

Southeastern Wisconsin **Regional Planning Commission**



Local Planning Team Meeting

Washington County

Hazard Mitigation Plan Update

February 1, 2023

Megan Shedivy- Planner, SEWRPC

Laura Herrick, PE, CFM- Chief Environmental Engineer, SEWRPC

- Introduction
- Meeting Agenda
- Draft Chapters 1-3 Review
- County/Community Projects and Implementation Activities (LPT Input)
- Questions/Adjourn





Chapter 1

Introduction and Background



Chapter 1 Overview

➤ Introduction

- Plan Update Begins Dec. 2020
- Plan Requirements
 - Amended Stafford Act, Title 44 CFR Sec. 201
- Hazards Addressed
 - Natural Weather Hazards

➤ Overview of Study Area/County

- Map 1.1

➤ Hazard Mitigation vs. Other Planning or Programs

- Table 1.1

➤ Scope and Purpose of Plan Update

- Table 1.2 Plan Participation

➤ Plan Maintenance and Implementation

- Table 1.3 Outreach Activities
- Table 1.4 Implementation Activities

➤ Plan Adoption

Map 1.1
Civil Division Boundaries in Washington County: 2022

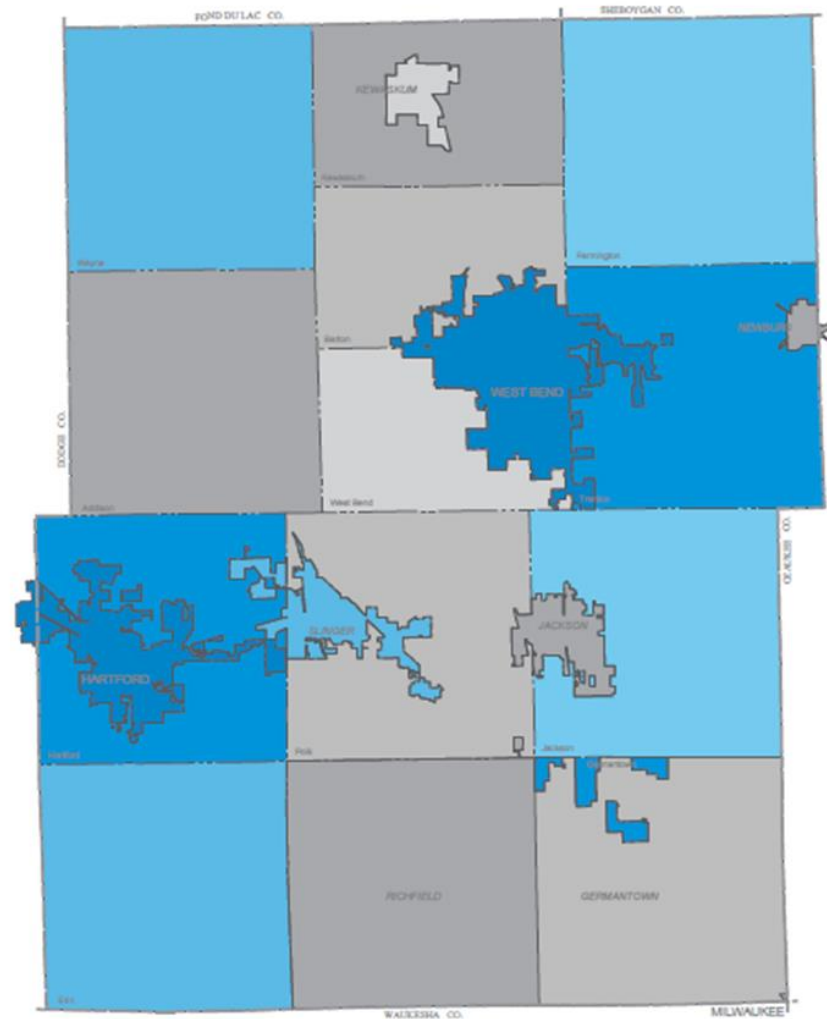




Table 1.2
Participation in the Washington County Hazard Mitigation Plan Update Planning Process

Civil Division	Attendance at Local Planning Team Meetings				Provision of Data ^a	Review of Report
	June 7, 2022	February 1, 2023				
Cities						
Hartford	--					
West Bend	X					
Villages						
Germantown	--					
Jackson	--					
Kewaskum	X					
Newburg	--					
Richfield	--					
Slinger	--					
Towns						
Addison	X					
Barton	X					
Erin	--					
Farmington	X					
Germantown	X					
Hartford	X					
Jackson	--					
Kewaskum	--					
Polk	X					
Trenton	--					
Wayne	X					
West Bend	X					
County						
Washington County	X					
Other						
	--					



Table 1.3
Outreach Activities by Community in Washington County
Related or Beneficial to Hazard Mitigation

Community	Activity
Washington County	<ul style="list-style-type: none"> County website County Facebook page County Twitter account County's Emergency Management Department webpage County Quarterly Newsletter County Newspaper(s) County's Stormwater Management Program Washington-Ozaukee Public Health Department Emergency Preparedness Website and Social Media Outreach County's Annual NWS Severe Weather Spotter/Safety Training Program Informational meeting (open house) for the Cedar Creek Watershed HUC 10 Floodplain Study and Map Amendments in Washington County Public Hearing for Chapter 275 (Shoreland-Wetland-Floodplain Zoning) Amendments and Floodplain Map Adoption for the Cedar Creek Floodplain Study
City of Hartford	<ul style="list-style-type: none"> City website Email and text message information and alert notices (Notify Me) City Facebook page City Twitter account City's Stormwater Management Program City Fire Department Facebook page and webpage that provides additional emergency preparedness resources and information City Police Department Facebook page Hartford Community Development Authority (HCDA) Weatherization Program Housing Rehab Loan Program
City of West Bend	<ul style="list-style-type: none"> City website City Facebook page City Twitter account City Emergency Government Management Program City Police Department Facebook page



Implementation/Project Activities

Table 1.4 (Work in Progress)
Hazard Mitigation Activities in Washington County: 2018-2023

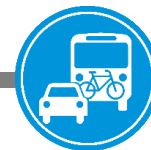
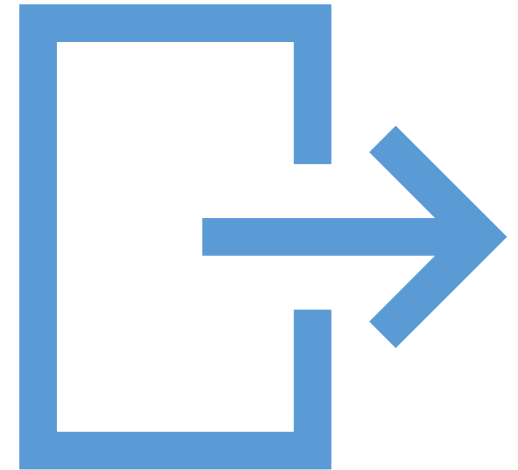
Community	Project	Cost	Funding Source	Completion Date
Washington County	Updating Floodplain Studies: <ul style="list-style-type: none"> • Cedar Creek (Adopted 2022) • Milwaukee River • Upper Rock River • Tributaries of the Menomonee River (ongoing) Installment of LiDAR technology (2015) Dam Repair on Big and Little Cedar Lake		WDNR, FEMA	February, 2022
City of Hartford				
City of West Bend	Tornado Siren Maintenance and Upkeep Severe Weather Policy Updates, Training, and Drills			
Village of Germantown				
Village of Jackson				
Village of Kewaskum	Annual Government Emergency Preparation Table Exercise			
Village of Newburg				





Plan Adoption

- To Receive FEMA Approval, **All Jurisdictions** (Participants) Must Adopt Plan with Documentation Proving So
- **Towns** Fall under County Adoption





