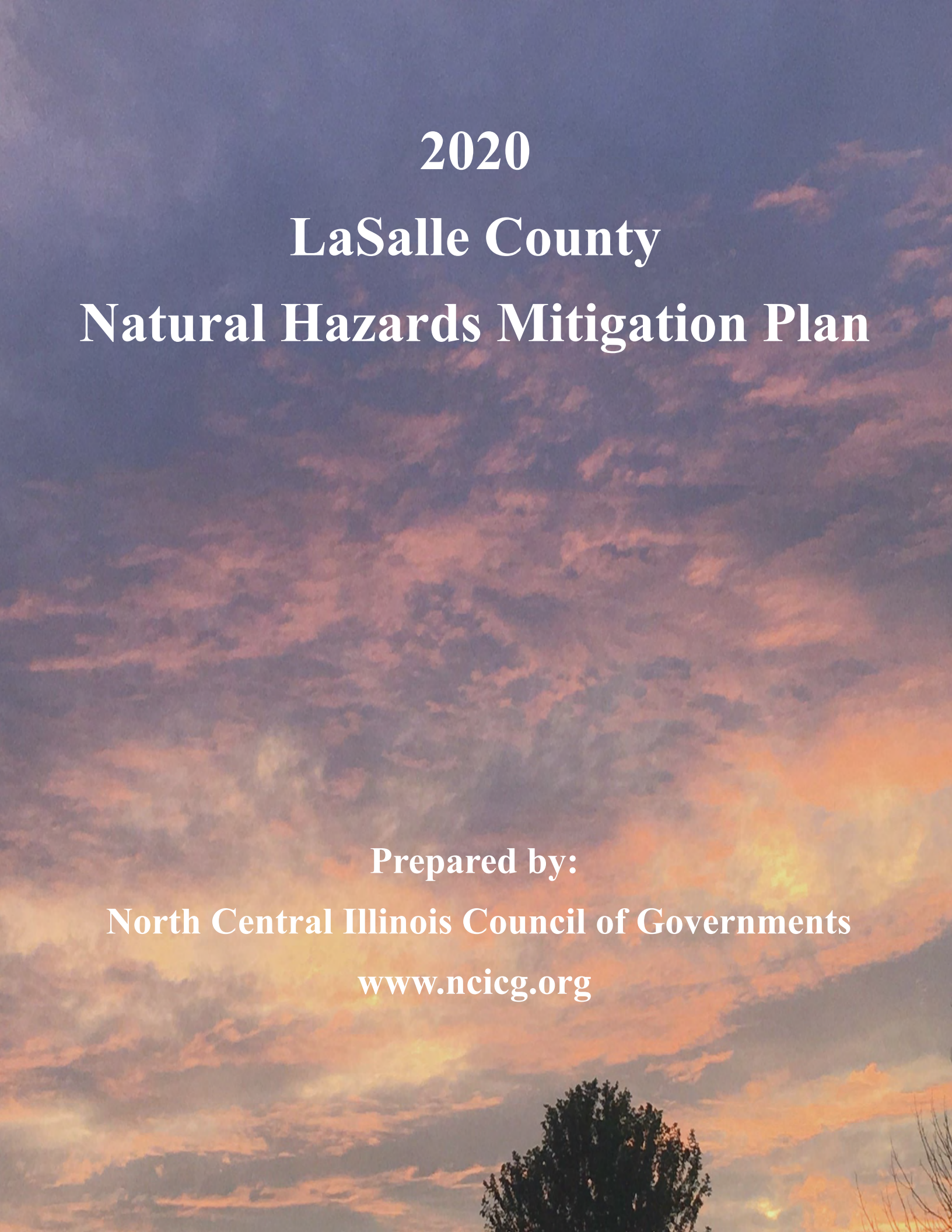
2020
LaSalle County
Natural Hazards Mitigation Plan



Prepared by:

North Central Illinois Council of Governments

www.ncicg.org

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Natural Hazards Mitigation Plan

Prepared by:

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Appendices

Glossary of Terms and Acronyms:

BCEGS – Building Code Effectiveness Grading Schedule
BCR – Benefit Cost Ratio
BOCA – Building Officials and Code Administrators
BSE - Base Flood Elevation
CEDS - Comprehensive Economic Development Strategy
CFM – Certified Flood Manager
CIPs – Capital Improvement Plans
COVID-19 – Coronavirus disease 2019
CRS – Community Rating System
CWA – Clean Water Act
DBS – Direct Broadcast Satellite
DFIRM – Digital Flood Insurance Rate Map
DMA 2000 – Disaster Mitigation Act of 2000
DoD – Degree of Damage
EAS – Emergency Alert System
EF-Scale – Enhanced Fujita Scale
EMA – Emergency Management Agency
EOP – Emergency Operations Plan
EPA – Environmental Protection Agency
FCC – Federal Communications Commission
FDAA - Federal Disaster Assistance Administration
FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Map
FMA – Flood Mitigation Assistance
F-Scale – Fujita Scale
GIS – Geographic Information System
HAZUS – Hazards United States Software

HMG – Hazard Mitigation Grant
HMGP – Hazard Mitigation Grant Program
HUD - Housing and Urban Development
IAFSM – Illinois Association for Floodplain and Stormwater Management
ICBO - International Conference of Building Officials
ICC – International Code Council
IDNR – Illinois Department of Natural Resources
IDOT – Illinois Department of Transportation
IDPH - Illinois Department of Public Health
IEMA – Illinois Emergency Management Agency
IEPA - Illinois Environmental Protection Agency
INHMP - Illinois Natural Hazards Mitigation Plan
IPAWS – Integrated Public Alert and Warning System
ISGS - Illinois State Geological Survey
ISO – Insurance Service Office
ISTC - Illinois Sustainable Technology Center
IVFRA - Illinois Valley Flood Resiliency Alliance
MFH – Multi-Family Housing
MH – Manufactured Housing
MM - Modified Mercalli
NCICG – North Central Illinois Council of Governments
NDRC - National Disaster Resiliency Competition
NFIP – National Flood Insurance Program
NHMP – Natural Hazard Mitigation Plan
NOAA – National Oceanic & Atmospheric Administration
NPDES – National Pollution Discharge Elimination System
NSSL - National Severe Storms Laboratory
NWR – NOAA Weather Radio
NWS – National Weather Service
OSHA – Occupational Safety and Health Administration
OTHS - Ottawa Township High School
PDM – Pre-Disaster Mitigation
POTW - Publicly Owned Treatment Works
PPI – Program for Public Information
RLP – Repetitive Loss Properties
SBCCI – Southern Building Code Congress International, Inc.
SDARS – Satellite Digital Audio Radio Service
SFH – Single Family Housing
SFHA – Standard Flood Hazard Area
USEPA – United States Environmental Protection Agency
USGS – United States Geological Survey
USHUD – United States Department of Housing and Urban Development
WEA – Wireless Emergency Alerts
WTP – Water Treatment Plant
WWTP – Wastewater Treatment Plant

2020 LaSalle County Natural Hazard Mitigation Plan
Executive Summary

The world's climate continues to change. Extreme temperatures, stronger storms, increased precipitation, and rising sea levels indicate that climate change persists. Whether the changing conditions are caused by human-induced actions or simply part of the Earth's climate pattern, the reality is that natural hazards are wreaking havoc and creating disasters that are claiming lives, destroying property, and impacting ecosystems. Natural disasters happen everywhere. The impacts of changing weather patterns have been observed even in Illinois. For example, May 2019 was Illinois' third wettest May in 150 years and Chicago had its wettest May on record in May 2020. Dozens of communities have been forced to deal with flooding, some on a regular basis. Thunderstorms, as well as tornadoes, are occurring with greater strength. The continued severe impacts of natural hazards necessitate government and public action to save lives and property. Born out of this understanding, communities engage in a process to create a Natural Hazards Mitigation Plan (NHMP) to identify strategies that will achieve the aforementioned objectives to build resiliency.

According to the Federal Emergency Management Agency (FEMA), the following four (4) steps are needed to begin a mitigation plan:

1. Build community partnerships.
2. Identify hazards and community vulnerability.
3. Prioritize hazards risk reduction actions.
4. Communicate successes.

The 2020 LaSalle County NHMP is an update of LaSalle County's 2015 plan with minimal changes. The plan covers LaSalle County and 19 communities including 5 new communities, 2 of them townships that did not participate in the 2015 plan. The county and communities created a partnership to identify countywide goals and local goals to mitigate the impact of future disasters. Through the planning process, each participant's hazards were identified and specific vulnerabilities were assessed. Ways to reduce damage from hazards were explored, community success stories were shared, and goals were drafted and prioritized.

Chapter 1: Introduction

Chapter 1 explains the process of LaSalle County applying for mitigation funds with the county asking the participating communities to help provide the required local match. Chapter 1 also explains the planning process, how the public was involved, and development of Community Risk Assessments (CRAs). The CRAs identify hazards that communities face, recent storm event descriptions, and future mitigation activities.

The impact of climate change and efforts to build resiliency are addressed in Chapter 1. Illinois Senator Sue Rezin's establishment of the Illinois Valley Flood Resiliency Alliance brings communities together to tackle the issue of flooding and is one (1) example of a regional approach to building resiliency.

Changes in development, progress in local mitigation, and changes in priorities are also addressed. While there have been little changes in development, there has been progress in local mitigation. Communities have completed storm sewer improvement projects, installed tornado sirens, and are enforcing floodplain management regulations to reduce the impact of riverine flooding. Mitigating urban flooding is now a significant priority that is being addressed.

Chapter 1 explains that this plan fulfills the requirements for federal mitigation funding programs, qualifies for Community Rating System (CRS) credit, and provides the county and the participating municipalities with a blueprint for reducing the impacts of the natural hazards. Three (3) Pre-Disaster Mitigation (PDM) projects being completed with FEMA funds are presented. They are floodwall projects to protect the Marseilles wastewater treatment plant, Peru wastewater treatment plant, and Ottawa Township High School with some neighboring homes.

Chapter 2: Hazard Profile

Chapter 2 identifies, explains, reviews, and analyzes the hazards below that have the potential to impact the county. Data on each hazard is presented and several examples of how these hazards have impacted communities are included in this chapter.

- Thunderstorms (includes lightning, hail, and tornadoes)
- Winter Storms
- Floods
- Earthquakes
- Drought
- Extreme temperatures (Heat and Cold)
- Landslides
- Wildfires

Landslides and wildfires are not common to the county, but a landslide in Streator in 2007 and a marsh grass fire near North Utica in 2012, which burned 200 acres, provide reasoning to examine their potential occurrence. The process of determining each community's risk is also described.

Chapter 3: Vulnerability Assessment

Chapter 3 reviews how vulnerable each county is to the hazards identified in Chapter 2. The tables in the chapter illustrate the potential damage from the natural hazards. Potential safety, health, economic, and building damages are explained for each hazard. The number of critical facilities and Repetitive Loss Properties (RLPs) within the county is presented.

Chapter 4: Preventive Measures

Preventive measures are implemented to protect new and future construction from potential losses and damages. The measures that are reviewed in Chapter 4 include:

- Building Codes
- Manufactured Housing Regulations
- Land Use Planning, Zoning, and Subdivision Regulations
- Floodplain Management
- Stormwater Management

The plan identifies building codes of each participating community and county. Some of the local governments have not adopted building codes and some local governments that have adopted codes may not enforce them for lack of resources. A countywide discussion is recommended to identify how communities could share resources and provide building inspector training.

Participation in the National Flood Insurance Program (NFIP) requires that a floodplain management ordinance be adopted and enforced in a community. Most of this NHMP's participants are members of the NFIP. To ensure compliance with the program, communities must continue to enforce their floodplain management ordinances. The City of Ottawa and LaSalle County have gone above and beyond the requirements of the NFIP and have adopted policies and pursued mitigation activities to be a participant in the CRS. As a result of their efforts, property owners with flood insurance in their jurisdiction save on flood insurance premiums.

Urban flooding is impacting communities across the county. Aging, deteriorating, undersized, and combined sewer systems are unable to handle increased flow associated with frequent heavy rain events. As a result, sewer and drain backups are occurring. The Illinois General Assembly passed the Urban Flood Awareness Act and tasked the Illinois Department of Natural Resources (IDNR) with exploring the prevalence of urban flooding, associated costs, and stormwater management policies. The report's recommendations are included in Appendix F of this plan.

Chapter 5: Property Protection

There are several property protection measures that can be pursued to reduce damages caused by natural hazards. Pursued measures often depend on location and financial resources.

The county has many critical facilities that are at risk of flooding. Most of these facilities are water treatment plants and wastewater treatment plants. Not all of the critical facilities are located in 100-year floodplains. Local governments need to care for and maintain their critical facilities in order to serve the public during emergencies. The importance of protecting critical facilities is examined through local examples of facilities that have been impacted by flooding.

Chapter 6: Flood Control

Floods are the most common and widespread disaster in the nation. In Chapter 6, items that can aid in the control of floods are addressed. They include:

- Conveyance System Maintenance
- Dredging and Erosion Control
- Dams and Reservoirs
- Levees and Floodwalls
- Open Space Preservation
- Ice Jam Mitigation

Some communities in the county expressed the need for additional dredging of the Illinois River. Silt and sediment that has settled on the riverbed is causing the river to rise more quickly, resulting in flooding. Dredging is a costly and timely mitigation activity and is not a long-term solution. Erosion control measures must be taken as well to address the root of the problem.

Chapter 7: Emergency Management

Emergency management measures protect people before, during and after a hazard event. The four (4) stages of emergency management; mitigation, preparedness, response, and recovery, are reviewed in this chapter.

Threat recognition systems as well as the entities responsible for tracking natural hazards are cited. The difference between a weather *watch* and *warning* is addressed along with the National Weather Service's (NWS) new storm-based warning method.

Chapter 7 examines multiple methods for the public to stay informed on disasters. Public and private emergency notification systems are reviewed. The need still remains from the previous plan to have a countywide discussion on the possibility of uniform guidelines for the activation of early warning sirens during severe weather. Communities have varying guidelines and policies on when sirens are to be activated. All communities and counties with sirens should adhere to Illinois law on testing early warning sirens only on the first Tuesday of the month at 10:00 a.m.

Chapter 8: Public Information

Ways to involve the public are addressed in Chapter 8. Public involvement is an important component of hazard mitigation. For mitigation activities to be successful, community support and often financial resources (tax dollars) are needed. Outreach projects, information outlets, assistance measures, and public information program strategies are reviewed. A list of resource links was developed for communities to consider putting on their websites to more easily educate their residents about natural hazards and how to prepare for and recover from.

Chapter 9: Objectives and Plans

The countywide goals and objectives, as identified through public meetings in the 2015 plan process were reviewed, updated and prioritized. The intent of these goals and objectives is

to reduce the impact of natural disasters and to build resiliency. This NHMP will direct officials before, during, and after a natural hazard.

Chapter 10: Community Risk Assessments

Each community and the county that participated in the 2020 LaSalle County NHMP will receive a copy their CRA report in Chapter 10. The CRA identifies the community's location and population, major storm events that have occurred since February 2008, the community's natural hazards risks, additional information about the community, and mitigation strategies for the community. For the communities that participated in the 2015 NHMP, their risk assessment was reviewed and updated. Communities that did not participate in the 2015 NHMP worked with NCICG to develop their risk assessment.

Appendix:

Provides documentation and resources referenced in the chapters of the NHMP. The end of each chapter also provides a list of reference links for each chapter.

Chapter 1: Introduction

Background

Natural hazards affect every state. Certain hazards are more prominent in certain areas of the country. In the Southeast, hurricanes and tropical storms pose yearly risks. Every year, thousands of acres are consumed by wildfires in the western states; some fires are caused by humans, others are caused by lightning and dry conditions. Across the Plains States, Great Lakes Region, and Mississippi Valley tornadoes wreak havoc on small and large communities throughout the year. Every state is susceptible to natural disasters. Therefore, communities must be proactive and implement activities and policies that will help minimize the often tragic outcomes caused by natural hazards.

A Natural Hazard Mitigation Plan (NHMP) is a necessary component of emergency management. To have appropriate, effective, and efficient solutions to natural hazards, a well-prepared plan needs to be created, reviewed, and implemented through the best efforts of the community. Mitigation plans are long-term and do not prevent loss or damage from occurring. However, through implementation of mitigation goals and activities, local governments can reduce and eliminate the loss of human life and damage to public and private property caused by natural hazards.

The Disaster Mitigation Act of 2000 (DMA 2000) is federal legislation that emphasizes and gives opportunity for state, tribal, and local governments to closely coordinate hazard mitigation planning and implementation efforts. This Act establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). Local mitigation plans must demonstrate that the proposed mitigation measures are based on a solid planning process that accounts for the risks and capabilities of the community.

A mitigation plan is required for governments to receive federal mitigation funds under Section 104 of the DMA 2000 (42 USC 5165). Plans must be community-specific to meet the prerequisite to receive pre-disaster funds from the Federal Emergency Management Agency (FEMA). An Interim Final Rule was published in the Federal Register in 2002, which established the planning and funding criteria for states and local communities. For the plan to receive FEMA approval, all the criteria must get a satisfactory or greater score and be adopted by the governing bodies of the jurisdictions involved. See adoption resolution template in Appendix H. Once FEMA has approved the plan, it is considered active for five (5) years.

The following statement is from the 2013 Illinois Natural Hazards Mitigation Plan (INHMP):

> "The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended by (PL) 106-390 (Pre-Disaster Mitigation Program, Hazard Mitigation Grant Program and the Flood Mitigation Assistance Program - 44 CFR Part 78), addresses state mitigation planning, identifies new local mitigation planning requirements, authorizes Hazard Mitigation Grant Program (HMGP) funds for planning activities, and increases the amount of HMGP funds available to states that develop a comprehensive, enhanced mitigation plan. The Disaster Mitigation Act of 2000 (DMA 2000) emphasizes the importance of strong state and local planning processes and comprehensive program management at the state level with a link in the planning process between the state and local mitigation programs. The Federal Emergency Management Agency (FEMA) has promulgated rules for implementation in 44 CFR Parts 201 and 206."

This plan will assist with the management and mitigation of natural disasters for LaSalle County, as well as the participating communities within LaSalle County. The LaSalle County NHMP fulfills the federal mitigation planning requirements, qualifies for Community Rating System (CRS) credit, and provides the county and participating communities with an outline for reducing the impacts of natural hazards on people and property.

The LaSalle County NHMP is an update of a previously approved plan: the 2015 Bureau, LaSalle, Marshall, Putnam, and Stark Counties NHMP. The current plan expires in October 2020. LaSalle County applied for funding to update the plan. The plan has a strong emphasis on flooding and measures that can be taken to reduce the loss of life and property caused by this hazard. Flooding mitigation activities remain the top priority of the plan. However, urban flooding and drainage issues are discussed more in depth. Through the planning process, it was identified that most communities have urban drainage and surface water flooding issues. Flooded roadways, overwhelmed sewer plants, and basement backups were common issues in the region. Communities identified specific mitigation projects that are needed to address these problems, but most communities have limited financial ability to carry out large-scale mitigation projects in the near future. The plan also identifies potential funding sources to assist the communities.

The plan addresses progress in local mitigation. This progress is identified in the Community's Risk Assessments. The City of Peru continue to pursue several sewer separation projects that will reduce basement backups. Several communities have also improved their ability to warn the public of approaching storms by utilizing CodeRed, Nixle or other notification programs.

The impacts of climate change are also acknowledged throughout the plan. According to the United States National Climate Assessment, which summarizes the current and future impacts of climate change, increased precipitation and flooding have occurred over the past century in the Midwest, and the trend is expected to continue. While there are multiple impacts of climate change, the most recognizable impact in the NHMP region has been increased precipitation and its related flooding. Increased flooding has led to the need for states and communities to identify practices, policies, and activities that will build resiliency. The primary objective of the community-identified mitigation activities in this plan is to build resiliency.

Existing plans, studies, reports, and technical information have been incorporated into this plan. The National Oceanic and Atmospheric Administration - National Weather Service (NOAA NWS) storm database was utilized to show the quantity of weather events and damages. FEMA's HAZUS software was used for assessing vulnerability. Repetitive loss property (RLP) data provided by the Illinois Emergency Management Agency (IEMA) is also incorporated. The Illinois Urban Flood Awareness Act Report is discussed in the plan and the report's recommendations are included in Appendix F. Other plans and technical information from sources including the Middle Illinois Regional Water Supply Study, the Illinois Valley Flood Resiliency Alliance (IVFRA), and community interviews are included in this NHMP.

This NHMP should be incorporated into other plans and documents, as necessary. The boards and councils of the participating communities should incorporate the NHMP into comprehensive plans that identify future land use and capital improvement plans that identify public infrastructure needs. Other plans that NHMP information should be incorporated into include:

- Emergency Operations Plans
- Zoning, Subdivision, and Floodplain Ordinances
- Economic Development Plans
- City Budgets
- Building Codes
- Other plans and documents deemed appropriate by the community or county

The 2020 LaSalle County NHMP addresses the following natural hazards that could affect the counties and communities covered under this plan: thunderstorms (including lightning, dangerous winds, hail, and tornadoes), floods, winter storms, drought, extreme temperatures (heat and cold), earthquakes, landslides, and wildfires.

Planning Area

Illinois is part of FEMA's Region V, which also includes Indiana, Michigan, Minnesota, Ohio, and Wisconsin. LaSalle County is located in north central Illinois and is bordered by the Counties of Kendall, Grundy, Livingston, Woodford, Marshall, Putnam, Lee, and DeKalb. The county seat of LaSalle County is the City of Ottawa.

County Demographics

Based on 2018 United States Census estimates data, 109,430 people reside within LaSalle County. This is a decrease of 4,494 (3.9%) since the 2010 Census. In LaSalle County, only 38% of the population lives in a rural area, but 96% of the county's land use is considered rural. An urban area is defined either urbanized areas (of more than 50,000 population) or urban cluster (at least 2,500 and less than 50,000). According to the census whatever is not urban is considered rural.

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County Demographics					
County	**Total Population**	**Rural Population**	**Percent Pop. Rural**	**County Square Miles**	**Percent County Rural**
LaSalle	109,430	41,583	38%	1,135	96%

Mitigation strategies and activities will vary based on a jurisdiction's size and land use. For example, in urban areas, miles of impervious surfaces including roadways and parking lots create surface-water flooding issues. In rural areas, agricultural runoff is a major concern. The solutions to addressing both types of flooding will be different. Urban communities will likely be able to complete larger mitigation projects, while smaller, rural communities may not have the resources, staff, or funds available to complete such projects.

Participating Communities and Local Match

LaSalle County applied for a grant in May of 2019 from IEMA to update the 2015 NHMP. Several communities signed "Statements of Intent to Participate" prior to submitting the application (see Appendix A). LaSalle County was awarded the grant and entered into a grant agreement with IEMA. Per the requirements of the grant, there is a 25% match to the grant funds. LaSalle County requested that any community that wanted to participate in the plan contribute $150 to help offset the cost of the local match the county had to provide. Their contribution indicated their willingness to participate in the plan. The following tables identifies the cities, villages and townships that participated in the 2020 LaSalle County NHMP. The table also shows their 2010 and 2018 populations.

Community	2010 Census Population	2018 Estimated Population
LaSalle County	113,924	109,430
City of Earlville	1,701	1,600
Village of Grand Ridge	560	526
Village of Kangley	251	237
City of LaSalle	9,609	9,064
Village of Leland	977	923
Village of Lostant	498	484
City of Marseilles	5,094	4,873
City of Mendota	7,372	7,057
Village of Naplate	496	476
Village of North Utica	1,352	1,346
Northville Township	7,410	7,178
City of Oglesby	3,791	3,587
City of Ottawa	18,768	18,128
Ottawa Township	11,766	11,320
City of Peru	10,295	9,798
Village of Ransom	384	359
Village of Seneca	2,371	2,261
Village of Sheridan	2,137	2,529
City of Streator	13,710	13,196

Planning Process

The development of this plan followed the same process as the 2015 update. This basic process was derived (generally) by FEMA in their *"State and Local Mitigation: How-to Guide"*. The steps are as follows:

Mitigation Planning Process

- Step 1: Public Outreach
- Step 2: Build Team
- Step 3: Collect Public and Agency Input
- Step 4: Identify and Profile Hazards
- Step 5: Identify and Assess Problems
- Step 6: Draft Goals
- Step 7: Assess Mitigation Strategies and Discussion on Community Rating System
- Step 8: Create Plan Draft
- Step 9: Review Draft with Public
- Step 10: Adopt Plan
- Step 11: Implement Plan

During the planning process updates, meeting notices and meeting information was made available on NCICG's website www.ncicg.org on a page dedicated to the 2020 LaSalle County NHMP update. Neighboring counties were invited to participate and give input on the NHMP update. The agency and the position representing those counties include: Bureau County- EMA Director, Grundy County - Director of EMA, DeKalb County – EMA Director, Kendall County – EMA Director, Lee County - EMA Coordinator, Livingston County – ESDA Administrator, Marshall County - EMA Director, Putnam County – EM Coordinator, and Woodford County – Director of EMA. NCICG is the regional planning agency for a seven-county region in north Central Illinois and works with 60+ communities.

All meetings held during the plan update were open to the public. A kick-off meeting was held October 24, 2019 at the LaSalle County EMA building. At the meeting, the planning process for updating the plan was presented. The communities were also informed of the cost for them to participate in the plan and that it would be used to assist the LaSalle County in providing the required local match to the grant.

In January 2020, NCICG started conducting community risk assessment interviews with local officials and members of the community familiar with their natural hazards risks. These were held after the community was given their 2015 risk assessment and a community survey for them to complete. The community survey was used to get updated information for their risk assessment. The interviews were held to review and update their current risk assessment based on what the community had accomplished and what, if any, major weather events they have had since the last update. If a community was new to the NHMP, then a risk assessment was developed based on the community survey they received and the meeting discussion. The meetings were held either in person in the community, at NCICG's office, or on the phone. Follow-up meetings were held February through April 2020 as needed to complete the community risk assessments.

In February 2020, LaSalle County EMA developed an online resident survey. The survey was promoted through email, social media, and press releases for residents to complete. A link to the survey was also available on the EMA's website www.lasallecountyema.org and NCICG's website www.ncicg.org. The survey was designed to measure the awareness that local citizens have about hazard issues and identify possible areas of danger in their community. The survey also brought awareness to the public that the NHMP was being updated.

A second meeting was held February 6, 2020 at the LaSalle County EMA building to give an update on the planning process, review and update the countywide regional goals for the plan, and take any comments from the public. A subsequent online survey was sent out to develop priorities for these goals, which are presented with the goals in Chapter 9. Marilyn Sucoe of the Illinois Department of Natural Resources (IDNR) gave a presentation on floodplain mapping tools online (FEMA maps and County GIS), river gages, post-flood floodplain inspections, and

flood mitigation. She also discussed mitigation techniques and mentioned a few others ideas for communities and residents to consider when flooding is happening.

A third meeting was scheduled for March 26, 2020 where Illinois State Climatologist, Trent Ford was going to give a presentation similar to one given presented on the State of Illinois' 2018 NHMP. However due to the COVID-19 pandemic this meeting was canceled. In an effort to continue to educate the communities about natural hazards a link was provided to the communities of a presentation recorded by Illinois Extension titled "Preparing for Extreme Weather." Trent Ford discussed "Preparing for Extreme Weather" and Sally McConkey from the Illinois State Water Survey discussed flooding and flood maps. A link to this recorded presentation and slides is available at www.ncicg.org.

For communities that were not able to attend the meetings plan input was received through in person meetings, phone calls and emails. Input was also received, in addition to the community representatives, from other community experts such as engineers, council/board members and village/city staff. Community representatives for these communities were: Earlville - Marth Dankenbring, Deputy Clerk; Grand Ridge - Joyce Miller, Village Clerk; Kangley - John Sullivan, Village President; Leland, Brandy Mason Village Clerk, Engineer, Jack Novotney; Lostant, Jack Immel, Village President, Dean Chaulkey Engineer; Marseilles – Mike Etscheid, City Engineer, Jason Rix – WWTP operator; Mendota - Dennis Ratishauser, Fire Chief; Peru, Eric Carls, City Engineer, Mike Perry, consulting engineer; Ransom - Jack Novotney, Village Engineer; Seneca, Kathy Haralson, EMA Coordinator; and Sheridan, Shelly Figgins, Village President

NCICG is very familiar with many of the community issues regarding natural hazards especially flooding/stormwater issues. This information was used as a beginning point to obtain feedback from these communities on the importance of natural hazards mitigation planning and obtaining their feedback on the planning process. This was very beneficial especially for communities where the 2020 LaSalle County NHMP was their first time participating. They were also informed of the process and benefit of mitigation activities and qualifying for FEMA grant funding.

In May 2020, NCICG held a public meeting via Zoom to present the updated plan. Due to the pandemic this was the best way to present the plan to the public. Prior to the meeting, the draft of the plan was posted online at www.ncicg.org for the public, local officials, and others to review. The public was also given the opportunity to comment on the plan during the drafting stages and prior to plan approval by attending public meetings or by sharing comments with NCICG via email and phone. Comments could be emailed to info@ncicg.org or by calling NCICG at 815-433-5830.

Public Participation

All meetings held during the planning process were public meetings. Attendance sheets and PowerPoint presentations for each meeting are included in Appendix E: Public Meeting Documentation. The resident survey questionnaire and results are included in Appendix J. The table on the following page identifies the purpose and accomplishments of each public meeting.

Public Meetings	
Date of Meeting	**Accomplishments**
October 24, 2019	Public kick-off meeting for LaSalle County. Informed the public about the purpose of the plan, how it would be updated. Communities were reminded of the local share cost to participate in the plan. 2015 Risk Assessments were handed out to communities along with a community survey.
February 2020	An online resident survey was developed by LaSalle County EMA and was promoted through email, social media, and press releases encouraging residents to complete the survey. A link to the survey was also available on LaSalle County EMA website www.lasallecountyema.org and NCICG's website at www.ncicg.org. The survey was designed to measure the awareness that local citizens have about hazard issues and identify possible areas of danger in their community. The survey also brought awareness to the public that the NHMP was being updated.
February 6, 2020	Informed the public about the plan's progress. Countywide regional goals from the 2015 plan were reviewed and updated based on discussion. Public was given opportunity to make comments or ask questions. Marilyn Sucoe of IDNR gave a presentation on floodplain mapping tools online (FEMA maps and County GIS), river gages, post-flood floodplain inspections, and flood mitigation. She also discussed mitigation techniques and mentioned a few others ideas for communities and residents to consider when flooding is happening.
March 26, 2020	Meeting was canceled due to the COVID-19 pandemic. In place of this meeting a webinar on Preparing for Extreme Weather and flooding was promoted to the communities and posted on NCICG's website.
May 2020	Presentation of the draft meeting held via Zoom because of the pandemic. Discussed the plan, answered questions, and provided information on how to provide feedback. Also

	provided information on grant opportunities. Explained the 2020 LaSalle County NHMP would be submitted to IEMA by May 30th .

Mitigation Team

The 2020 NHMP was developed under the guidance of a mitigation team which was created to provide information and assistance throughout the planning process. The team consisted of engineers, village staff, zoning officials, floodplain managers, EMA personnel, a fire chief, an environmental services director, and an insurance agent. They actively participated in the development of the plan and attended public and special meetings to provide input and guidance on the plan. They also recommended that NCICG submit the plan to the IEMA for review following the public presentation of the draft at the meeting held in May 2020. Upon approval of the plan, they recommended that the participating communities formally adopt the NHMP. The table below identifies individuals on the Mitigation Team.

NHMP Mitigation Team		
Community	**Contact**	**Position**
LaSalle County	Brian Gift	Director of ESLUD
LaSalle County	Connie Brooks	Director of EMA
Village of Earlville	Martha Dankenbring	Deputy Clerk
Village of Grand Ridge	Joyce Miller	Village Clerk
Village of Kangley	John Sullivan	Village President
City of LaSalle	Andy Bacidore	Fire Chief
Village of Leland	Brandy Mason	Village Clerk
Village of Lostant	Jack Immel	Village President
City of Marseilles	Mike Etscheid	Village Engineer
City of Mendota	Dennis Ratishauser	Fire Chief
Village of Naplate	John Nevins	Fire Chief
Village of North Utica	Jamie Turczen	Director of Village Affairs
Northville Township	Jim Swanson	Supervisor
City of Oglesby	Amy Eititus	City Clerk
City of Ottawa	Matt Stafford	Building Official
City of Ottawa	Michelle Fernandez	Flood Commission and Insurance Industry
Ottawa Township	Tim Aussem	Highway Commissioner
City of Peru	Eric Carls	City Engineer
Village of Ransom	Jack Novotney	Village Engineer
Village of Seneca	Grant Hacker	ESDA
Village of Sheridan	Shelly Figgins	Village President

City of Streator	Jeremy Palm	City Engineer

Community Risk Assessments, Mitigation Activities and Priorities

Each community that participated in the 2020 LaSalle County NHMP, including LaSalle County, has a Community Risk Assessment report in Chapter 10. The Community Risk Assessment identifies the following:

1. The community's location and population.
2. Major storm events that have occurred since February 2008.
3. The community's natural hazard risks.
4. Additional information about the community.
5. Mitigation strategies for the community.

