



# City of Milwaukee All Hazard Mitigation Plan Update: Updated Hazard Mitigation Plan

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# Agenda for Meeting

A photograph of a residential street during winter. The scene is heavily covered in snow. In the foreground, a car is almost completely buried under a thick layer of snow. To the left, there are snow-laden evergreen trees and a fence. In the background, a multi-story building with a snow-covered roof is visible. The sky is overcast and grey.

- Discuss purpose of plan update
- Review updated plan
- Answer questions on the plan update
- Take comments on plan update

# Plan Documentation

- The plan update will be documented in a SEWRPC Community Assistance Planning Report
- SEWRPC CAPR No. 282 (3rd edition), *City of Milwaukee All Hazard Mitigation Plan Update*
- When completed the update will be available on the SEWRPC website at:

<http://www.sewrpc.org/HMP>





# What is Hazard Mitigation?

- “Mitigation is any sustained action taken to eliminate or reduce the long-term risk to human life and property from natural and technological hazards” —FEMA
- Actions to reduce the damages that result when disasters occur



# What is Hazard Mitigation?

- Mitigation is not:
  - Emergency response
  - Crisis management
  - Disaster preparation and recovery
- Mitigation focuses on reducing the impacts from hazard events when they occur





# Why Do We Mitigate Hazards?



- Disasters are costly
- State and Federal assistance are insufficient
- We can prevent future damages
- Lesser impacts mean a quicker response and recovery process
- Can do this locally

# City of Milwaukee All Hazard Mitigation Plan

- Sets forth strategies for mitigating impacts of several natural and technological/human induced hazards
- Establishes eligibility for hazard mitigation funding from the Federal Emergency Management Agency (FEMA)
  - FEMA requires that local hazard mitigation plans be updated and revised every five years
  - Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, and the Pre-Disaster Mitigation Program

# City of Milwaukee All Hazard Mitigation Plan

- Plan development and updating is overseen by a Local Planning Team
  - Team includes appointed officials, department and agency representatives, business representatives, knowledgeable citizens
  - Law enforcement and fire departments, public works department, planning department, health department, County emergency management department, and Milwaukee Metropolitan Sewerage District
- Staff include Department of Public Works, Office of Emergency Management and Homeland Security, and SEWRPC



# Plan Components Reviewed and Revised

- Reviewed implementation activities
- Updated inventories of natural and built features
- Reviewed and reevaluated identification of hazards
- Updated and reevaluated risk and vulnerability analysis
- Reviewed and revised hazard mitigation goals
- Reviewed and revised hazard mitigation strategies
- Updated plan adoption, implementation, and maintenance strategies including funding source inventory

# Natural Hazards Profiled in the Plan

(Required by FEMA)



Flooding



Coastal Erosion



Extreme  
Temperatures



Thunderstorms  
High Wind/Hail/Lightning



Tornado



Winter Storms

# Technological Hazards Profiled in the Plan

(Optional under FEMA rules)



Contamination/Loss  
of Water Supply



Hazardous  
Material Incidents



Major Fire or  
Emergency Incidents



Medical/Health  
Risks



Terrorism



# Risk Analysis—Hazard Profiles

- Most profiles follow a similar format
  - Definition and description of the hazard
  - Description of notable historical events that affected the City
  - Description of some notable recent events that affected the City
  - Assessment of vulnerabilities to the hazard and community impacts from the hazard
  - Description of potential future changes in impacts

