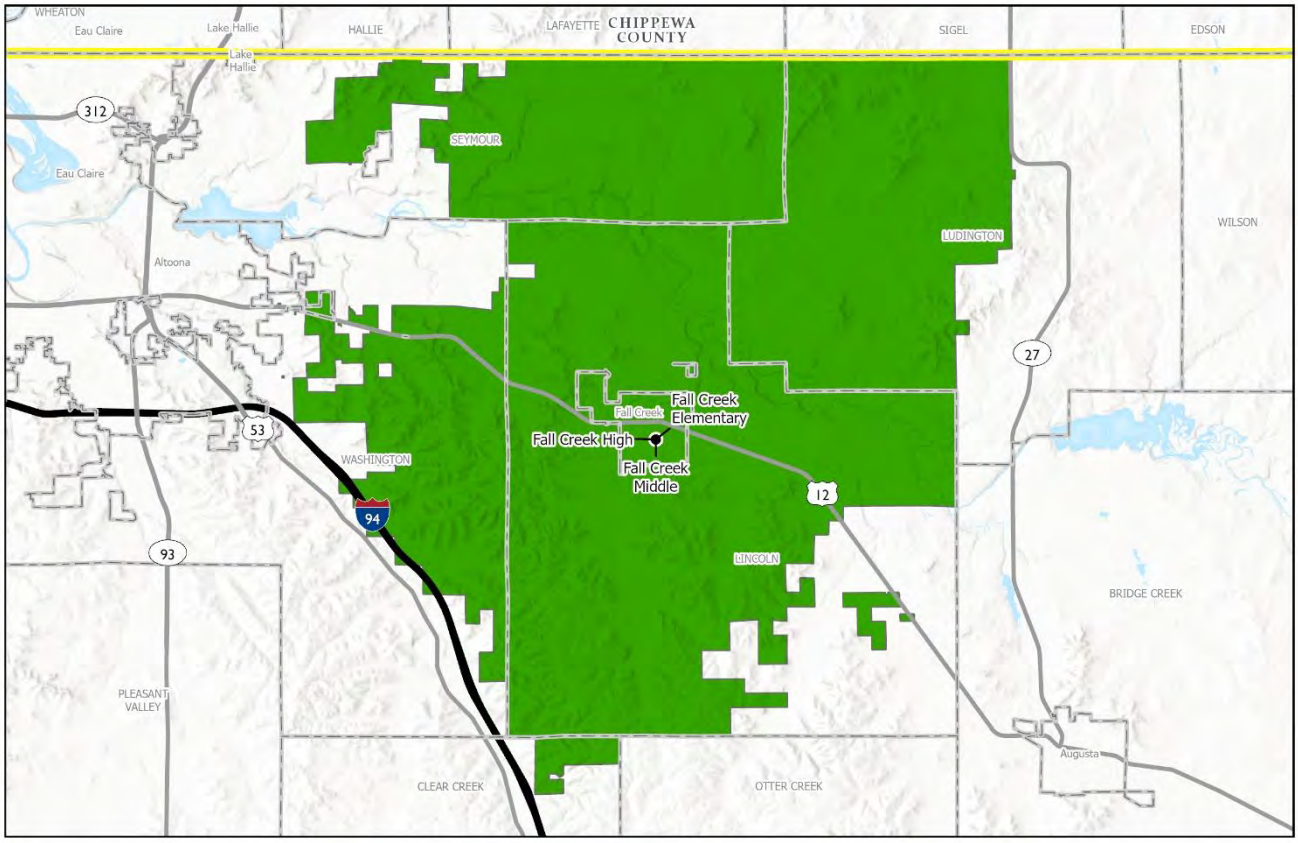
Sub-Plan Adoption and Maintenance

Plan Adoption	The School Board will adopt the County's overall hazard mitigation plan (and any future revisions/amendments specific to the District) by resolution during a noticed public meeting in adherence with Wisconsin Open Meetings laws. This school district-specific Hazard Mitigation Sub-Plan is an appendix of the County's overall plan. The District may modify and re-adopt its Sub-Plan by resolution during a noticed public meeting at any time at their discretion.
Plan Maintenance	Concurrent with the annual review of its other All Hazards Plans and protocols or following a declared disaster event impacting the District, District administration staff will review this Mitigation Sub-Plan and its recommendations. Other municipal and agency officials (e.g., public works, fire department, law enforcement) may be involved in this review or consulted as needed. The Mitigation Sub-Plan will be reviewed for: • Any significant changes in vulnerabilities, priorities, or trends, including to populations, structures, community lifelines, and weather/event patterns. • Any significant changes in capabilities or barriers to plan implementation. • Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms). • Potential new mitigation and preparedness strategies, projects, or grant opportunities. • Any comments or discussion with the public, partners, or other stakeholders. If potential changes to the Sub-Plan are being considered, the planning contact will: 1. Contact County Emergency Management and West Central Wisconsin Regional Planning Commission (WCWRPC) to discuss the proposed changes and any guidance regarding potential resources and next steps. 2. Provide the suggested changes to the School Board or its committees for consideration. Should it be determined that a Mitigation Sub-Plan change is needed, the School Board will adopt the Sub-Plan as noted previously. Such changes will be limited to this district-specific Mitigation Sub-Plan. Changes to this Sub-Plan may be made in the future without County Board or other participant re-adoption of the County's overall mitigation plan.
Plan Updates	The District intends to be a full participant in five-year updates of the County's overall hazard mitigation plan, which will include reviewing and updating the information provided in this Mitigation Sub-Plan. Changes to Sub-Plan content may be necessitated by applicable mitigation rules and planning guidance in effect at that time.
Continued Public Participation	The District will provide opportunities for public participation throughout its mitigation planning processes, including: (1) School Board actions regarding the Sub-Plan shall be conducted in adherence with the Wisconsin Open Meetings rules; (2) public comments will be accepted on draft Sub-Plans and Sub-Plan changes prior to adoption; and (3) public input and ideas on potential risks, vulnerabilities, capabilities, or mitigation projects are welcomed and will be considered.