Information used to develop the Community Risk Assessment was gathered through one-on-one interviews with community officials and staff, email correspondence, community surveys, local newspaper articles, and governmental websites. Example forms of the surveys are provided in Appendix B: NHMP Community Survey. In the 2020 NHMP, participating communities either reviewed their 2015 risk assessment or worked with NCICG to develop one, if they did not participate in the 2015 plan. For those that had a risk assessment, the mitigation strategies were reviewed and updated. The following are identified for each mitigation activity: responsible entity or person, preliminary benefit/cost assessment, priority, cost, revenue source, resources, benefits, timeline, mitigation type, and activity status. If an activity had been completed, it was noted. A list of community contacts is provided in Appendix G.

The type of mitigation was also added to the activity. They were identified as either plans and regulations, structure and infrastructure projects, natural systems protection, or education and awareness. Their comments were noted and incorporated into the final report. Each participating community discussed their risk assessment at either a city council, village board, or county committee meeting. These meetings were open to the public and public comment was taken and considered in the risk assessment.

Mitigation activities in the risk assessment are prioritized using the table below. These selections indicated each community's agreement to consider completing the action items selected. Once the action items were selected, the communities then had to determine who was responsible for completing the tasks, how much the tasks cost, when they would be completed, and from what source the funding would come from.

Priority	Description
A: Very High	Projects that will permanently eliminate damages or significantly reduce the probability of deaths and injuries. These projects will mitigate the community's most significant hazards.
B: High	Projects and/or activities that permanently reduce damages from the community's most significant hazards. They also reduce the possibility of death or injury.
C: Medium	Projects and/or activities that help alert or educate the public to the approach of a threat and/or the need for mitigation from any hazard.
D: Low	Projects and/or activities that will permanently or significantly reduce the probability of deaths and injuries from the community's less significant hazards.
E. Very Low	Projects and/or activities that *are needed to* reduce the effects of all natural hazards and organize for mitigation purposes.

Included with each mitigation strategy is a preliminary benefit/cost assessment. General terms of low, medium and high were utilized for both benefit and cost. Activities that will definitely need outside funding to be completed received a ranking of high for cost. Many of the communities have limited financial capability to move forward with costly mitigation projects in the near future. However, there are several activities that will only require staff time or minimal cost and should be pursued immediately and these activities received a ranking of low for cost.

When a community is determining if a mitigation activity should be implemented a complete benefit/cost analysis will need to be done. FEMA has created a cost-benefit analysis tool to calculate a benefit-cost ratio (BCR). Accordingly, "The BCR is a numerical expression of the cost effectiveness of a project. A project is considered to be cost effective when the BCR is 1.0 or greater, indicating the benefits of a prospective hazard mitigation project are sufficient to justify the costs." In order for a community to apply for FEMA funding a project must have a BCR of at least 1.0. The higher the BCR the more competitive the project will be when competing with other projects for funding. More information about the tool is available at http://www.fema.gov/benefit-cost-analysis.

Plan Management

Once approved and adopted the 2020 LaSalle County NHMP will be placed on the LaSalle County Environmental Services page (https://lasallecounty.org/environmental-services-and-land-use/) as the 2015 NHMP currently is. The 2020 Plan is on NCICG's website (www.ncicg.org) under the Planning tab. The 2020 LaSalle County NHMP will be reviewed by LaSalle County and each participating community on an annual basis. LaSalle County Environmental Services and Land Use Director, Brian Gift will be responsible for efforts to monitor, evaluate and update the plan. They will coordinate with NCICG to hold a annual meeting to get an update on each community's progress on the plan and their mitigation activities. Any goals that have been implemented will be noted and new goals will be added. The plan may also be reviewed at regular board and council meetings or special meetings. In

any case, the public will be notified through various methods including public notices, public postings, and governmental websites and encouraged to participate in the review. Community experiences of natural hazards that occurred during the year will be gathered.

FEMA requires the plan to be updated every five (5) years to be eligible for federal pre-disaster mitigation funds. This NHMP will expire in 2025. LaSalle County Environmental Services Director and LaSalle County EMA Director will work with NCICG to identify and apply for grant opportunities to fund the update of the plan.

Community Risk Assessments will be reviewed annually. It is the responsibility of each plan participant to review their Community Risk Assessment and monitor implementation of their mitigation activities. Mitigation activities that have been implemented will be noted and recent disaster information will be updated. If the community has identified new mitigation strategies, they will be added to the assessment.

In 2025, this NHMP will expire. FEMA requires the plan to be updated every five (5) years to be eligible for federal pre-disaster mitigation funds. It is the responsibility of each community to update the NHMP and to coordinate the update with IEMA. Communities and counties are not required to be part of a multi-jurisdictional plan. Single jurisdiction plans may be written. NCICG will inform communities of grant opportunities that are available to fund an update of the plan.

Climate Change

The impacts of climate change have been felt across the world. More precipitation, extreme drought conditions, rising sea levels, and stronger storms are signs of climate change. Scientists overwhelmingly believe that although natural climate changes occur, the warming of the earth and climate change over the past 50 years has been caused by human-induced emissions of heat-trapping gases. The United States National Climate Assessment examines the impact of climate change on the country by region. The assessment identifies six (6) key messages for the Midwest, which are listed below. The full report is available online at http://nca2018.globalchange.gov/ .

Key Messages of the United States National Climate Assessment for the Midwest Region

1. The Midwest is a major producer of a wide range of food and animal feed for national consumption and international trade. Increases in warm-season absolute humidity and precipitation have eroded soils, created favorable conditions for pests and pathogens, and degraded the quality of stored grain. Projected changes in precipitation, coupled with rising extreme temperatures before mid-century, will reduce Midwest agricultural productivity to levels of the 1980s without major technological advances.

2. Midwest forests provide numerous economic and ecological benefits, yet threats from a changing climate are interacting with existing stressors such as invasive species and pests to increase tree mortality and reduce forest productivity. Without adaptive actions, these interactions will result in the loss of economically and culturally important tree species

such as paper birch and black ash and are expected to lead to the conversion of some forests to other forest types or even to non-forested ecosystems by the end of the century. Land managers are beginning to manage risk in forests by increasing diversity and selecting for tree species adapted to a range of projected conditions.

3. The ecosystems of the Midwest support a diverse array of native species and provide people with essential services such as water purification, flood control, resource provision, crop pollination, and recreational opportunities. Species and ecosystems, including the important freshwater resources of the Great Lakes, are typically most at risk when climate stressors, like temperature increases, interact with land-use change, habitat loss, pollution, nutrient inputs, and nonnative invasive species. Restoration of natural systems, increases in the use of green infrastructure, and targeted conservation efforts, especially of wetland systems, can help protect people and nature from climate change impacts.

4. Climate change is expected to worsen existing health conditions and introduce new health threats by increasing the frequency and intensity of poor air quality days, extreme high temperature events, and heavy rainfalls; extending pollen seasons; and modifying the distribution of disease-carrying pests and insects. By mid-century, the region is projected to experience substantial, yet avoidable, loss of life, worsened health conditions, and economic impacts estimated in the billions of dollars as a result of these changes. Improved basic health services and increased public health measures—including surveillance and monitoring—can prevent or reduce these impacts.

5. Storm water management systems, transportation networks, and other critical infrastructure are already experiencing impacts from changing precipitation patterns and elevated flood risks. Green infrastructure is reducing some of the negative impacts by using plants and open space to absorb storm water. The annual cost of adapting urban storm water systems to more frequent and severe storms is projected to exceed $500 million for the Midwest by the end of the century.

6. At-risk communities in the Midwest are becoming more vulnerable to climate change impacts such as flooding, drought, and increases in urban heat islands. Tribal nations are especially vulnerable because of their reliance on threatened natural resources for their cultural, subsistence, and economic needs. Integrating climate adaptation into planning processes offers an opportunity to better manage climate risks now. Developing knowledge for decision-making in cooperation with vulnerable communities and tribal nations will help to build adaptive capacity and increase resilience.

The report notes that climate change, in general, will continue to impact people, ecosystems, and infrastructure in the Midwest. The region has experienced multiple extreme rainfall events that have led to severe flooding.

Building Resilience

Climate change forces states and communities to identify ways to build resiliency. This NHMP identifies steps for the region and the participating communities to become more resilient to natural disasters. The region is also taking other steps to build resiliency. State Senator Sue Rezin of Illinois' 38 District spearheaded a regional group, the Illinois Valley Flood Resiliency Alliance (IVFRA). The IVFRA includes LaSalle, Grundy, Bureau, and Putnam counties. Senator Rezin established the alliance in 2014 following record flooding losses in her district in April 2013. As a result of the IVFRA, there are now 24 new floodplain managers in the region. The alliance was created to improve coordination between communities, local governments, and emergency personnel prior to a flood. The alliance can serve as a model for communities across the country on how to improve their resiliency. The IVFRA coordinated with the state to apply for funding to develop a regional resiliency plan through the National Disaster Resiliency Competition (NDRC). However, that application for funding was not successful.

The regions Comprehensive Economic Development Strategy (CEDS) discusses economic resilience of the communities and what actions they can take. The CEDS discusses the importance of preparation, response, recovery and mitigation and how they affect a community's resilience. Whether natural or man-made; disasters can have a devastating impact on a community. The Vision Statement from the CEDS states, 'Collaboratively work as a region to develop an attractive, diverse, and resilient economy that is primed for growth and has a well-trained workforce, development-ready sites and sufficient infrastructure to meet investor's needs and thus will improve the quality of life and prosperity of the region.

Funding for Implementation

Appendix I shows a list of potential funding programs from various state and federal agencies to assist the communities in implementing the mitigation strategies and identified projects that they would not be able to fund on their own. When it makes sense, communities should join efforts in funding or applying for funding to implement common activities.

In 2016 the cities of Marseilles, Ottawa, and Peru all applied for and were awarded FEMA PDM funding for the construction of a floodwalls. The Marseilles projects

included construction of a floodwall and pumping station to protect the city's wastewater treatment plant. The flood wall included 150 feet of earth construction and 1,210 feet of sheet pile. The project also included a gate closure system for the entrance to the plant. The new floodwall will protect the wastewater treatment plant above a 500-year flood level.

The Ottawa project was coordinated with and was for the Ottawa Township High School for floodwall construction and improvement. The project included 1,500 lineal feet of new floodwall and elevating an existing concrete floodwall and elevating a portion of an existing earthen levee. The entire section of the levee north of Main Street was improved through both elevation and new construction. The extension of the levee and floodwall ensures heightened protection of OTHS campus and surrounding residential neighbors from flood related damages.

Peru constructed a floodwall to protect the city's east wastewater treatment plan. The floodwall was built out of pre-cast concrete blocks. The project also included a gate closure system for the entrance to the plant and a backup generator to ensure the plant can run during high waters if there is a power failure. The new floodwall will protect the wastewater treatment plant above a 500-year flood level.

The City of Ottawa has an application submitted to FEMA for PDM funds for a project on the east side of the city. The City of Ottawa is proposing to elevate Green Street above the 500-year flood elevation in order to allow residents, emergency personnel, and Ottawa Township High School staff and students safe and uninterrupted ingress egress access to the Eastside portion of the City of Ottawa. The Eastside neighborhood, approximately 250 residential homes and a student population of 1,332 at the Township High School, is accessed at only two locations; a Main Street bridge across the Fox River and Green Street, a roadway that crosses an old riverbed scar of the Illinois River. By raising the elevation of Green Street approximately 15 feet, this will help ensure the roadway is above the 500 year flood elevation (477.0) and the Eastside neighborhood is protected from extended periods of total isolation.

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https://www2.illinois.gov/iema/Mitigation/Pages/Planning.aspx and
https://www2.illinois.gov/iema/Mitigation/Documents/Plan_IllMitigationPlan.pdf

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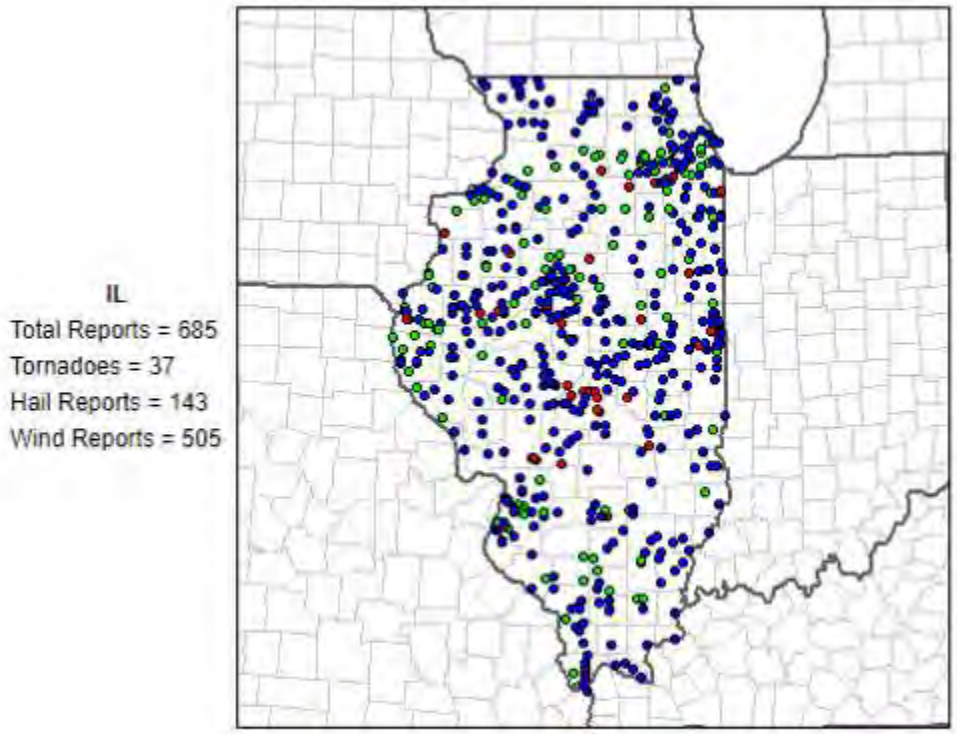
Chapter 2: Hazard Profiles

This chapter presents the basic information on the hazards that are present in LaSalle County. The possible hazards include: thunderstorms (which can produce lightning, hail, and tornadoes), winter storms, floods, earthquakes, drought, and extreme temperatures (heat/cold). Landslides and wildfires are unlikely to occur in the region, but are briefly discussed. Each hazard is identified and statistical data on storm events is presented. The following Illinois map shows Annual Severe Weather Report Summary information for 2019.

Annual Severe Weather Report Summary - 2019



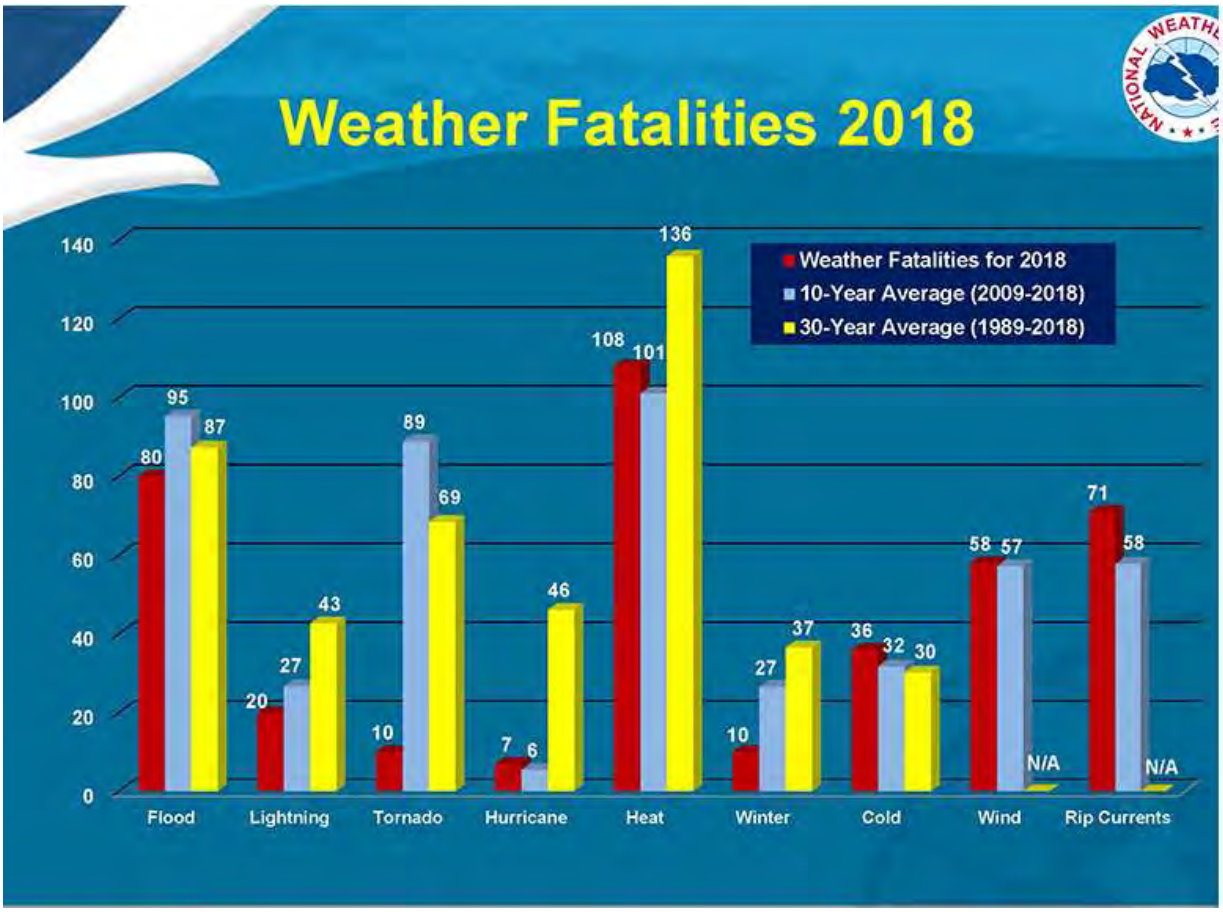
Key: Blue: Wind Damage Red: Tornadoes Green: Hail

Source: https://www.spc.noaa.gov/climo/online/monthly/states.php?month=00&year=2019&state=IL

Thunderstorms

Thunderstorms are dangerous because of the weather phenomenon that is associated with them. Thunderstorms have the capability to produce tornadoes, hail, flash flooding, and strong winds. Lightning occurs with all thunderstorms. The average thunderstorm is 15 miles in diameter and lasts 30 minutes. There are an estimated 16 million thunderstorms worldwide every year. Approximately 100,000 of the 16 million thunderstorms occur in the United States. On average, about 10,000 of those are classified as severe. The National Weather Service (NWS) considers a thunderstorm severe if it produces hail at least one (1) inch in diameter,

winds of 58 mph or stronger, or a tornado. In the United States, dozens of fatalities are caused each year by thunderstorms and their associated weather.[1] The table below shows 2018, 10-year average, and 30-year average weather fatalities.



Source: https://www.weather.gov/images/hazstat/weather_fatalities.jpg

The following table illustrates the thunderstorm and high wind occurrences in LaSalle County from 1/1/1970 – 12/31/2019. A full list of detailed thunderstorm events, by jurisdiction, is provided in Appendix D: Storm Events Data.

Thunderstorms and High Wind					
1/1/1970 to 12/31/2019					
County	Quantity	Deaths	Injuries	Property Damage	Crop Damage
LaSalle	315	0	3	972K	0

Source: http://www.ncdc.noaa.gov/stormevents/

There are four (4) different types of thunderstorms. The four (4) types are single cell, multicell clusters, multicell lines or squall lines, and supercell. They are identified below

according to the University of Illinois WW2010 Project (http://ww2010.atmos.uiuc.edu/%28Gh%29/guides/mtr/svr/type/home.rxml).

Single cell storms, also known as pulse storms, usually last for approximately 20-30 minutes. They generally do not cause severe weather.

A *multicell cluster* consists of a group of cells moving as a single unit. One cell denotes one updraft/downdraft couplet. There are several updrafts and downdrafts in proximity with a multicell storm. Each cell is in a different stage of the thunderstorm life cycle. As the multicell cluster develops, individual cells take turns at being the most dominant. New cells tend to form along the upwind (typically western or southwestern) edge of the cluster, with mature cells located at the center and dissipating cells found along the downwind (east or northeast) portion of the cluster.

A *squall line* or multicell line tends to form in long lines with a well-developed gust front at the leading edge of the line. An approaching multicell line often appears as a dark bank of clouds covering the western horizon.

A *supercell* is a thunderstorm with a deep rotating updraft (mesocyclone). They are the rarest thunderstorm but are extremely dangerous. Severe events almost always occur near the updraft/downdraft interface. These are typically in the rear of the storm but storms do have them in the front as well.

Lightning

Lightning is the flash of light produced by a discharge of atmospheric electricity. Lightning occurs during all thunderstorms and has the possibility of striking anywhere. Its generated outcome is created by the buildup and release of electrical energy between positively and negatively charged areas. Ascending and descending air within a thunderstorm separates these positive and negative charges. Every thunderstorm will have lightning.

A cloud-to-ground lightning strike begins as an invisible channel of electrically charged air moving from the cloud toward the ground. When one (1) channel nears an object on the ground, a powerful surge of electricity from the ground moves upward to the clouds and produces the visible lightning strike.

According to the National Oceanic and Atmospheric Administration (NOAA), lightning causes an average of 33 fatalities and between 300 - 500 injuries nationally each year. The air near a lightning strike is heated to 50,000 degrees Fahrenheit. Fatalities have occurred while people were talking on the phone, playing golf, boating, bike riding, and mountain climbing. It is important to take shelter immediately when a thunderstorm occurs. Livestock and pets are also at risk of being struck by lightning.

The rapid heating and cooling of the air near the lightning channel causes a shock wave that creates thunder. The distance of a thunderstorm can be calculated by counting the number of seconds between a flash of lightning and the next clap of thunder. Divide the number by five

(5) to determine the distance in miles to the lightning. For example, if there is 10 seconds between the lightning flash and the thunder (10 divided by 5 = 2), then the lightning is two (2) miles away. Knowing that lightning can occur in front and behind a thunderstorm, even when there is little to no rain accompanying the storm, can help avoid a tragedy.

The following table shows the number of deaths, injuries, and damages caused by lightning in LaSalle County. A lightning event was only recorded if deaths, injuries, and damages had been reported. In general, lightning events are not reported. A complete list of lightning events, by jurisdiction, in LaSalle County is provided in Appendix D: Storm Events Data.

Lightning					
1/1/1970 to 12/31/2019					
County	Quantity	Deaths	Injuries	Property Damage	Crop Damage
LaSalle	15	0	8	158K	0

Source: http://www.ncdc.noaa.gov/stormevents/

Hail

Hail is precipitation caused during thunderstorms when updrafts carry raindrops high into the atmosphere and they freeze into ice. Hail falls to the ground in the form of ice balls. When hail hits the ground, the weather event is considered a hailstorm. Hail is more likely to occur in the spring, when thunderstorms are more frequent. Hail can be found in the middle and upper portions of almost all thunderstorms. However, most either melts before hitting the ground, or being very soft, disintegrates in the violent thunderstorm interior. Large hailstones fall at speeds faster than 100 mph. Hail falls along paths known as hail swaths. These can be a few acres in area to 10 miles wide by 100 miles long. Wide hail swaths usually are associated with squall line thunderstorms.

Hail is difficult to measure due to the fact that it is only in its solid form for a few minutes before it begins to melt. The US NWS recognizes a series of descriptor terms for various hailstone diameters, ranging from pea-sized to softball-size. The size of hailstones usually increases with the intensity of the storm cell from which they are produced. Large hail that is greater than two (2) inches, forms mostly in supercell thunderstorms.

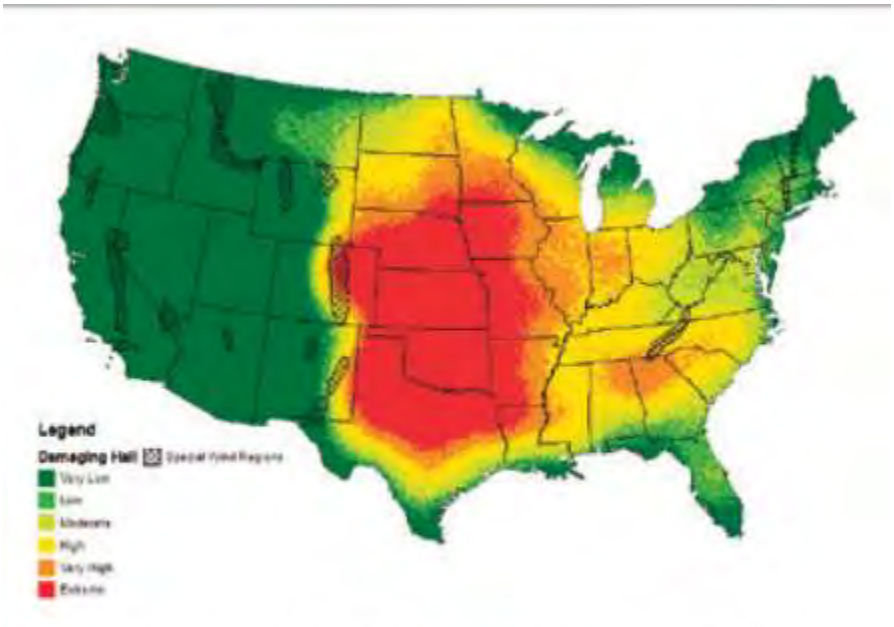
Hail causes damage to structures and crops. According to the NOAA's Severe Storms database, there were 5,382 major hailstorms in 2019 In 2018, 4610 major hailstorms occurred resulting in $810 million in property and crop damage. In 2019, Illinois had 143 severe hailstorms.

Illinois ranked third for having the most hail damage in 2018, according to State Farm Insurance[2][3]. The ranking only included State Farm policyholders. In 2018, State Farm paid more than $2.7 billion for more than 280,000 auto and homeowners insurance hail damage claims.

Source: https://newsroom.statefarm.com/top-10-states-for-hail-damage-claims-2019/

The probability and possibility of hail occurring in the LaSalle County is highly likely and unpredictable. However, severe hailstorms are more frequent in the Central Plains States where on average there are more than 10 severe hail days per year. Severe hail refers to hail one (1) inch or greater in diameter.

Source: www.weather.com/storms/severe/news/top-ten-states-hail-claims-2014[4]



A CoreLogic map illustrates U.S. hail risk across almost every state east of the Rocky Mountains.

Source: https://www.corelogic.com/downloadable-docs/wind-hail-risk-data-sheet.pdf[5]

Below is a table of the hailstorms in LaSalle County that occurred between 1/1/1970 – 12/31/2019. LaSalle County sustained the highest amount of property damage with 145 hail events that totaled $1 million in property damage. A detailed list of all storms, by jurisdiction, is included in Appendix D: Storm Events Data.

Hail Events							
1/1/1970 to 12/31/2019							
County	Quantity	Quantity 1-2 inches	Quantity over 2 inches	Deaths	Injuries	**Property Damage**	**Crop Damage**
LaSalle	145	79	6	0	14	1.0M	0

Source: http://www.ncdc.noaa.gov/stormevents/

Tornadoes

A tornado is, according to the Glossary of Meteorology, "a violently rotating column of air, in contact with the ground, either pendant from a cumuliform cloud or underneath a cumuliform cloud, and often (but not always) visible as a funnel cloud." About 1,000 tornadoes are reported nationwide every year, the NOAA reports[6].

Picture above is from the February 28, 2017 tornado event that touched down in LaSalle County.

Tornadoes are classified using the Enhanced Fujita Scale (EF-Scale). The EF-Scale is a modified version of the Fujita Scale that Dr. Tetsuya Theodore Fujita introduced in 1971. Dr. Tetsuya wanted to be able to classify tornadoes according to their intensity and area, and determine their wind speed by looking at damages. Due to weaknesses in the scale, scientists modified the scale to be more effective and consistent.

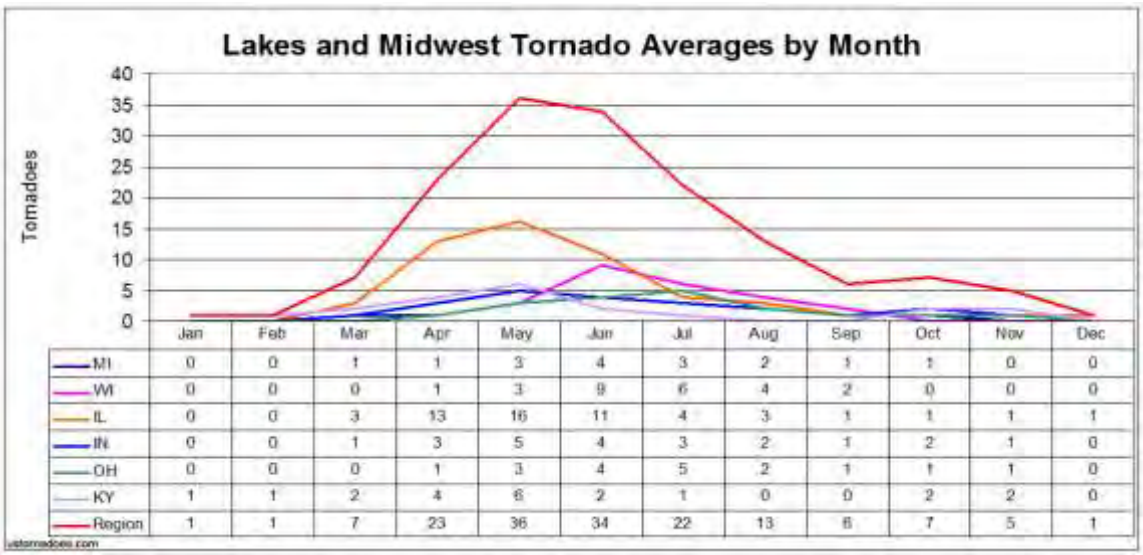
The use of the EF-Scale to determine a tornado's EF-rating begins with the 28 damage indicators (these can be found at http://www.spc.noaa.gov/efscale/ef-scale.html). Each indicator has a description of the typical construction that is within the indicator category. Once the damage indicator is determined the Degree of Damage (DoD) must be figured. Each DoD is given an expected estimate of wind speed, a lower bound of wind speed and an upper bound of wind speed. The original Fujita scale was based on damages alone, while the Enhanced Fujita Scale takes other factors into consideration.

Fujita Tornado Damage Scale		**Tornado Scale Comparison**	**Enhanced Fujita Tornado Damage Scale**	
Scale	Wind Estimate (MPH)	Typical Damage	**Scale**	**Wind Estimate (MPH)**
F0	<73	Light Damage: Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; signboards damaged.	**EF0**	**65-85**
F1	73-112	Moderate Damage: Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.	**EF1**	**86-110**
F2	113-157	Considerable Damage: Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.	**EF2**	**111-135**

F3	158-206	Severe Damage: Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.	**EF3**	**136-165**
F4	207-260	Devastating Damage: Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.	**EF4**	**166-200**
F5	261-318	Incredible Damage: Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.	**EF5**	**>200**

Source: https://www.spc.noaa.gov/faq/tornado/f-scale.html; http://www.spc.noaa.gov/efscale/ef-scale.html

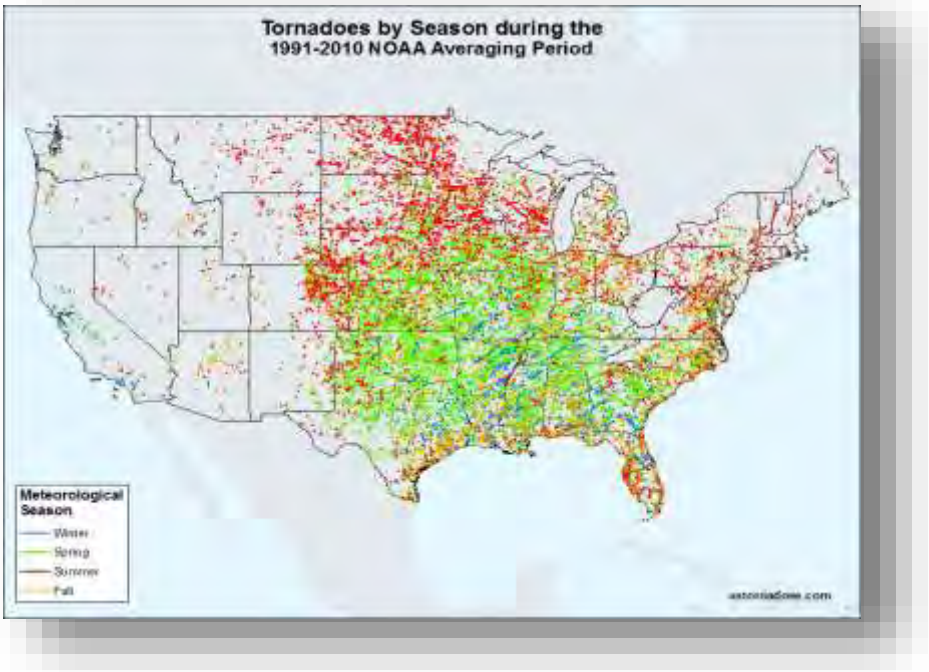
Tornadoes occur more frequently in the spring and summer months, but can occur anytime of the year. Some parts of the United States experience tornadoes exclusively during one (1) season, while other areas experience tornadoes year-round. Ian Livingston, founder of USTornadoes.com, has analyzed the occurrence of tornadoes throughout the country. The peak period for tornadoes in the Lakes and Midwest region is between April and July, as shown on the graph below.