Table V-7

**PRIORITY RANKING OF NATURAL AND OTHER HAZARDS AFFECTING  
THE CITY OF MILWAUKEE BASED UPON MORTALITY AND INJURY**

Order Based on Steering Committee Perception <sup>a</sup>	Natural and Other Hazards	Period of Record	Number of Incidents per Year (average)	Average Number of Mortalities per Year	Average Number of Injuries per Year	Sum of Average Mortalities and Injuries per Year	Priority Ranking Based on Analysis
8	Medical/health risks (infectious diseases and parasites)	2005-2014	--	202.30	--	202.30	1
4	Temperature extremes	1994-2016	3.61	5.43	10.70	16.13	2
5	Major fire and Emergency incidents	2000-2015	997 (fires) 55,207	8.90 (fires) --	-- --	8.90 --	3
3	Hazardous materials incidents	1971-2016	38.04 <sup>c</sup>	0.06 <sup>b</sup>	3.20 <sup>b</sup>	3.26 <sup>b</sup>	4
9	Tornadoes	1958-2016	0.24	0.00	2.98	2.98	5
2	Winter storms	1987-2016	5.00	0.97	0.30	1.27	6
7	Thunderstorms, high wind, hail, and lightning	1993-2016	12.00	0.13	0.36	0.49	7
1	Flooding	1996-2016	1.95	0.05	0.05	0.10	8
10	Coastal erosion	1975-1995	Less than one foot per year	0.00	0.00	0.00	9
11	Contamination or loss of water supply	1993-2016	<0.10	-- <sup>c</sup>	-- <sup>c</sup>	-- <sup>c</sup>	--
9	Terrorism incident	2000-2016	<0.10	--	--	--	--

<sup>a</sup>These numbers reflect the ranked order of the hazards assigned by the City of Milwaukee Hazard Mitigation Local Planning Team. For more details see Hazard Identification section and Table III-3 in Chapter III in this report.

<sup>b</sup>Refers to gas and liquid hazardous materials pipeline and transportation incidents within the City of Milwaukee 1971 to 2016.

<sup>c</sup>Information on mortalities and injuries is based on one event in 1993 related to a parasitic contamination of the water supply. According to the Wisconsin Division of Health, the estimated number of mortalities was about 69, and approximately 4,400 people were hospitalized. As the water treatment facilities have been upgraded to avoid such contamination, the number of mortalities and injuries are not being considered in the current ranking.

Source: National Climatic Data Center; U.S. Department of Transportation, Office of Pipeline Safety; National Consortium for the Study of Terrorism; Wisconsin Department of Health Services; Milwaukee Fire Department; Milwaukee Police Department; City of Milwaukee Hazard Mitigation Local Planning Team;

Table V-8

**PRIORITY RANKING OF NATURAL AND OTHER HAZARDS AFFECTING THE CITY OF MILWAUKEE BASED UPON PROPERTY DAMAGE**

Order Based on Steering Committee Perception <sup>a</sup>	Natural and Other Hazards	Period of Record	Number of Incidents per Year (average)	Total Property Damage per Year (average) <sup>b</sup>	Priority Ranking Based on Analysis
5	Major fire and emergency incidents	2000-2015	997 (fires) 55,207	\$21,862,500 (fires) --	1
1	Flooding	1996-2016	1.95	\$13,835,935	2
7	Thunderstorms, high wind, hail, and lightning	1993-2016	12.00	\$ 2,370,723	3
3	Hazardous materials incidents	1971-2016	38.04 <sup>c</sup>	\$ 473,400	4
9	Tornadoes	1958-2016	0.24	\$ 310,853	5
2	Winter storms	1987-2016	5.00	\$ 40,835	6
4	Temperature extremes	1994-2016	3.61	\$ 1,007	7
10	Coastal erosion	1975-1995	Less than one foot per year	-- <sup>d</sup>	--
6	Terrorism incident	2000-2016	<0.10	-- <sup>d</sup>	--
11	Contamination or loss of water supply	1993-2016	<0.10	--	--
8	Medical/health risks	2005-2014	--	--	--

<sup>a</sup>These numbers reflect the ranked order of the hazards assigned by the City of Milwaukee Hazard Mitigation Local Planning Team. For more details see Hazard Identification section and Table III-3 in Chapter III in this report.

<sup>b</sup>Dollar values are adjusted to year 2016 by using the average annual Consumer Price Index (CPI) values from the U.S. Department of Labor, Bureau of Labor Statistics.

<sup>c</sup>Refers to gas and liquid hazardous materials pipeline and transportation incidents within the City of Milwaukee 1971 to 2009.