FALL CREEK SCHOOL DISTRICT HAZARD MITIGATION SUB-PLAN

Primary Contact:	Brad Ceranski, District Administrator
Planning Process:	• Hazard mitigation webinar conducted by WCWRPC in August 2024. • District completed a comprehensive hazard mitigation survey on September 4, 2024. WCWRPC prepared the draft sub-plan based on the survey results. • District reviewed the draft sub-plan and provided revisions to WCWRPC; provided additional input to WCWRPC on sub-plan and strategy alternatives as needed. • Resolution adopting the Hazard Mitigation Plan and Sub-Plan will be approved by School Board at a public meeting. Resolution included in Appendix A.

School District Profile			
Institution Type:	Public; K4 thru 12 grades primary & secondary school		
Campus/Facility in Eau Claire County	**Address**	**approx. 2022-2023 Enrollment**	**approx. 2022-2023 Staff**
Fall Creek School District (K-12)	336 E. Hoover Avenue, Fall Creek, WI	870	115



Hazard Threat Assessment

This table describes past hazard events impacting the District and any unique vulnerabilities to each event. This assessment is supplemented by the risk assessment map included at the end of this Mitigation Sub-Plan for the District. Also see the Risk Assessment in Section III of the main text of the Eau Claire County mitigation plan for general risks and vulnerabilities applicable to most or all districts.

Hazard	History or Probability	Absenteeism	Vulnerability or Potential Impacts
Tornado & High Winds	High	Limited Absenteeism for thunderstorms, 1-2 Events	High
Hail & Lightning	High		High
Winter Storm, Ice, & Extreme Cold	High	Significant Impact, 3+ Events	High
Extreme Heat	Low	Limited Impact, 1-2 Events	Moderate
Long-Term Power Outage	Moderate	Limited Impact, 1-2 Events	Moderate
Flooding – Riverine or Overbank	Low	No Significant Impact	None
Flooding – Stormwater or Overland	Low	No Significant Impact	Low
Drought	Low	No Significant Impact	Low
Wildfire	Low	No Significant Impact	Low
Hazardous Materials Spills	Low	No Significant Impact	Low
Active Threats	Low	No Significant Impact	Moderate
Cyber-Attack	Moderate	No Significant Impact	Moderate
Pandemic or Infectious Disease	Moderate	Significant Impact, 3+ days	High
Landslides / Sinkholes	None	No Significant Impact	None

Hazard Analysis

Flooding	
1. Flood history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of flooding.	No documented damages or issues with flooding, but substantial runoff through the property that could impact buildings during extreme weather. Some ice damming and stormwater ponding has occurred near the school in the past.
2. Are any existing or planned school buildings or assets located within the 100-year floodplain?	No structures believed to be within or near the 100-year floodplain.
3. Facilities covered by flood the National Flood Insurance Program or other flood insurance.	None. Does not believe it is needed given flood history.
4. Existing or needed flood mitigation activities.	None needed for current development at this time. Existing water retention systems have been effective, though an extreme weather event could test them.
Tornados, Thunderstorms, Winter Storms, & Extreme Temperatures	
5. Extreme weather event history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	No tornado events within the Village has caused significant damage, though such events have occurred in the area, including a death less than 10 miles to the south in 1994. High winds and severe thunderstorms have caused roof and other damage within the community.