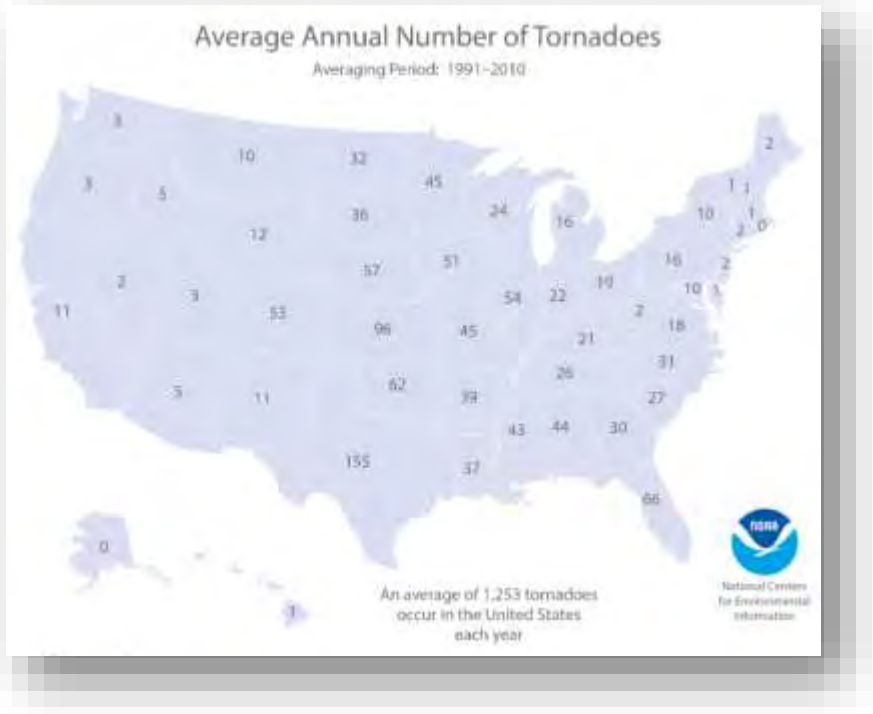
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
MI	0	0	1	1	3	4	3	2	1	1	0	0
WI	0	0	0	1	3	9	6	4	2	0	0	0
IL	0	0	3	13	16	11	4	3	1	1	1	1
IN	0	0	1	3	5	4	3	2	1	2	1	0
OH	0	0	0	1	3	4	5	2	1	1	1	0
KY	1	1	2	4	6	2	1	0	0	2	2	0
Region	1	1	7	23	36	34	22	13	6	7	5	1

Source: USTornadoes.com

Tornadoes are more frequent in the meteorological seasons of spring and summer. The graphics below show that more tornadoes occur in the Plains States, the Mississippi Valley, and the Great Lakes Region than in the rest of the country. Florida also has a higher number of tornadoes every year. Illinois had an average of 54 tornadoes per year between 1991 and 2010 and ranked sixth (6th) for having the highest average of tornadoes. [7] There were 48 tornadoes reported in Illinois during 2019, which resulted in 1 injury and nearly $2 million in property damage. Illinois ranks fourth in the United States for the most tornadoes per square mile.

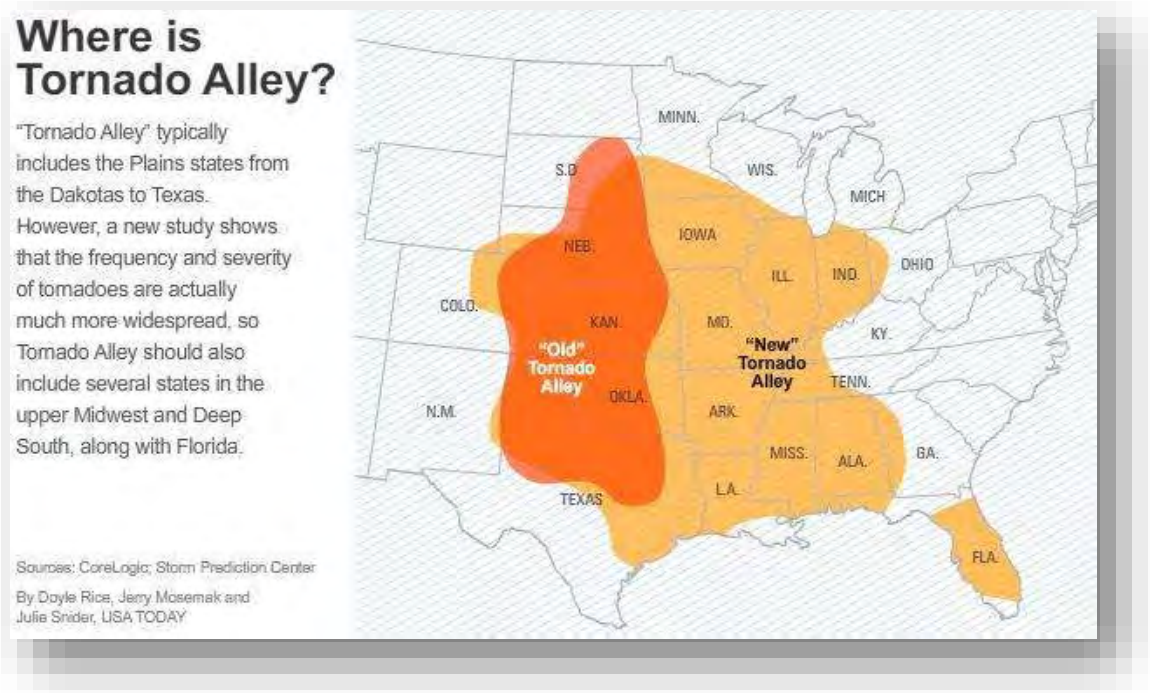


https://www.ustornadoes.com/wp-content/uploads/2013/03/Tornadoes-1991_2010.gif



https://www.ncdc.noaa.gov/sites/default/files/Average-Annual-Number-of-Tornadoes-United-States-Map.png

Tornadoes are thought to be more common in the central United States. Texas, Oklahoma, Kansas, and Nebraska are commonly referred to as Tornado Alley. But, the boundaries of Tornado Alley are debatable because of the high occurrence[8] of tornadoes outside of those states. The NOAA defines Tornado Alley as, "The area from central Texas, northward to northern Iowa, and from central Kansas and Nebraska east to western Ohio…" Based on this description, the North Central Illinois region would be included in Tornado Alley. The graphic below illustrates the two (2) thoughts on the boundaries of Tornado Alley.

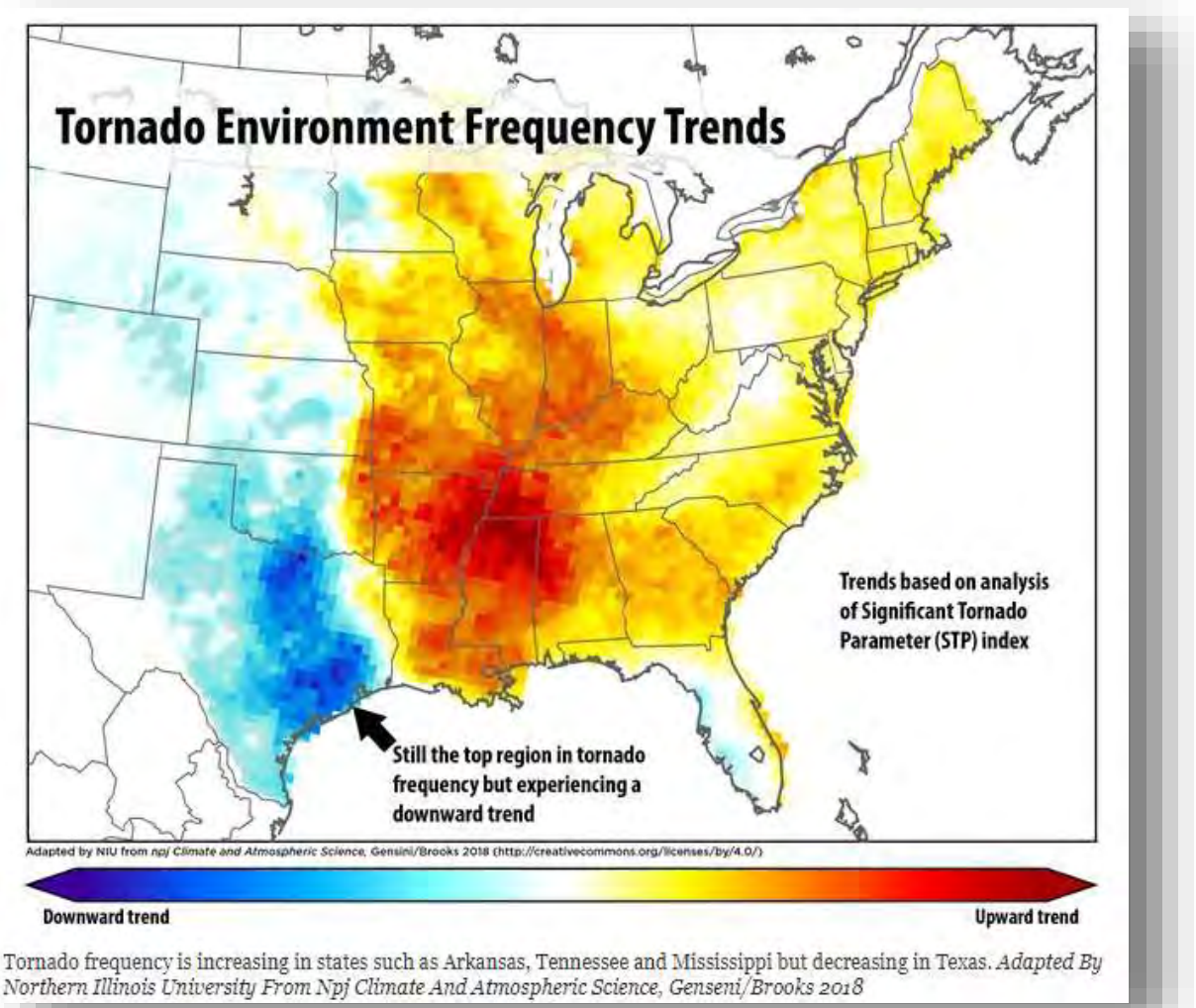


Source: http://usatoday30.usatoday.com/weather/storms/tornadoes/story/2012-04-09/tornado-alley/54157872/1

Although Tornado Alley still remains the top US area for tornadoes, areas to the east are catching up, based on data from 1979 to 2017. That includes portions of Illinois.

The USA's infamous "Tornado Alley" may be shifting to the east. Over the past four (4) decades, researchers in a new study found that tornadoes have increased over a large swath of the Midwest and Southeast, including what has been referred to as "Dixie Alley."At the same time, they've decreased in the central and southern Plains, the region traditionally known as Tornado Alley that includes large parts of Oklahoma and Texas.

"Regions in the Southeast and Midwest are closing the gap when it comes to the number of tornado reports," said Northern Illinois University meteorologist Victor Gensini, who led the study. Although Tornado Alley still remains the top US area for tornadoes, areas to the east are catching up, based on data from 1979 to 2017. That includes portions of Illinois. See Map below that shows the trend of Tornado Frequency shifting east.



Tornado frequency is increasing in states such as Arkansas, Tennessee and Mississippi but decreasing in Texas. *Adapted By Northern Illinois University From Npj Climate And Atmospheric Science, Genseni/Brooks 2018*

Source:https://newsroom.niu.edu/2018/10/17/study-u-s-tornado-frequency-shifting-eastward-from-great-plains/

Since the October 2008 Natural Hazard Mitigation Plan (NHMP), there have been several tornadoes that have touched down in the region. Listed below are descriptions of each tornado[9].

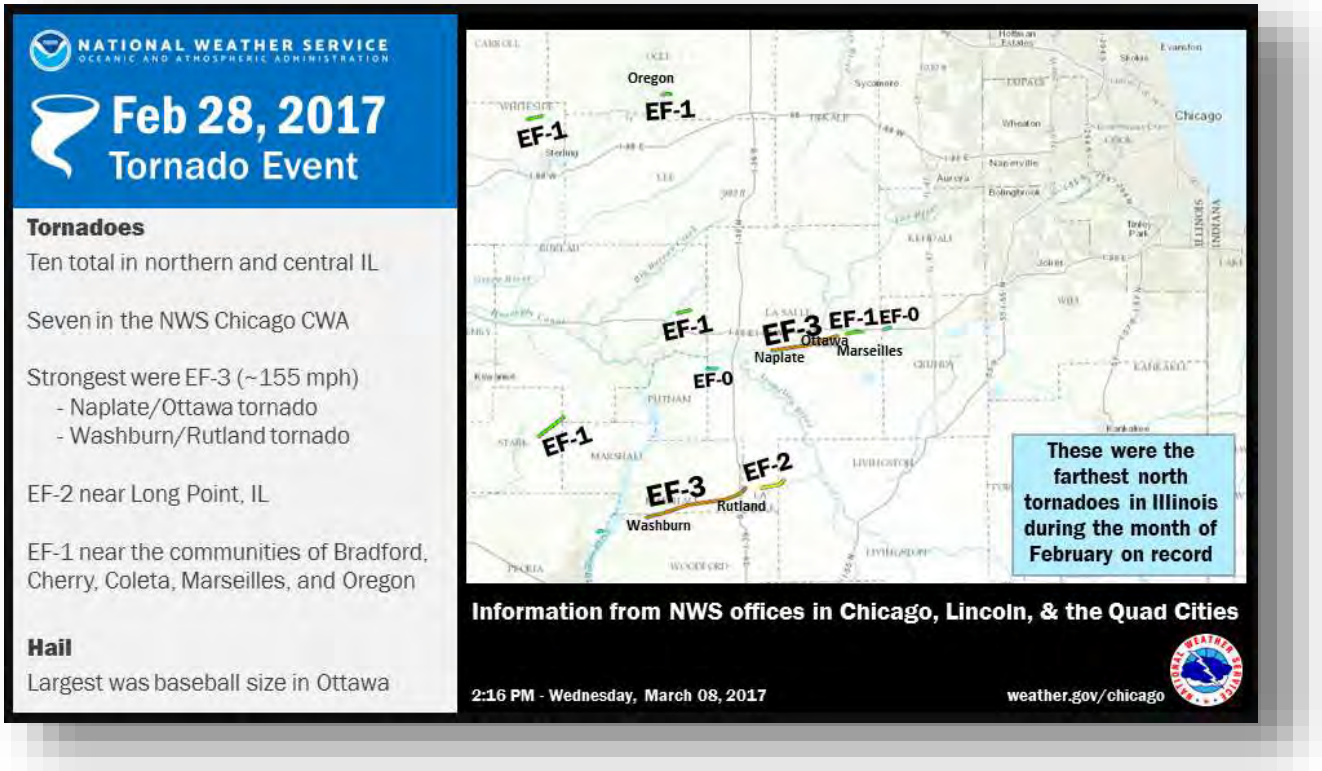
- February 28, 2017 Tornado (Cedar Point area): An EF0 tornado with wind speeds up to 80 miles per hour. The location and time of this tornado were estimated from spotter photos and videos from the area. No damage was identified, so the intensity is estimated.

- February 28, 2017 Tornado (Naplate/Ottawa): An EF3 tornado with wind speeds up to 155 miles per hour. The first area of significant damage in the EF2 range was in the area around the La Salle County Nursing Home and La Salle County Highway Department, with lighter damage upstream from this location. The tornado continued into Naplate and produced widespread EF2 damage to numerous homes. EF3 damage also was identified in two locations. The first was where a minivan was thrown about 30 yards and a home

was lifted off its foundation and left with only its interior walls intact. The second was at the Pilkington Glass plant where one section of the factory was completely destroyed. The tornado then crossed the Illinois River and moved through the south side of Ottawa, producing an 800-yard-wide path of EF1 damage to trees and homes. The fatalities in Ottawa occurred from a tree falling onto two men who were working outside. The tornado then crossed the Illinois River again and continued to produce EF1 and EF0 damage as it exited Ottawa, finally dissipating in the area northwest of Marseilles.

- February 28, 2017 Tornado (Marseilles area): An EF1 tornado with wind speeds up to 110 miles per hour. The tornado moved along N 30th Road south of Interstate 80 and produced damage at two farmsteads, both on the north side of the road, and to a tower on the south side of the road. Videos of this tornado suggested the condensation funnel possibly was wider than documented by the survey, but the path width was estimated based on the areas of damage.

- February 28, 2017 Tornado (LaSalle/Livingston Counties Area): An EF2 tornado with wind speeds up to 120 miles per hour. The tornado began as a weak EF0 that produced isolated tree damage north of Dana, IL. It then caused EF2 damage when it tore the roof off of a house just east of the LaSalle-Livingston county line. The tornado then weakened and snapped a couple of trees before dissipating one (1) mile west of Long Point, IL.



Source: https://www.weather.gov/lot/2017Feb28_tornadoes

- June 22, 2015 Tornado (Mendota): An EF1 tornado with wind speeds up to 105 miles per hour struck down on the city's northwest side. Multiple trees snapped or were uprooted. No injuries or fatalities were reported with this tornado. The tornado was part of a long-lived, cyclic supercell storm that tracked across Whiteside, Lee, LaSalle, Grundy, Will, and Kankakee Counties and included a total of 12 tornadoes that caused 14 injuries. There were no fatalities with the tornadic outbreak.

- June 22, 2015 Tornado (Ottawa/ Wedron Area): An EF1 tornado with wind speeds up to 90 miles per hour struck down eight (8) miles northwest of the City of Ottawa and tracked east to the unincorporated community of Wedron. Several large trees were snapped or uprooted. Approximately six (6) homes had minor damage with roof shingles off. A small trailer next to a garage was picked up and thrown behind a house. No injuries or fatalities were reported with this tornado. The[10] tornado was one (1) of the 12 tornadoes that was associated with the cyclic supercell storm on June 22.

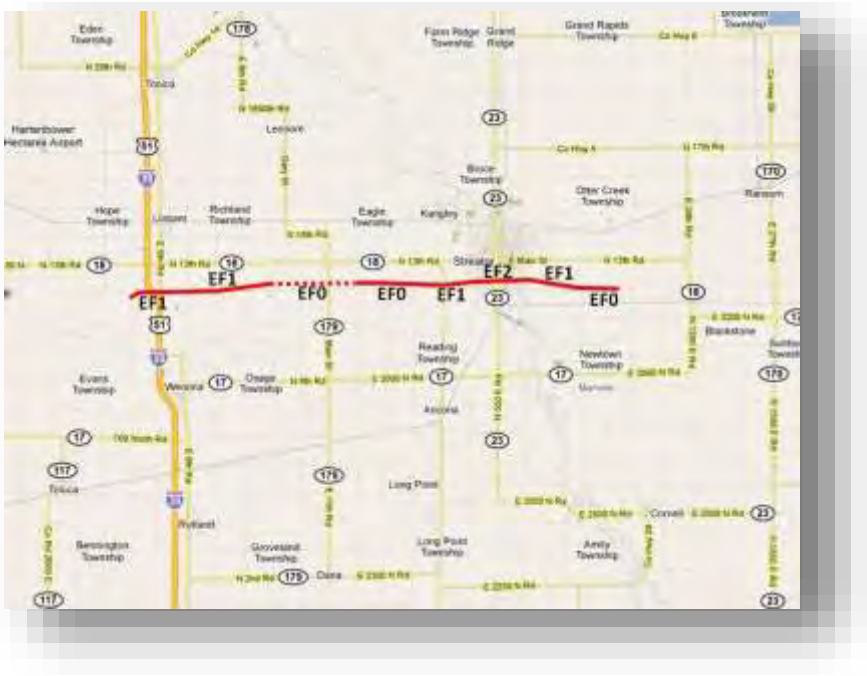
- June 22, 2015 Tornado (Seneca/ Morris): An EF1 tornado with winds up to 90 miles per hour struck down 5.6 miles north of the Village of Seneca and ended three (3) miles southwest of the City of Morris in Grundy County. Several large trees were snapped or uprooted and minor structural damage to outbuildings was reported. There were no injuries or fatalities reported with this tornado. The tornado was one (1) of the 12 tornadoes that was associated with the cyclic supercell storm on June 22.

http://www.weather.gov/lot/22June2015#phot

- June 30, 2014 Tornado (City of Earlville): Strong thunderstorms moved across the Midwest as a result of two (2) separate derecho events. Straight-line winds with speeds of 80-110 miles per hour impacted the City of Earlville followed by an EF1 tornado around 8:16 P.M. that uprooted trees, damaged roofs, destroyed a garage, and heavily damaged a church. No fatalities or injuries were reported.

- November 17, 2013 Tornado (Village of Dana/ Village of Rutland): Weather conditions were ripe across the Midwest for tornadic activity. A series of supercell thunderstorms produced 10 tornadoes, including three (3) which were EF2 tornadoes. An EF2 tornado that began in Tazewell County tracked across Woodford County and entered LaSalle County one-half mile east of Illinois Route 251 north of the City of Minonk at 11:41 A.M. The tornado snapped several utility poles, destroyed outbuildings, and badly damaged a few homes. Maximum winds speeds reached 135 miles per hour.

- September 1, 2013 Tornado (Village of Baker- 4 miles south of the Village of Leland): Around 5:47 P.M. trained tornado spotters reported a brief EF0 tornado south of the Village of Leland. The tornado did not cause any damage, fatalities, or injuries.



- June 5, 2010 Tornado: A supercell storm moved east from Magnolia, Illinois in Putnam County where it had produced an EF0/EF1 strength tornado. After lifting, a new tornado touched down near the Marshall and LaSalle County line due south. The tornado tracked along North 12th Road in LaSalle County knocking down trees and power lines. Minor structural damage was also reported. As the EF0/EF1 tornado continued to push east toward the City of Streator, it intensified to an EF1/EF2 strength tornado. As it moved through Eagle Pass Subdivision, trees were toppled, roofs were blown off, and several homes were badly damaged or destroyed. The most intense damage occurred along Hall Street near Southside Athletic Park. In all, 21 homes became uninhabitable and had to be destroyed, another 33 were uninhabitable and

required major repair, and a total of 150 received some degree of damage. Damage totaled $7 million. Seventeen (17) direct or indirect injuries were reported as a result of the tornado. There were no fatalities. At its strongest, the tornado had winds up to 130 mile per and was one (1) half mile wide. The tornado traveled approximately 18 miles and lasted 22 minutes.

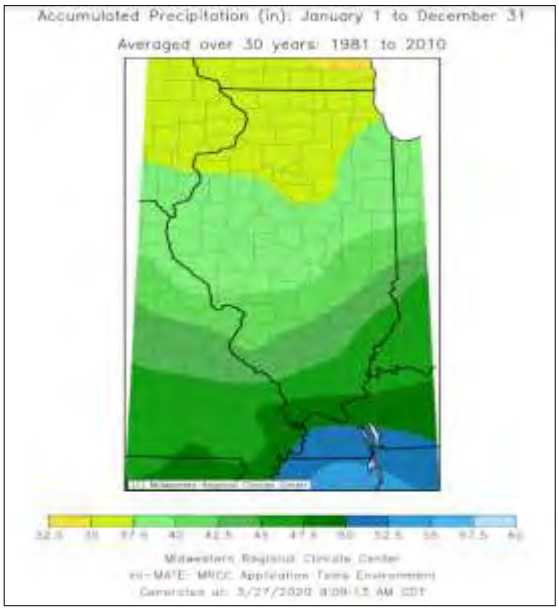
The table below identifies the number of tornadoes that have occurred in the past 50 years in the NHMP region. Property damage exceeded $9.1 million in LaSalle County. An EF2 tornado claimed the lives of eight (8) people in the Village of North Utica on April 20, 2004.

Tornadoes and Funnel Clouds					
1/1/1970 to 12/31/2019					
County	Quantity	Deaths	Injuries	**Property Damage**	**Crop Damage**
LaSalle	61	10	35	9.19M	0

Source: http://www.ncdc.noaa.gov/stormevents/

Dangerous Winds

For this plan, high winds and thunderstorm winds are referred to as "dangerous winds." Dangerous winds are typically associated with the outflow generated by a thunderstorm downdraft and are classified as having speeds exceeding 50 – 60 miles per hour (mph), according to the National Severe Storms Laboratory (NSSL). Winds of this strength are often called "straight-line" winds. Speeds can reach up to 100 mph and produce damage across hundreds of miles. People are at a greater risk for injury and death as a result of flying debris such as trees and power lines during dangerous winds. Derecho events are also a cause of concern. Derechos are associated with widespread and long-lasting thunderstorms. Derechos can also produce winds in excess of 100 mph. The NSSL is studying models to better forecast derechos to provide advanced warning. A list of dangerous wind events by jurisdiction is included in Appendix D: Storm Events Data.



Heavy Rain and Flooding

The intensity and duration of rain precipitation determines the extent of flooding in an area. If rain occurs over a period of several days, it will take longer for flooding to take place. When heavy rain occurs during a short period of time, flash flooding is common. On average, the region receives between 36 – 39 inches of precipitation annually. However, fluctuations occur. June 2015 was especially wet in Illinois. According to the

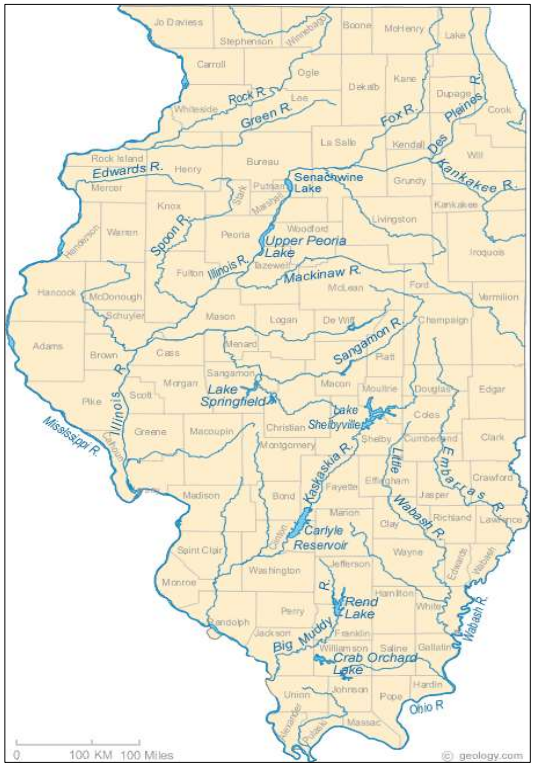
Illinois Office of the State Climatologist, June 2015 was wettest on record with the state averaging 8.91 inches of precipitation. Record keeping dates back to 1895. Heavy rain has caused flooding of streams and rivers and has created frequent flash floods. [11]In 2019, the preliminary average statewide precipitation in May, 2019 was 8.43 inches, which is 3.83 inches above the long-term average. As it stands now, spring 2019 will rank within the top four wettest spring seasons in state history (March-May), with May 2019 ranking as the third-wettest May in state history. The abnormally wet May weather has led to a continuation of elevated flooding.

Average annual precipitation in Illinois ranges from 36 inches in the northern part of the state to about 48 inches in the south. Illinois has experienced an increase in annual precipitation of 4.1 inches over the last century. That translates into about an extra month's worth of precipitation. The 1981-2010 average, or normal, for the state now stands as 39.96 inches. Based on a linear trend, Illinois precipitation has increased from 36 to 40 inches, about 10% over the last century. From the map above, LaSalle County falls into the 37.5 – 40.0 inches of accumulated precipitation averaged over 30 years (1990 – 2019).

According to the NSSL, a flood is defined as an overflowing of water onto land that is normally dry. The National Flood Insurance Program (NFIP) defines a flood as "a general and temporary condition where two (2) or more acres of normally dry land or two (2) or more properties are inundated by water or mudflow.

Floods are one (1) of the most destructive and widespread natural hazards in the United States. According to the NOAA, 30-year flood loss damages averaged $8 billion per year and claimed an average of 82 lives per year. More deaths are caused by floods every year than by lightning, tornadoes, and hurricanes. Every state is at risk for floods to occur.

The Federal Emergency Management Agency (FEMA) has identified several types of floods. They are grouped into the following types:



- Riverine Flooding
- Urban Drainage
- Fluctuating Lake Levels
- Ground Failures
- Coastal Flooding and Erosion

Riverine flooding and urban drainage-related flooding are the most common types of flooding within the NHMP region.

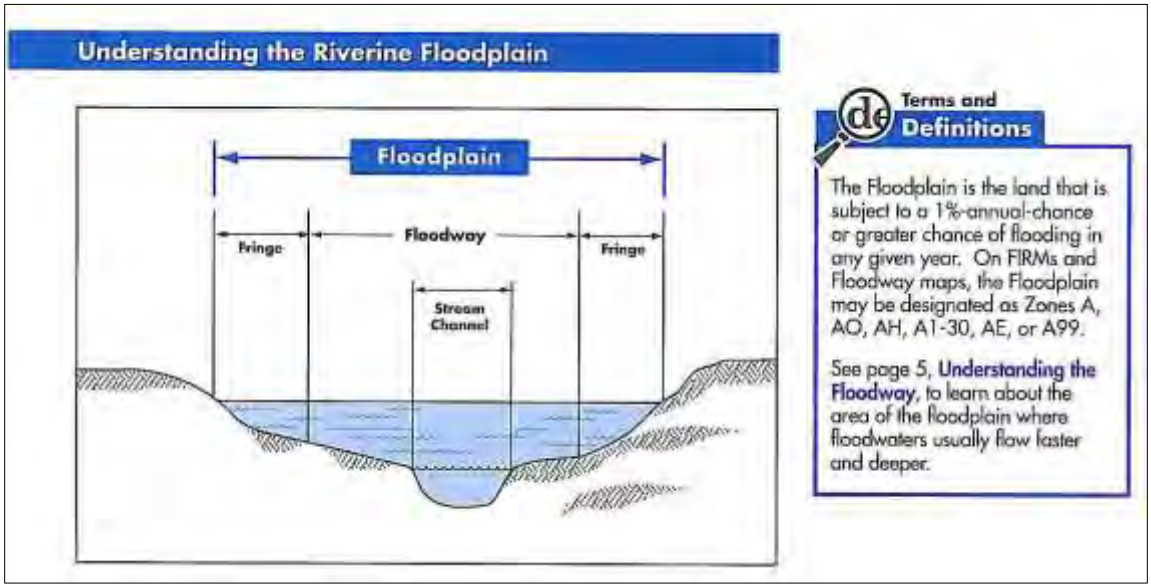
Riverine Flooding

Riverine flooding occurs when the channel of a creek, stream, or river reaches its capacity and overflows. Riverine flooding is the most common type of flooding in the United States. There are many small creeks and streams that run through the region, but the greatest threat

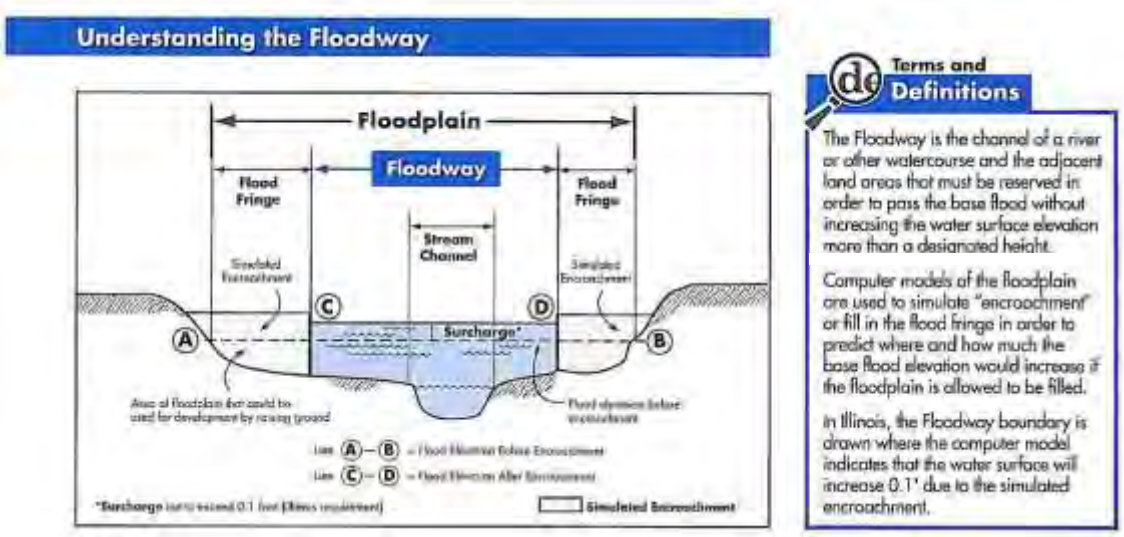
of riverine flooding comes from the Illinois, Fox, and Vermilion Rivers. Riverine flooding can occur in the form of overbank flooding, flash flooding, levee or dam failures, or ice jams.

Overbank Flooding

Overbank flooding is the most common type of flooding. Overbank flooding is when a river, stream, or other watercourse reaches capacity and begins inundating the adjacent floodplain. A floodplain is the land adjacent to the stream or river known as a Special Flood Hazard Area (SFHA) that is subject to one (1) percent annual chance or greater of flooding in any given year. A one (1) percent annual flood is also referred to as a 100-year flood and base flood. FEMA identifies SFHAs on Flood Insurance Rate Maps (FIRMS) by labeling them according to zones. Please refer to Chapter 4: Preventive Measures for more information on FIRMS and SFHAs. Overbank flooding can be exacerbated by urban and agricultural drainage practices and land development. Land use practices upriver may have an adverse impact on communities downriver.