Chapter 2

Basic Study Area Inventory and Analysis



Chapter 2 Overview:

➤ Civil Divisions

- Table 2.1
- Map 1.1 and 2.2

➤ Demographic Trends and Projections

- Tables 2.2-2.6
- Maps 2.1-2.2

➤ Existing and Planned Land Use

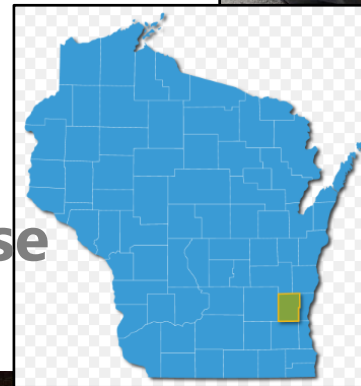
- Tables 2.7-2.9
- Maps 2.3-2.4 and 3.1

➤ Critical Facilities

- Tables 2.10-2.11, Appendix
- Maps 2.5-2.7

➤ Climate Change

Figures 2.1-2.4

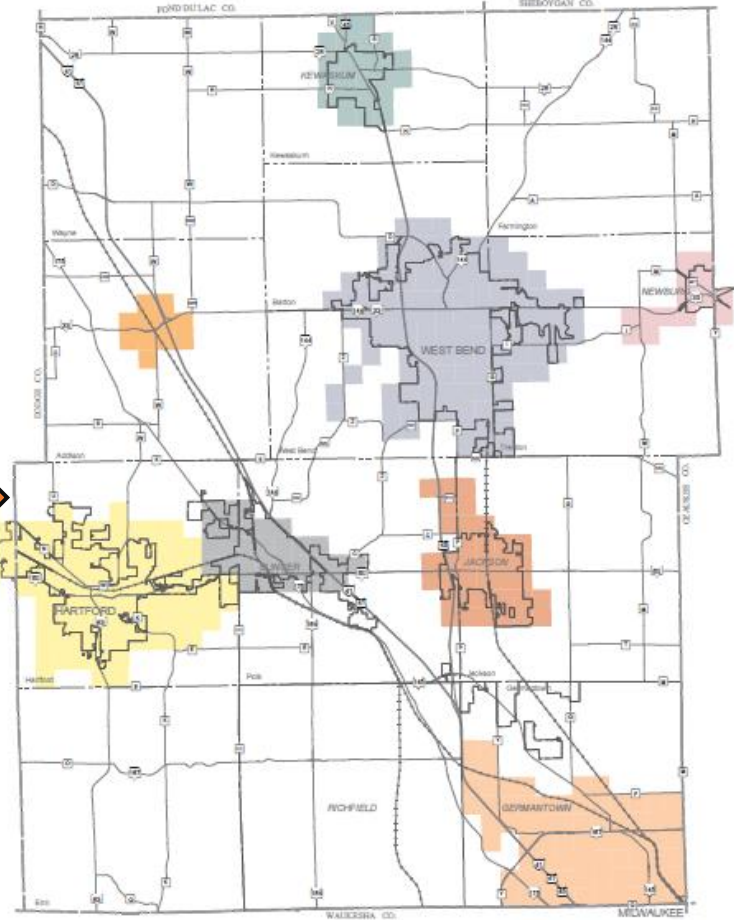
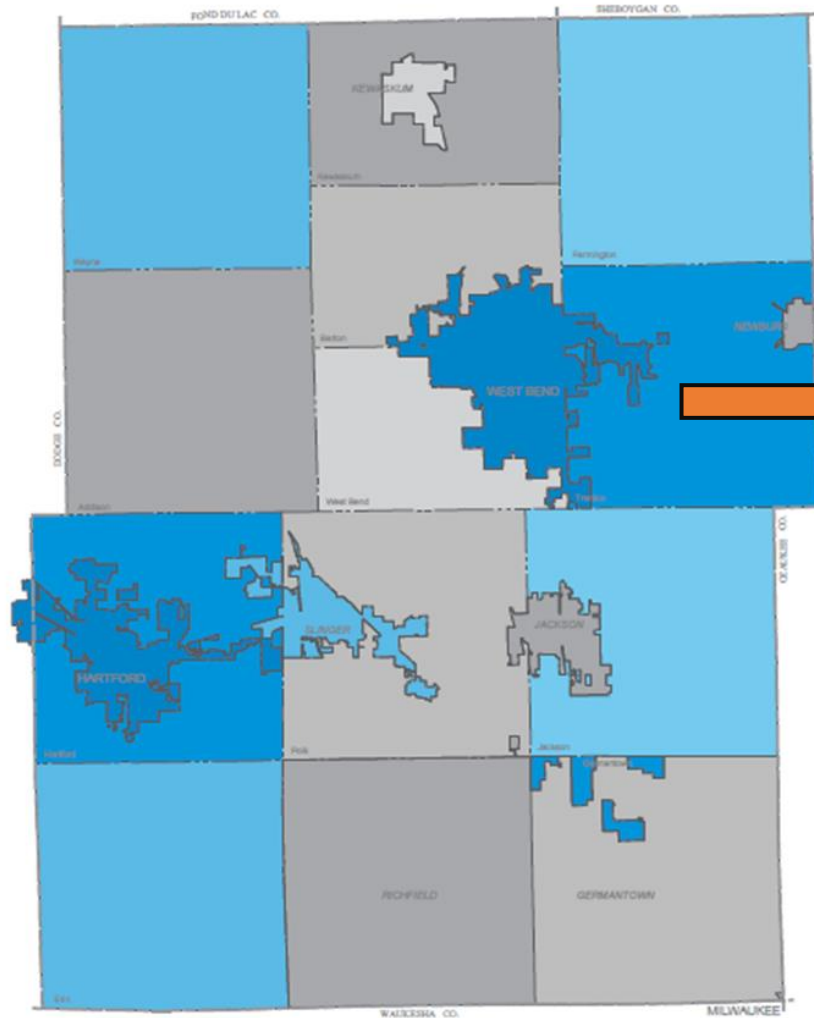







Planned Urban Service Areas: 2050

Map 2.2
Generalized Planned Urban Service Areas in Washington County: 2050

Map 1.1
Civil Division Boundaries in Washington County: 2022



-  VILLAGE OF KEWASKUM
-  CITY OF HARTFORD
-  TOWN OF ALLENTON
-  VILLAGE OF SLINGER
-  CITY OF WEST BEND
-  VILLAGE OF JACKSON
-  VILLAGE OF NEWBURG
-  VILLAGE OF GERMANTOWN