6. Facilities with storm shelters or safe rooms.	No safe room exists within the Village. The District would like to pursue mitigation grant funding to construct a safe room & emergency shelter for students, staff, visitors, and village residents in the event of a tornado, severe storm, or extreme temperatures.
7. Facilities serving as heating/cooling or other emergency/recovery shelters.	Not at this time, but interested in providing such a shelter, possibly as part of a safe room project.
8. Unique concerns, vulnerabilities, or resources/support needed to address future severe weather threats.	The District has undertaken ongoing discussions with the Village of Fall Creek regarding the lack of a safe room/storm shelter within the community; the Village is supportive of the District's efforts to remedy this community need.
Active Threats	
9. Active threat history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	No significant past active threat events.
10. Adopted protocols for training and response to active threats.	The District has adopted Run-Hide Fight/Avoid-Deny-Defend.
11. Concerns, strategies, resources, support, or training needed for the District or in partnership with others.	The District has undertaken significant efforts to plan for, train, and address active threats or civil disturbances. The District has an excellent relationship with the Fall Creek Village Police Department and the Eau Claire County Sheriff's Department. The District's plans are reviewed each year and members of each department are on site when intruder drills are conducted. After-action assessments are completed following drills to improve response in the event of an active threat in District facilities.
12. Emergency agencies with access to floor plans for the District's primary buildings.	Yes
13. Does local law enforcement have physical keys or access cards to the District's primary buildings?	Yes
14. Describe preparedness activities.	Each year, The District's Safety Committee reviews protocols and plans and conducts multiple drills during the school year. The District collaborates with local law enforcement to review and evaluate the plan. During in-service, the District has an all-staff review of all of our safety protocols. The District also has two active threat drills with our students and staff during the school year, along with all fire and tornado drills.
Other Threats	
15. Wildfire history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	None noted. The District has evacuation plans in its crisis response protocols if need arises.
16. Hazardous material spill history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	No significant hazardous material spills have occurred, and no unique vulnerabilities identified. In addition to evacuation plans, District staff who could potentially encounter hazardous materials are trained annually.

17. Cybersecurity / cyber-attack history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	No significant events have occurred. The District's technology department works hard to anticipate potential vulnerabilities and implement preparedness activities to avoid attacks. These activities include dual authentication, periodic freeze and reset of district devices, regular password changes, monitoring software, and a solid firewall. The District's response would be to contact specialists and law enforcement if its system is attacked.
18. Zoonotic / infections disease history, damage/impacts, repetitive losses, or concerns for District facilities and assets, including the nature/type of event.	The only past event was COVID-19. The District's flexible approach with instruction and connections to families during COVID-19 was effective. In any future event, the District will follow County guidance and problem-solve to best adjust and serve students, families, and the community.
19. Other threat events or strategies of note.	None noted.
Underserved or Socially Vulnerable Communities	
20. Underserved or socially vulnerable populations in the service area.	Aligns closely with the socio-economic data of Eau Claire County, including an aging population and lower-income household.
21. Preparedness, planning, mitigation or support recommendations for the above populations.	The School District communicates with and supports all families whose students attend the district, including related preparedness and support messaging.

Capabilities Assessment & Plan Coordination

The following is a brief assessment of the District's resiliency and capability needs (or related recommendations) to mitigate, respond to, and recover from a disaster event. It also notes if mitigation or preparedness has been integrated into planning mechanisms.

Capability Needs or Recommendations	
Equipment Needs	Safe room/emergency shelter with generator and heating/cooling for extreme temperatures.
Training Needs	Continue existing training programs, including partnerships with law enforcement; build upon the lessons learned during training to enhance plans and preparedness.
Collaboration Needs	
Communications/Outreach Needs	None noted. Fall Creek has a siren to alert residents to severe weather. District also uses a Crisis Go app to communicate with staff during an emergency.
County Emergency Management Relationship	The District looks forward to continuing to partner with the County to strengthen community preparedness and resiliency, including the planning for operations of a safe room.
Plan Coordination	
Key Plans & Training related to hazard mitigation	• Fall Creek School District Crisis Response Plan • County Multi-Hazard Mitigation Plan • Annual Safety Drills as required by State • Annual Staff Crisis Response Training

	• Regular Staff & Student Intruder Drills with law enforcement present. All systems tested and students educate on active threat response.
Additional opportunities to integrate hazard mitigation plan recommendations into the above plans	The District will integrate mitigation plan recommendations into the District Crisis Plan as needed and continue to partner with the Village and County to expand mitigation and preparedness opportunities.
Other:	The District is familiar with Student Tools for Emergency Planning (STEP) Program and may use it in the future.

Mitigation Strategy Recommendations

The overall mitigation goal statements in Section VI. of the Eau Claire County mitigation plan are shared by all participating communities and school districts.

The District will strive to implement the following mitigation actions/projects as resources and funding allows, though priorities could change due to a variety of fiscal, technical, or other factors, including changes in hazard risks. Section VI of the Eau Claire County mitigation plan includes additional mitigation projects and actions that are intergovernmental in nature and not specific to the District.

The District will continue to collaborate with the Village of Fall Creek, Eau Claire County, area emergency response providers, and other partners to explore and implement such mitigation and preparedness actions to enhance the safety and disaster resiliency of the District and community.