The floodway is the channel of a river or other watercourse and the adjacent land areas that are necessary for the base flood to flow through without increasing the water surface elevation more than a designated height.



Flash Flooding

According to the NWS, the definition of a flash flood is "A rapid and extreme flow of high water into a normally dry area, or a rapid rise in a stream or creek above a predetermined flood level, beginning within six (6) hours of the causative event (e.g. intense rainfall, dam failure, ice jam)." The amount of time it takes for a flash flood to occur depends on topography and rain intensity. In some cases, there is little or no time to evacuate. Flash floods usually approach an area as a wall of fast moving water that carries rocks, mud, and other debris and can sweep away most things in its path. When a dam breaks it may produce the same effects as flash floods. Flash floods are more common in mountainous, sloping areas.

Levee and Dam Failures

A levee or dam failure can cause catastrophic flooding and destruction. The region has several levees and dams. Large dams in the region include the Marseilles Lock and Dam (Lock and Dam No. 5) in Marseilles, the Starved Rock Lock and Dam (Lock and Dam no. 6) east of North Utica, and the Dayton Dam, north of the City of Ottawa, on the Fox River. Construction was completed on Lock and Dam No. 5 and No. 6 in 1933 as part of the construction of the Illinois Waterway- a system of navigable waterways to link the Great Lakes to the Mississippi River. The Dayton Dam was constructed in 1928 as a hydroelectric power plant. The Dayton Dam is still in use today. Lake Holiday dam is a 45 high and creates the 240 acre lake in Northville Township. Another large manmade body of water in the county is LaSalle Lake at Com Ed's LaSalle Power Station which creates a 2,058 acre lake formed by levees southeast of Marseilles.

Dam and levee failures are usually caused when design capacity has been exceeded. Many of the nation's dams and levees are older and were designed to only provide limited flood protection. Some dams and levees may not have had designs at all. Poor maintenance is also a

cause of their failure. Changes in regional precipitation and flood levels caused by climate change and land use development may cause a levee or dam to fail.

Human error can also be a factor. On April 18, 2013, several barges broke loose from a towing vessel attempting to enter the Marseilles Lock and struck the dam after one (1) of the barges collided with a concrete retaining wall. Due to strong flow on the river, seven (7) of the barges were pulled up against the dam and four (4) of them sank. The dam sustained an estimated $50 million in damages. The incident is believed to have prevented water flow and likely exacerbated flooding in the City of Marseilles. The incident is discussed in more detail in Chapter 5 under the "Critical Facilities" section.

On June 14, 2015, four (4) barges broke loose from a towing vessel that was pushing eight (8) barges southbound on the Illinois River. Two (2) of the barges were immediately recovered, but two (2) of them were forced up against the piers of the Starved Rock D. The lock was temporarily closed. A preliminary investigation revealed minor damage to the dam and barges.

US Army Corp of Engineers Dam Failure Inundation Maps and Dam Studies for both the Marseilles Dam and the Starved Rock Lock and Dam state the their dam breach assessment predicts flood elevations that are unlikely to reach "Action Stage" at USGS Gauges or cause population at risk locations downstream. The water coming downstream is projected to stay within its banks.

Ice Jams

Ice jams occur when a body of flowing water freezes and unfreezes creating large chunks of ice that impede water flow and cause flooding. In Northern communities, ice covers the rivers annually. Generally, the river's surface will break up without causing problems.

Ice Jam on Fox River at Dayton Dam
Picture courtesy of Mike Sutfin, City of Ottawa

Ice jams are hard to predict because they are site specific, are less common, and poorly documented. The rates of water rise can vary between feet per minute and feet per hour. Risks and damages can be as high as or greater than open water floods because cold temperatures cause other dangers and damages. Bridges are often victims of ice jams.

The picture to the right was taken at the Dayton Dam along the Fox River north of the City of Ottawa. According to a 2011 Illinois State Water Survey study, the "Lower Fox River

Watershed Discovery Report, the Fox River has had major ice jams over the past 25 years that have caused major damage to the river's shoreline, to houses on the river, boat docks, and bridges. On one (1) occasion, the Dayton Road Bridge was destroyed by an ice jam. In 2010, a major freeze resulted in an ice jam that was 20 feet thick in some areas and stretched 5.1 miles downriver from the dam. Ice jams have also caused flash flooding along the Fox River.

The following factors cause ice jams to form:

1. River geometries, weather characteristics, and floodplain land-use.
2. The area ice is conveyed to have less carrying capacity than the quantity of the ice transported to the area.
3. A tributary stream entrance to a larger river, lake, or reservoir where ice may be thicker and frozen. The broken ice from the stream will move until it cannot move anymore, collecting at the entrance and causing ice jams.
4. Obstructions such as trees or bridge pylons can cause ice jams.
5. Removal of dams and structural and operational changes in reservoirs.

Urban Drainage

Surface water flooding is a common issue throughout many of the communities and rural areas in Illinois. Surface water flooding occurs when rain falls too quickly for soils to absorb water or for it to evaporate. The result is pooling of stormwater and localized flooding. Different types of ground cover influence the severity of surface water flooding. Densely populated and urban areas have more impervious services such as streets, roadways, and parking lots that are designed to divert water as quickly as possible away from the area. With more impervious surfaces, there is less natural area for water to be absorbed, thus resulting in surface water flooding.

Urban drainage techniques are a major cause of surface water flooding. The philosophy behind urban drainage techniques is to eliminate excess water from a site as quickly as possible through a closed conveyance system. Public expectations demand that all water is gone from a site within minutes of a rainstorm. Unfortunately, this unrealistic demand is contributing to overwhelmed sewer systems, basement backups, downstream riverine flooding, and diminished groundwater supplies. As a result, there is a need for stormwater management practices enforced through ordinances. Stormwater management is covered in Chapter 4: Preventive Measures.

Basement Flooding and Backups

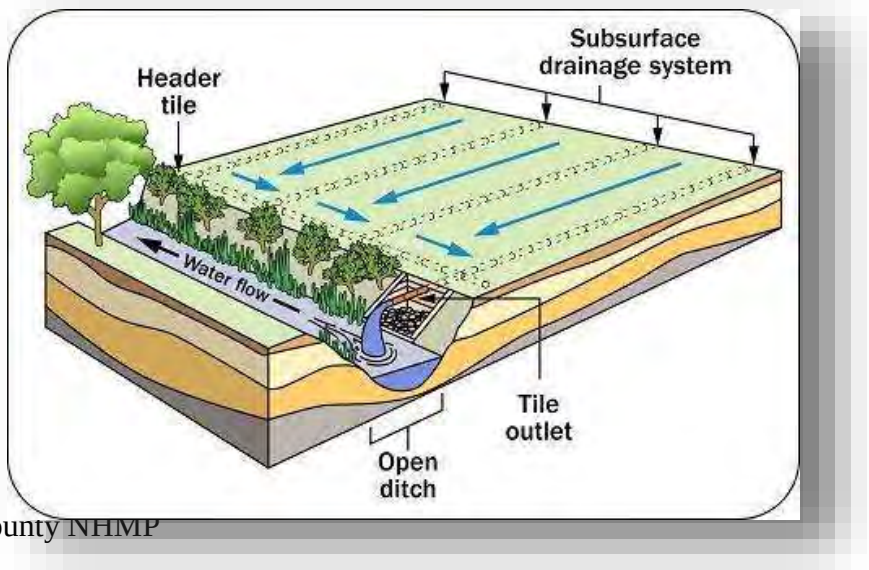
Most of the communities that participated in this NHMP reported that basement flooding occurs within their towns. One (1) community reported 567 basement backups during the April 2013 flood. It is important for homeowners to understand their insurance policies because the definition of flood varies by insurance company. Water that enters a

basement through a sewer, drain, or failed sump pumps is not considered a flood according to insurance companies. Therefore, if a homeowner does not have a sewer and drain policy, their damage may not be covered.

Sanitary sewers cause basement flooding when they are overwhelmed by stormwater and groundwater that is entering the system. The terms used to describe groundwater and stormwater entering the sanitary sewer system are inflow and infiltration. Sources of inflow include downspouts, sump pumps, and foundation footings and drains. Inflow sources are direct points where water enters the system. They are often illegal according to local ordinances. Infiltration occurs when there are cracks and leaks in the sewer main. Addressing sources of inflow and infiltration is necessary, but is costly. Separating combined sewers and constructing new storm and sanitary sewers may cost millions. However, educating the public about these conditions and encouraging them to disconnect their illegal hookups from the sanitary sewer will reduce basement backups. Several communities offer programs to residents to share in the cost of installing ejector pumps that will eliminate basement backups. Most communities within the region are working to separate their sanitary and storm sewers.

Agricultural Drainage

The impact of agricultural drainage practices on rural communities is both complex and controversial. According to the United States Environmental Protection Agency (USEPA), agricultural drainage techniques are utilized to eliminate excess water in the soil to improve crop production. There are different types of drainage techniques: leveling land, constructing shallow ditches and waterways, and constructing surface inlets to subsurface drains. Subsurface drainage practices usually involve the installation of a network of field tiles, perforated tubing that allows water to seep in and be drained away from the field. The image below shows a typical subsurface drainage system.



Source : http://www.yaharapridefarms.org/tile-drainage/

There is controversy on whether or not the use of subsurface agricultural drainage systems worsens flooding in nearby communities. There are also concerns about the impact of field tiling on wetlands and water quality. Several participating communities in this plan shared comments and concerns on the use of field tiles. North Central Illinois Council of Governments (NCICG) recommends that LaSalle County examine the impact of agricultural drainage systems and rural stormwater.

Flood Designations

Flood designations are based on statistical averages, not the number of years between floods. The term "100-year flood" means that during any given year there is a one (1) in 100 chance that a large flood will occur. Climate change may cause large floods to occur in successive years or sporadically. The table to the right is an overview of the chance of a flood based on time periods and according to size. By definitions used in the NFIP, the probability of a 10-year flood is 10 percent in any given year, and one (1) percent for a 100-year flood in any given year.

Chance of Flooding

	Flood Size			
Time Period	**10-year**	**25-year**	**50-year**	**100-year**
1 year	10.0%	4.0%	2.0%	1.0%
10 years	65.0%	34.0%	18.0%	10.0%
20 years	88.0%	56.0%	33.0%	18.0%
30 years	96.0%	71.0%	45.0%	26.0%
50 years	99.0%	87.0%	64.0%	39.0%

The table below shows the number of floods that have occurred in LaSalle County and the number of injuries and deaths caused by each flood. The amount of property damage has also been included in the table. The list of historic flood events for LaSalle County is included in Appendix D: Storm Events Data.

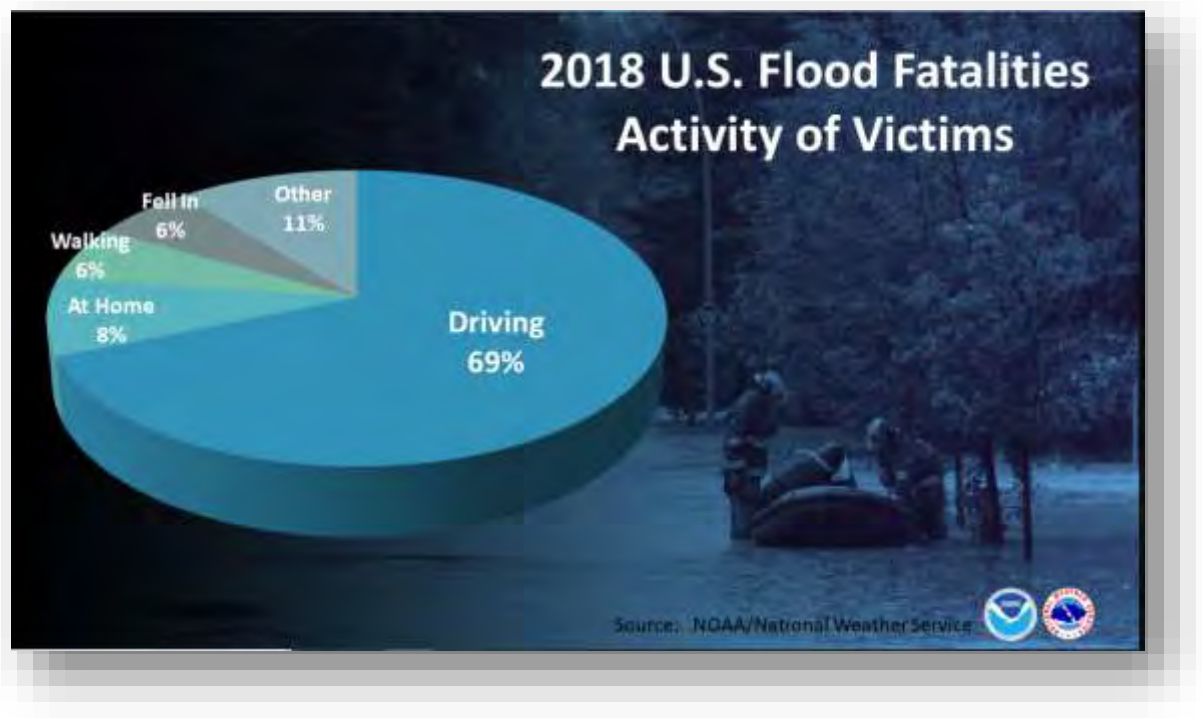
Floods

1/1/1970 to 12/31/2019

County	Quantity	Deaths	Injuries	Property Damage	Crop Damage
LaSalle	69	1	5	86.9M	20K

Source: http://www.ncdc.noaa.gov/stormevents/

Flooding Fatalities



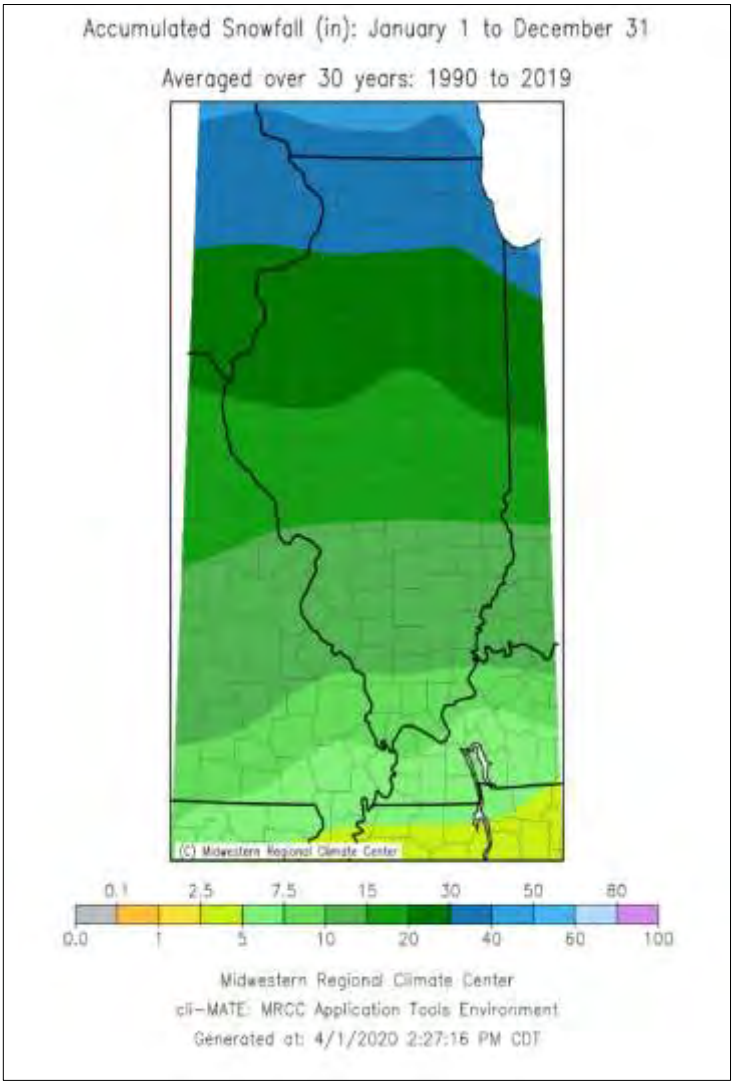
Source:https://www.weather.gov/images/arx/floodeaths/2018_activity.png

In the United States, 69% of flood fatalities happen when people attempt to drive their vehicles through flooded roadways. The next highest group of fatalities occurs when people are walking in or playing in flooded waters. Victims underestimate the power of water and often ignore signs closing off flooded roads and areas. It only takes six (6) inches of fast-moving water to knock a person down and only one (1) foot of water to move a small car. Two (2) feet of water can move most vehicles. The majority of victims drown in their vehicles after being swept downstream. It is never safe to drive on flooded roads. The true extent of the flooding is not known by looking on the surface. Sinkholes and washed out roads become unseen traps. The NWS encourages public education about avoiding flooded areas through its Turn Around, Don't Drown phrase. Information about usage of the phrase and producing warning signs is available at https://www.weather.gov/tsa/hydro_tadd. Most flooding deaths are preventable.

Winter Storm Events

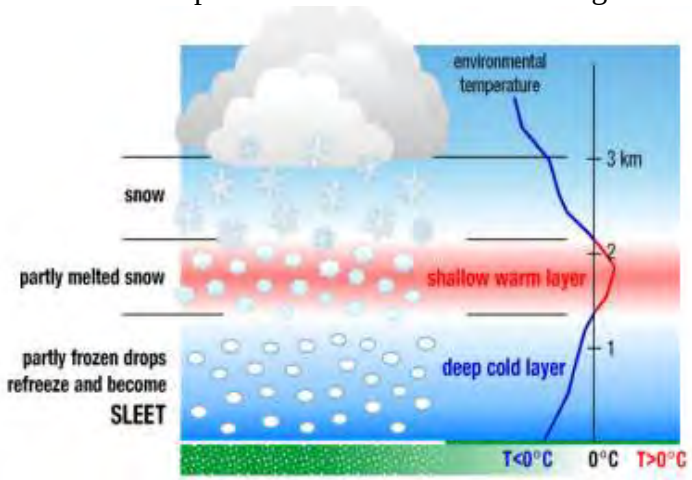
In the last century, Illinois has had a severe storm every winter. According to the Illinois Emergency Management Agency (IEMA) there are three (3) categories of winter storms: blizzards, heavy snowstorms, and ice storms. Characteristics of blizzards include low temperatures, heavy snowfall, and winds of 35 miles per hour or greater. The combination of these events leads to low visibility. Heavy snowstorms produce six (6) inches or more of snow in 48-hours or less. Ice storms occur when moisture falls and freezes upon impact (freezing rain) creating dangerous roadways and causing trees to fall. The map below illustrates that LaSalle County snowfall within the 26 - 34 inches of snow per year area.

In 1977-1978, eighteen severe winter storms occurred, making it the worst winter on record. The following year, 1979, a federal snow emergency was declared Federal Disaster Assistance Administration (FDAA 3068-EM) when the northern third of the state received six (6) inches or more of snowfall between January 12 and 14. The heaviest snowfall, between 12 and 20 inches, was recorded in the northeast quarter of the state, where traffic was paralyzed and transportation corridors closed. Midway and O'Hare airports recorded maximum amounts of 20 and 19.8 inches of snow in the 2018 Illinois Hazard Mitigation Plan III-109. From the map shown, LaSalle County falls into the 20.0 – 30.0 inches of accumulated snowfall averaged over 30 years (1990 – 2019).



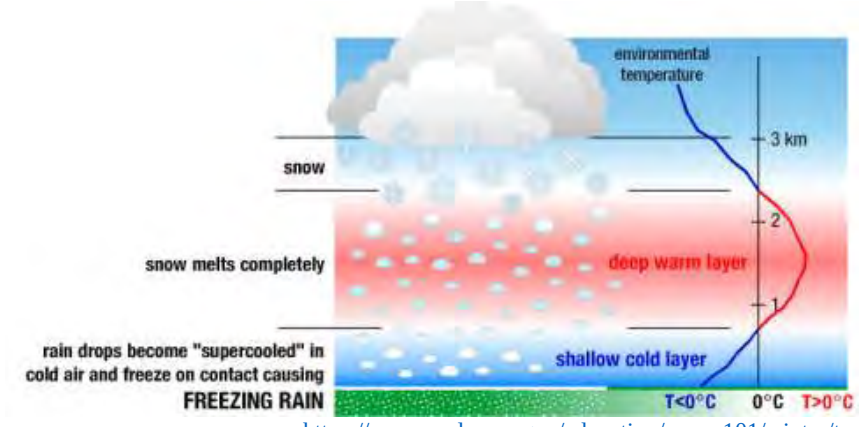
https://www.nssl.noaa.gov/education/svrwx101/winter/types/

Precipitation falls as snow when air temperature remains below freezing in the atmosphere.



https://www.nssl.noaa.gov/education/svrwx101/winter/types/

Sleet falls when snow partially melts in a warm layer of air and then refreezes in a layer of freezing air.

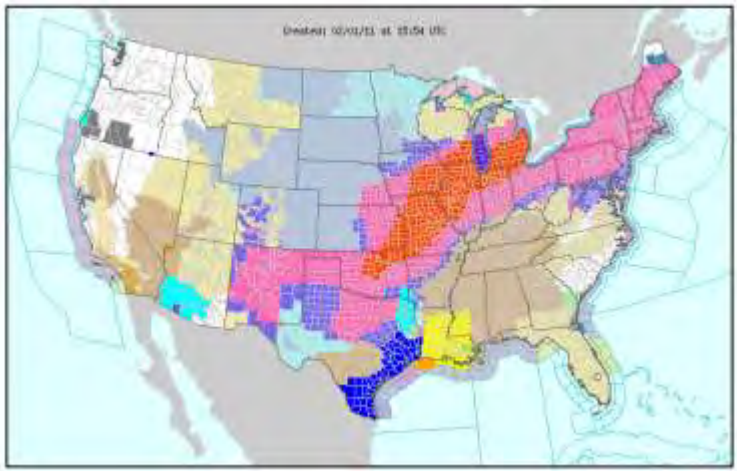


https://www.nssl.noaa.gov/education/svrwx101/winter/types/

Freezing rain occurs when snowflakes completely melt in a layer of warm air, then hit a layer of super cooled air and freeze on contact.

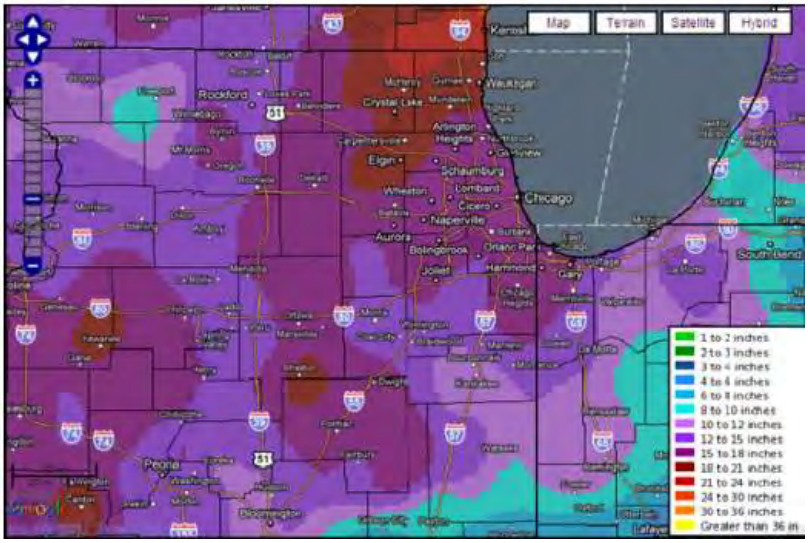
The region experiences winter storms on an annual basis, but between January 31 and February 2, 2011, Illinois and the region experienced one (1) of the worst winter storms on record. The winter storm stretched across a large section of the nation from New Mexico to Maine. The map below shows watches and warnings issued for the morning of February 1, 2011. LaSalle County was included in a blizzard warning (in red) issued by the NWS.

The blizzard created dangerous weather conditions with wind gusts up to 50 – 60 miles per hour (mph), snow drifts up to 10 feet high, and snow totals in the region ranging from 10 – 21 inches.



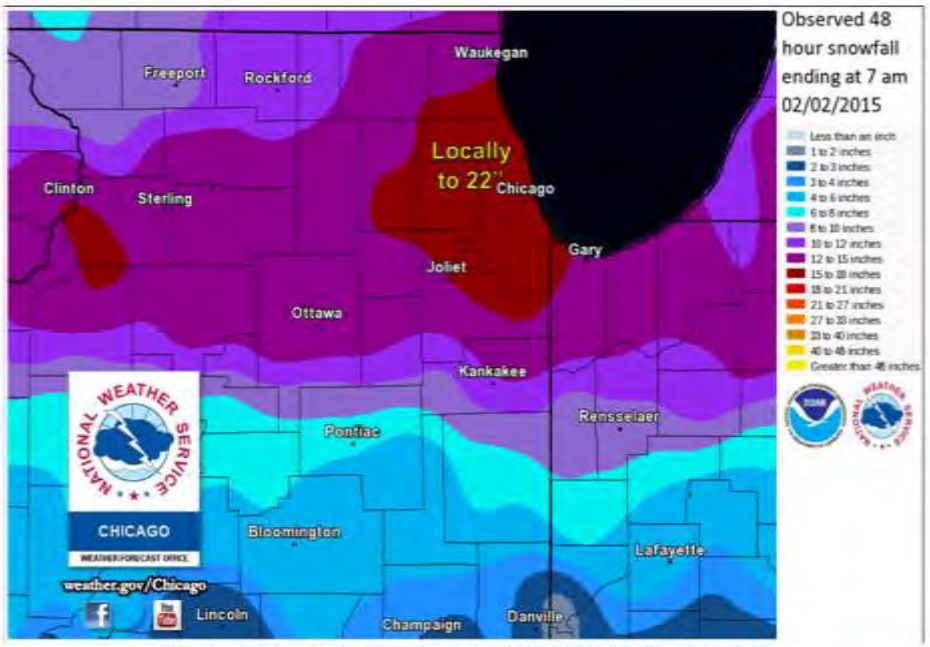
Source: http://www.weather.gov/lot/2011blizzard#snowfall

The blizzard exhausted community stockpiles of salt and required overtime for the removal of snow to keep roadways safe. Former Illinois Governor Pat Quinn requested a declaration for public assistance for 60 counties, snow assistance for 43 counties, and hazard mitigation funds for all counties. On March 17, 2011 President Barack Obama declared a major disaster existed in Illinois under FEMA-1960-DR, Illinois, Severe Winter Storm and Snowstorm. LaSalle County was included in the declaration.



https://atlas.niu.edu/klot/pastevents/2011Blizzard/bliz2011-2pm.png

Another memorable winter storm arrived on the evening of Saturday, January 31, 2015 and continued through Sunday, February 2nd in the area. Rockford received 10.5 inches (out of 11.9 inches total) on February 1st and Chicago O'Hare received 16.2 inches (out of 19.3 total). Both of these one-day snowfall amounts ranked in the top overall one-day snowfall accumulations for these cities. As you can see from the map below that most of LaSalle County fell into the 10-12 inches category for snowfall accumulation.



15-18" were reported around the Chicago metro area with locally higher totals.

Source: https://www.weather.gov/lot/2015_Feb01_Snow

The table below shows the type and number of winter storms for LaSalle County, and their associated deaths, injuries, and damage.

WINTER EVENTS						
1/1/1970 TO 12/31/2019						
County	**Storm Type**	**Quantity**	**Injuries**	**Deaths**	**Property Damage**	**Crop Damage**
LaSalle						
	Blizzard	4	0	1	0	0
	Frost/Freeze	1	0	0	0	0
	Heavy Snow	13	0	0	0	0
	Ice Storm	2	0	0	2K	0
	Winter Storm	27	0	0	0	0
	Winter Weather	4	0	0	0	0
	Total	51	0	1	2K	0

Source: http://www.ncdc.noaa.gov/stormevents/

Drought

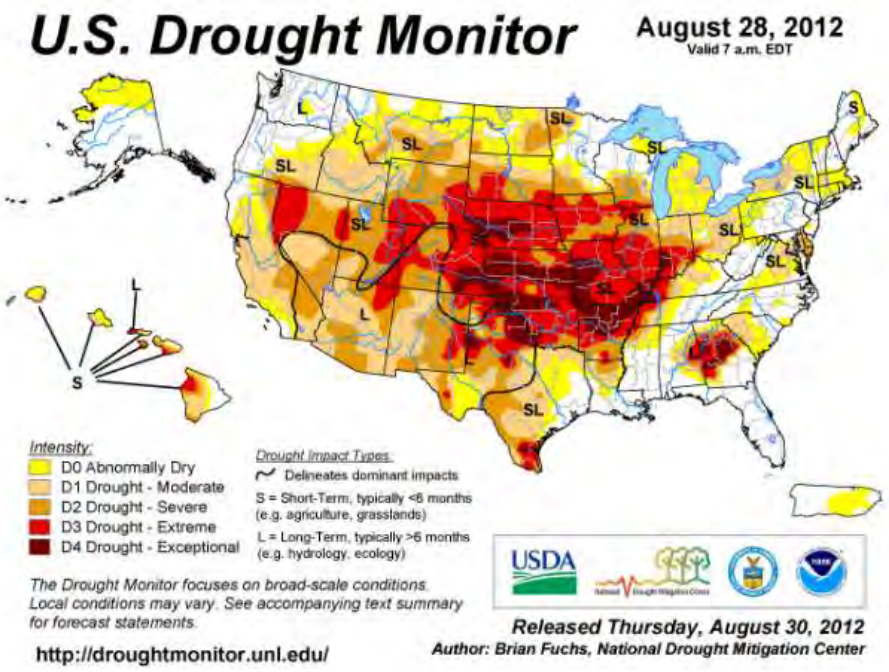
Drought is, generally, "a deficiency of precipitation over an extended period of time, resulting in a water shortage for some activity, group, or environmental sector." Drought is difficult to define because the severity of drought can vary across a region. Droughts are a normal, recurrent feature of climate. They affect both developed and developing countries. The entire county is at risk of drought in any given year. Weather conditions, soil moisture, runoff, water table conditions, water quality and stream flow are all natural factors that are important in determining drought. High temperatures, high winds, and low relative humidity can significantly aggravate its severity.

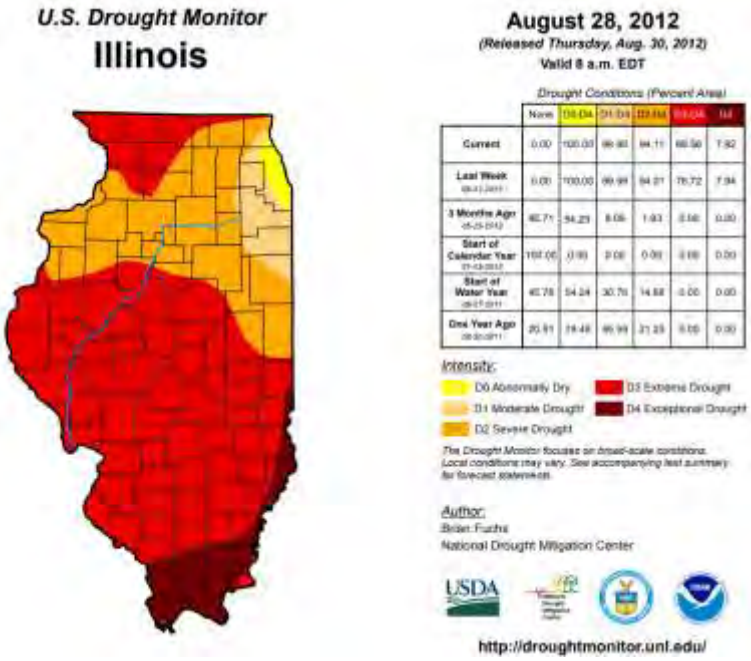
Droughts have serious economic, environmental, and health impacts. Drought Impacts:

- · Damaged/diminished crop harvests
- · Loss of Electricity generation
- · Poor surface water quality
- · Scarce drinking water supplies/rationing
- · Recreation opportunities lost
- · Transportation problems

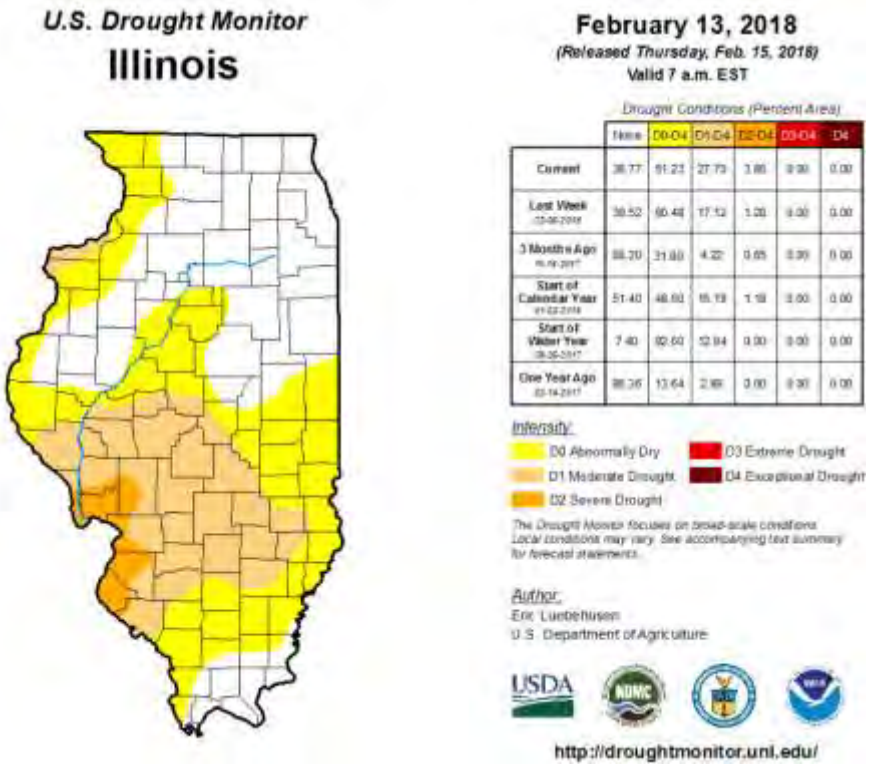
In 2012 another severe drought occurred in Illinois, affecting a large majority of the state. The drought conditions intensified throughout the summer months and into early fall. Agricultural impacts became evident in late July as hydrologic conditions continued to deteriorate. The statewide average precipitation total was 28 percent of normal. The statewide average temperature during this time was 78.0 degrees, 3.8 degrees above normal. Extremely hot weather occurred during the second half of this period with highs in the 90s and low 100s common across the state. At least 56 sites in Illinois broke their daily high temperature records on June 28 and 29. The statewide average precipitation for June was 1.8 inches, which is 2.3 inches below normal and 43 percent of normal. It was the eighth driest June on record. June 1988 was the driest on record at 1.1 inches. The statewide average precipitation for the first half of 2012 was 12.6 inches, making it the sixth driest on record. The graphics below shows drought conditions on August 28, 2012 for the US. The Illinois map shows the drought conditions for the same date (Aug 28, 2012).