County Trends and Projections

➤ Population

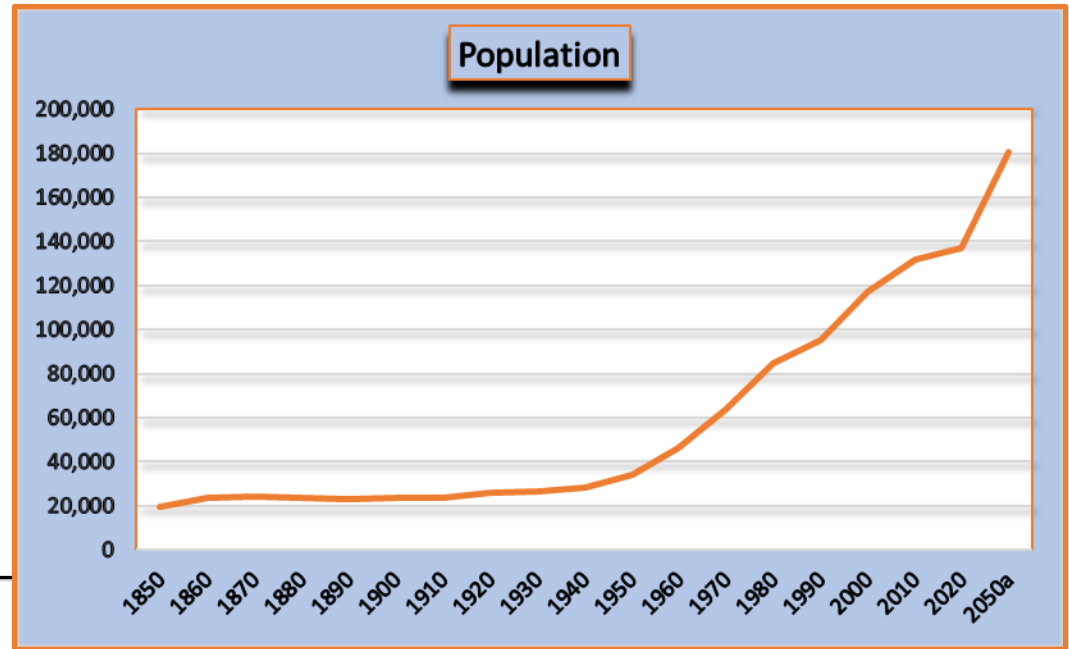
- Table 2.2

➤ Household

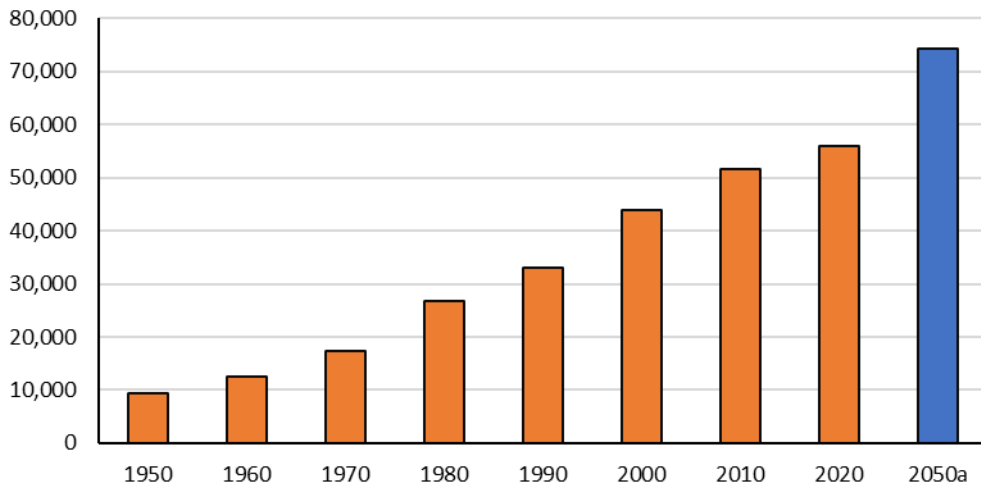
- Table 2.4

➤ Employment

- Table 2.5



Number of Households



Existing Land Use: 2015

Map 2.3
Existing Land Use in Washington County: 2015

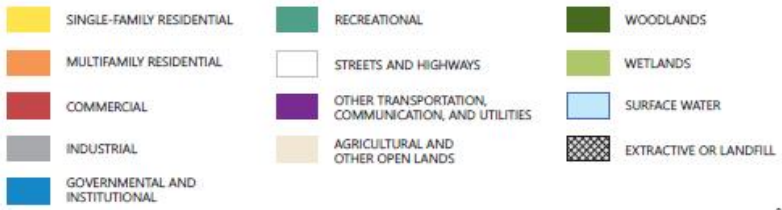
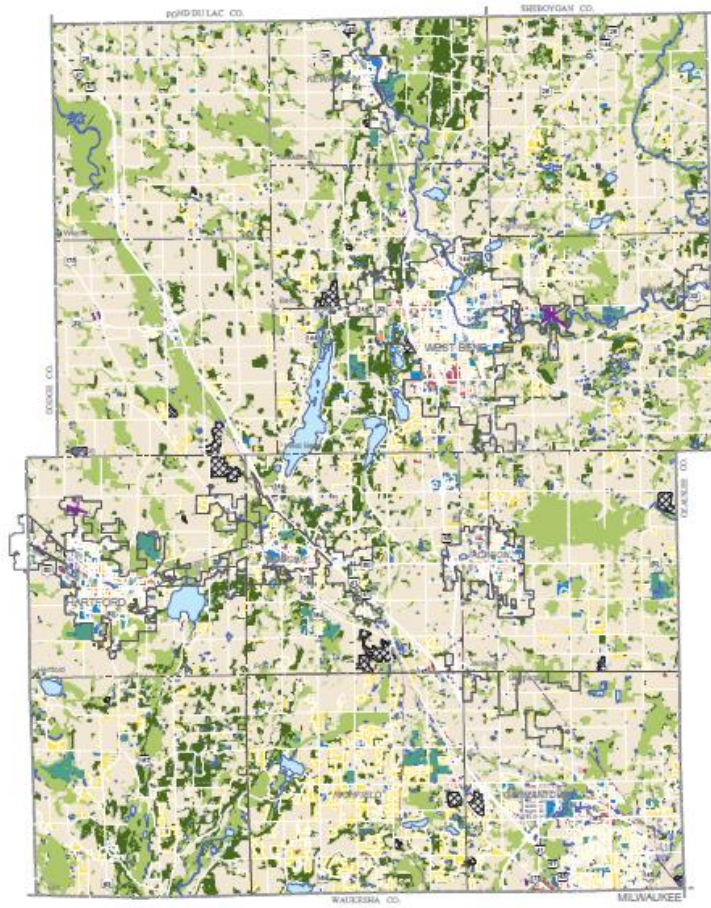


Table 2.7
Land Uses in Washington County: 2015

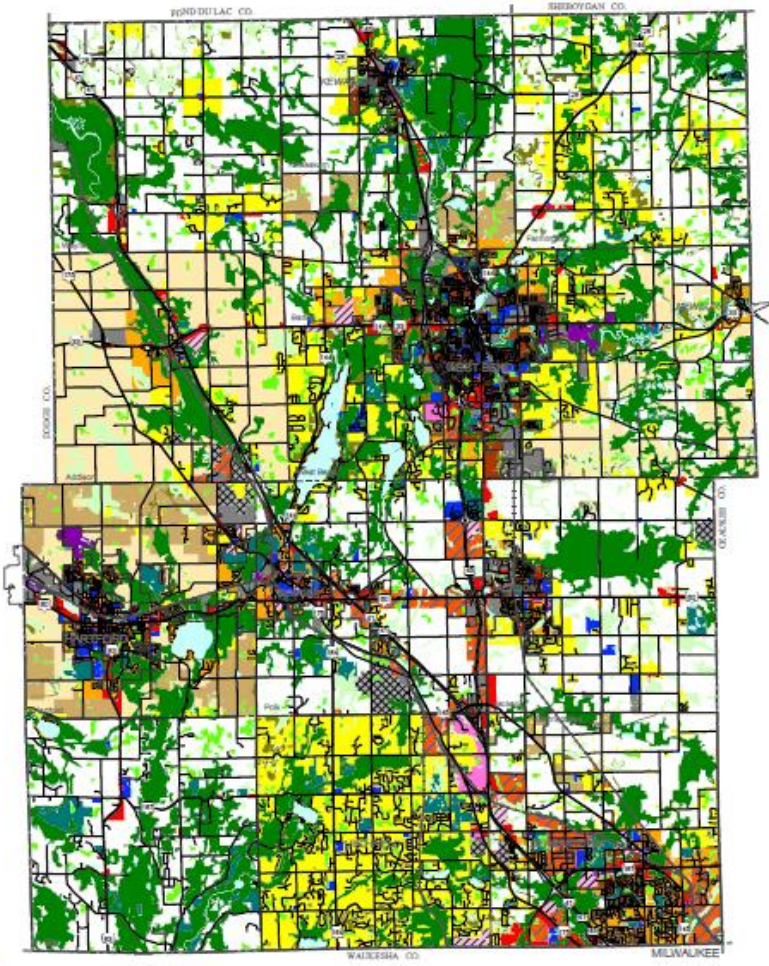
Land Use Category ^a	Acres	Percent of Subtotal
Urban		
Single-Family Residential ←	29,000.1	48.9
Multifamily Residential ^b	1,810.4	3.0
Commercial	1,834.0	3.1
Industrial	2,053.0	3.5
Transportation, Communications, and Utilities	16,894.4	28.5
Governmental and Institutional	1,851.7	3.1
Recreational	4,057.1	6.8
Unused Urban	1,836.3	3.1
Urban Subtotal	59,337.0	100.0
Nonurban		
Agricultural and Other Open Lands ^c ←	141,353.5	64.4
Woodlands	26,263.1	12.0
Wetlands	46,638.3	21.3
Surface Water	5,158.2	2.3
Nonurban Subtotal	219,413.0	100.0
Total	278,750.0	--