The following recommended, key actions/projects are specific to the District:

Action/Project	Priority & Timeline	Primary Responsible Party	Potential Resources
1. Continue to collaborate with the Village, County, area law enforcement, and other partners to strengthen community preparedness and active threats prevention/preparedness, including regular drills and exercises. Regularly update the District's Crisis Response Plan to address emerging threats, integrate community mitigation opportunities, and reflect any lessons learned from exercises.	High; Ongoing	District Safety Committee	Local/County law enforcement; CESA and DPI; County Emergency Management

2. Explore the potential integration of the Student Tools for Emergency Planning (STEP) Program curriculum for fourth and fifth grade classes.[1]	Medium; 1-3 years	School Board and/or District Administrator to discuss	Curriculum materials available at ReadyWisconsin website
3. As part of future facility remodel, expansion/addition, or new gym, explore the development of a community safe room (storm shelter) for use by District students, staff, and visitors as well as area residents. Include a generator and heating/cooling as part of the project, which will also allow the space to be used as a heating/cooling, emergency shelter, reunification site, and/or public health emergency point of distribution. Given localized stormwater flooding history, incorporate of nature-based stormwater management systems (e.g., rain barrels, rain garden) to mitigate site runoff, while offering related education opportunities.	High; 1-3 years Specific plans being developed with intent to apply for FEMA BRIC funding in early 2025	School Board; District Administrator	FEMA Hazard Mitigation Grant Programs (BRIC & HMGP) WCWRPC and Wisconsin Emergency Management can provide grant-related guidance Note: As of Dec 2024, FEMA will fund generators for emergency lighting, etc., as part of safe room projects, but has considered full HVAC and insulation costs to be ineligible unless otherwise required by code.
4. Continue to collaborate with the Village to monitor and, if needed, mitigate localized flooding.	Low; ongoing	Building/Grounds Director & Village Public Works	If flooding damages or poses an imminent threat to school facilities or students, FEMA or WEM mitigation grant funding may be available.

[1] Spring 2025 note added post-adoption: This strategy may have been implemented. A Wisconsin Emergency Management announcement in late 2024 identified the Fall Creek School District as participating in the STEP Program.

Sub-Plan Adoption and Maintenance

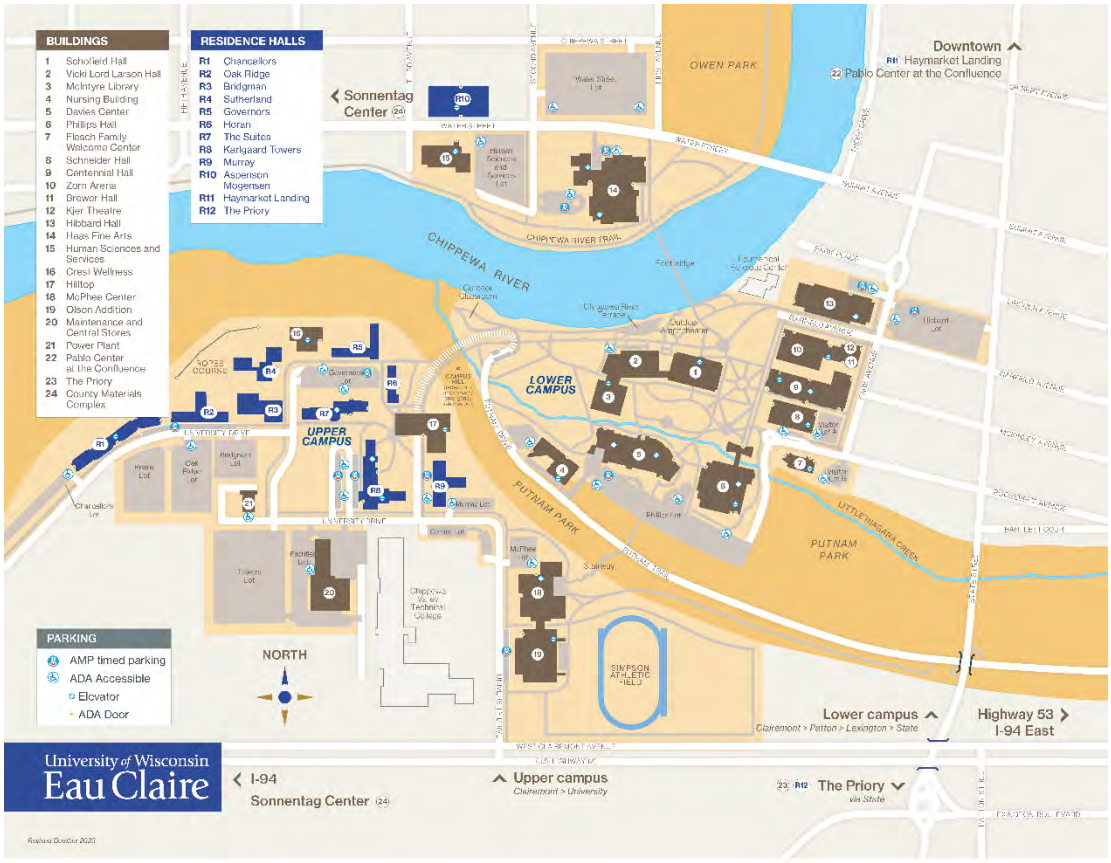
Plan Adoption	The School Board will adopt the County's overall hazard mitigation plan (and any future revisions/amendments specific to the District) by resolution during a noticed public meeting in adherence with Wisconsin Open Meetings laws. This school district-specific Hazard Mitigation Sub-Plan is an appendix of the County's overall plan. The District may modify and re-adopt its Sub-Plan by resolution during a noticed public meeting at any time at their discretion.
Plan Maintenance	Concurrent with the annual review of its other All Hazards Plans and protocols or following a declared disaster event impacting the District, District administration staff will review this Mitigation Sub-Plan and its recommendations. Other municipal and agency officials (e.g., public works, fire department, law enforcement) may be involved in this review or consulted as needed. The Mitigation Sub-Plan will be reviewed for: • Any significant changes in vulnerabilities, priorities, or trends, including to populations, structures, community lifelines, and weather/event patterns. • Any significant changes in capabilities or barriers to plan implementation. • Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms). • Potential new mitigation and preparedness strategies, projects, or grant opportunities. • Any comments or discussion with the public, partners, or other stakeholders. If potential changes to the Sub-Plan are being considered, the planning contact will: 1. Contact County Emergency Management and West Central Wisconsin Regional Planning Commission (WCWRPC) to discuss the proposed changes and any guidance regarding potential resources and next steps. 2. Provide the suggested changes to the School Board or its committees for consideration. Should it be determined that a Mitigation Sub-Plan change is needed, the School Board will adopt the Sub-Plan as noted previously. Such changes will be limited to this district-specific Mitigation Sub-Plan. Changes to this Sub-Plan may be made in the future without County Board or other participant re-adoption of the County's overall mitigation plan.
Plan Updates	The District intends to be a full participant in five-year updates of the County's overall hazard mitigation plan, which will include reviewing and updating the information provided in this Mitigation Sub-Plan. Changes to Sub-Plan content may be necessitated by applicable mitigation rules and planning guidance in effect at that time.
Continued Public Participation	The District will provide opportunities for public participation throughout its mitigation planning processes, including: (1) School Board actions regarding the Sub-Plan shall be conducted in adherence with the Wisconsin Open Meetings rules; (2) public comments will be accepted on draft Sub-Plans and Sub-Plan changes prior to adoption; and (3) public input and ideas on potential risks, vulnerabilities, capabilities, or mitigation projects are welcomed and will be considered.