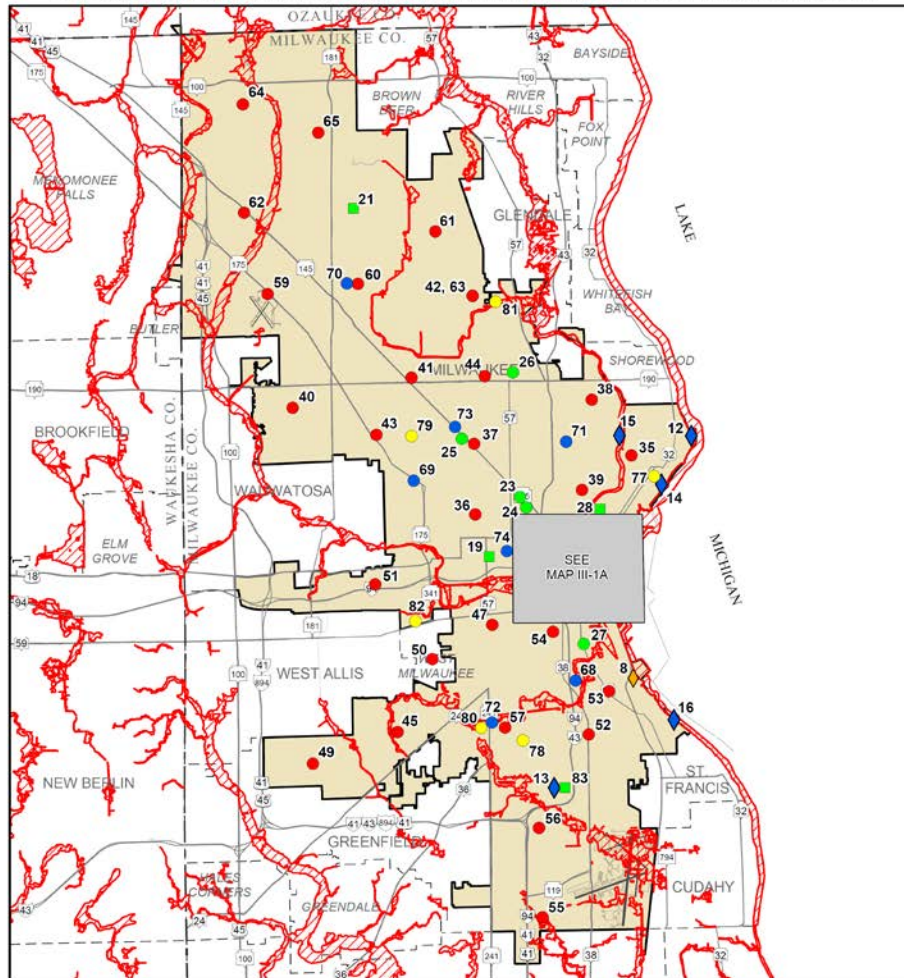
<sup>d</sup>Data are not known.

Source: National Climatic Data Center; U.S. Department of Transportation, Office of Pipeline Safety; National Consortium for the Study of Terrorism; Wisconsin Department of Health Services; Milwaukee Fire Department; Milwaukee Police Department; City of Milwaukee Hazard Mitigation Local Planning Team; and SEWRPC.



Map III - 1

LOCATION OF CRITICAL FACILITIES IN RELATION TO FLOODPLAINS IN THE CITY OF MILWAUKEE: 2016



- CRITICAL GOVERNMENT FACILITY
- LAW ENFORCEMENT STATION
- FIRE STATION
- HOSPITALS AND MEDICAL CENTERS
- CITY OF MILWAUKEE
- MILWAUKEE COUNTY TRANSIT SYSTEM FACILITY
- ◆ PORT OF MILWAUKEE
- ◆ WATER PURIFICATION PLANT OR PUMPING STATION
- ▲ WASTEWATER TREATMENT PLANT
- 29** CRITICAL FACILITY REFERENCE NUMBER (SEE APPENDIX B, TABLES B-1 TO B-4)