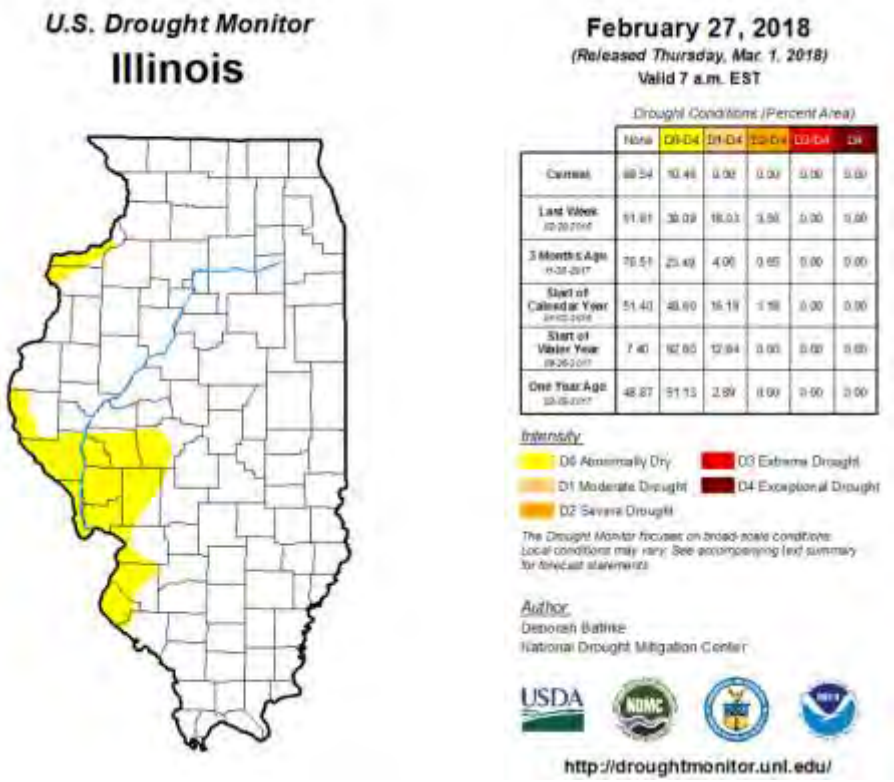
LaSalle County reported damages as a result of the drought. By August 2012, drought conditions impacted most of the state. Areas identified in orange were enduring a severe drought. LaSalle County was included in the severe drought area.





In 2018 parts of Illinois were showing signs of Drought. LaSalle County was on the edge of Abnormally Dry Drought conditions. Multiple waves of rain and storms moved through the Midwest during the 3rd week of February 2018, with 7- day accumulations of more than five inches across the southern portion of the region. The rainfall helped to fill ponds and increase streamflow, and caused minor to moderate flooding. As a result, improvements were made to drought areas, including the reductions in moderate drought in Illinois. The following maps show drought conditions in early February 2018 and late February.


U.S. Drought Monitor
Illinois
February 13, 2018
(Released Thursday, Feb. 15, 2018)
Valid 7 a.m. EST
Drought Conditions (Percent Area)
None
D0-D4
D1-D4
D2-D4
D3-D4
D4
Current
38.77
61.23
27.73
3.86
0.00
0.00
Last Week
38.52
60.48
17.12
1.28
0.00
0.00
3 Months Ago
88.20
31.80
4.22
0.65
0.00
0.00
Start of Calendar Year
51.40
48.60
16.19
1.18
0.00
0.00
Start of Water Year
7.40
92.60
12.94
0.00
0.00
0.00
One Year Ago
86.36
13.64
2.89
0.00
0.00
0.00
Intensity:
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
Author:
Eric Luebehusen
U.S. Department of Agriculture
USDA
NDMC
http://droughtmonitor.unl.edu/


U.S. Drought Monitor
Illinois
February 27, 2018
(Released Thursday, Mar. 1, 2018)
Valid 7 a.m. EST
Drought Conditions (Percent Area)
None
D0-D4
D1-D4
D2-D4
D3-D4
D4
Current
88.54
10.46
0.00
0.00
0.00
0.00
Last Week
81.91
38.09
18.03
3.86
0.00
0.00
3 Months Ago
78.51
21.49
4.00
0.65
0.00
0.00
Start of Calendar Year
51.40
48.60
16.19
1.18
0.00
0.00
Start of Water Year
7.40
92.60
12.94
0.00
0.00
0.00
One Year Ago
48.87
51.13
2.89
0.00
0.00
0.00
Intensity:
D0 Abnormally Dry
D1 Moderate Drought
D2 Severe Drought
D3 Extreme Drought
D4 Exceptional Drought
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.
Author:
Deborah Bathke
National Drought Mitigation Center
USDA
NDMC
http://droughtmonitor.unl.edu/

Climate change and population increases necessitate the need for water supply planning. The Prairie Research Institute and the Illinois State Water Survey predict that Illinois will need 20 - 50% more water in the coming decades. In 2006, former Governor Rod Blagojevich ordered the Illinois Department of Natural Resources (IDNR) to take the lead in studying regional and state water supplies. Two (2) regional pilot studies were launched and others were added later.

LaSalle County is part of the Middle Illinois Basin planning area. See map below The Middle Illinois Basin study is on phase II of the study and should be completed sometime next fiscal year. Until the studies are completed there is not enough data to determine the impact on LaSalle County and its communities. It is essential that the study be completed for Illinois to be prepared for future water needs. The Middle Illinois Basin study will examine issues including, but not limited to the following:

- Increased industrial/municipal use of groundwater
- Water needs for agricultural use
- Water needs for mining use
- Limited quantity of groundwater
- Need for infrastructure upgrades

Source: https://www.isws.illinois.edu/images/default-source/water-supply-planning/wsp_mid_il_planningarea.png?sfvrsn=66227163_4

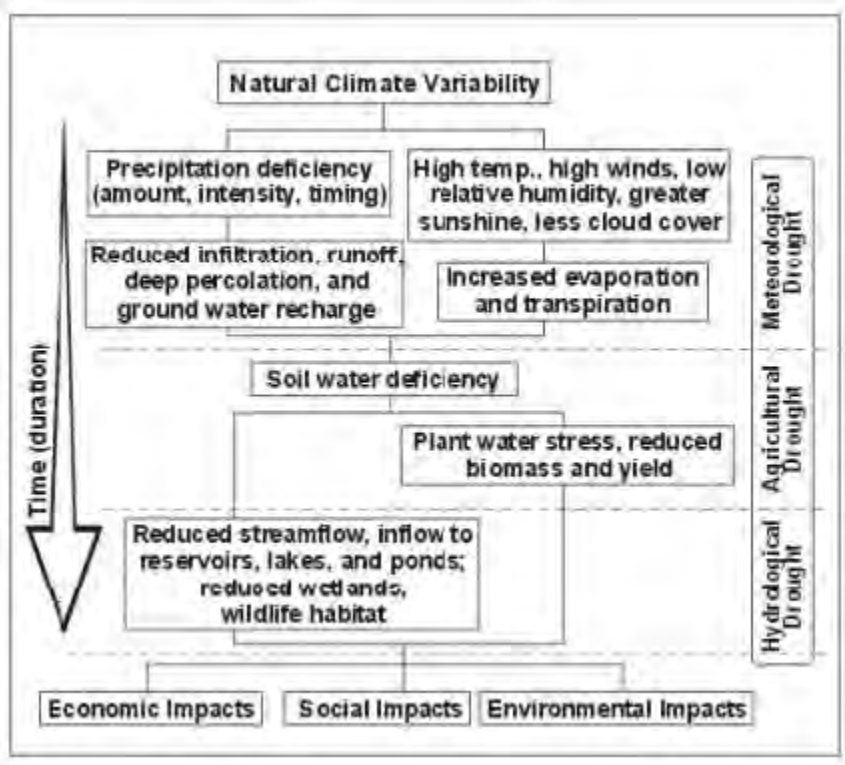
The table below shows the number of droughts since January 1, 1970 in LaSalle County and the amount of damage that occurred to the crops due to the drought. The complete list of drought occurrences is available in Appendix D: Storm Events Data.

Drought					
1/1/1970 to 12/31/2019					
County	Quantity	Injuries	Deaths	Property Damage	Crop Damage
LaSalle	9	0	0	0	0

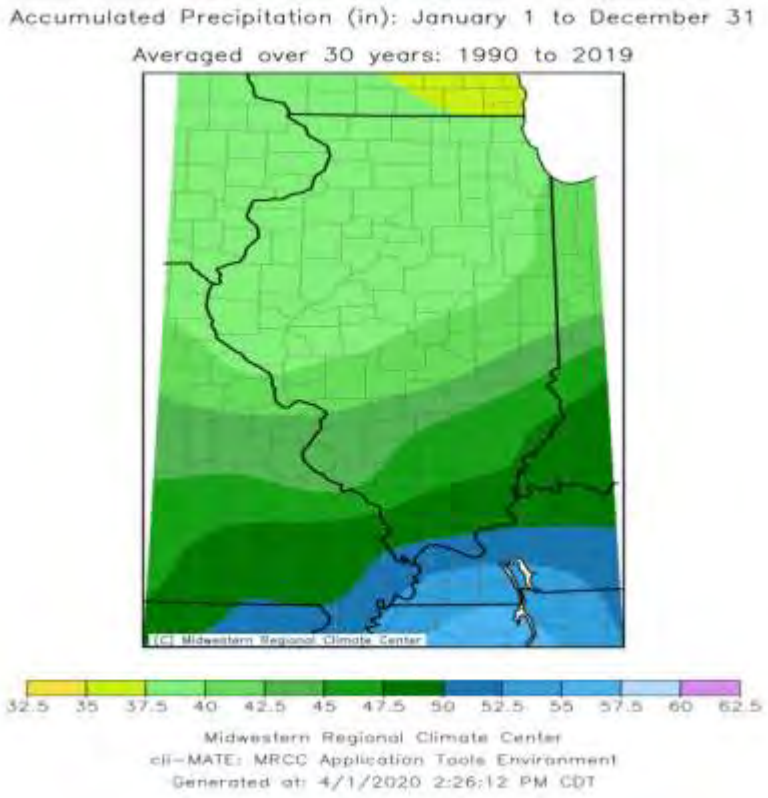
Source: http://www.ncdc.noaa.gov/stormevents/

No property damage was reported to the NOAA during this time period. However, crop damage totaled $77.3 million. Most crop damage occurred during the 2005 and 2012 droughts.

The following chart is an explanation and time scale for the different types of drought that can occur.



The following map illustrates the annual precipitation for the state of Illinois. LaSalle County falls in the 36 - 39 inches per year area with a couple areas below an average of 36 inches per year.



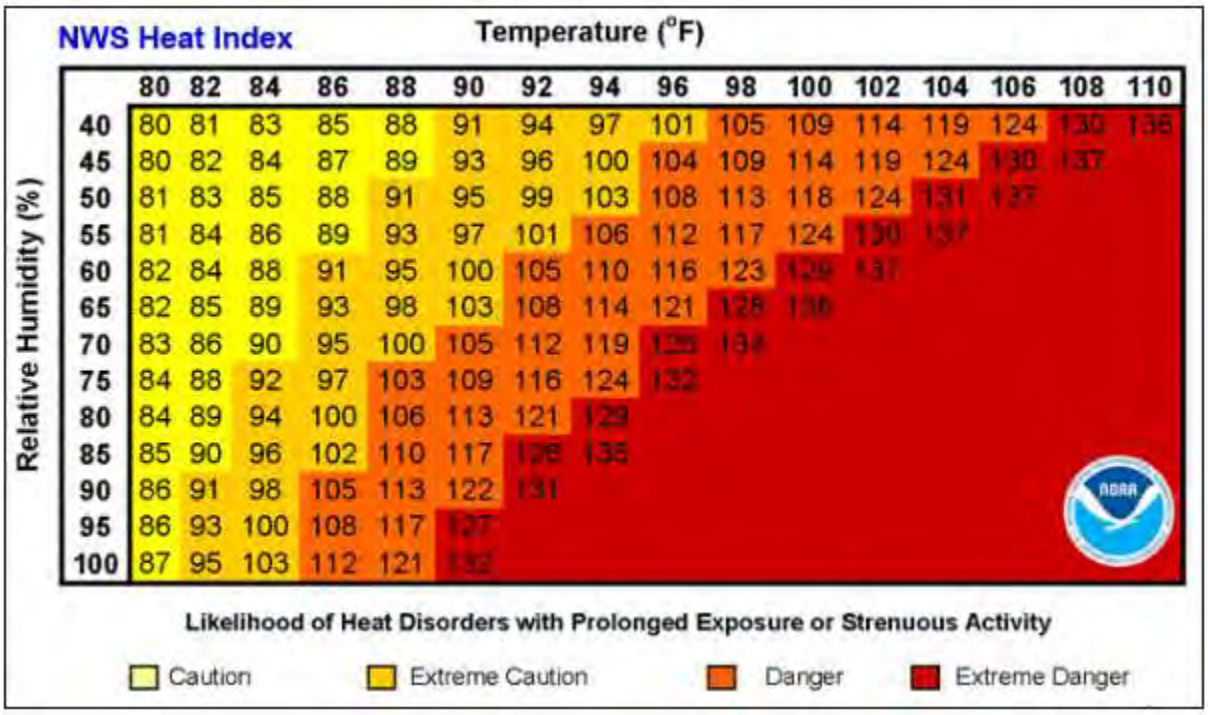
Extreme Temperatures (Heat and Cold)

Extreme temperatures are a hazard due to the stresses they can put on the human body. Extreme temperatures can be both heat-related or cold-related.

According to the Red Cross a heat wave is a "prolonged period of excessive heat and humidity." The heat index is "a number in degrees Fahrenheit that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to full sunshine can increase the heat index by 15 degrees Fahrenheit." More than 100 heat-related deaths occur every year in the United States. The 10 year (2004 – 2013) average for heat related deaths was 123 fatalities[12]. Overall, a total of more than 9,000 Americans have died from heat-related causes since 1979.

The body cools itself by sweating. High humidity reduces this evaporation and hinders the body's effort to cool itself. The dew point temperature is a much more useful measure of the moisture content of the atmosphere than the commonly used relative humidity.

The following is a heat index chart. To understand the heat index: Select a temperature and a relative humidity percentage. Where they connect in the chart is the heat index.

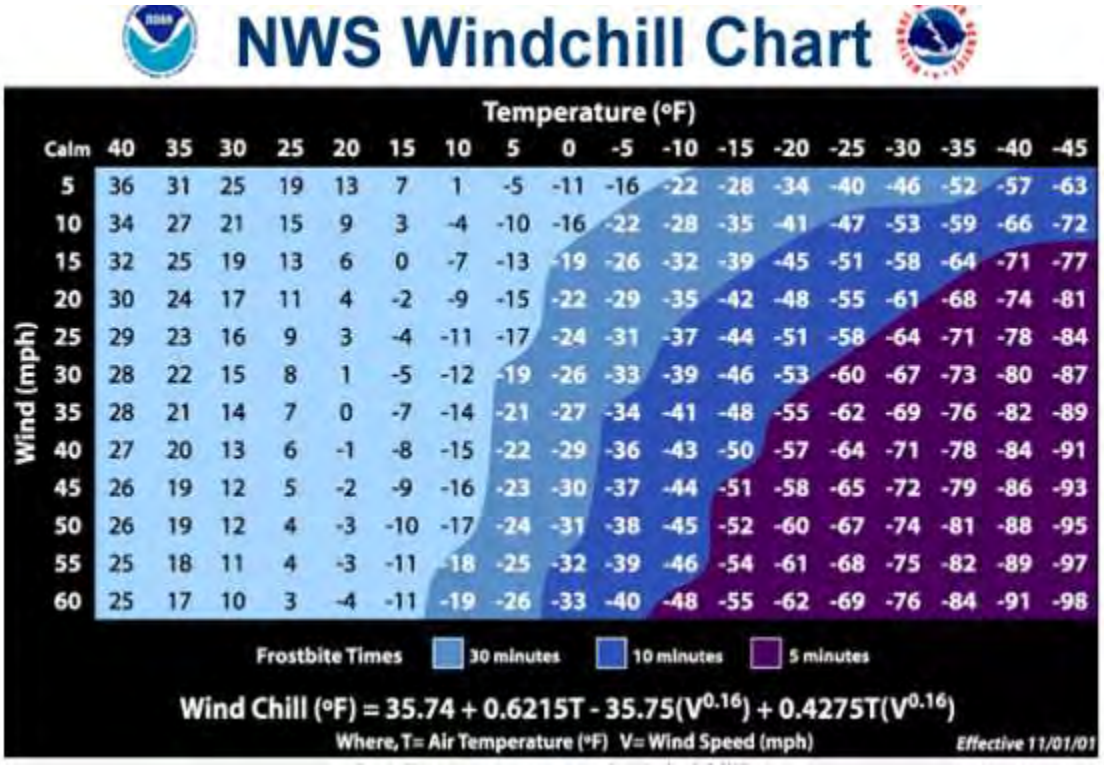


https://www.weather.gov/safety/heat-index

Category	Heat Index	Possible heat disorders for people in high risk groups
Extreme Danger	130 or higher	Heatstroke or sunstroke likely. Heatstroke possible with prolonged exposure and/or physical activity.
Danger	105-129	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure.
Extreme Caution	90-105	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure.
Caution	80-90	Fatigue possible with prolonged exposure and/or physical activity.

Extreme cold temperatures are also a hazard. The most susceptible people to cold temperatures are the elderly and infants. Overexertion in the winter can be dangerous because of the strain on the heart. Regardless of age, people should be aware and cautious of overexerting themselves.

Wind can impact how cold it feels outside. Most of the time, cold is judged in terms of a thermometer reading. With people and other living things though, both temperature and wind speed are needed to produce a "wind chill factor." The wind chill is based on the rate of heat loss from exposed skin caused by the combined effects of the wind speed and cold temperatures. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature. The wind chill shows how cold the wind makes exposed flesh feel and is a good way to determine the potential for frostbite or hypothermia. The following chart is a wind chill chart. Find the temperature and the wind speed. Where they connect in the middle is the wind chill.



https://www.weather.gov/safety/cold-wind-chill-chart

A winter storm is an event in which varieties of precipitation are formed that only occur at low temperatures, such as snow or sleet, or a rainstorm where ground temperatures are low enough to allow ice to form. The NWS uses the winter weather terms below to convey the weather threat to the public. See the chart of Winter Weather Terms below.

Freezing Rain	Rain that freezes when it falls onto ground based objects, creating a coating of ice on roads, walkways, trees and power lines.
Sleet	Rain that turns to ice pellets before reaching the ground. Sleet also causes roads to freeze and become slippery.
Winter Storm Watch	**Potentially significant** winter weather, including heavy snow, ice, sleet, and/or blowing snow is expected within the next day or two.
Winter Storm Warning	Heavy snow, blowing snow, sleet or a combination of winter weather hazards are expected to cause a **significant impact to life or property**.
Ice Storm Warning	Heavy accumulations of ice, usually greater than ¼" in thickness, are expected to cause a **significant impact to life or property**, resulting in hazardous travel conditions, tree damage and extended power outages.
Blizzard Warning	Strong winds (35 mph or greater) will produce blinding snow and near zero visibility, resulting in **potentially life-threatening conditions** – particularly for travelers. Blizzards can occur with minimal accumulations of snow.
Freeze Warning	Below freezing temperatures are expected during the growing season, which will cause damage to local vegetation.
Winter Weather Advisory	Snow, blowing snow, ice and/or sleet is expected to produce **potentially dangerous travel conditions** within the next 12 to 36 hours.

Source: Winter Weather Preparedness Guide IEMA 2019

Extreme heat and cold can also be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. In the City of LaSalle, a long period of below freezing temperatures during the winter of 2013 - 2014 caused water main in a section of the city to burst. The water main was only about 18 inches below the ground. Dozens of homes went without water for up to two (2) months. The city provided water to the residents until the main was repaired. The entire region is at risk for extreme temperatures.

In order to minimize impact of such events on a community they should eliminate as many dead ends as possible by looping water mains. Also communities should put together a plan on how residents will be supplied with water in case another event like in LaSalle would occur in any community. As discovered by communities shallow water mains should be placed deeper to mitigate the problem of freezing water mains.

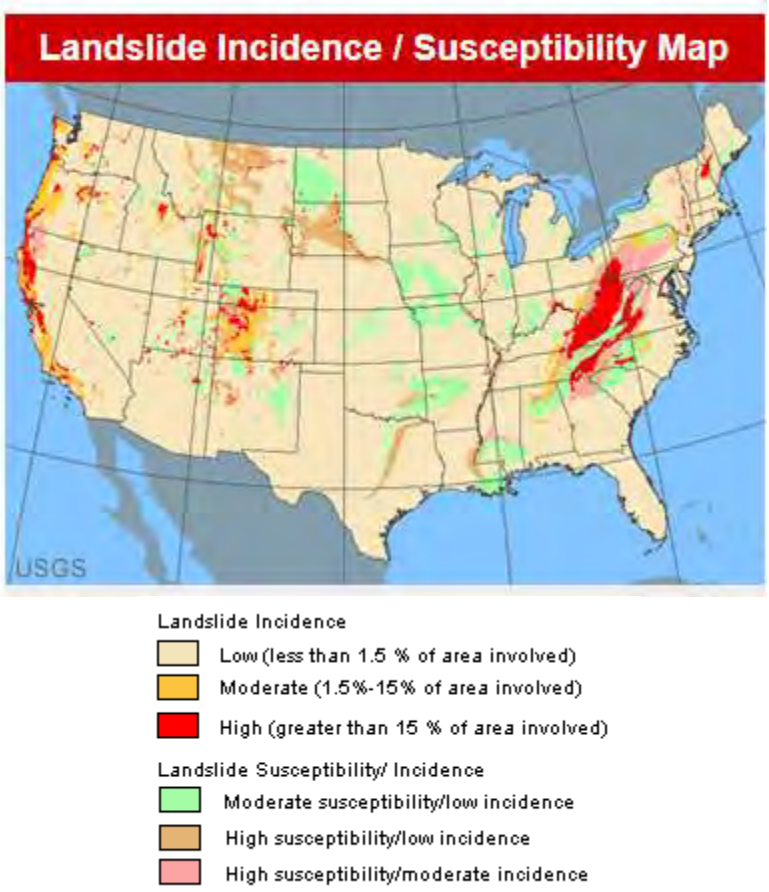
Landslides

Landslides constitute a major geologic hazard because they are widespread, occur in all 50 states and U.S. territories, and cause up to $1 - 2 billion in damages and more than 25

fatalities on average each year. Landslides commonly occur in connection with other major natural disasters such as earthquakes, volcanoes, wildfires, and floods.

According to the American Red Cross, landslides can move slowly and cause damage gradually or move very rapidly destroying property and taking lives suddenly. Gravity is the force that drives landslide movement. Factors that allow the force of gravity to overcome the resistance of earth materials are saturation by water, steepening of slopes by erosion or construction, alternate freezing or thawing, and earthquakes.

Debris flows, also referred to as mudslides or mudflows, are common types of fast-moving landslides. These flows generally occur during periods of intense rainfall or rapid snowmelt. They continue flowing down hills and through channels, growing in volume with the addition of water, sand, mud, boulders, trees, and other materials. When the flows reach flatter ground, the debris spreads over a broad area.



Source: https://geology.com/usgs/landslides/

In the City of Streator in LaSalle County, a landslide occurred in March 2007 along the eastern bank of the Vermilion River, just south of the Main Street Bridge near the downtown. The landslide caused two (2) businesses to close. The city eventually bought out both properties. The city completed a riverbank slope protection project to control erosion and to protect 15 residential properties. Historically, in 1956 a flood damaged hundreds of structures in this area. A levee was later constructed along the west bank of the river to protect structures in the area.

City of Streator Stream Bank Stabilization and Property Acquisition: The City of Streator was provided Hazard Mitigation Grant Program federal funds in the amount of $565,600 to be used toward steam bank stabilization work and property acquisition as a result of a 2007 landside. A portion of the Vermilion River bank collapsed causing a massive landslide. The landslide affected two buildings in Streator and caused fear of future landslides. The stabilization work entailed removal of material from the Vermilion River, re-grading of the current river bank and installation of Gabion baskets to provide protection from future erosion. One structure was successfully purchased. Unfortunately, due to environmental concerns, the second structure could not be purchased until clean-up was completed. The project was closed in May 2017.

Illinois does not have a state-wide reporting system for landslides. The Illinois State Geological Survey (ISGS) received some reports from individuals in the Illinois Department of Transportation (IDOT), Illinois Division of Highways (Bureau of Materials 1954), Natural Resource Conservation Service, Universities and ISGS staff. An inventory based on this type of submitted information was published in 1985 (Killey et al., 1985). The ISGS has also performed a few systematic landslide inventories along rivers; part of the Illinois River by LaSalle/Peru (DuMontelle et al., 1971), and part of the Ohio and Mississippi Rivers in southern Illinois by aerial studies (Su and Stohr, 1992).

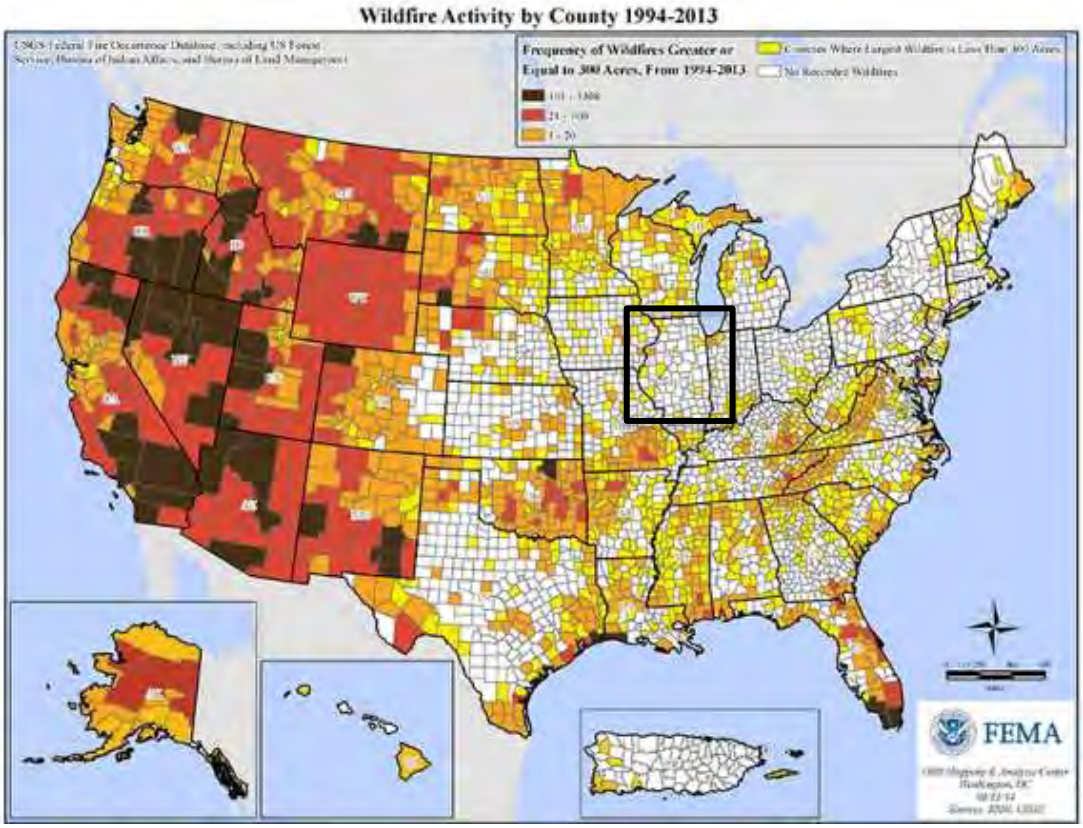
The location of risk for potential landslides is steep sloped areas along the Vermillion River including areas in the Streator, Kangley, Oglesby and unincorporated LaSalle County. The City of Streator has already addressed a vulnerable area with the previously mentioned bank stabilization project.

Wildfires

The following maps show the locations that experienced wildfires greater than 300 acres, between 1994 – 2013, in the United States. No wildfires of this magnitude have occurred in LaSalle County region (as identified by the white coloring in the map below). Because there have been no wildfires of this magnitude during this time frame in LaSalle County the probability of wildfires in the County is considered very low.

Inset of map on following page

However, on September 11, 2012 a wildfire burned 200 acres of marsh grass and cattails along Dee Bennett Road in rural North Utica, Illinois in LaSalle County. The fire started when a yard waste burn pile got out of control. Wind gusts up to 25 miles per hour caused the fire to rapidly spread. The fire was extinguished after 12 hours with the help of 20 responding agencies. While wildfires occur frequently in the Western United States, the September 2012 fire shows that they can occur in Illinois and that people must be cautious when starting fires.



Source: https://wildfiretoday.com/2017/05/01/wildfire-activity-by-county/

Earthquakes

The earth's outer surface is composed of tectonic plates. These plates constantly move away from, towards or past each other. The continents, which are part of these plates, also move. The sudden movement of the Earth caused by the abrupt release of accumulated strain along a fault in the interior is an earthquake. The released energy passes through the Earth as seismic waves, which cause the shaking. Seismic waves continue to travel through the Earth after the fault motion has stopped.

According to the United States Geological Survey (USGS), earthquake severity is measured by intensity and magnitude. Intensity is an observed effect of ground shaking on people, buildings, and natural features. Magnitude is based on the amplitude of the earthquake waves near the hypocenter of the earthquake recorded on instruments which have a common calibration. The magnitude of an earthquake is a value determined by an instrument, such as the seismograph.

The Richter scale was developed in 1935 by Charles F. Richter. It is a mathematical device that compares the size of earthquakes. On the Richter scale, magnitude is expressed in whole numbers and decimal fractions. For example, a magnitude of 5.3 might be computed for a moderate earthquake. The logarithmic basis of the scale presents each whole number increase in magnitude, a tenfold increase in measured amplitude. As an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy

than the amount associated with the preceding whole number value. The Richter scale does not express damage. The Richter scale has no upper limit. The largest known shocks have had magnitudes from 9.0 to 9.5.

Earthquakes with magnitude of approximately 2.0 or less are usually called micro-earthquakes. Micro-earthquakes are not commonly felt by people and are generally recorded only on local seismographs. Events with magnitudes of approximately 4.5 or greater, of which there are several thousand annually, are strong enough to be recorded by sensitive seismographs all over the world. Great earthquakes are usually, on average, 8.0 or higher. One (1) great earthquake of such size occurs somewhere in the world each year.