UNIVERSITY OF WISCONSIN–EAU CLAIRE HAZARD MITIGATION SUB-PLAN

Primary Contact:	Brian Drollinger, Director of Risk Management and Safety
Planning Process:	• UWEC participated in a hazard mitigation webinar conducted by WCWRPC in August 2024, then completed a comprehensive hazard mitigation survey on August 16, 2024. WCWRPC prepared the draft sub-plan based on the survey results. • UWEC reviewed the draft sub-plan and provided revisions to WCWRPC; provided additional input to WCWRPC on sub-plan and strategy alternatives as needed. • Resolution adopting the Hazard Mitigation Plan and Sub-Plan was approved by the Board of Directors at a public meeting. Resolution included in Appendix A.

UW-Eau Claire Profile

Institution Type:	Public university.		
Campus/Facility in Eau Claire County	**Address**	**approx. 2022-2023 Enrollment**	**approx. 2022-2023 Staff**
Primary campus consists of 12 residence halls (dormitories) and 24 other educational buildings and supporting facilities.	multiple in City of Eau Claire, Wisconsin	9,500	1,200



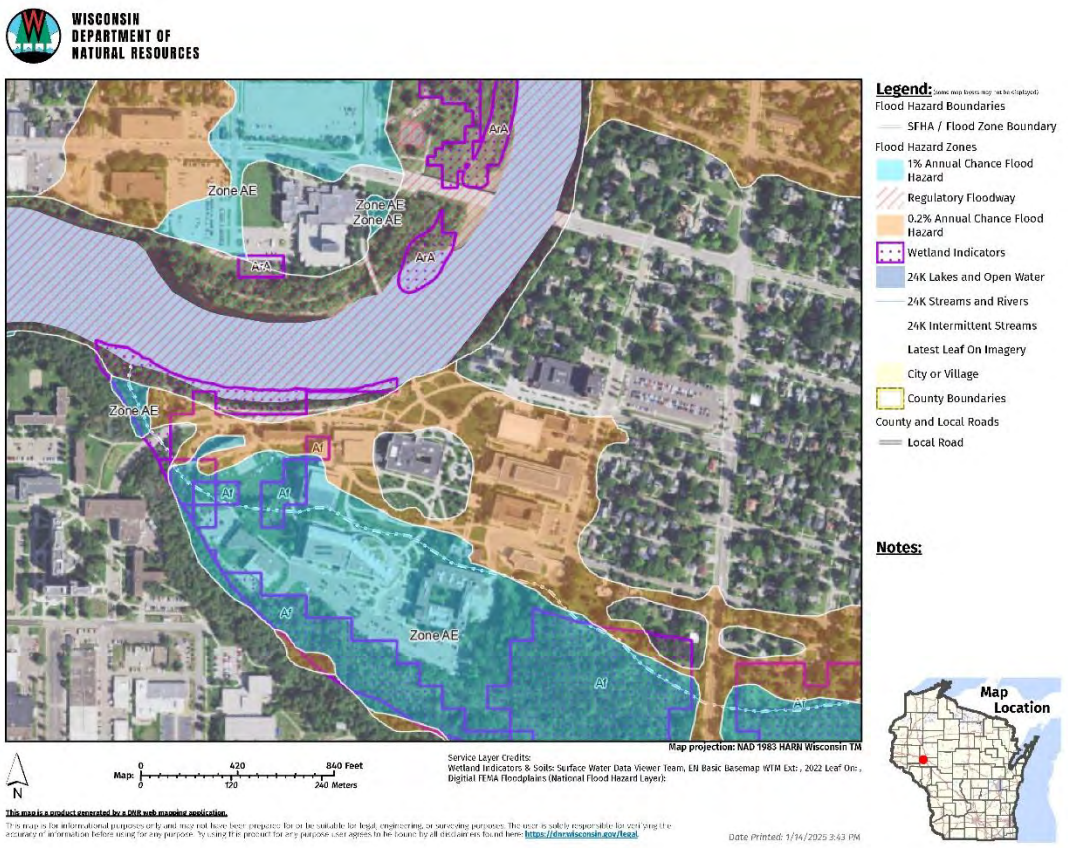
Hazard Threat Assessment

This table describes past hazard events impacting UWEC and any unique vulnerabilities to each event. This assessment is supplemented by the risk assessment map included at the end of this Mitigation Sub-Plan for UWEC. Also see the Risk Assessment in Section III of the main text of the Eau Claire County mitigation plan for general risks and vulnerabilities applicable to most or all districts and campuses.

Hazard	History or Probability	Absenteeism	Vulnerability or Potential Impacts
Tornado & High Winds	Low	Limited Absenteeism for thunderstorms, 1-2 Events	Low
Hail & Lightning	Moderate		Moderate
Winter Storm, Ice, & Extreme Cold	Moderate	Limited Absenteeism, 1-2 Events	Low
Extreme Heat	Low	No Significant Impact	Low
Long-Term Power Outage	Low	Limited Absenteeism, 1-2 Events	Low
Flooding – Riverine or Overbank	High	Limited Absenteeism, 3+ Events	High
Flooding – Stormwater or Overland	Moderate	Limited Absenteeism, 3+ Events	Low
Drought	Low	No Significant Impact	None
Wildfire	Low	No Significant Impact	Low
Hazardous Materials Spills	Moderate	Limited Absenteeism, 1-2 Events	Low
Active Threats	Moderate	No Significant Impact	Moderate
Cyber-Attack	High	No Significant Impact	High
Pandemic or Infectious Disease	Moderate	Significant Impact, 3+ days	Low
Landslides / Sinkholes	Low	No Significant Impact	None

Hazard Analysis

Flooding	
1. Flood history, damage/impacts, repetitive losses, or concerns for UWEC facilities and assets, including the nature/type of flooding.	The campus's location adjacent to the Chippewa River causes regular flooding issues. There has been water damage from flooding to the Zorn Arena and Brewer Hall buildings. Flooding events as recent as 2023 have resulted in cancellation of campus events.