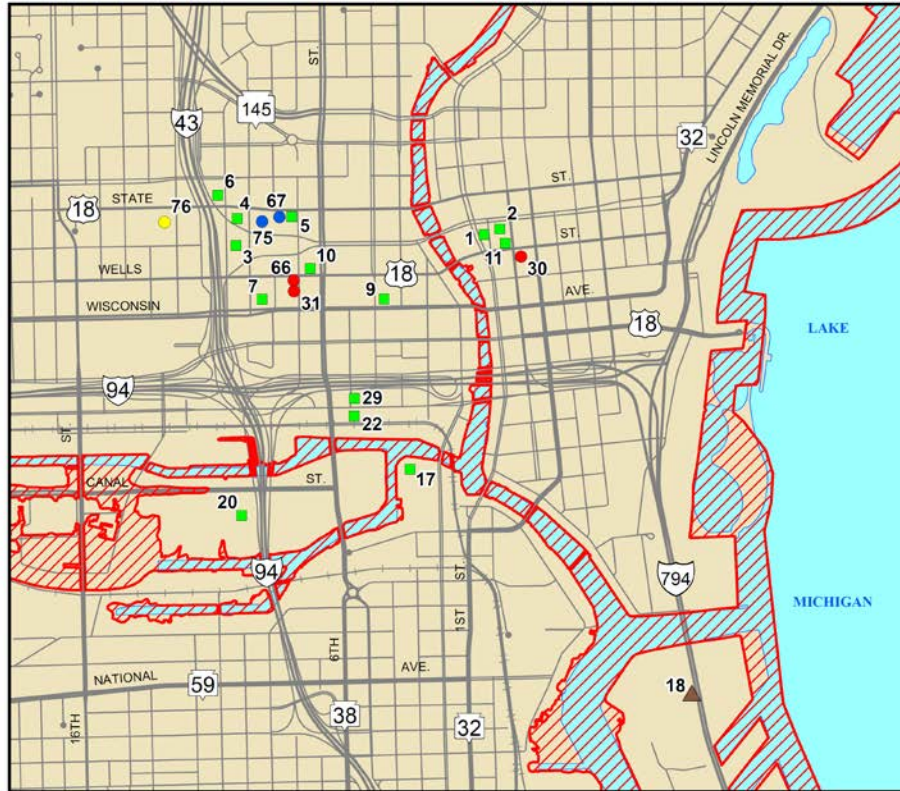
ONE-PERCENT-ANNUAL-PROBABILITY (100-YEAR RECURRENCE INTERVAL) FLOODPLAINS (FEMA (JAN. 2018), SEWRPC MCAMLIS)



Source: Milwaukee County Automated Mapping and Land Information System (MCAMLIS), City of Milwaukee Master Property File (MPPROP), Federal Emergency Management Agency, and SEWRPC.