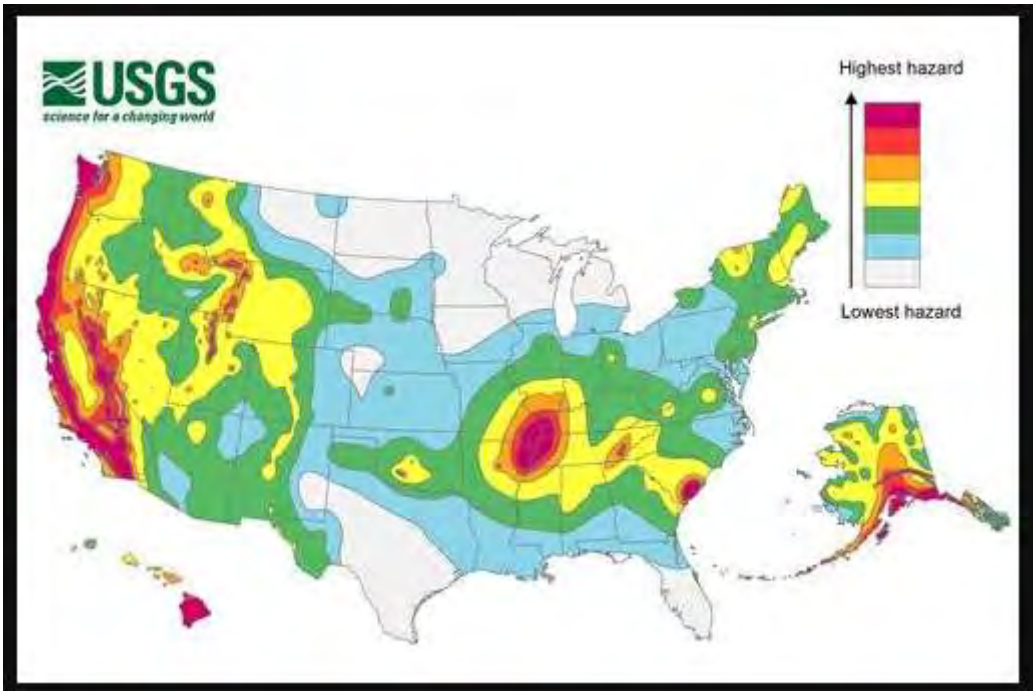
The effect of an earthquake on the Earth's surface is called the intensity. The intensity scale consists of a series of certain key responses, such as people awakening, movement of furniture, damage to chimneys, and total destruction. The intensity scale currently used in the United States is the Modified Mercalli (MM) Intensity Scale, developed in 1931. This scale, composed of 12 increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It is an arbitrary ranking based on observed effects. Generally, the maximum observed intensity occurs near the epicenter.

The Modified Mercalli (MM) Intensity Scale is described below.

Earthquake Measurement Scales		
Mercalli	**Richter**	**Felt Intensity**
I	0-4.3	Not felt except by a very few under especially favorable conditions.
II		Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III		Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration similar to the passing of a truck. Duration estimated.
IV	4.3-4.8	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V		Felt by nearly everyone; many awakened, some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	4.8-6.2	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII		Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	6.0-7.3	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chmineys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX		Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X		Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rail bent.
XI	7.3-8.9	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII		Damage total. Lines of sight and level are distorted. Objects thrown into the air.

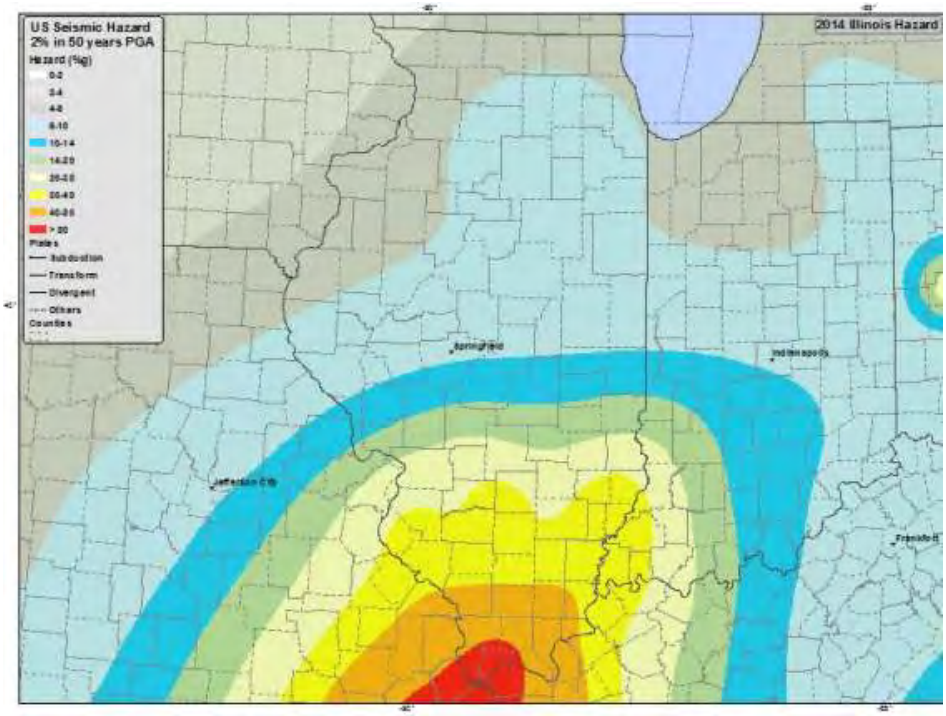
Earthquake hazard map shown below. The map is based on the most recent USGS models for the conterminous U.S. (2018), Hawaii (1998), and Alaska (2007). The models are based on seismicity and fault-slip rates, and take into account the frequency of earthquakes of various magnitudes. Locally, the hazard may be greater than shown, because site geology may amplify ground motions.

2018 Long-term National Seismic Hazard Map



Source: https://www.usgs.gov/media/images/2018-long-term-national-seismic-hazard-map

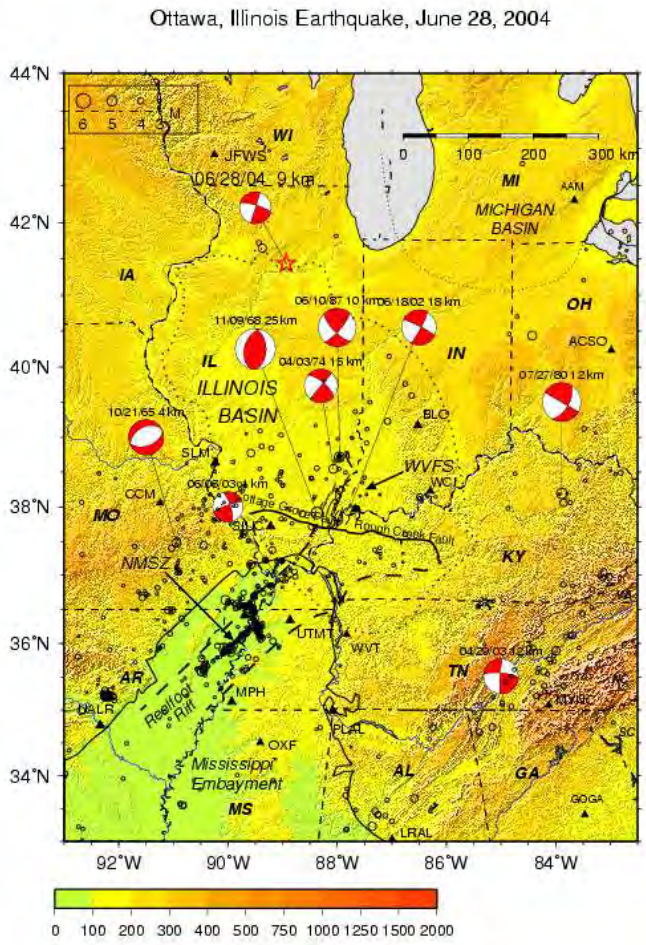
2014 Illinois Seismic Hazard Map – USGS



Source: https://www.usgs.gov/media/images/2014-seismic-hazard-map-illinois

The map above shows that southern Illinois has a high risk of experiencing an earthquake. Southern Illinois is part of the New Madrid Seismic Zone, which also includes parts of Arkansas, Kentucky, Missouri, and Tennessee. The New Madrid Zone is the most active earthquake region in the United States east of the Rocky Mountains. The zone stretches 125 miles long and has multiple fault lines. Four (4) of the largest earthquakes ever recorded in United States history occurred within the zone between 1811 and 1812 with magnitudes greater than 7.0. The possibility of future earthquakes of this size is not known. The USGS records earthquake data, but cannot predict future earthquakes.

The map below of Illinois illustrates the epicenter of a 4.2 - 4.5 magnitude earthquake that occurred on June 28, 2004 in Ottawa, Illinois (LaSalle County). According to the USGS Earthquake Summary, the earthquake was felt in Indiana, Iowa, Michigan, Missouri, and Wisconsin. A ***red star*** indicates the epicenter of the June 28, 2004 Illinois earthquake. Notice that the 2004 earthquake occurred at the northern end of the Illinois basin where seismicity is relatively lower than the Wabash Valley seismic zone in southeastern Illinois and southwestern Indiana, as well as the New Madrid seismic zone in the Central Mississippi Valley.



Won-Young Kim. Lamont-Doherty Earth Observatory of Columbia University.
June 28, 2004 Ottawa, Illinois Earthquake.

Since 1811, the earthquakes in the United States have resulted in the deaths of more than 3,400 people. Fires, landslides, and tsunamis caused many of those deaths. In fact, over 350 deaths were caused by tsunamis that followed the earthquakes.

Natural Hazard Risk Levels

The color-coded boxes at the top of each Community Risk Assessment report indicate the community's risk level for potential natural hazards. The process of determining the community's risk level was similar to that used by the State of Illinois for the state's 2018 NHMP (see Appendix C: Illinois Hazard Rating Process). The process for this NHMP considers four (4) categories to determine risk: Historical/Probability, Vulnerability, Severity of Impact, and Population. Each category is assigned a numerical value that is determined by the following:

- The number of times that a disaster has occurred in the past 50 years.
- The percentage of people that live in an area that could be impacted by a disaster.
- The likely severity of the impact in terms of fatalities, injuries, damage.
- Current population and future population projections.

The total value of the four (4) categories determines the risk rating for each natural hazard. The "Key" below shows the total numerical values for each color and risk level.

Key	
Very Low=0-12	Low=13-24
Medium=25-36	High=37-48
Severe=49-60	

The NOAA's storm events database was utilized to determine the risk level for each hazard. Storm data from January 1, 1970 – December 31, 2019 was used for the analysis. Storm data for LaSalle County is included in Appendix D: Storm Events Data. NOAA's storm database is available at http://www.ncdc.noaa.gov/stormevents /. The following table identifies the natural hazard risks for each community.

LaSalle County Risk Assessment								
Communities	Tornadoes	Floods	Winter Storms	Extreme Temps.	DangerousWinds	Lightning	Drought	Hail
LaSalle County	Medium	Medium	High	Medium	High	Low	Medium	Medium
Cedar Point	Low	Low	High	Medium	Medium	Low	Medium	Low
Earlville	Low	Low	High	Medium	Medium	Low	Medium	Low
Grand Ridge	Low	Low	High	Medium	Medium	Low	Medium	Low
Kangley	Low	Low	High	Medium	Medium	Low	Medium	Low
LaSalle	Low	Low	High	Medium	Medium	Low	Medium	Low
Leland	Low	Low	High	Medium	Medium	Low	Medium	Low
Lostant	Low	Low	High	Medium	Medium	Low	Medium	Low
Marseilles	Low	Low	High	Medium	High	Low	Medium	Low
Mendota	Low	Low	High	Medium	High	Low	Medium	Low
Naplate	Low	Low	High	Medium	Medium	Low	Medium	Low
North Utica	Low	Low	High	Medium	Medium	Low	Medium	Low
Northville Township	Low	Low	High	Medium	Medium	Low	Medium	Low
Oglesby	Low	Low	High	Medium	Medium	Low	Medium	Low
Ottawa	Low	Low	High	Medium	High	Low	Medium	Medium
Ottawa Township	Low	Low	High	Medium	High	Low	Medium	Medium
Peru	Low	Low	High	Medium	High	Low	Medium	Medium
Ransom	Low	Low	High	Medium	Medium	Low	Medium	Low
Seneca	Low	Low	High	Medium	Medium	Low	Medium	Low
Sheridan	Low	Low	High	Medium	Medium	Low	Medium	Low
Streator	Low	Low	High	Medium	High	Low	Medium	Medium

Probability

Probability is the likelihood of future occurrences of an event happening. The table below identifies Very low as a 0-24% chance of occurring, medium as a 25-80% chance of occurring and high as a higher than 80% probability of occurring. These probabilities are based on past occurrences and the effects of climate change may impose on these risks.

Future Probability								
Communities	Tornadoes	Floods	Winter Storms	Extreme Temps.	Dangerous Winds	Lightning	Drought	Hail
LaSalle County	High	Medium	High	Very Low	High	Very Low	Very Low	Medium
Cedar Point	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Earlville	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Grand Ridge	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Kangley	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
LaSalle	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Leland	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Leonore	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Lostant	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Marseilles	Very Low	Very Low	High	Very Low	Medium	Very Low	Very Low	Very Low
Mendota	Very Low	Very Low	High	Very Low	Medium	Very Low	Very Low	Very Low
Naplate	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
North Utica	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Oglesby	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Ottawa	Very Low	Very Low	High	Very Low	High	Very Low	Very Low	Medium
Peru	Very Low	Very Low	High	Very Low	Medium	Very Low	Very Low	Medium
Ransom	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Rutland	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Seneca	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Sheridan	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low
Streator	Very Low	Very Low	High	Very Low	Medium	Very Low	Very Low	Medium
Tonica	Very Low	Very Low	High	Very Low	Very Low	Very Low	Very Low	Very Low

Conclusions

LaSalle County is at risk of experiencing the impacts of several natural hazards including tornadoes, floods, winter storms, extreme temperatures, dangerous winds, lightning, drought, and hail. Although not frequent, the region has experienced wildfires, landslides, and earthquakes. By having a greater understanding of the forces behind natural disasters, mitigation activities can be pursued to save lives and reduce or prevent property destruction.

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Chapter 3: Vulnerability Assessment

Assessing the vulnerability of a community is a necessary step in the Natural Hazard Mitigation Program (NHMP) process. Planning must be based on a reasonable assessment of hazards and the damages that may accompany them. Many factors are used to determine the vulnerability of structures. According to the 2010 Census, LaSalle County had 113,840 residents and the estimated 2018 population is 109,430. Therefore, there are thousands of people, homes, businesses, and other properties that have the potential to be damaged from a natural hazard. This chapter reviews the vulnerability of LaSalle County's public health and safety, property damage, and the adverse impact on the local economy. The county has to pay close attention to these impacts.

Hazards create many types of damages. Direct damages are those caused immediately by the event. Indirect damages are disruptions in asset operations and community functions. Secondary hazards are caused by the initial hazard event, such as a landslide that is caused by an earthquake.

The methodology used to determine vulnerability is as follows:

1. Select and inventory categories of property subject to damage.
    A. Determine seven (7) categories
    B. Use Census 2010 and HAZUS 4.2 software to compute totals.
2. Determine how the hazard can affect safety, health, buildings, and the economy.
3. Determine the average cost of buildings per square foot as well as the replacement costs for structures.

    Note: This is an average cost per square foot for the general category of building. This information is from the HAZUS software.
4. Calculate the impact

Properties

Seven (7) categories of buildings were assessed to determine the vulnerability to property damage in LaSalle County

.

1. Residential
2. Commercial
3. Industrial
4. Agriculture
5. Religion
6. Government
7. Education

Assessing these categories of structures allows for determination of the relative vulnerability of properties from the hazards facing LaSalle County.

The number of buildings is shown in the following table.

Buildings in LaSalle County

Residential	45,146
Commercial	2,665
Industrial	707
Agriculture	528
Religion	256
Government	88
Education	97
total	49,487
Source: HAZUS 4.2	

The table below shows the number of critical facilities within LaSalle County. Included are communities that opted not to participate in this plan, however, the information is imperative to determining potential dollar losses.

LaSalle County Critical Facilities

	Public Safety									
City	**Medical Care Facilities**	**Police Stations**	**Fire Stations**	**Emergency Centers**	**Schools**	**Utilities**	**Nuclear Power Plant**	**DAMS**	**Hazardous Materials**	**Total**
Cedar Point						1				1
Dana			1							1
Earlville		1	1		1	1				4
Grand Ridge		1	1							2
La Salle City	2	1	1	5	6	5			2	22
La Salle Co								14		14
Leland		1	1		2					4
Leonore			1							1
Lostant			1							1
Marseilles		1	2		2	3	1		1	10
Mendota	1	1	1		5	4			2	14
Naplate			1							1
Oglesby		1	1		3	3			1	9
Ottawa	1	3	2	1	14	7			3	31
Peru	1	1	1	1	6	5			4	19
Ransom			1			1				2
Rutland			1			4				5
Seneca		1	2	1	2	1			1	8
Serena			1						1	2
Sheridan		1	2		2	1				6
Streator	1	1	2	1	12	5			5	27
Tonica	1		1		1	1				4
Utica		1	1		1	2				5
Total	7	15	26	9	57	44	1	14	20	193

The following table identifies the residential units and businesses at the community level.

	Residential Units	Businesses
LaSalle County	49,978	4,276
Earlville, City of	782	52
Grand Ridge, Village of	232	18
Kangley, Village of	116	2
LaSalle, City of	4,468	394
Leland, Village of	401	27
Lostant, Village of	208	17
Marseilles, City of	2,452	143
Mendota, City of	3,067	276
Naplate, Village of	259	8
North Utica, Village of	608	69
Northville Township	3,143	*
Oglesby, City of	1,774	136
Ottawa, City of	8,610	1,062
Ottawa Township	5,601	*
Peru, City of	4,850	694
Ransom, Village of	159	10
Seneca, Village of	962	92
Sheridan, Village of	326	45
Streator, City of	6,365	460
Source: LOIS, ESRI		
* data not available at this		

The following sections assess how the hazard can affect safety, health, the economy, and structures.

Floods

Safety:

Threats to life and safety can be avoided if people evacuate before floodwaters reach their homes or flood their evacuation routes. Forewarning is required if people are to leave their homes and reach their evacuation routes before floodwaters halt their passage. The National Weather Service's (NWS) river level predictions and gages along the Illinois River should allow for ample time of notification to the public. However, smaller streams rise so rapidly during heavy storms that prediction equipment may only be able to give residents enough time to get to higher ground or prediction equipment may not be available.

People often put themselves in harm's way during a flood. People mistakenly think a washed out bridge is still there or that their vehicle will not wash away on a flooded roadway. Six (6) inches of fast moving water can knock a person off his or her feet and two (2) feet of moving water can carry away a vehicle.

Health:

Three (3) types of health issues accompany floods. They are listed below:

1. The water itself, in floods, is a mix of dirt, oils, industrial and agricultural chemicals, as well as other point and non-point source pollutants. It can contain numerous hazardous and toxic elements.
2. The residual pools of water after the floodwaters have receded become stagnant and breed mosquitoes, molds, and mildews.
3. Post-traumatic stresses of having your home and irreplaceable valuables destroyed. For those in the floodplain, there is the chance of floods reoccurring and a chance of more loss and damages.

The public must be advised to stay out of flooded waters. An immediate threat is the possibility of drowning. Polluted water also has the possibility to cause infections and other serious ailments and diseases.

Basement flooding causes significant damage in some urban areas, most commonly in older communities. The damage is exacerbated where there are combined stormwater and sanitary sewers. When the capacity of storm sewers and waterways is exceeding water backs up into streets, yards and basements.

Economy:

According to the Community Rating System (CRS) Report for Congress, some of the economic consequences of flooding are:

1. The cost of emergency services accepted by state and local governments.
2. Reductions in government revenue, such as sales tax and property tax revenues, due to business interruption or business destruction.
3. Dollar value of flood-related deaths, bodily injury and mental anguish suffered by victims.
4. Post-disaster outlays by the federal government, such as loans and direct financial assistance to individuals for emergency housing, food, and clothing.

Economic impacts because of floods can be difficult to measure. Businesses may have to close, inventories and product could be compromised, and employees may not be able to get to work or be facing flood issues of their own. During past floods, community businesses have been compromised, and often times had to close. In LaSalle County, these effects were felt in businesses along the Illinois River, and in the communities of Utica, Ottawa, and Marseilles. Clean up and flood-fighting costs are the responsibility of the community and can be costly. Agricultural losses can be substantial. Flooded agricultural tracts can cause a total loss of a farmer's crop.

Basement flooding can cause significant damage to businesses, as well as to individual homes. Basements are used for storage, as well as living space. It is not only a health risk, but an economic issue as well.

Structures:

Floods can cause interior and structural damage to residential and commercial buildings. Interior damage occurs from residues and contaminants that are left when water recedes. Structural damage occurs from the velocity of water flow and the debris that comes with the flood. Materials will also deteriorate from long exposure to water and to moist air. Woods, wallboards, and floors can warp from being wet and then drying out.

Repetitive Loss Properties (RLPs)

Flooding is the most common natural disaster in the United States. The Community Rating System (CRS) defines a Repetitive Loss Property (RLP) as a property for which two (2) or more flood insurance claims of more than $1,000 have been paid by the National Flood Insurance Program (NFIP) within any 10-year period since 1978. The following tables identify the communities that have RLPs and provide cumulative totals of payments made to property owners following flood losses. The best way to mitigate RLPs is to demolish or relocate structures on the property outside of the standard flood hazard area (SFHA). Through Congressional action, the Federal Emergency Management Agency (FEMA) was given authority to raise flood insurance premiums beginning on April 1, 2015. The legislation allows FEMA to increase premiums up to 18% annually until the full actuarial rate of flood insured properties is met. A significant portion of flood insurance claims are for RLPs. The higher premiums will encourage property owners to take action to mitigate the impact of flooding.

The table below identifies payments for both RLPs and Mitigated Properties. More than $4.6 million has been paid out in flood insurance claims to RLP owners across LaSalle County.

Repetitive Loss County Summary

For the State of Illinois - Data as of 06/30/2015

County Name	Community Name	Community Number	Building Payments	Contents Payments	Total Payments	Average Payment	Losses	Properties
La Salle County	La Salle County	170400	2,166,603.13	330,950.20	2,497,553.33	29,382.98	85	32
	La Salle, City Of	170401	24,703.76	12,300.00	37,003.76	18,501.88	2	1
	Mendota, City Of	170403	38,943.62	0	38,943.62	4,867.95	8	3
	North Utica, Village Of	170822	525,785.62	12,429.99	538,215.61	29,900.87	18	7
	Ottawa, City Of	170405	1,565,037.35	306,330.30	1,871,367.65	17,993.92	104	37
	Peru, City Of	170406	314,100.74	55,832.11	369,932.85	14,228.19	26	6
	Sheridan, Village Of	170802	210,399.80	23,055.34	233,455.14	38,909.19	6	3
	Streator, City Of	170408	7,908.47	0	7,908.47	1,977.12	4	1

The table below identifies payments for RLPs only. Mitigated properties are not included on the table. The table shows that the number of RLPs has decreased in several communities. The City of Ottawa has dropped from 37 to 10 RLPs. LaSalle County has dropped from 32 to 24 RLPs.

Repetitive Loss County Summary						
Non-mitigated records only - Data as of April 2020						
Community	**Total**	**Properties**	**Building Payments**	**Contents Payments**	**Total Payments**	**Average Payments**
LaSalle County	53	18	$1,559,580	$1,570,088	$1,716,668	$32,390
Mendota	8	3	$38,944	$0	$38,944	$4,868
N. Utica	19	7	$532,193	$12,430	$544,623	$28,664
Ottawa	14	4	$264,369	$164,346	$428,715	$30,623
Peru	29	6	$355,670	$55,832	$411,502	$14,190
sheridan	4	2	$112,501	$11,348	$123,849	$30,962
Streator	4	1	$7,908	$0	$7,908	$1,977
Total	131	41	$2,871,165	$401,044	$3,272,209	$24,974

Community	**Non-Mitigated Repetitive Loss Properties**
LaSalle County	**24**
Earlville, City of	0
Grand Ridge, Village of	0
Kangley, Village of	0
LaSalle, City of	0
Leland, Village of	0
Lostant, Village of	0
Marseilles, City of	0
Mendota, City of	0
Naplate, Village of	0
North Utica, Village of	7
Northville Township	0
Oglesby, City of	0
Ottawa, City of	10
Ottawa Township	0
Peru, City of	6
Ransom, Village of	0
Seneca, Village of	0
Sheridan, Village of	2
Streator, City of	1

Local Drainage Problems

Health and Safety:

Local drainage problems, such as septic system flooding, can be a safety and health problem if not fixed. Septic systems flooding can create a bacteria infected area. Repetitive flooding of sewage or water creates an easier chance for mold, mildew, and other bacteria and disease to occur.

Prompt attention to basements that have been impacted by water is necessary to prevent homeowners from being susceptible to disease. Homeowners should also avoid entering flooded basements when electricity is on. An electrical charge may be flowing through the water, especially if the furnace has been compromised or if wall outlets are underwater. Contacting an electrician is advised.

In the past, when heavy rains fell across central Illinois, in a short period, it caused flash flooding that severely overloaded the storm water drainage system. With nowhere else to flow, the rainwater and sewage that accumulated in the combined stormwater/sanitary sewer system caused sewer backups in many basements.

Economy:

The cost of constructing a new storm sewer or maintaining the current storm sewer system can be a strain on many communities. Even when storm sewer projects are urgent, budgetary constraints may make it unaffordable for a community to address drainage issues. Damage to residential and commercial structures can have a large impact on the economy.

Structures:

The flooding of lower portions of buildings, such as basements, is possible with insufficient drainage. Damage to structure, as well as contents can occur. Local drainage affects buildings similarly to overbank flooding. Several communities in the county have issues with stormwater drainage and most are working to address these issues. However, residents must help. They must be advised to disconnect their sump pumps, downspouts, and drainage tiles from both sanitary and storm sewer systems. Installing ejector pits and overhead sewers can prevent basement backups as well. The public should also be advised not to build in or fill in drainage easements/ditches.

Thunderstorms

Health and Safety:

Remove dead or rotting trees and branches that could fall and cause injury or damage during a severe thunderstorm. Flying debris is a hazard during a thunderstorm. Secure outdoor objects that could blow away or cause damage.

Economy:

Thunderstorms and their effects have the capability to halt transportation, utilities, and telecommunications. Downed power lines and power surges can cause havoc and lack of power to thousands of consumers. Straight-line winds can cause more wind damage annually than tornadoes.

Buildings:

Manufactured homes are the most vulnerable to damage from thunderstorms. Straight-line winds can push over manufactured homes or knock them off their foundations. Wind and water damage can cause losses on any structure. Flying debris and hail can cause damage to windows, siding, and roofs. There are 1,530 mobile homes in LaSalle County.

Lightning

Safety:

Lightning is unpredictable and can strike where rain is not present. An individual's chances of being struck by lightning are estimated to be 1 in 1,222,000 (based on averages for 2009-2018), but[1][2][3] could be reduced even further by following safety precautions. Most lightning deaths and injuries occur when people are caught outdoors in the summer months during the afternoon and evening. To avoid lightning injuries, follow the 30-30 rule. The 30-30 rule reminds you to count to 30 after you see lightning. If you hear thunder within 30 seconds, go indoors. Then, stay indoors for 30 minutes after hearing the last clap of thunder. Taking coverage inside a home, building, or hard top automobile (not a convertible) will reduce one's risk of being struck. Shut your blinds and curtains. Steer clear of windows, doors, and porches. Stay away from plumbing (including showering, washing hands, doing laundry, etc.). Avoid using electrical equipment like computers, kitchen appliances, or corded phones.

Health:

Lightning strike victims carry no electrical charge and should be attended to immediately. If a victim has a pulse and is breathing, look for other possible injuries. Check for burns where the lightning entered and left the body. Also be alert for nervous system damage, broken bones, and loss of hearing and eyesight. If there is no pulse administer Cardiopulmonary Resuscitation (CPR), when trained.

Economy:

Unplug appliances and other electrical items and turn off air conditioners. Power surges from lightning can destroy a home's electrical system and start a fire.

Structures:

Buildings usually have lightning rods or backup generators, which recover quickly or take over when power fails. Unprotected buildings and land have the potential to burn from a lightning strike.

Hail

Health and Safety:

The greatest danger from hail is impact at a high velocity. Hail can vary in sizes as small as a pea to as large as a grapefruit. Large hail can fall at speeds over 100 MPH. If outdoors, cover your head by any means possible.

Economy:

Hail causes damage to structures, automobiles, livestock, and crops. The damage to buildings and recovery will vary depending on the extent of damage. Crop damage can also be very high depending on the extent and area of a hail event. Livestock can be killed or injured by hail.

Structures:

Hail can cause damage to vehicles, usually broken or shattered windows and dents in the body. Hail can inflict damage to roofs, windows, and siding. Damage will vary depending on the size of the hailstone.

Tornadoes

Safety:

Safety is not guaranteed during a tornado. Flying debris (such as trees, house parts, or vehicles) is a serious hazard. It is extremely dangerous to be located outside, in a vehicle, or in a manufactured or mobile home during a tornado. Vehicles have a tendency to get rolled over by a tornado. A mobile home, even if tied down may be destroyed from the force of the tornado. Stronger tornadoes can remove houses from their foundations and miss other houses completely.

After a tornado, be aware of new safety issues created by the disaster. Watch for washed out roads, unsafe and unstable buildings, contaminated water, gas leaks, broken glass, damaged electrical wiring, and downed power lines.

Health:

After a tornado, be careful of further injuring yourself or the injured. Only move someone if they are in danger of further injury. If an unconscious person must be moved, stabilize the neck and back first. Care for yourself. Make sure to get plenty of fluids, food, and rest. Washing hands when working with people and debris will help to halt disease and infection as well.

Economy:

Most of the economic impact is to infrastructure and utilities. There is also a cost to clean up and debris removal. The total cost of damaged caused by tornadoes can be in the millions. It may take years for an economy to fully recover from a tornado.

Structures:

Tornadoes may strike quickly with little or no warning. With or without warning, freak accidents happen. All buildings are vulnerable; the following three (3) structures are more likely to suffer damage:

1. Mobile or manufactured homes.
2. Homes on crawlspaces.
3. Buildings with large spans, such as shopping malls, factories and gymnasiums.

There are 1,530 mobile homes located in LaSalle County. The numbers are not available for the number of homes with crawlspaces and large span buildings.

At one (1) time, it was thought that tornadoes created a vacuum that caused houses to explode. Researchers now know that this "vacuum" has no effect on the destruction caused by tornadoes. Gravity must be taken into account for the structure to be sound, but too often designers rely on gravity for structural stability. Tornadoes, however, counteract gravity. Research has shown that a tornado exerts an upward force on a building up to 10 times as strong as the force of gravity.

A FEMA study concludes that many residential building failures could have been avoided with better construction, materials, and connections. The tornado assessment teams saw significant damage to hundreds of single-family homes, multi-family housing and manufactured homes. The building failures resulted from wind-borne debris and high winds that often produced forces on buildings not designed to withstand such forces.

Winter Storms and Extreme Cold[4]

Health and Safety:

According to National Weather Service about 70% of injuries during winter storms result from vehicle accidents, and about 25% of injuries result from being caught out in the storm.

Frostbite is a severe reaction to cold exposure that causes freezing in the deep layers of skin and tissue. Frostbite can cause permanent damage. It is recognizable by a loss of feeling and a waxy-white or pale appearance in fingers, toes, nose, or ear lobes. It usually occurs on the body's extremities.

Hypothermia occurs when the body temperature drops to less than 95 degrees Fahrenheit. Symptoms of hypothermia include uncontrollable shivering, slow speech, memory lapses, frequent stumbling, drowsiness, and exhaustion. According to the Occupational Safety and Health Administration (OSHA), victims of hypothermia are often:

1. Elderly people and infants (see table below showing elderly and very young population) with inadequate food, clothing, or heating.

2. People who remain outdoors for long periods, such as the homeless or hunters.
3. People who drink alcohol or use illicit drugs.
4. People with predisposing health conditions such as cardiovascular disease, diabetes, and hypertension.
5. People that take certain medication.
6. People in poor physical condition or who have a poor diet.

Vulnerable Population Effected by Extreme Temperatures

Community	Total population	Age 0 to 4	% 0 to 4	Age 65 +	% 65 +	Age Total	%
LaSalle County	113,924	6,618	5.81	18,678	16.40	25,296	22.2
Earlville, City of	1,701	121	7.11	226	13.29	347	20.4
Grand Ridge, Village of	550	41	7.32	77	13.75	118	21.1
Kangley, Village of	251	16	6.37	47	18.73	63	25.1
LaSalle, City of	9,609	699	7.27	1,508	15.69	2,207	23.0
Leland, Village of	977	78	7.98	104	10.64	182	18.6
Lostant, Village of	498	36	7.23	88	17.67	124	24.9
Marseilles, City of	5,094	351	6.89	761	14.94	1,112	21.8
Mendota, City of	7,372	450	6.10	1,335	18.11	1,785	24.2
Naplate, Village of	496	32	6.45	86	17.34	118	23.8
North Utica, Village of	1,352	88	6.51	210	15.53	298	22.0
Northville Township *	7,310	362	4.95	930	12.70	1,292	17.7
Oglesby, City of	3,791	251	6.62	664	17.52	915	24.1
Ottawa, City of	18,768	1,177	6.27	3,107	16.55	4,284	22.8
Ottawa Township *	11,886	700	5.89	1,796	15.11	2,496	21.0
Peru, City of	10,295	533	5.18	2,251	21.86	2,784	27.0
Ransom, Village of	384	28	7.29	48	12.50	76	19.8
Seneca, Village of	2,371	119	5.02	292	12.32	411	17.3
Sheridan, Village of	2,137	49	2.29	73	3.42	122	5.7
Streator, City of	13,710	853	6.22	2,425	17.69	3,278	23.9

2010 Census

* 2010: ACS 5-Year Estimates

OSHA lists some of hazards that are associated with working in winter storms, which also can affect people in general whether working, or not. These include:

1. Driving accidents due to slippery roadways.
2. Carbon monoxide poisoning.
3. Work Zone traffic safety to protect workers.
4. Slips and falls due to slippery walkways.
5. Shoveling snow can cause injuries or heart attacks.
6. Snow Blowers can cause electrocution and injuries
7. Hypothermia and frostbite due to the cold weather exposure.
8. Being struck by falling objects such as icicles, tree limbs, and utility poles.