2. Are any existing or planned school buildings or assets located within the 100-year floodplain?	Yes. A small waterway, Little Niagra, flows through campus and connects to the Chippewa River. Five buildings along the Creek are potentially in the floodplain but are protected through a concrete flood control structure with gates and pumping systems. The new Science Hall has been elevated above the City code minimum of 2' above base flood elevation. See map below.
3. Facilities covered by flood the National Flood Insurance Program or other flood insurance.	Respondent indicated they were unsure.
4. Existing or needed flood mitigation activities.	Gates within the concrete dam system (pump and levee/bulkhead) can be manually opened and closed as needed to prevent back-up of floodwater from the Chippewa River. Additional improvements to the structure would be beneficial. The university completed bank stabilization projects in 2003.



Tornados, Thunderstorms, Winter Storms, & Extreme Temperatures	
5. Extreme weather event history, damage/impacts, repetitive losses, or concerns for UWEC facilities and assets, including the nature/type of event.	Few incidents have caused damage. Roofing, exteriors of buildings, and landscaping have been damaged.
6. Facilities with storm shelters or safe rooms.	The campus does not currently have a tornado shelter or safe room. Campus administration is interested in exploring opportunities to develop a safe room or storm hardening measures.
7. Facilities serving as heating/cooling or other emergency/recovery shelters.	Facilities do not serve as heating/cooling/emergency shelters. Campus administration is willing to consider agreements to serve in this capacity.
8. Unique concerns, vulnerabilities, or resources/support needed to address future severe weather threats.	The new Sonnentag event center could be a possible shelter location. Additional analysis of the building and approval would be required.
Active Threats	
9. Active threat history, damage/impacts, repetitive losses, or concerns for UWEC facilities and assets, including the nature/type of event.	Potential active threats have arisen, but none have escalated to active threats. One vulnerability is that facilities have high occupancy limits, allowing many people to congregate in relatively small spaces. The new Sonnentag event center can hold up to 5,000 people at a time and the Pablo Center can hold up to 1,200 people.
10. Adopted protocols for training and response to active threats.	The university has adopted a Run-Hide-Fight or Avoid-Deny-Defend strategies.
11. Concerns, strategies, resources, support, or training needed for UWEC or in partnership with others.	A coordinated active threat exercise on campus would be beneficial. Partners should include Eau Claire PD, Fire, and CVTC, among others.