Planned Land Use: 2050

Map 2.4
Washington County Land Use Plan: 2050



FARMLAND PRESERVATION	GOVERNMENTAL AND INSTITUTIONAL	STREET AND HIGHWAY RIGHTS-OF-WAY
GENERAL AGRICULTURAL	PARK AND RECREATION	OTHER TRANSPORTATION AND UTILITIES (EXCEPT FOR STREETS AND HIGHWAYS)
AGRICULTURAL AND RURAL RESIDENTIAL	EXTRACTIVE	FORMER LANDFILL (IDENTIFIED ON LOCAL GOVERNMENT LAND USE PLAN MAP)
SUBURBAN-DENSITY RESIDENTIAL	PRIMARY ENVIRONMENTAL CORRIDOR	ISOLATED NATURAL RESOURCE AREA
MEDIUM-DENSITY URBAN RESIDENTIAL	WETLANDS OUTSIDE PRIMARY ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS	OTHER CONSERVANCY LANDS TO BE PRESERVED BY LOCAL GOVERNMENT
HIGH-DENSITY URBAN RESIDENTIAL	SURFACE WATER	
MIXED-USE		
GENERAL COMMERCIAL		
OFFICE/PROFESSIONAL SERVICES		
BUSINESS/INDUSTRIAL		
INDUSTRIAL		

Table 2.8
Planned Land Uses in Washington County: 2050

Land Use Category	Acres
Urban	
Suburban-Density Residential	35,261.3
Medium-Density Urban Residential	10,176.0
High-Density Urban Residential	5,156.7
Mixed-Use	1,539.1
General Commercial	4,476.3
Office/Professional Services	706.5
Business/Industrial	4,475.0
Industrial	4,256.0
Governmental and Institutional	2,861.0
Park and Recreation	6,240.6
Street and Highway Rights-of-Way	16,084.4
Other Transportation and Utilities	1,463.7
Urban Land Subtotal	92,696.6
Undeveloped Land	
Farmland Preservation	7,810.4
General Agricultural	22,422.1
Agricultural and Rural Residential	73,373.3
Extractive	1,778.3
Former Landfill	31.3
Primary Environmental Corridor (PEC)	56,794.0
Isolated Natural Resources Area (INRA)	6,319.4
Wetlands Outside PEC and INRA	8,764.0
Other Conservancy Lands to be Protected	3,908.3
Surface Water	4,852.1
Nonurban Land Subtotal	186,053.2
Total	278,750.0

Source: SEWRPC/

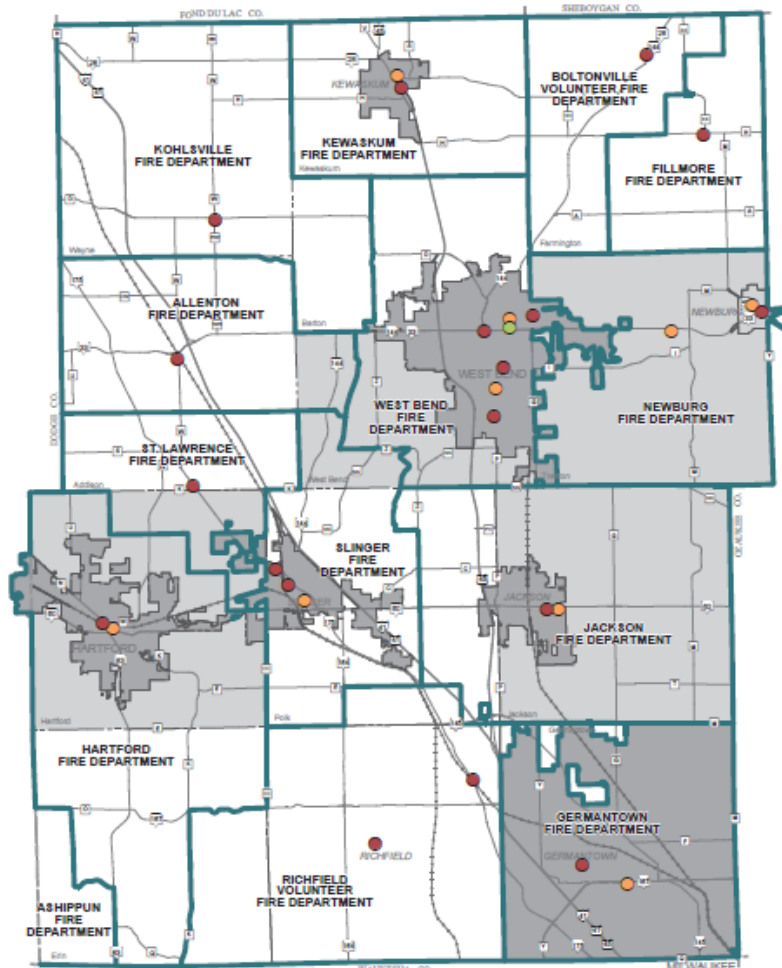
Source: Local Gov
Washington County.





Critical Community Facilities

Map 2.5
Emergency Services in Washington County: 2022



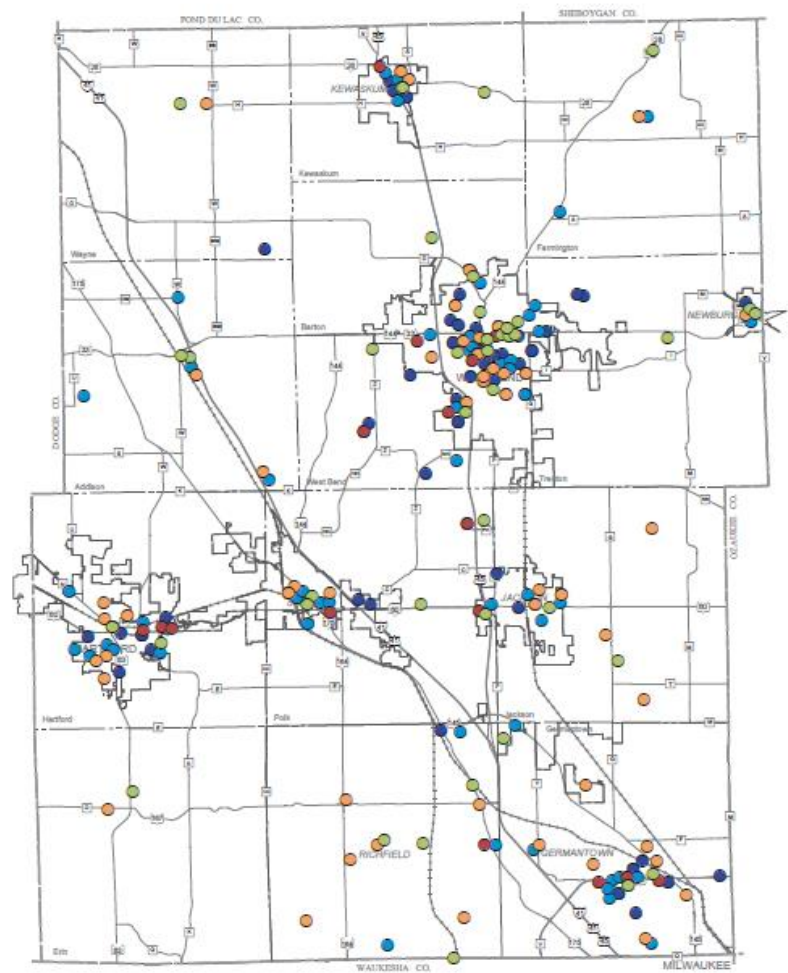
- FIRE/EMS STATION
- POLICE STATION
- COUNTY COURT HOUSE
- AREA SERVED BY A LOCAL POLICE DEPARTMENT
- AREA SERVED BY A LOCAL POLICE DEPARTMENT AND BY WASHINGTON COUNTY SHERIFF'S DEPARTMENT
- AREA SERVED BY WASHINGTON COUNTY SHERIFF'S DEPARTMENT ONLY
- FIRE DEPARTMENT DISTRICTS