9. Electrocution due to downed power lines or downed objects in contact with power lines.
10. Falls from heights (e.g. falls from roof or skylights while removing snow).
11. Roof collapse under weight of snow (or melting snow if drains are clogged).
12. Burns from fires caused by energized line contact or equipment failure.
13. Chainsaw accidents from cutting downed trees.
14. Exhaustion.
15. Dehydration.

Economy:

Snow and ice affect transportation and utilities. Utilities can be weighed down by ice and snow. Tree limbs also become weighed down and collapse on wires, homes, and businesses. If there is no power, businesses are unable to open.

Keeping roads open to residents, travelers, and the public is a great expense to communities. If roads close during or after storms it has an effect on local businesses as well as outlying businesses.

Winter storms will impact retail sales and housing activity but there is an impact on payrolls because many people become temporarily out of work by a major snow event. There are significant impacts that are not consistently measured because they are more indirect. These effects can have national and global economic implications.

Structures:

The accumulation of snow can cause roofs to collapse. The winters in Illinois have a tendency to be cold and harsh. General building and construction of homes now consider snow, ice, and extreme cold. Buildings are insulated much more than in the past, which helps the Northern Midwest climate, where winter storms are prevalent. Extreme temperatures have caused water towers to freeze and water main breaks to occur. If a water tower freezes, a community may be forced to truck in water to provide for residents. During the winter of 2013 – 2014, extreme cold temperatures caused a water main break in the City of LaSalle the cut off water to some residents. Water was trucked in and provided to residents for up to two (2) months.

Drought and Extreme Heat

Safety:

Communities can help their residents understand the dangers of drought and extreme heat by doing the following:

1. Publish a special section with emergency information on extreme heat including dangers of sunburn, heat exhaustion, heat stroke, and other possible conditions.
2. Localize the information by including the phone numbers of local emergency services offices, the American Red Cross, and hospitals.

3. During a drought, explain ways that individuals can conserve water and energy in their homes and their workplaces.
4. Be aware of special steps farmers can take to establish alternative water supplies for their crops.
5. Have programs through the local school system to encourage children to think of those persons who require special assistance such as elderly people, infants or people with disabilities during severe weather conditions.

Extreme heat often results in the highest number of annual deaths among all weather-related hazards. In most of the United States, extreme heat is defined as a long period (2 to 3 days) of high heat and humidity with temperatures above 90 degrees. In extreme heat, evaporation is slowed and the body must work extra hard to maintain a normal temperature. This can lead to death by overworking the human body.

During extreme heat, people should remain out of the sun as much as possible. Remaining indoors is best. Spending the warmest part of the days in public buildings with air conditioning is recommended. Avoid strenuous activities, wear light clothing, and drink plenty of fluids is strongly recommended. Watch for heat cramps, heat exhaustion, and heat stroke. Checking on others, who don't have air conditioning, can also be a life-saving measure. Never leave people or pets in a closed car.

Health:

Older adults, young children, and those who are sick or overweight are more likely to succumb to extreme heat. Heat kills by pushing the human body beyond its limits. Most heat disorders occur because the victim has been overexposed to heat or has over-exercised for his or her age and physical condition

Economy:

Water and electricity use will go up during a heat wave or drought. Water bans, such as those forbidding the watering of lawns, are a reasonable means to conserve water. Strategies for drought preparedness focus mainly on water conservation. Communities should observe state and local restrictions on water use during a drought. Communities should contact state or local government for current information. Communities can instruct individuals how they can follow general indoor and outdoor water conservation tips to help preserve this essential resource.

Drought and heat waves can have a major effect on the agricultural sectors. Crops suffer from lack of water and relief from extreme heat. If crops are affected there is a ripple effect throughout the economy with supplies and price fluctuations.

Structures:

There are measures that can be taken to keep houses and buildings cool. These measures include:

1. Properly installing window air conditioners.
2. Cover windows with blinds, shades, or window coverings.

3. Having properly insulated air conditioning ducts.
4. Installing weather strips and seals around windows and doors.
5. Installing awnings and drapes to keep sunlight out.
6. Properly installing attic and wall insulation.

Damages normally do not occur to buildings because of drought or extreme heat or humidity.

Following is a list showing which communities have heating and cooling centers available for resident during extreme cold or heat.

Community	Heating and Cooling Centers
LaSalle County	x
Earlville, City of	x
Grand Ridge, Village of	
Kangley, Village of	x
LaSalle, City of	x
Leland, Village of	
Lostant, Village of	
Marseilles, City of	x
Mendota, City of	x
Naplate, Village of	
North Utica, Village of	x
Northville Township	
Oglesby, City of	
Ottawa, City of	x
Ottawa Township	
Peru, City of	x
Ransom, Village of	
Seneca, Village of	x
Sheridan, Village of	x
Streator, City of	x

Earthquakes

Safety:

FEMA has some recommendations to ready your house for an earthquake. They are as follows:

1. Fasten shelves securely to walls and place large or heavy objects on lower shelves.
2. Hang heavy items such as pictures and mirrors away from beds, couches, and anywhere people sit.
3. Repair defective electrical wiring and leaky gas connections. These are potential fire risks. Be sure to brace overhead light fixtures.

4. Repair any deep cracks in ceilings or foundations. Get expert advice if there are signs of structural defects.

Precautions to take if you feel an earthquake begin are, as suggested by FEMA:

1. Get under something sturdy and hold on
2. Cover neck or head with something soft
3. If outside remain outside away from trees, buildings, and utilities
4. If inside, remain inside and get under something sturdy and hold on
5. Stay away from windows, walls and anything that could fall or collapse

Health:

After an earthquake, be careful of further injuring yourself or the injured. Only move someone if they are in danger of further injury. If an unconscious person must be moved, stabilize the neck and back first. Care for yourself. Make sure to get plenty of fluids, food, and rest. Washing hands when working with people and debris will help to halt disease and infection as well.

Economy & Structures:

Most of the economic impact is to infrastructure and utilities. There is also a cost to clean up and debris removal.

Local Area Assessment

The following tables are the square footages of the buildings in LaSalle County. The table is divided by the seven (7) categories of property, which includes residential, commercial, industrial, agriculture, religion, government, and education structures.

Square Footage

Residential	70,724,600
Commercial	13,128,300
Industrial	4,777,100
Agriculture	2,149,900
Religion	1,343,300
Government	454,300
Education	2,006,100
Total	94,583,500

Source: HAZUS 4.2

The table below is the average cost per square foot for the different housing/ building types[5] in LaSalle County. The information was gathered from FEMA's HAZUS software.

Cost per square foot

Building	Avg. cost/Sq. Ft.
Single Family Housing	$135.68
Manufactured Homes	$48.86
Multi-Family Structures	$164.33
Commercial	$183.00
Industrial	$124.34
Agriculture	$120.00
Religion	$190.53
Government	$202.03
Education	$186.34

Source: HAZUS 4.2

The following table shows the estimated average replacement costs for the different types of buildings within LaSalle County. The information was gathered from FEMA's HAZUS 4.2 software.

Replacement Costs

Residential	$10,609,397,246.00
Commercial	$2,402,478,900.00
Industrial	$593,984,614.00
Agriculture	$257,988,000.00
Religion	$255,938,949.00
Government	$91,782,229.00
Education	$373,816,674.00

Source: HAZUS 4.2

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Chapter 4: Preventive Measures

Preventive measures are designed to protect new and future construction and development from hazards and potential losses. Preventive measures include:

- Building Codes
- Manufactured Housing Regulations
- Land Use Planning, Zoning, and Subdivision Regulations
- Floodplain Management
- Stormwater Management

Building Codes

Building codes are the primary measure for protecting new properties from damage by hazards. When properly designed and constructed, the average building can withstand the impacts from the aforementioned hazards. Hazard protection standards should be incorporated into the local building codes for all new and renovated buildings.

The Building Code Effectiveness Grading Schedule (BCEGS) assesses the building codes in effect in a particular community and how the community enforces its building codes, with special emphasis on mitigation of losses from natural hazards. The idea is to lessen the losses and the costs of insurance by maintaining and enforcing an appropriate building code.

The BCEGS program assigns each municipality a BCEGS grade of 1 to 10. One (1) is the most exemplary commitment to building code enforcement. The Insurance Services Office (ISO) develops advisory rating credits that apply to ranges of BCEGS classifications (1-3, 4-7, 8-9, 10). ISO gives insurers BCEGS classifications, BCEGS advisory credits, and related underwriting information. The ISO began implementing the program in states with high exposure to wind (hurricane) hazards, then moved to states with high seismic exposure, and then continued through the rest of the country.

The founders of the International Code Council (ICC) are the Building Officials and Code Administrators International, Inc. (BOCA), the International Conference of Building Officials (ICBO), and the Southern Building Code Congress International, Inc. (SBCCI). Since the early part of the 20th Century, these nonprofit organizations developed the three (3) separate sets of model codes used throughout the United States. In 1994, as needs changed, the nation's three (3) model code groups responded by creating the ICC and by developing codes without regional limitations.

The ICC develops codes used to construct residential and commercial buildings, including homes and schools. Most United States cities, counties, and states that adopt codes choose the International Codes developed by the ICC. Code enforcement officials, architects, engineers, designers, and contractors can now work with a consistent set of requirements throughout the United States. Enforcement of an adopted code will lead to higher quality construction.

Many of the participating communities have adopted some version of a building code. However, a lot of communities do not fully enforce their building codes for lack of resources or for not knowing how to enforce the building code. North Central Illinois Council of Governments (NCICG) recommends that a county-wide group be formed to identify how communities can share resources and provide building inspector training. Sharing building inspectors might be more cost-effective for smaller communities that may have only a few new structures being built each year. All communities are encouraged to adopt a code, even if only to provide standards for new development. Building codes are meant to ensure structures are built to a certain standard of quality that protects the longevity of the structure and people's lives. The following tables identify the building codes for the participating communities. If a participating community is not listed, information was not available for the community.

LaSalle County	
Community	**Codes**
LaSalle County	International Residential Code 2003; Portions of International Building Code 2003; International Fire Code 2003; International Mechanical Code 2003; International Fuel Gas Code 2003; and National Electrical Code 2002
Earlville, City of	International Building Code 2003
Grand Ridge, Village of	Has a code- Year not provided
LaSalle, City of	International Building Code 2003 and National Electrical Code 2002
Leland, Village of	International Building Code 2001- Only setbacks enforced
Lostant, Village of	Has a code- Year not provided
Marseilles, City of	International Building Code 2003
Mendota, City of	International Building Code 2012
Naplate, Village of	International Building Code 2006
North Utica, Village of	International Building Code - No Year Provided
Oglesby, City of	International Building Code 2003
Ottawa, City of	International Residential Code 2012; International Building Code 2012; International Energy Conservation Code 2012; 2014 National Electrical Code; All new structures inspected
Peru, City of	International Building Code 2018
Seneca, Village of	International Building Code 2003
Sheridan, Village of	National Electrical Code 1999; International Mechanical Code 2000; Illinois State Plumbing Code 2004; International Building Code 2000; International Residential Code 2000
Streator, City of	International Building Code 2012

Manufactured Housing Regulations

A manufactured home is constructed according to a specific building code to ensure proper design and safety. They are constructed in accordance with the United States Department of Housing and Urban Development (HUD) Code. The United States Congress laid the foundation for the HUD Code in the National Manufactured Housing Construction and Safety

Standards Act of 1974. According to the Manufactured Housing Institute, the reasons for this act are as follows:

1. The interstate shipment of homes from the plant - to the retailer - to the home site meant that the manufacturer, ordinarily, did not know in advance which code would apply.

2. States were not able to effectively and uniformly regulate manufactured construction homes and safety issues.

In its legislation, Congress directed the secretary of HUD to establish appropriate manufactured home construction and safety standards that "...meet the highest standards of protection, taking into account existing state and local laws relating to manufactured home safety and construction."

Local governments cannot require additional standards on construction. They can, however, regulate location of the structures and their on-site installation. Installation regulations are the number one (1) way to have mitigation against wind damage, which is a large concern for manufactured housing.

The Illinois Department of Public Health (IDPH) enforces the Mobile Home Park Act, the Illinois Manufactured Housing and Mobile Home Safety Act, and the Illinois Mobile Home Tiedown Act. These state codes were enacted for the protection of people and property. IDPH regulates these codes unless the community is a home rule community.

It is important to protect the residences of these homes as much as it is those of non-manufactured housing. Even with tie downs, residents should seek more secure shelter during severe weather. A prearranged location should be selected, whether it is a friend's house, a relative's house, or a nearby building with a basement or tornado shelter.

Land Use Planning, Zoning, and Subdivision Regulations

Planning and zoning directs development. Zoning controls where development should or should not occur, such as in floodplains and/or floodways. Development should coincide with proper land uses. Land uses should be compatible with the natural land conditions.

Comprehensive Plans

Comprehensive plans (also called comprehensive land use plans) are used to encourage where future growth and development should occur within a community. The process of developing a comprehensive plan involves identifying the strengths, weaknesses, opportunities, and threats of the community. The public is highly encouraged to participate in the process along with key stakeholders such as elected officials, municipal staff, business owners, associations, and institutions. Natural hazards are usually not addressed within comprehensive plans. However, North Central Illinois Council of Governments (NCICG) has incorporated natural hazards into their most recent plans for the Village of Marseilles. The plans have a

significant focus on flooding, as Marseilles is located on the Illinois River and is greatly impacted by riverine flooding.

There were 19 jurisdictions, 18 communities in LaSalle County that participated in the 2015 Natural Hazard Mitigation Plan (NHMP). Only 13 of the jurisdictions have comprehensive plans that were completed in 2000 or later. An estimated 8 communities don't have plans at all. Several communities did not indicate whether they have plans. Although costly, communities should complete a plan to learn more about their community and to direct future growth. Directing growth includes deciding where future industry, commercial, residential, institutional, and recreational development should be located.

The following table shows communities in LaSalle County that have adopted comprehensive plans.

LaSalle County	
Community	**Comprehensive Plan Year**
LaSalle County	2014
Earlville, City of	1993
LaSalle, City of	2014
Leland, Village of	1989
Marseilles, City of	2014
Mendota, City of	2010
North Utica, Village of	2016
Oglesby, City of	2020
Ottawa, City of	2014
Peru, City of	1970
Seneca, Village of	2008
Sheridan, Village of	2006
Streator, City of	2014

Zoning Ordinances

Zoning ordinances regulate development by dividing a community into different areas, such as residential, commercial, or industrial. Each area has regulations and standards for development. Zoning ordinances and codes allow for a community to control development and growth. The ordinances will specify such regulations as lot size, easements, and frontage. They should coincide with the future land use recommended in the future land use plan. Zoning is a primary tool in the implementation of those proposed land uses.

Zoning ordinances can be used to prevent development from occurring in hazardous areas. The public's well-being is a key component of zoning ordinances. For example, LaSalle

County Zoning Ordinance states that the purpose of their zoning ordinance is, "For the purpose of promoting the public health, safety, morals, comfort and general welfare, conserving the values of property throughout the County …" (page 8).

A community can control development by not extending infrastructure to areas outside of its boundaries or within certain zones. Designating areas for acquisition by the city to maintain them as open space, parks, and recreation areas will also prevent building in floodplains.

Subdivision Regulations

Subdivision regulations establish minimum standards for subdivision development. They govern the development of large vacant tracts of land that a developer plans to split into individual lots. Subdivision regulations set the standards for infrastructure, whereas zoning ordinances define where different types of development are allowed.

Subdivision regulations can include the following hazard protection standards:

1. Requiring the final plat show all hazardous areas.
2. Setting minimum road widths and cul-de-sac radius for emergency vehicles.
3. Require power and or phone lines to be buried.
4. Establish minimum water pressure (250 gpm at 20 psi residual pressure for a duration of 2 hours) for firefighting.
5. Require road ways to be at a certain flood levels.

Floodplain Management

Development in floodplains poses risks to people and property. Floodplain management regulations can reduce risks by prohibiting new development in floodplains and/or requiring existing structures to be demolished, retrofitted, or relocated following a flood. Buying out structures from floodplains is the best way to reduce flooding-related risks. If new development is permitted in floodplains, requirements for compensatory storage and building structures above the base flood elevation (BFE) should be enforced. Floodplains should be returned to open space, if possible. Creating parks is another option for floodplains because there are often few or no structures in parks; the floodplain will still be able to fulfill its purpose; and the open space will provide recreational benefits to the community. Restoring floodplains to their natural functions of controlling flooding and erosion, filtering water, and supporting natural habitat will save lives and prevent destruction of property. Any community that participates in the National Flood Insurance Program (NFIP) must maintain and enforce floodplain regulations.

The Illinois Association for Floodplain and Stormwater Management (IAFSM) administers the Certified Floodplain Manager (CFM) Program. The local permit official must pass a test and receive continuing education. Communities with Certified Floodplain Managers (CFMs) have a better understanding of the activities and policies that are needed to reduce the impact of flooding. IAFSM promotes the general interest of floodplain and stormwater

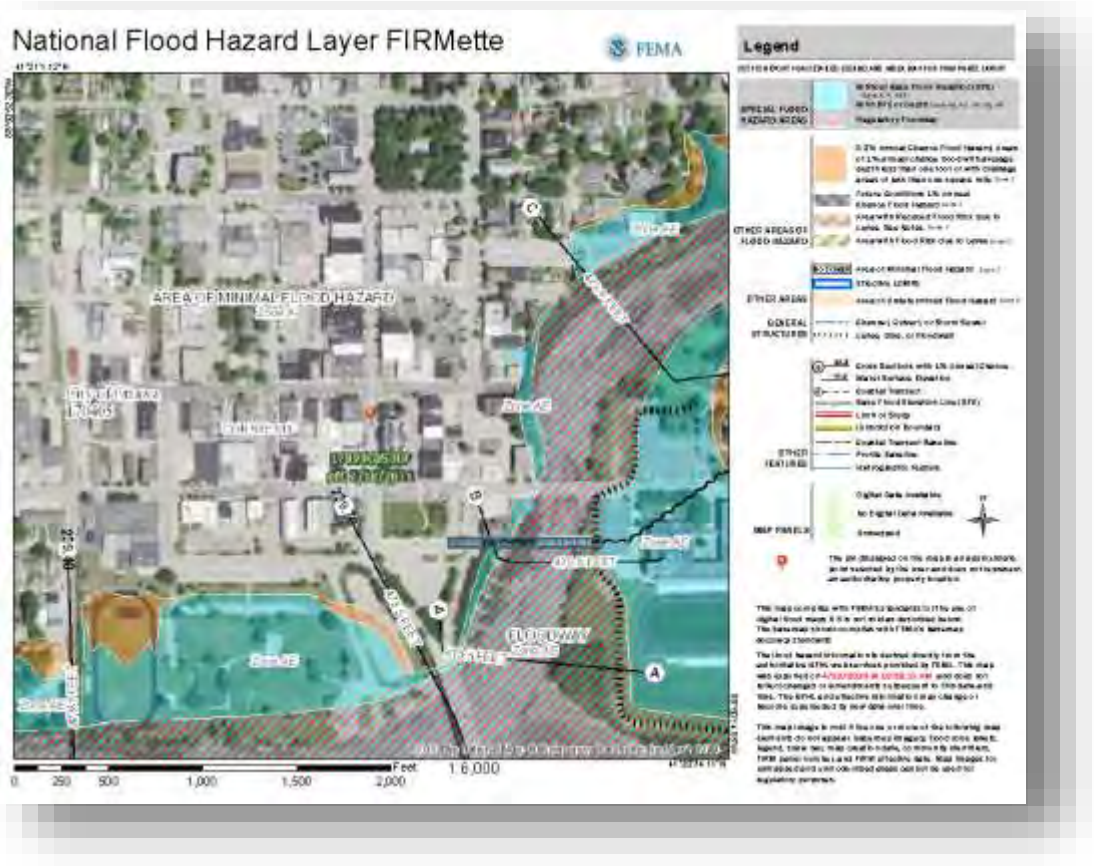
management and strengthens the cooperation of local, state, and federal agencies to find innovative solutions to managing the state's floodplain and stormwater management systems.

Flood Insurance Rate Maps (FIRM)

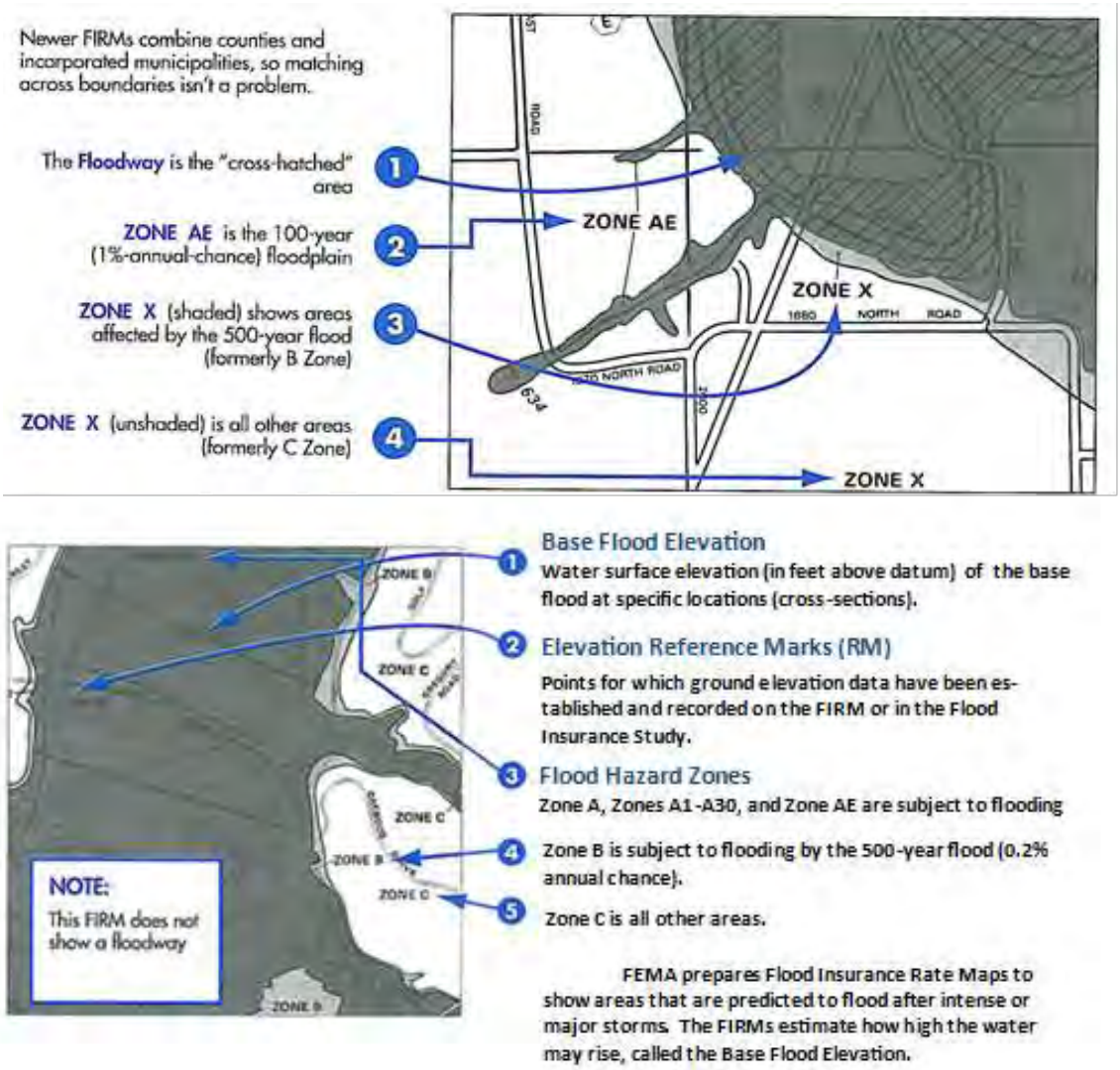
Floodplain maps are created by FEMA and are necessary to enforce floodplain management regulations. The map is called a FIRM or Digital Flood Insurance Rate Map (DFIRM). Each community is given a FIRM and a Flood Insurance Study that explains how the map was prepared. FEMA has digitized all maps for LaSalle County. LaSalle County has access to DFIRMs, such as the photo below.

The DFIRM Database is a digital version of the FEMA flood insurance rate map that is designed for use with digital mapping and analysis software. The DFIRM is designed to provide the user with the ability to determine the flood zone, base flood elevation within one foot and the floodway status for a particular location. It also has NFIP community information, map panel information, cross section and hydraulic structure information, and base map information like road, stream, and public survey data. DFIRMs can be easily accessed at http://illinoisfloodmaps.org/ by communities and individuals.

Shown below is a DFIRM for the City of Ottawa in LaSalle County.



The following illustrations explain FIRMs.



https://www2.illinois.gov/dnr/WaterResources/Documents/Resman_ILFPMQuickGuide.pdf P. 6-7

Illinois has minimum requirements for development in the floodplain. State permits are required for floodway development. The Illinois Department of Natural Resources (IDNR) requires local governments to enforce floodplain development codes. FEMA maps the urban areas and rural areas where the stream drains 10 square miles or more. The urban fringes have moved into some of these areas with no regulation.

National Flood Insurance Program (NFIP)

The NFIP is a federal program that allows property owners in participating communities to purchase flood insurance in exchange for their community implementing floodplain management regulations and policies. According to FEMA,

"The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the Federal Government will make flood insurance available within the community as a financial protection against flood losses."

Floodplain management regulations are the cornerstone of participation in the NFIP. Communities that participate in the NFIP are required to adopt and enforce floodplain management regulations. These regulations are adopted and enforced to prevent future flood damages and losses.

In Illinois, most communities have adopted the State of Illinois Model Ordinance that goes above and beyond NFIP minimum standards. In addition, the State of Illinois floodway regulations are much more restrictive than NFIP minimums. The following table shows that most communities in the NHMP region participate in the NFIP. To ensure future NFIP compliance, the participating communities will continue to enforce their floodplain management regulations and zoning ordinances. Each community will continually monitor activities in the floodplain to ensure that all activities are within the codes and regulations and will not have an adverse impact on other property owners. If a community does not participate in the NFIP the reason is listed below.

National Flood Insurance Program Participants	
Community	**NFIP Participant**
LaSalle County	Yes
Earlville, City of	Yes
Grand Ridge, Village of	No Identified FHBM
Kangley, Village of	No, suspended *
LaSalle, City of	Yes
Leland, Village of	No Identified FHBM
Lostant, Village of	No Identified FHBM
Marseilles, City of	Yes
Mendota, City of	Yes
Naplate, Village of	No Identified FHBM
North Utica, Village of	Yes
Northville Township	Covered by County
Oglesby, City of	Yes
Ottawa, City of	Yes
Ottawa Township	Covered by County
Peru, City of	Yes

Ransom, Village of	No Identified FHBM
Seneca, Village of	Yes
Sheridan, Village of	Yes
Streator, City of	Yes

Source: https://www.fema.gov/cis/IL.html

No FHBM means the community does not have floodplain within the city/village limits

* Kangley is currently suspended from the program due to a violation but are working with IDNR on being reinstated.

It is important to understand that standard homeowner's insurance policies do not cover flooding. Homeowners must purchase a separate flood insurance policy. Local agents offer flood insurance policies, but FEMA determines the rates based on the location's risk. Any house can be covered by NFIP policies as long as the community participates in the NFIP. Separate policies must be obtained for the structure and for the contents. Flood insurance does not cover landscaping or items outside of the house. Renters may buy content insurance even if there is no structural coverage from the owner.

In Illinois more damage occurs to contents than to structures, but both flood insurance and homeowner's insurance are recommended. Flood insurance, generally, only covers damage incurred. There may be additional costs to bring a damaged building up to the current code. Each company has different amounts of coverage, deductibles, and arrangements. A separate sewer and drain policy or endorsement is required to cover basement flooding caused by water entering drainage pipes, toilets, or other points of entry. Homeowners are advised to discuss their insurance policies with their insurance agents to ensure their assets are properly covered not only from flooding, but from other natural hazards.

Flood insurance is only one (1) type of insurance that can protect property owners from the costs associated with natural disasters. Insurance policies are beneficial post-disaster, but they do not mitigate the impacts of disasters. Property owners must implement activities that will reduce their risks.

Community Rating System (CRS)

The CRS is a voluntary incentive program for NFIP participating communities. The CRS encourages community floodplain management activities that exceed the minimum NFIP requirements. Communities that participate in the CRS reward their residents with reduced rates on flood insurance premiums. The three (3) goals of the CRS are to reduce and avoid flood losses to insurable property, to strengthen and support the NFIP by generating and contributing data for accurate actuarial rating of flood insurance, and to foster a comprehensive approach to floodplain management that considers not only flood insurance, but planning, open space protection, and public information activities.

The CRS identifies 19 creditable activities organized under four (4) categories or series. Each activity is assigned evaluation measures and a corresponding score. A community is rated

on the total number of points generated during a particular evaluation. Credit is given to communities when their activities advance the goals of the CRS. Eligible floodplain management activities fall under the following series:

1. ***Public Information Activities (300 Series)*** – Credit is given for informing the public about their flood hazards, their need for flood insurance, and actions the public can take to minimize flood damage.

2. ***Mapping & Regulator Activities (400 Series)*** – Credit is given for mapping areas not shown on the FIRM. Credit is also given for activities that protect natural floodplain functions, managing stormwater, and enforcing higher regulatory standards. These activities provide increased protection to new development.

3. ***Flood Damage Reduction Activities (500 Series)*** – Credit is given for completing projects that will reduce the damage of flooding in flood-prone areas. Activities include retrofitting and relocating structures, development of a comprehensive flood management plan, and proper maintenance of drainage systems.

4. ***Warning and Response (600 Series)*** – Credit is given for activities, such as flood warning and response programs, that will protect lives and property during a flood. Credit is also given for maintenance of levees and dams and programs that prepare for their potential failure.

Most communities enter the CRS with a class 9 or 8 rating, which entitles residents who live in the standard flood hazard area (SFHA), also known as the 100-year floodplain, to a 5% or 10% discount on flood insurance premiums. The class 1 rating requires the most credit points and awards the highest premium reduction, of a 45% discount. Per the June 2017 FEMA Fact Sheet, 1,444 communities in the nation participated in the CRS, but only one (1) of the communities, Roseville, California, had achieved a class 1 rating Illinois currently has over 69 communities participating in the CRS program, ranking it (tied for 5th) 6th in the nation in CRS communities. Of these communities, 13 are rated as a Class 5 community, which results in a 25% reduction in flood

CRS Classes, Credits, and Premium Discounts

CRS Class	Credits	Premium Discount	
		In SFHA	Outside SFHA
1	4,500 +	45%	10%
2	4,000 - 4,499	40%	10%
3	3,500 - 3,999	35%	10%
4	3,000 - 3,499	30%	10%
5	2,500 - 2,999	25%	10%
6	2,000 - 2,499	20%	10%
7	1,500 - 1,999	15%	5%
8	1,000 - 1,499	10%	5%
9	500 - 999	5%	5%
10	0 - 499	0%	0%

SFHA- Standard Flood Hazard Area

Source: www.fema.gov

insurance premiums. This distinction ranks Illinois 4th nation-wide and 1st for noncoastal communities.

Two (2) jurisdictions in the NHMP region participate in the CRS- the City of Ottawa, which has a class 2 rating, and LaSalle County, which has a class 8 rating. CRS ratings are not permanent. Communities must continue to implement activities to receive the reduced insurance rates.

As of September 2018, the United States Government Accountability Office (U.S. GAO) reported that NFIP owed the United States Treasury $20.5 billion despite Congress having canceled $16 billion in debt in October 2017. Congress passed the Biggert Waters Flood Insurance Reform Act of 2012 as a means to reduce that debt by increasing flood insurance premiums. The Homeowner Flood Insurance Affordability Act of 2014 amended and replaced Biggert Waters to slow rate increases. However, on April 1, 2015, the new rates went into effect. Under the new law, rates can be increased up to 18% annually until the actuarial rate of insuring the homeowner's property is met. Therefore, participation in the CRS is a regional goal because it is the only way for homeowners who choose to live in a floodplain to save on flood insurance premiums.

There are many reasons the CRS program is important, beyond reducing insurance premiums for residents. The benefits include:

1. Enhanced public safety, reduction in damage to property and public infrastructure, avoidance of economic disruption, reduction of human suffering, and protection of the environment.
2. Participants have the opportunity to evaluate their flood program against a nationally recognized benchmark.
3. Technical assistance is available in designing and implementing some activities at no cost.
4. The program provides an incentive to maintain flood programs.
5. Implementing some CRS activities allows communities to qualify for federal assistance.