12. Emergency agencies with access to floor plans for UWEC's primary buildings.	Yes. UWEC also has its own police force.
13. Does local law enforcement have physical keys or access cards to UWEC's primary buildings?	
14. Describe preparedness activities.	Emergency Operation Plans are updated annually and shared with staff. Training is offered and recommended to all students and staff. The UW System has a training module / course.
Other Threats	
15. Wildfire history, damage/impacts, repetitive losses, or concerns for UWEC facilities and assets, including the nature/type of event.	No significant events have occurred.
16. Hazardous material spill history, damage/impacts, repetitive losses, or concerns for UWEC facilities and assets, including the nature/type of event.	No significant events have occurred. Minor spills in the Science Building required mitigation. A new Science Building is currently under construction (planned to open 2027)
17. Cybersecurity / cyber-attack history, damage/impacts, repetitive losses, or concerns for UWEC facilities and assets, including the nature/type of event.	No significant events have occurred. The 9,000+ students access and rely on UWEC's network regularly. Maintaining the network is critical to the university's functions. The number of devices accessing the network poses a security risk. Any one of these devices could, unintentionally or intentionally, allow malware to infiltrate the network.
18. Zoonotic / infections disease history, damage/impacts, repetitive losses, or concerns for UWEC facilities and assets, including the nature/type of event.	No significant events have occurred. Students interact with other students, faculty, and staff daily in classrooms, facilities, and dorms. Highly infectious diseases could spread across a significant portion of the population if they are able to remain undetected for any amount of time.
19. Other threat events or strategies of note.	None identified.
Underserved or Socially Vulnerable Communities	
20. Underserved or socially vulnerable populations in the service area.	• **On-campus student residents** may not have resources available to them in the event of a shutdown / evacuation of the campus. • The University has a growing number of **international students**, who have additional vulnerabilities in the event of a shutdown. • A large concentration of **off-campus student rental housing** also exists to the north-northwest of the lower campus and to the north-northwest of the Chippewa River. These neighborhoods tend to be lower-income and often identified as having a higher social vulnerability due to socio-economic factors.
21. Preparedness, planning, mitigation or support recommendations for the above populations.	Continue to maintain, update, and test/exercise current plans. No additional recommendation identified.

Capabilities Assessment & Plan Coordination	
The following is a brief assessment of UWEC's resiliency and capability needs (or related recommendations) to mitigate, respond to, and recover from a disaster event. It also notes if mitigation or preparedness has been integrated into planning mechanisms.	
Capability Needs or Recommendations	
Equipment Needs	Additional improvements to Little Niagra damming structure.
Training Needs	A coordinated active threat exercise on campus with all relevant partners would be beneficial.
Collaboration Needs	Overall, UWEC has strong partnerships with local law enforcement and emergency responders as well as City-County 911 Communications Center, City-County Public Health, and County Emergency Management.
Communications/Outreach Needs	None identified.
County Emergency Management Relationship	University administration maintains regular communication with County Emergency Management. Additional assistance and training around active threat situations may be useful in the future.
Plan Coordination	
Key Plans & Training related to hazard mitigation	• Emergency Operations Plans • Emergency management tabletop exercises • Educational outreach • Shared resources for training • Partnership with the City, County, and non-profits
Additional opportunities to integrate hazard mitigation plan recommendations into the above plans	On-campus active threat exercises could result in additional recommendations being implemented. Development of additional education materials and outreach.
Other:	The UWEC Director of Risk Management and Safety is represented on the Disaster Ready Chippewa Valley Board of Directors as well as the City-County Public Health Emergency Preparedness Committee and the Eau Claire County Local Emergency Planning Committee.

Mitigation Strategy Recommendations

The overall mitigation goal statements in Section VI. of the Eau Claire County mitigation plan are shared by all participating communities and school districts. UWEC will continue to collaborate with the City of Eau Claire, Eau Claire County, area emergency response providers, and other partners to explore and implement such mitigation and preparedness actions to enhance the safety and disaster resiliency of UWEC and the community.

UWEC will strive to implement the following mitigation actions/projects as resources and funding allows, though priorities could change due to a variety of fiscal, technical, or other factors, including changes in hazard risks. Section VI of the Eau Claire County mitigation plan includes additional mitigation projects and actions that are intergovernmental in nature and not specific to UWEC.