Notes: Fire and EMS personnel are housed within the same structure/station, hence the map shows both within the same building.



Source: Wisconsin Department of Transportation (WIENET), Washington County

Map 2.6
Critical Community Facilities in Washington County: 2022



- HOSPITAL/CLINIC
- PUBLIC/PRIVATE SCHOOLS OR COLLEGES
- GOVERNMENT BUILDINGS
- CHILD CARE
- ADULT CARE



Source: Wisconsin Department of Families, Wisconsin Department of Health Services





Wisconsin Initiative on Climate Change Impacts

Nelson Institute for Environmental Studies | Wisconsin Department of Natural Resources

Working Groups ▾

Trends and Projections

Impacts and Adaptation

Education and Outreach

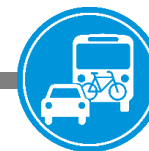
➤ WICCI Data

➤ Trends and Projections

- Online, 2011 and 2021 Data/Maps
- 1950-2018: Trends
- 2041-2060: Projections
- **Fig.s 2.1-2.4**

➤ Impacts to Each Hazard

- Flooding and Extreme Temps





Chapter 3

Analysis of Hazard Conditions



Chapter 3 Overview:

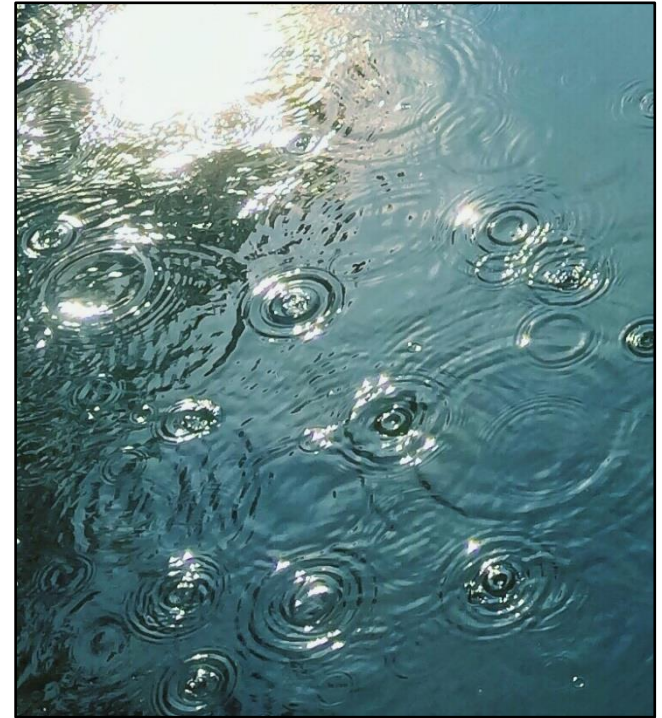
Hazard Identification Process:

- Summary and Results of HVA (Survey123)
- Hazard Rankings (Table 3.2)

Description Risk Analysis

Hazard Vulnerability and Risk Assessment Profiles:

- Flooding
- Severe Weather
- Tornadoes
- Winter Storms
- Extreme Heat and Cold
- Drought



- Definition and Description of Each Hazard
- Description of Notable Events that Have Affected the County
 - “Recent Events”
- Assessment of Vulnerabilities to the Hazard and it’s Impact on Community and/or Community Assets
 - “Vulnerability and Community Impact Assessment”
- Description of Potential Future Changes in Impacts due to the Changing Climate
 - “Future Changes and Conditions”
- Discussion of Any Differences Among Communities at Risk
 - “Multi-Jurisdictional Risk Management”



●●●●● Hazards to be Considered

Table 3.2

Summary of Hazards to be Considered in the Washington County Hazard Mitigation Plan: 2022

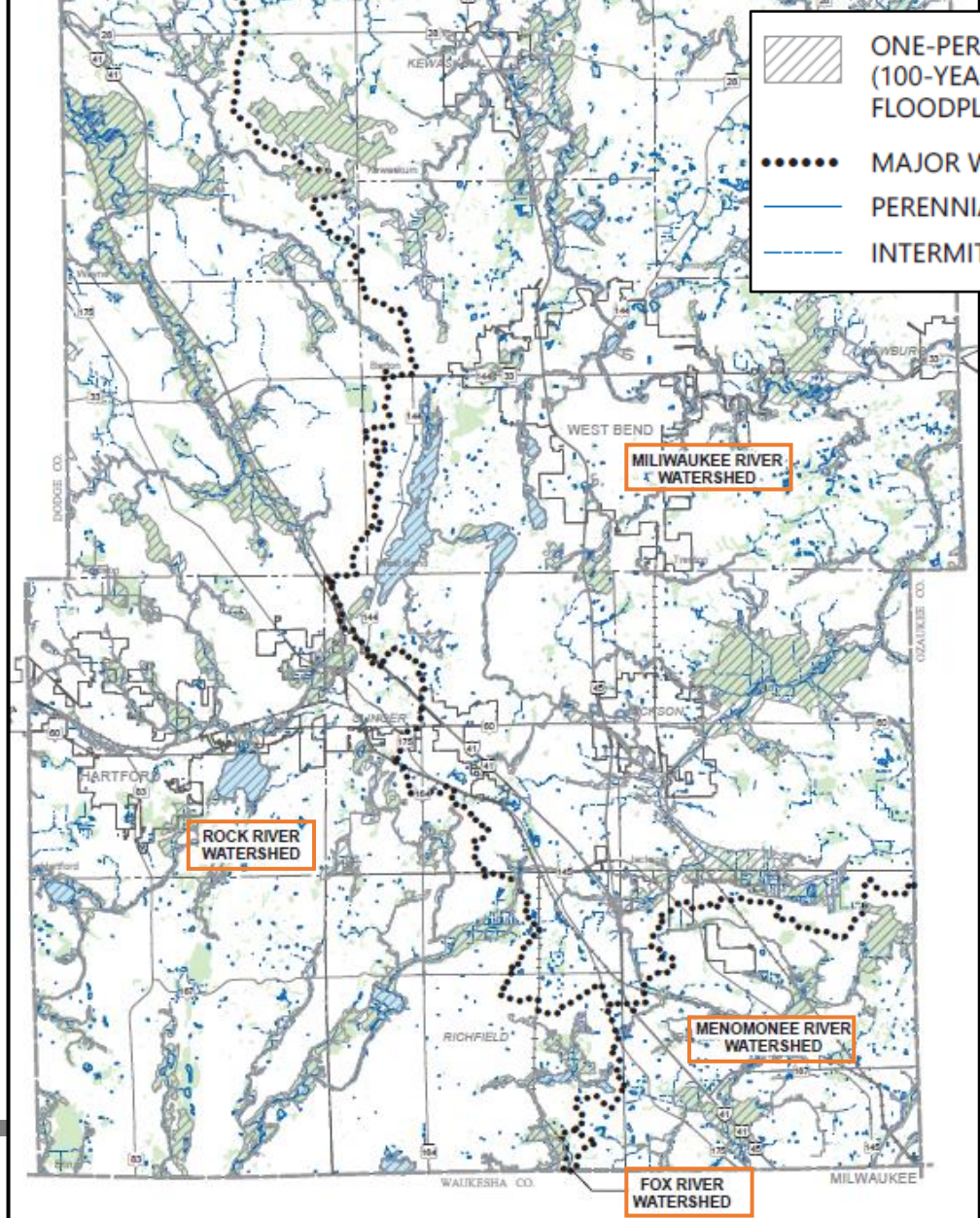
Hazard	Risk of Occurrence (high, medium, or low)	Damage to Property (high, medium, or low)	Threat to Life Safety (high, medium, or low)	Duration of Impact (long, moderate, or short)	Size of Area Affected (large, medium, or small)
Flooding and Stormwater Drainage Problems	High	High	Medium	Moderate	Large
Thunderstorm, High Winds, Hail, Lightning	High	Medium	Medium	Long	Large
Tornadoes	Low	High	High	Short	Small
Winter Storms	Medium	Low	Medium	Medium	Large
Temperature Extremes	Medium	Low	High	Long	Large
Drought	Medium	Low	Low	Long	Large