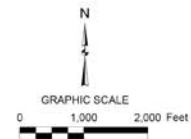
Map III - 1A

LOCATION OF CRITICAL FACILITIES IN RELATION TO FLOODPLAINS IN THE CITY OF MILWAUKEE: 2016

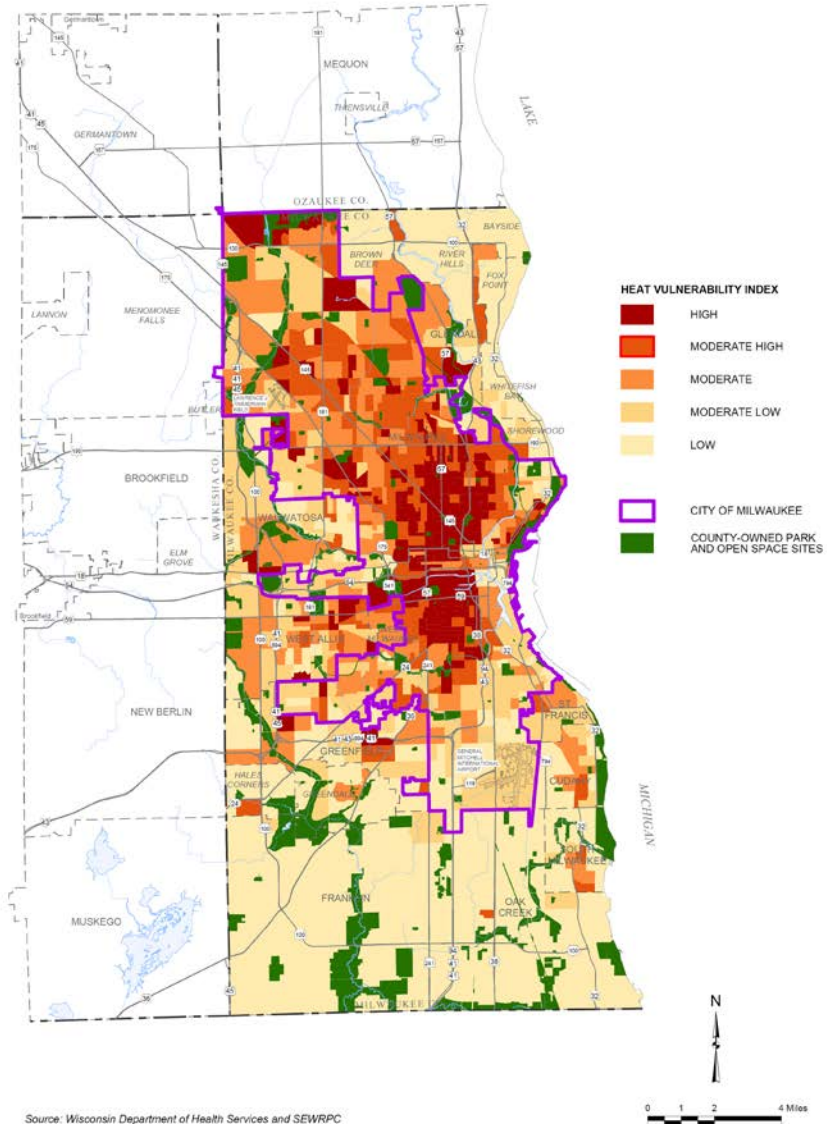


- CRITICAL GOVERNMENT FACILITY
- LAW ENFORCEMENT STATION
- FIRE STATION
- HOSPITALS AND MEDICAL CENTERS
- ▲ WASTEWATER TREATMENT PLANT
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- ONE-PERCENT-ANNUAL-PROBABILITY  
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FLOODPLAINS (FEMA (JAN. 2018), SEWRPC MCAMLIS)

Source: Milwaukee County Automated Mapping and Land Information System (MCAMLIS), City of Milwaukee Master Property File (MPROP), Federal Emergency Management Agency, and SEWRPC.



MILWAUKEE COUNTY HEAT VULNERABILITY INDEX: 2014



Source: Wisconsin Department of Health Services and SEWRPC



# Development of Hazard Mitigation Strategies

- Identified alternative strategies
- Reviewed current programs
  - Federal and State, local
- Evaluated alternatives and identified mitigation actions
- Selected and set forth a revised set of priority mitigation measures



# Flood Mitigation Strategies

Floodland and wetland zoning and zoning review

Preservation of open space and sensitive areas

Implementation of MMSD Watercourse and Flood Management Plans

Channel and floodplain improvements

Bridge and culvert improvements

Voluntary acquisition, demolition, and removal or floodproofing of structures in the floodplain

Stormwater management planning and regulation

Stormwater management facility maintenance



Stream Channel Maintenance

National Flood Insurance Program (NFIP) map updating

# Mitigation Strategies for Weather-related Hazards



Maintain early warning systems

NOAA Weather Radio, EAS broadcasting, HAZCollect

Public information and education

Identify and advertise shelters

Review and enforcement of building code requirements

Continued coordination of local government emergency operations and response plan

Maintain compliance with National Incident Management System



# Mitigation Strategies for Technological/Human-induced Hazards



Public information and education

Driver safety, hazardous materials, public health, power outages

Continued support of training, equipping, planning, and preparedness for emergency responders

# Implementation Strategies

- Updated estimates of mitigation measure costs
- Summarized benefits of implementing mitigation measures
- Designated lead management agencies
- Updated current implementation status
- Identified potential sources of funding and technical assistance

# Approval and Adoption

- When a draft plan is complete
  - Review by Wisconsin Division of Emergency Management → Incorporate comments
  - Review and approval by FEMA → Incorporate comments
  - The plan will need to be adopted by the Common Council



# Project Web Site

- <http://www.sewrpc.org/HMP>
  - Agendas and other meeting materials
  - Summary notes from meetings
  - Presentations
  - Draft chapters of the plan report
  - Comment screen
  - Other ways to send a comment
- Email to [jboxhorn@sewrpc.org](mailto:jboxhorn@sewrpc.org)