The following recommended, key actions/projects are specific to UWEC:

Action/Project	Priority & Timeline	Primary Responsible Party	Potential Resources
1. Continue to collaborate with the City, County, area law enforcement, and other partners to strengthen community preparedness and active threats prevention/preparedness, including regular drills and exercises. Regularly update UWEC's Emergency Operation Plans to address emerging threats, integrate community mitigation opportunities, and reflect on any lessons learned from exercises.	High; Ongoing	Director of Risk Management and Safety	Local/County law enforcement; CESA and DPI; County Emergency Management **An on-campus active threats exercise involving key partners is recommended as top priority.**
2. Complete a feasibility study for use of the Sonnentag event center as a storm shelter / safe room and heating/cooling center. As part of future facility remodels, expansion/addition, explore the development of a community safe room (storm shelter) for use by UWEC students, staff, and visitors as well as area residents. Storm hardening may be considered as an alternative. Include a generator and heating/cooling as part of expansion projects, which will also allow the space to be used as a heating/cooling, emergency shelter, reunification site, and/or public health emergency point of distribution.	High; Feasibility Study: 1-3 years Facility expansions and remodels: Ongoing	UW Facilities potentially in collaboration Red Cross and City-County Public Health	FEMA Hazard Mitigation Grant Programs WCWRPC and Wisconsin Emergency Management can provide grant-related guidance Note: As of Dec 2024, FEMA will fund generators for emergency lighting, etc., as part of safe room projects, but has considered full HVAC and insulation costs to be ineligible unless otherwise required by code.
3. Update Little Niagra dam structure to strengthen flood prevention and mitigate potential flooding impacts to UWEC facilities, infrastructure, and students/staff/visitors.	Medium; 3-5 years	UW Facilities	FEMA Hazard Mitigation Grant Programs (BRIC & HMGP) WCWRPC and Wisconsin Emergency Management can provide grant-related guidance
4. Continue to monitor flooding especially in light of the increasing frequency of heavy rain events or changing land uses nearby. Explore mitigation actions, such as hydraulic analysis, additional flood retention, or, if buildings are impacted, considering structural mitigation projects such as floodproofing or flood elevation.	Ongoing; mitigation as needed & feasible	UW Facilities	FEMA Flood Mitigation Assistance (FMA) or Wisconsin Pre-Disaster Flood Resilience Grant.

5. Continue to prioritize cybersecurity efforts, including use of Cybersecurity and Infrastructure Security Agency (CISA) program support, such as requesting a third-party assessment of cybersecurity infrastructure.	High; Ongoing	UW IT Staff	Wisconsin CISA Cybersecuity staff, WI Division of Enterprise Technology (DET) State & Local Cybersecurity Grant Program (SLCGP)

Sub-Plan Adoption and Maintenance

Plan Adoption	The plan will be reviewed by UWEC administration and the greater UW-System. The plan will be adopted by the UWEC Board of Directors.
Plan Maintenance	Concurrent with the annual review of its other emergency plans and protocols, or following a declared disaster event impacting the campus, UWEC administrative staff will review this Mitigation Sub-Plan and its recommendations. Other municipal and agency officials (e.g., public works, fire department, law enforcement) may be involved in this review or consulted as needed. The Mitigation Sub-Plan will be reviewed for: • Any significant changes in vulnerabilities, priorities, or trends, including to populations, structures, community lifelines, and weather/event patterns. • Any significant changes in capabilities or barriers to plan implementation. • Opportunities to strengthen plan coordination (i.e., integrate mitigation and preparedness into other community planning mechanisms). • Potential new mitigation and preparedness strategies, projects, or grant opportunities. • Any comments or discussion with the public, partners, or other stakeholders. If potential changes to the Sub-Plan are being considered, the planning contact will: 1. Contact County Emergency Management and West Central Wisconsin Regional Planning Commission (WCWRPC) to discuss the proposed changes and any guidance regarding potential resources and next steps. 2. Provide the suggested changes to the UWEC administrative staff and UW-System for consideration. Should it be determined that a Mitigation Sub-Plan change is needed, the Board of Directors will adopt the Sub-Plan as noted previously. Such changes will be limited to this university-specific Mitigation Sub-Plan. Changes to this Sub-Plan may be made in the future without County Board or other participant re-adoption of the County's overall mitigation plan.
Plan Updates	UWEC intends to be a full participant in five-year updates of the County's overall hazard mitigation plan, which will include reviewing and updating the information provided in this Mitigation Sub-Plan. Changes to Sub-Plan content may be necessitated by applicable mitigation rules and planning guidance in effect at that time.
Continued Public Participation	UWEC will provide opportunities for public participation throughout its mitigation planning processes, including: (1) university actions regarding the Sub-Plan shall be conducted in adherence with the Wisconsin Open Meetings rules; (2) public comments will be accepted on draft Sub-Plans and Sub-Plan changes prior to adoption; and (3) public input and ideas on potential risks, vulnerabilities, capabilities, or mitigation projects are welcomed and will be considered.