1. Flooding Hazard

Surface Waters, Wetlands, and Floodplains (Map 3.1)



	ONE-PERCENT-ANNUAL-PROBABILITY (100-YEAR RECURRENCE INTERVAL) FLOODPLAINS (FEMA FIS, JANUARY 2022)		WETLANDS
	MAJOR WATERSHED BOUNDARIES		SURFACE WATER
	PERENNIAL STREAM		
	INTERMITTENT STREAM		

- 220 Miles Streams
- 4 Major Watersheds
- 14 Major Lakes
- 42,189 ac. Of 1-Percent Floodplain



➤ Types of Flooding Concerns

- Dam Failure
- Ice Jams
- Agricultural
- Stormwater Drainage

➤ Recent Events

- 2004, 2008, and 2018

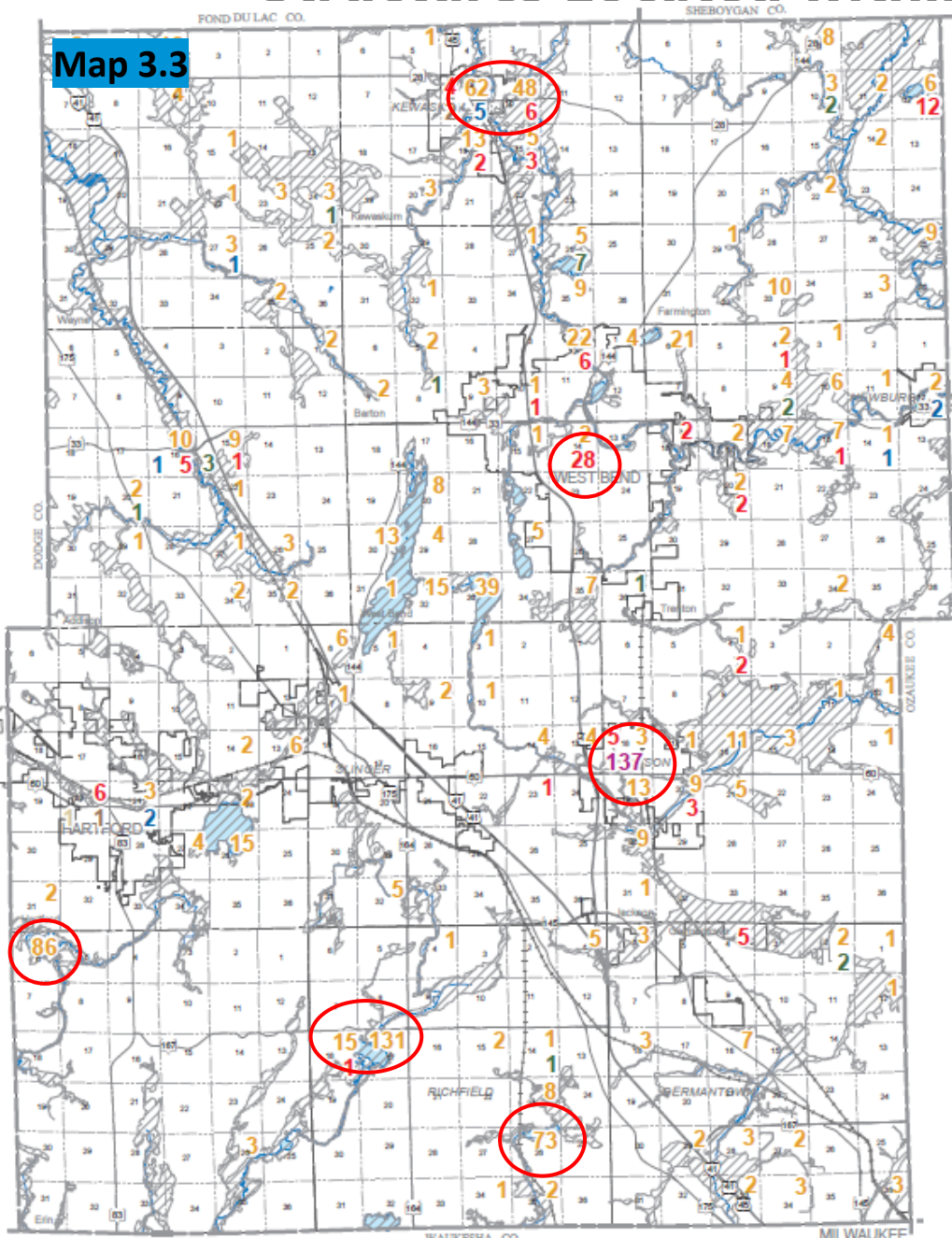
➤ Vulnerability and Community Impact Assessment

- Structural
 - **Parcel-Based Loss Analysis**
- Agricultural
- Transportation Systems



Structures Located within 100-Yr. Floodplain

Map 3.3



NUMBER OF STRUCTURES WITHIN U.S. PUBLIC LAND SURVEY

- 929 RESIDENTIAL STRUCTURES
- 97 COMMERCIAL STRUCTURES
- 21 AGRICULTURAL STRUCTURES
- 137 MANUFACTURED HOMES
- 12 GOVERNMENT STRUCTURES
- 1 INDUSTRIAL STRUCTURES
- 3 OTHER STRUCTURES





Flooding Hazard (cont.)

Table 3.9
Estimated Flood Damages for a 1-Percent-Annual-Probability Flood in Washington County: 2022

Municipality	Number of Structures in Floodplain	Flood Damages		
		Direct (\$)	Indirect (\$)	Total (\$)
Cities				
Hartford	13	908,070	348,240	1,256,310
Milwaukee	--	0	0	0
West Bend	41	2,912,370	1,148,380	4,060,750
Villages				
Germantown	29	149,550	22,850	172,400
Jackson	167	2,404,640	376,300	2,786,650
Kewaskum	135	1,549,340	287,920	1,837,260
Newburg	4	14,280	4,240	18,520
Richfield	236	4,782,230	729,400	5,511,630
Slinger	--	0	0	0
Towns				
Addison	44	874,490	182,080	1,072,010
Barton	58	670,720	109,110	770,500
Erin	89	1,244,180	186,830	1,431,010
Farmington	60	443,400	76,810	520,210
Germantown	11	13,600	5,440	19,040
Hartford	31	510,210	76,530	586,740
Jackson	47	190,270	28,540	218,810
Kewaskum	19	200,090	30,010	230,100
Polk	24	225,610	39,470	265,080
Trenton	63	795,940	145,750	941,690
Wayne	36	764,120	142,520	906,640
West Bend	93	745,660	111,890	857,550
Total	1,200	1,998,770	4,052,310	23,451,080

Note: Estimated damages are based on assessed improvement values in 2022.

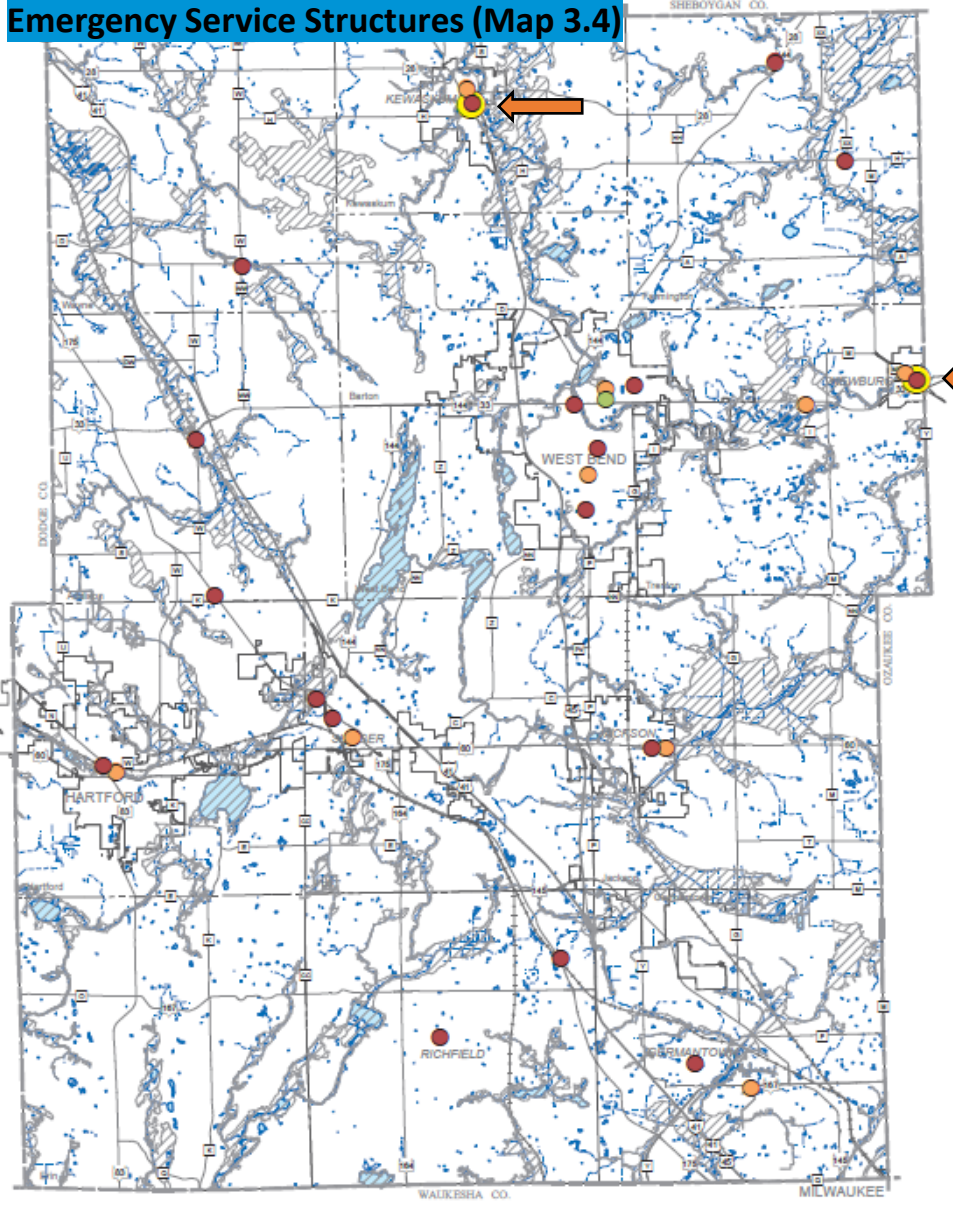
Source: Federal Emergency Management Agency, Wisconsin Department of Natural Resources, Washington County, and SEWRPC



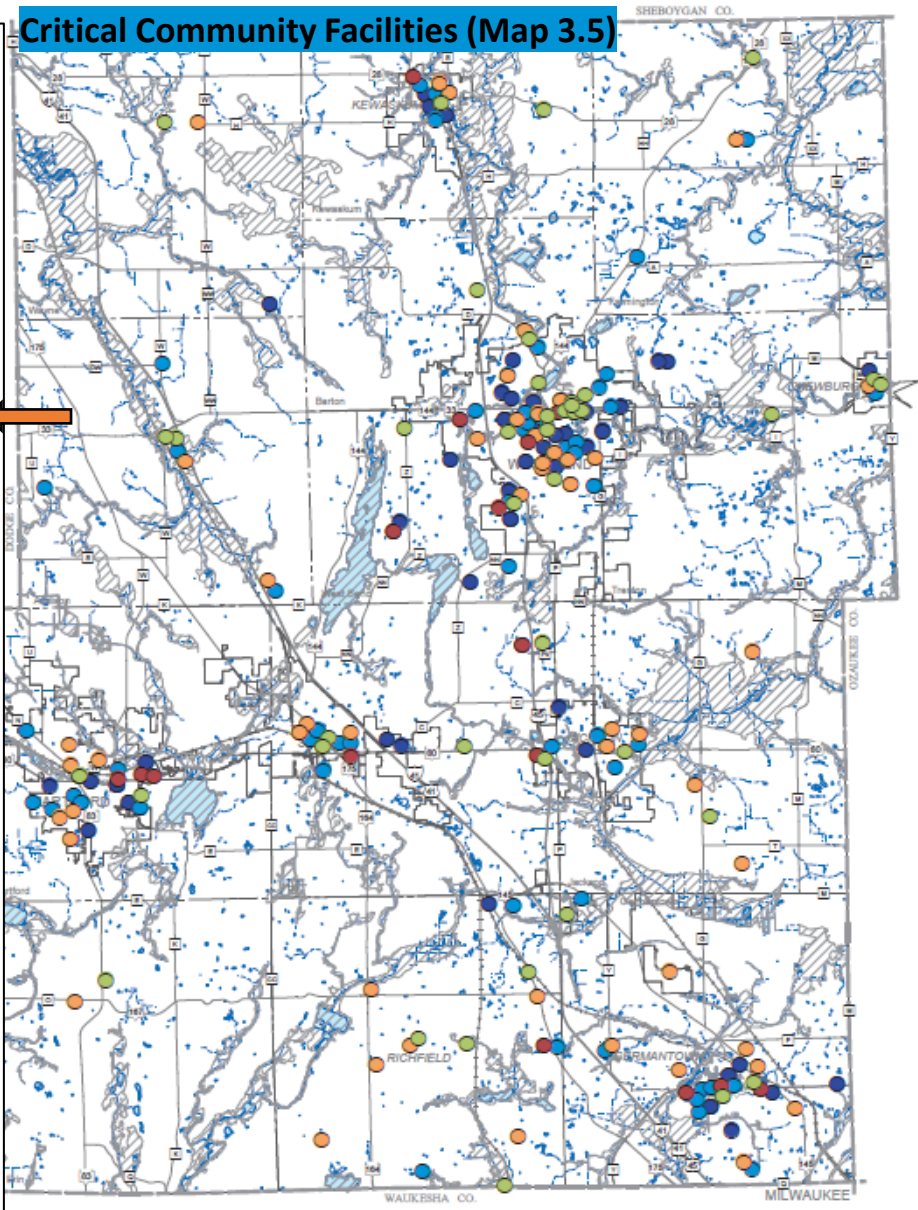


Critical and Emergency Facilities Relative to the 100-Yr Floodplain

Emergency Service Structures (Map 3.4)



Critical Community Facilities (Map 3.5)



●●●●● 2. Severe Weather (Thunderstorm-Related) Hazard 26

➤ Thunderstorm-Related Problems

- Thunderstorm Winds
- Non-Thunderstorm High Winds
- Hail
- Lightning

➤ Recent Events

- Table 3.11
- 2012, 2013, 2017, and 2019

➤ Vulnerability and Community Impact Assessment

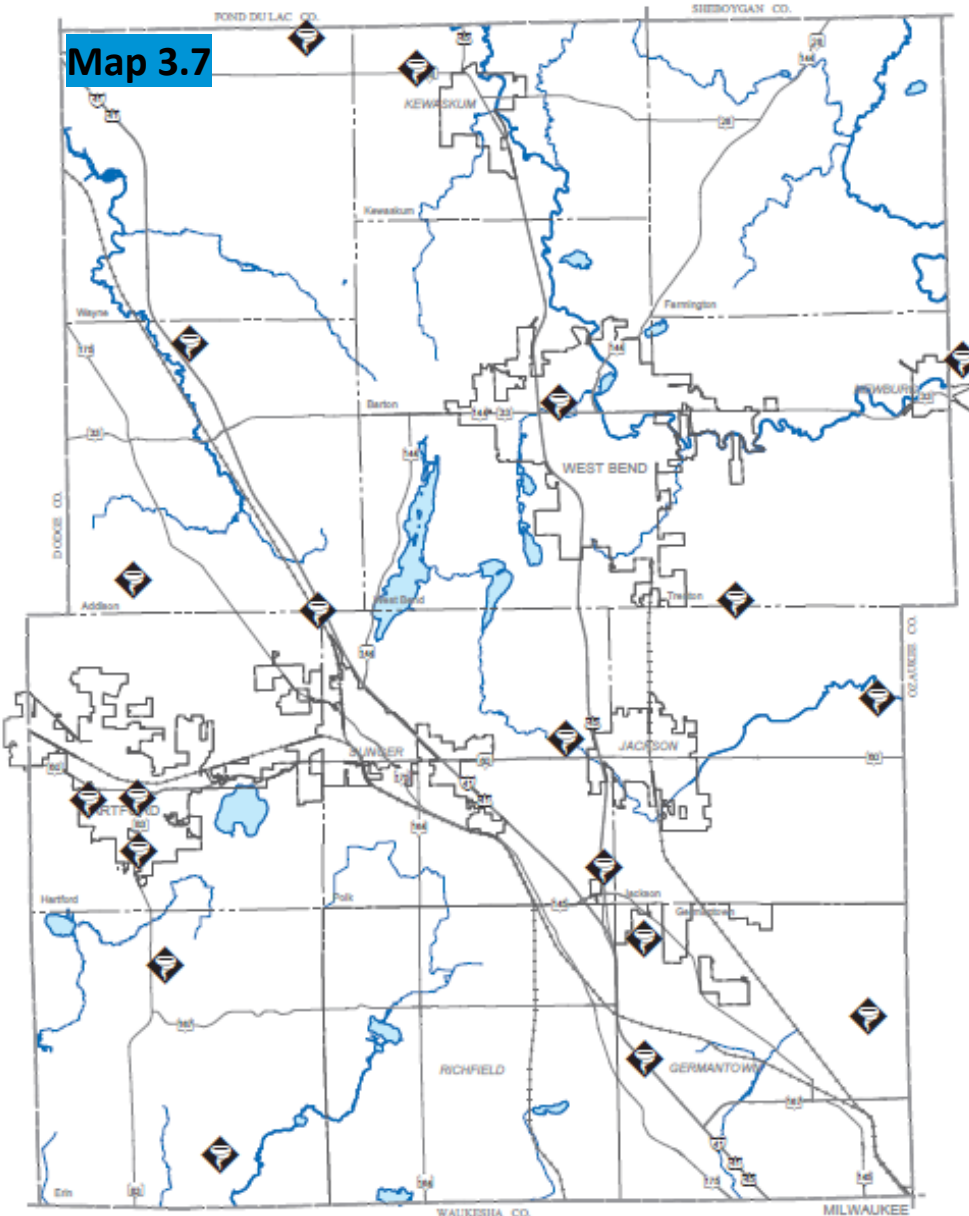
➤ Future Changes and Conditions

➤ Multi-Jurisdictional Risks



3. Tornado Hazard

Map 3.7



- Definition of Tornado
- Fujita Scale
 - Table 3.12
- Watches and Warning
 - Table 3.2
- Recent Events
 - Table 3.13
 - 2004, 2006
- Vulnerability and Comm. Impact Assessment
- Future Changes
- Multi-Jurisdictional Risks



4. Severe Winter Hazard

➤ Different Winter Related Phenomena (NWS)

- Heavy Snowfall
- Blizzard
- Ice Storm
- Freezing Rain
- Sleet
- Wind Chill (Covered in Extreme Cold Hazard)

➤ Recent Events

- Table 3.15
- 2001, 2015

➤ Vulnerability and Community Impact Assessment

➤ Future Changes and Conditions

➤ Multi-Jurisdictional Risks



5. Extreme Heat Hazard

➤ Heat Index (HI)

- Figure 3.1
- Table 3.16

➤ Heat Event Definitions/Criteria

➤ Recent Events

- Table 3.17
- 2012, 2018, and 2019

➤ Vulnerability and Community Impact Assessment

➤ Future Changes and Conditions

➤ Multi-Jurisdictional Risks



6. Extreme Cold Hazard

- **Frostbite vs. Hypothermia**
- **Wind Chill Index**
 - Table 3.18
- **Recent Events**
 - Table 3.19
 - 2013, 2014, and 2019
- **Vulnerability and Community Impact Assessment**
- **Future Changes and Conditions**
- **Multi-Jurisdictional Risks**



7. Drought Hazard

➤ Drought Definitions

1. Meteorological Drought
2. Hydrological Drought
3. Agricultural Drought
4. Socioeconomic Drought

➤ Palmer Drought Severity Index

- Figure 3.3

➤ Recent Events/Ag. Losses due to Drought

- Table 3.20
- 2012

➤ Vulnerability and Community Impact Assessment

➤ Future Changes and Conditions

- Figure 3.5

➤ Multi-Jurisdictional Risks



➤ www.sewrpc.org/HMP

- Agendas and other meeting materials
- Summary notes from meetings
- Presentations
- Draft chapters as they are completed
- Comment Screen
 - Or email to mshedivy@sewrpc.org

➤ LPT Review Comments for Chapters 1-3 until 2/28/23

➤ Public Meeting TBA



Hazard Mitigation Activities and Projects

Examples:

- Flooding/Stormwater (only stormwater projects completed to Relieve Flooding problems)
- Planning Activities
- Buyouts, demolition of damaged structures, flood proofing of structures
- New Construction Of Dams, Levees, Channels, Bridge/Culvert Replacements, Pump Stations, etc.
- Floodplain Studies, Stormwater Management Plans, etc.
- Severe Weather Training
- Channel Clearing/Dredging
- Stormwater Detention Basins or Storm Sewer Work Designed to Relieve Flooding
- Newly Installed Tornado Sirens
- Newly Installed Tornado Safe Rooms
- Riverbank Stabilization
- Outreach- newsletters, websites, Facebook, twitter, public meetings)
- Wetland Mitigation/Preservation



Thank You

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