Stormwater Management

Stormwater is precipitation that accumulates during and immediately following a storm event. Stormwater management is the term given to the functions associated with planning, designing, constructing, maintaining, financing, and regulating the facilities that collect, store, control, and/or convey stormwater.

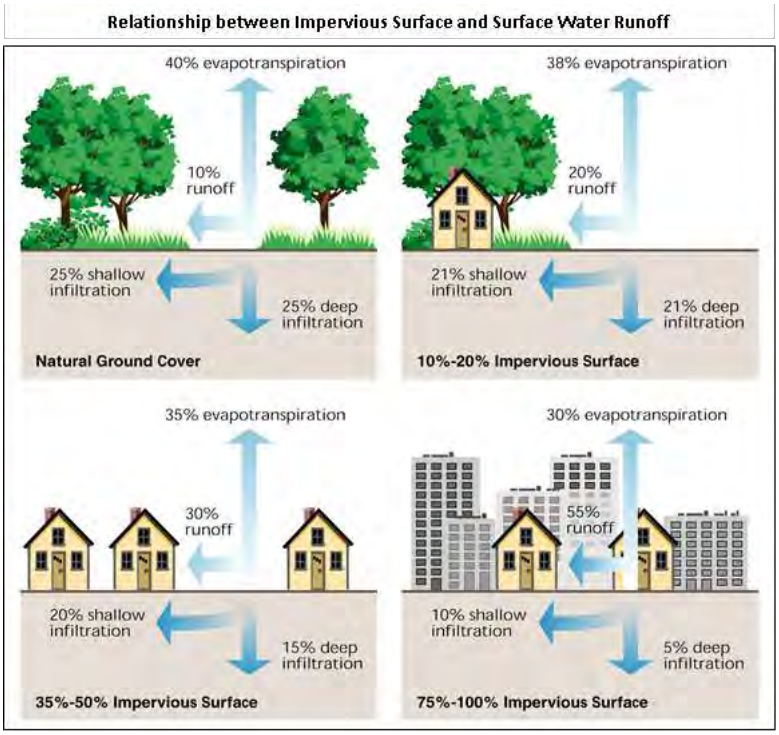
Stormwater management is important because unplanned development can contribute to flooding hazards. When urban development replaces natural ground cover stormwater runoff is increased. Streets and rooftops shed more water than natural ground cover. Drainage ditches

and storm sewers make the travel of runoff quicker towards streams and rivers. This can aggravate downstream flooding, overload the drainage system, and impair the water quality.

The graphic on the following page shows that with natural ground cover there is less runoff, greater evapotranspiration, and a higher infiltration rate. Evapotranspiration is the sum of evaporation of water from soils and plants to the atmosphere. Infiltration is the natural process whereby water is absorbed by soils. When there is a more impervious surface, less water is subject to evapotranspiration and infiltration and there is more runoff.

Retention and detention of stormwater is an important aspect of stormwater management. Stormwater management requirements are generally found in subdivision ordinances. The regulations make developers guarantee that the post-development runoff is not greater than the pre-development runoff.

Improving the quality of the stormwater runoff that flows into rivers is also important. Non-point source pollutants are carried into the receiving streams. Non-point source pollutants include lawn fertilizers, sediment, oils from street surfaces, pesticides, and farm chemicals. Point source pollutants come from municipal and industrial wastewater surfaces. Point sources also include pipes or man-made ditches.



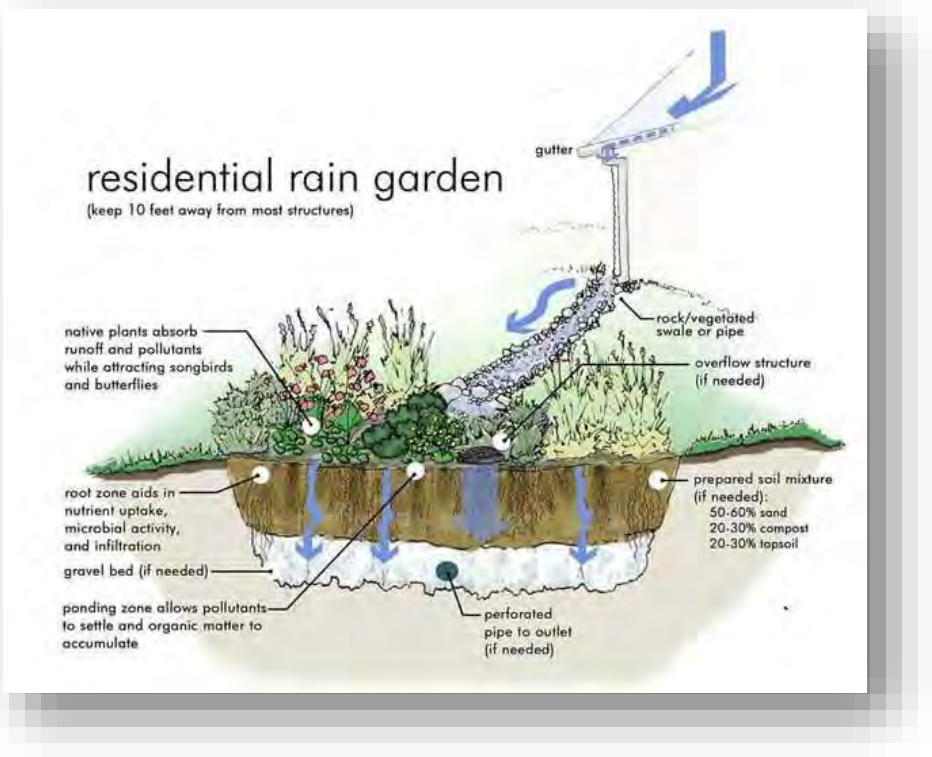
Source: http://www.learnc.org/lp/editions/mudcreek/6394

Stormwater management water quality measures are known as best management practices. The use of such measures as drainage ways and retention and detention basins is

incorporated into new developments to reduce non-point source pollutants from entering the water system. These measures hold stormwater runoff and clean it through filtration. Examples include green roofs and rain gardens.

For the environmentally friendly person, rain gardens are an essential part of just about any yard. They are effective at removing up to 90% of nutrients and chemicals and up to 80% of sediments from the rainwater runoff. Compared to a conventional lawn, rain gardens allow for 30% more water to soak into the ground. Stopping all those chemicals, foreign debris, and materials from getting into the sewer drain helps keep our lakes and streams clean.

The following is a drawing of a rain garden and its inner workings.



Source: https://kglandscape.com/rain-garden-everything-need-know/

Sedimentation is a large source of water pollution. Farmland and construction sites are large contributors of sedimentation in stormwater runoff. Sedimentation tends to fill in channels and lakes where the water from streams slows down. Due to the build-up of sediments, the drainage channels become less able to carry flood flows. Minimizing erosion and capturing sediment before it leaves the site helps maintain water quality. Sediment basins and wetlands are two (2) means of capturing sediments.

The National Pollution Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters. The Illinois Environmental Protection Agency (IEPA) is responsible for administering the state's storm water program. The State of Illinois's storm water requirements are the same as the Federal NPDES

requirements. The program requires all construction sites disturbing more than one (1) acre, industrial sites, and all designated municipal separate storm sewer systems to obtain permit coverage.

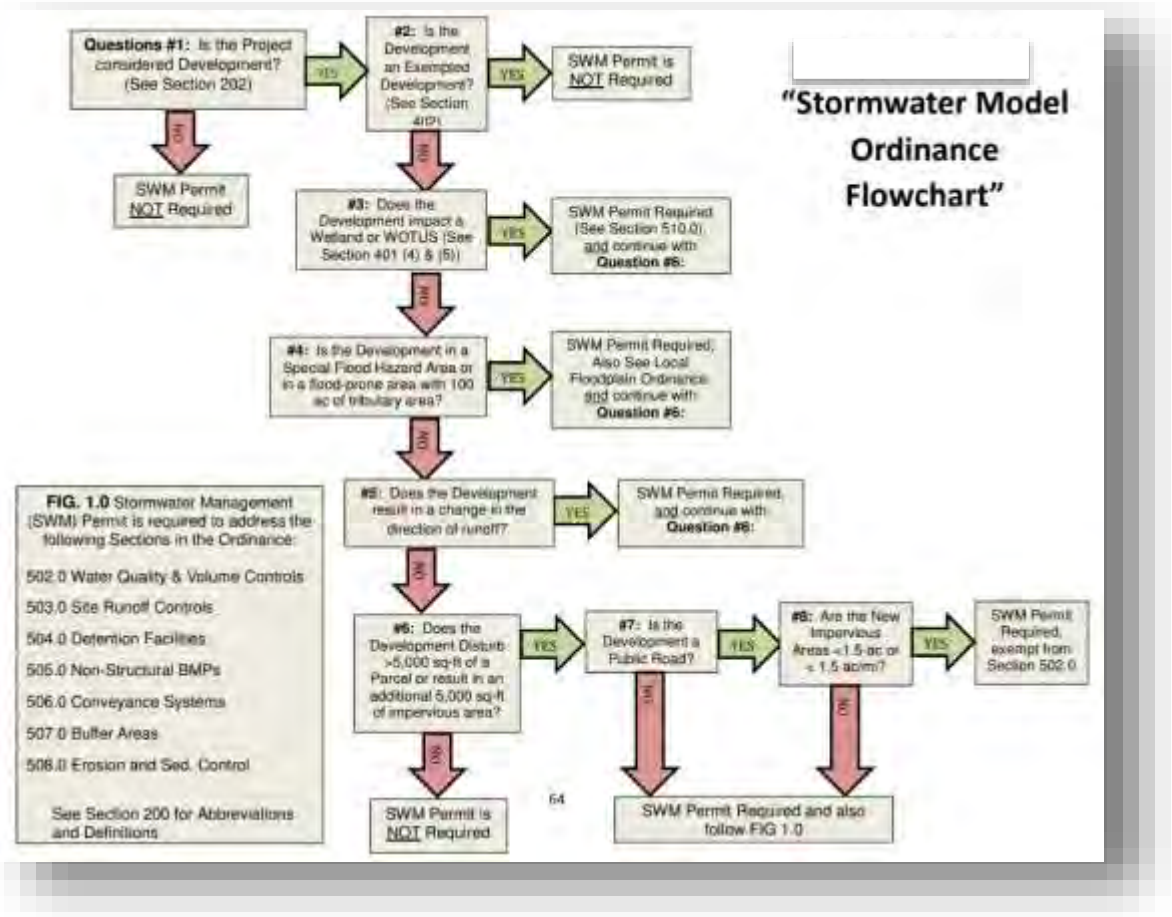
Urban Flood Awareness Act

Most of the communities within the NHMP region have urban flooding issues. Basement and sewer backups were common occurrences. The region is not unique in having urban flooding issues. Communities and counties across the state and nation are experiencing urban flooding more frequently. Recognizing the impact of urban flooding, the State of Illinois is working to achieve a better understanding of why urban flooding is occurring and how it can be mitigated.

The Urban Flood Awareness Act was passed by the Illinois General Assembly and went into effect on August 3, 2014. Under the Act, the IDNR was tasked with preparing a comprehensive report that examined "the extent cost, prevalence and policies related to urban flooding in Illinois and to identify resources and technology that may lead to mitigation of the impact of urban flooding." Each of Illinois' 102 counties has been subject to urban flooding. Urban flooding, as defined by the Act, is "The inundation of property in a built environment, particularly in more densely populated areas, caused by rainfall overwhelming the capacity of drainage systems, such as storm sewers."

Between 2007 – 2014, there were at least $2.32 billion in documented flood damages in Illinois, of which $1.24 billion were for private claims that often represented basement flooding and sewer backups. Urbanization, climate change, and deteriorating infrastructure are contributing factors to urban flooding. Updated information shows that between 2000 – 2018 floods and flash floods caused $3 billion in property damages in Illinois. Illinois experienced 1,537 flood events for this period, averaging 1.5 floods per week.

The Urban Flooding Awareness Act Report identifies 33 recommendations that have been categorized by responsible entities (the Illinois General Assembly, Illinois Congressional Delegation, Local Government, and State Government) – See Appendix F. Topics covered under the recommendations include, but are not limited to, funding for programs, data collection efforts, public education, coordination with communities and government agencies, and infrastructure improvements, and local regulations. The plan's recommendations are included in Appendix F: Urban Flood Awareness Act Report recommendations. Working with other state agencies, IDNR created a state Model Stormwater Management Ordinance, September 2015. This model stormwater management ordinance provides comprehensive content with recommendations on how to customize the content for individual community circumstances. The Stormwater Model Ordinance Flowchart is shown below.



https://www2.illinois.gov/dnr/WaterResources/Documents/IL_Model_Stormwater_Ordinance.pdf

Conclusions

The preventive measures discussed in this chapter are designed to protect new and future construction and development from hazards and potential losses.

Building codes are an effective measure for protecting new buildings from natural hazard damages. Incorporating hazard protection standards into local building codes is an ideal way to persuade developers and citizens into protecting themselves.

Subdivision regulations establish standards for development. They are useful in controlling safety standards and for including preventive measures and property protection measures.

Floodplain regulations are designed to protect people and property. Floodplain regulations must be enforced if the community participates in the NFIP. Communities that implement policies and activities that go above and beyond the requirements of the NFIP are

eligible to join the CRS. The CRS rewards residents with lower insurance premiums when their communities implement such activities and policies.

LaSalle County has citizens that live in manufactured homes. The federal government sets the standards for these homes. Local governments cannot require additional standards but can regulate where manufactured homes are located. Regulating location is a measure to protect the population from potential hazards.

Creating and updating comprehensive plans is a feasible way to direct development into areas that are not prone to natural hazards. Zoning ordinances can also be used to protect property from hazardous areas. Both planning tools can be used to designate floodplain areas for acquisition to become open space or parks.

Stormwater management is imperative because development outside the floodplain can increase flooding hazards. Reiterating the need for open space preservation, new development can increase surface water runoff and flooding.

Recommendations

- Adopt and enforce a building code to ensure that new structures are built with safety in mind.
- Develop a building inspector training program and develop a process to allow communities, particularly, smaller communities, to share building inspectors.
- Prohibit the construction of all structures including homes, businesses, and critical facilities in a floodplain.
- Regulate location and installation of manufactured housing.
- Use plans, zoning ordinances, and land-use measures to preserve existing open space and designate new open space.
- Adopt a comprehensive land use plan or update the community's existing plan and include natural hazard mitigation in the plan.
- Encourage residents to discuss their insurance coverage with their agents to ensure they are adequately protected.

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Chapter 5: Property Protection

Property protection measures are used to protect property that is in danger from damage caused by natural hazards. Property owners are responsible for implementing protective measures at their own cost, but government assistance may be available depending on the project, timing, and community's financial state. Educating the public and supporting implementation of property protection measures are important roles of the local government. Local governments also have a responsibility to ensure that their critical facilities are protected and capable of being used following a disaster. Flooding is the primary natural hazard concern of the region. The property protection measures below are reflective of this concern.

Barriers

A barrier is a type of property protection measure designed and used to keep surface floodwaters from reaching a building. A flood protection barrier can be built of dirt, soil, concrete, or steel. Dirt and soil barriers are called berms, while concrete and steel barriers are called floodwalls. Design is imperative to prevent flooding on properties that were previously flood-free. The barriers need to take into consideration still water. If water sits, leaks are a possibility. Proper drains and sumps, as well as pipes, may need to be installed.

Berms are susceptible to erosion and can settle to lower than the original height. Berms require a lot of land and need to be maintained to provide proper protection. The standard build is three (3) horizontal feet for each vertical foot (3:1 slope). A professional engineer should be consulted for the construction of a berm. Barriers should be as far from buildings as possible to reduce seepage and hydrostatic pressure. Floodwalls must also be constructed with sound engineering and design. All barriers are susceptible to cracks and weakening from moving water. Insurance is still advised because failure is always a possibility. Basement protection berms are another barrier option. Construction of low walls around stairwells or the use of backfill can protect basements and the lower floors of split-level homes.

The construction of both private and publicly-owned and maintained barriers will require consultation with the appropriate governmental agencies to ensure sound construction, to guarantee that the barrier will not result in an adverse impact on other property owners, and to ensure that there will not be an impact on the environment.

Relocation

The best way to protect a structure in a floodplain is to move it to a location outside of a floodplain. Any structure can be moved, but the heavier the structure, the heftier the cost. The easiest structures to move are small houses on crawlspaces. Buildings on a slab, buildings with fireplaces, and buildings with masonry walls are very costly to move. Relocation within a large lot is a good option if the property owner has constructible land outside of the floodplain. Some structures are not worth the expense to move compared to the cost of flood insurance or repairing after a flood. However, structures located in floodplains are often required to be brought into compliance with the community's zoning ordinance, which may be costly.

Communities can acquire (by cost) properties that cannot be relocated. The Federal Emergency Management Agency (FEMA) provides financial assistance to communities through three (3) programs for property acquisition, relocation, and demolition. These programs include the Hazard Mitigation Grant Program (HMGP), Pre-Disaster Mitigation (PDM) Grants, and the Flood Mitigation Assistance (FMA) Program. More information about these programs is available at http://www.fema.gov/hazard-mitigation-assistance.

When multiple structures are acquired or relocated, the property is often converted to a park or open space. The City of Ottawa's Fox River Park on the city's east side is the result of the community's efforts to remove structures that were located in the floodplain and flooded repetitively. The city used local, state, and federal funds to remove 84 structures from the floodplain. A study of this project was completed to show how beneficial removing structure can be financially for a community. The analysis regarding loss avoidance was completed and included in the 2018 Illinois Natural Hazard Mitigation Plan (Shown in Appendix N).

Retrofitting (Modifying)

Retrofitting is the modifying of a structure to reduce or prevent damage from natural hazards. Retrofitting may be done to protect a structure from flooding, high winds, heavy snow, or other natural hazards.

Elevation

Elevation is the raising of a structure above the base flood level (100-year flood level). The area below the raised building can be either filled in or left with openings so the floodwater can flow freely underneath the structure. The type of elevation structure depends on the condition of the building, the floodplain regulations, and the owner's finances. New structures in floodplains require, by law, to be elevated. An already existing structure can be raised while a new foundation is constructed under the house. Many homeowners are concerned with the appearance that elevation will cause to their home. The new foundation can be covered by landscaping or backfill.

When flood elevations are not excessive, a crawl space can be constructed. A crawl space must not be below grade and must have permanent openings. The openings can be covered by plastic to keep insects and animals out, but must be able to open without human intervention if floodwater reaches the building. Any method of elevation must allow floodwaters to enter and exit without damaging the building structure.

Using fill as an elevation method is another proper means. If fill is used, it does not mean the house is out of a floodplain, basements are still not allowed. Stilts, poles, and piles are used

when there are high flood levels and a house must be raised several feet to be above the base flood elevation.

Floodproofing

Floodproofing is a combination of structural and non-structural additions, changes, and adjustments to structures, which reduce or eliminate risk of flood damage to real estate or improved real property. Dry or wet floodproofing techniques may be used to protect property.

Dry floodproofing techniques are used for sealing a building to prevent floodwaters from entering as well as making them structurally resistant to flood water pressure. All areas that are below the flood protection level are to be made watertight. Buildings with basements are not appropriate for dry floodproofing. Within the floodplain, dry floodproofing on non-residential buildings is permitted, but dry floodproofing on residential buildings is only permitted as long as the building is not "substantially damaged" or "substantially improved" as defined by floodplain management ordinances and local zoning codes. Dry floodproofing is a very difficult and expensive floodproofing measure.

Wet floodproofing is the process of permanently removing or elevating everything that could be damaged by a flood. If the flood levels are not high, furnaces and laundry appliances can be raised on blocks or platforms. Water is then let inside the structure to allow pressure to be relieved from the foundation walls. Small floodproofing efforts can result in large savings when a flood occurs.

Earthquake Modifications

The relatively low occurrence of strong earthquakes in the region means less expensive earthquake measures can be taken to keep property safe. Tying down appliances, water heaters, and furnaces, as well as installing flexible utilities, can be an inexpensive way to protect a home or business. Critical facilities may have to take extra measures for protection to ensure functionality is not an issue during and after any disaster.

Tornado, High Wind, and Thunderstorm Modifications

The construction of shelters or safe rooms is recommended to provide protection from tornadoes and high winds. Interior rooms can be reinforced and modified to be safe rooms. Securing walls, roofs, and foundations is also a means for protecting against wind damage. Large openings should be secured and sealed as well. The decision to build a shelter or safe room is often a financial decision. However, safe rooms and shelters have saved many lives. The likelihood of a tornado occurring should also be taken into consideration.

There are many ways to protect against the damages that could occur from thunderstorms. Having lightning rods, storm shutters, and roof materials that are more resistant to hail damage are outside modifications that can protect the building from damage. Requiring hurricane clips to be installed during new construction can help prevent damages caused by high winds and tornadoes. Hurricane clips and ties hold a structure's trusses to its walls. Burying

utility lines can also be a significant modification for protection. Inside modifications include using surge suppressors to protect electronics and appliances. Generators and backup power batteries to provide needed power are also suggested.

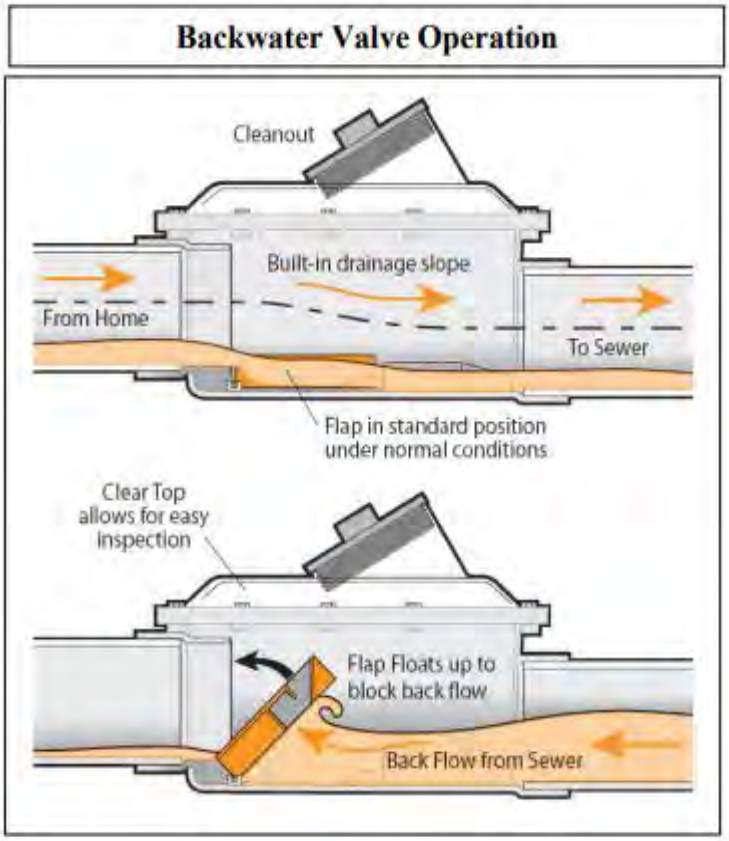
Winter Storm Modifications

Winter storm protection measures should be highly considered where winter storms are prominent. Insulating buildings and locating water lines to interior spaces is recommended. Sealing windows with plastic or storm windows and modifying roofs to shed heavy snow loads is suggested. Higher pitched roofs prevent the buildup of snow. Snow guards can also be used on roofs to prevent roof avalanches. Warm clothes, alternative heat sources, food, water and batteries should be kept in an emergency kit.

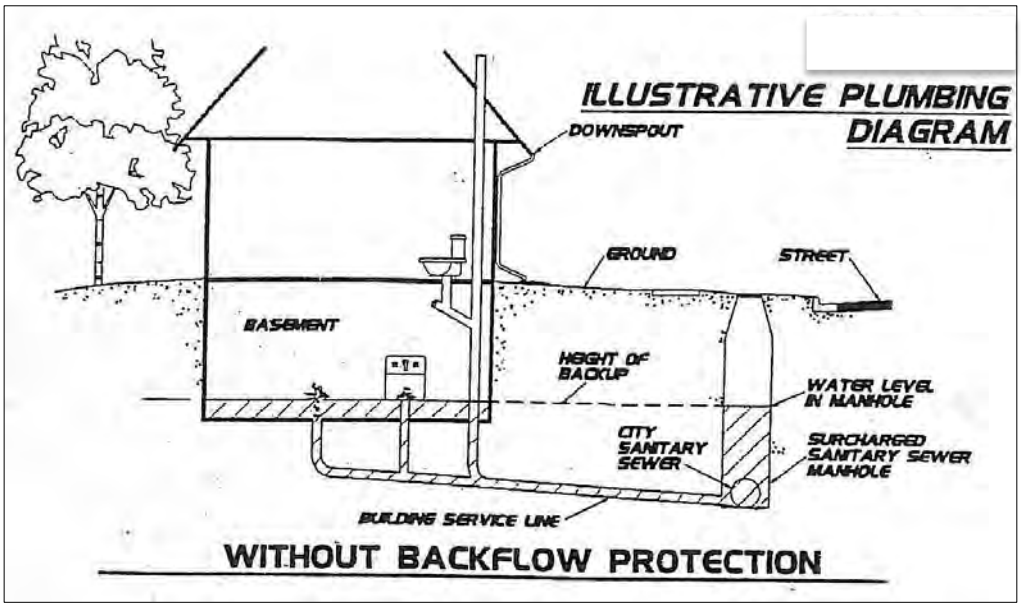
Sewer Backup Protection

Many measures can be taken to prevent damage from basement backups. Some measures can be achieved through modifications completed by the homeowner. Some measures should be accomplished through the hiring of a professional. Flooding can cause sewage from sanitary sewer lines to back up into houses through drainpipes. The damage from this is difficult to repair as well as a major health concern top the building occupants.

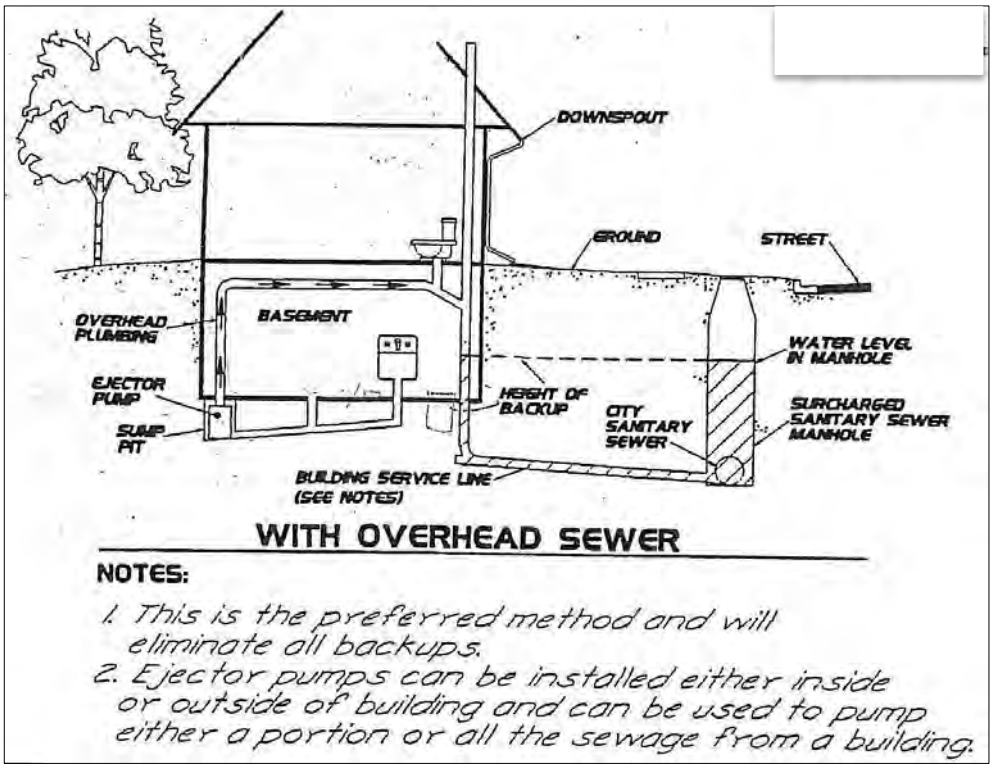
Backwater valves are a good way to protect from this hazard. They are designed to temporarily block drain pipes and prevent flow into the house. Backwater valves can have simple to complex designs and should be installed by a professional plumber. This graphic shows how a backwater valve operates.



Source: www.squareoneinsurance.ca/backwater-valve



Overhead sewers can also be installed to avoid sewage overflow. These are expensive and require maintenance. An ejector pump is installed under the basement floor to intercept sewage flowing from below-grade fixtures and floor drains. Instead of immediately discharging water into the sanitary sewer, the ejector pump forces the water up through overhead plumbing and then out, eliminating basement backups.



Another way to stop sewer backups is to plug the drain where it enters into the house. Floor drain plugs can be purchased for minimal cost at a hardware store. A floor drain plug with a float will allow water to leave, but will halt water from entering. As the water rises, the float plugs the drain. Floor drain stand-pipes have the same basic effect, keeping water in the pipe, and are also inexpensive. However, pressure can eject the plugs and cause the pipes to burst.

Urban Forestry

High wind, snow, and ice can cause trees to fall on structures, utilities, vehicles, and anything else in their path, including people and animals. Urban forestry programs prevent some damage by encouraging the planting of hardier trees and ensuring their continued maintenance. Trees that do not grow fast or to great heights should be planted under and along utility areas. After storms, trees need to be checked, pruned, and maintained. A trained urban forester or arborist should inspect all damaged trees to determine if they should be saved or removed.

An urban forestry plan should be properly written and enforced. It should reduce liability, alleviate the extent of fallen limbs by wind and ice, and provide guidance on pruning and caring for trees. Such a plan guides a community to become a Tree City USA. The Arbor Day Foundation administers Tree City USA, a national program that provides cities and towns across the United States with a foundation for community forestry management. There are four (4) standards a community must comply with to be a Tree City USA. They include:

1. Creating a tree board or forestry department to be legally responsible for the care of all trees on city or village-owned property.
2. Adopting a local tree ordinance that provides clear guidance for planting, maintaining, and removing trees on city or village-owned property.
3. Spending a minimum of $2 per capita annually on the planting of, care for, and removal of trees on city or village-owned property.
4. Observing Arbor Day and issuing a proclamation to celebrate community successes and recognize the community's efforts.

There is one community and another location in LaSalle County that participate in Tree City USA. They include:

- The City of Ottawa in LaSalle County (member for 20 years) – Population 18,768
- Marseilles Training Center in LaSalle County (member for 5 years) – Population 24

Critical Facilities

A critical facility is any building, which is necessary to the health and welfare of the population and, if impeded by disaster, would negatively impact the quality of life and services provided by a jurisdiction. Damage to critical facilities could impact the delivery of vital services, cause greater damage to other sectors of the community, and/ or put special populations at risk. Examples of critical facilities where mitigation needs should be assessed include: emergency services facilities (such as fire and police stations), schools, hospitals, retirement homes and senior care facilities, major roads and bridges, critical utility sites (telephone switching stations or electrical transformers), and hazardous material storage facilities (chemicals, petrochemicals, hazardous or toxic substances).

The table below shows that several of the participating communities have critical facilities that are at risk of flooding. Most of the critical facilities are water treatment plants (WTP) and wastewater treatment plants (WWTP). This information is taken from the 2018 Illinois Hazard Mitigation Plan, Section titled Illinois Statewide Flood Hazard Assessment (Appendix K – Locally Owned Essential and Critical Facilities within the 100-year Floodplain).

Illinois Statewide Flood Hazard Assessment - LaSalle County			
County	**Jurisdiction**	**Facility Name**	**Facility Type**
LaSalle	Earlville	Earlville Jr High & High School	School
LaSalle	Earlville	Earlville Elem School	School
LaSalle	LaSalle	La Salle WWTP City of	Waste Water Treatment Facility
LaSalle	Mendota	Mendota Sewage Treatment Plant	Waste Water Treatment Facility
LaSalle	Mendota	Mendota WTP 1	Potable Water Treatment Facility
LaSalle	Mendota	Mendota WTP 2	Potable Water Treatment Facility
LaSalle	Mendota	Mendota Police Department	Police Facility
LaSalle	Ottawa	City of Ottawa Sewage Treatment Plant	Waste Water Treatment Facility
LaSalle	Ottawa	Ottawa WTP-Well 10	Potable Water Treatment Facility
LaSalle	Ottawa	Ottawa Township High School	School
LaSalle	Ottawa	Central Elem School	School
LaSalle	Peru	City of Peru Sewage Treatment Plant	Waste Water Treatment Facility
LaSalle	Peru	City of Peru Generating Station	Electric Power Facility
LaSalle	Peru	Peru Municipal Light Plant	Electric Power Facility
LaSalle	Seneca	Seneca WWTP	Waste Water Treatment Facility
LaSalle	Seneca	Seneca High School	School
LaSalle	Sheridan	Sheridan WWTP	Waste Water Treatment Facility
LaSalle	Utica	Utica Community FPD	Fire Station
LaSalle	Utica	Utica Police Department	Police Facility

https://www2.illinois.gov/iema/Mitigation/documents/Plan_IllMitigationPlan.pdf P. VII-58,59

Critical Facility:

In 2008, 2013, and 2019, communities along the Illinois River experienced record flooding that damaged critical infrastructure. Federal disaster declarations were declared for these weather events. They included the following declarations:

- FEMA 4116 Flood Declaration for weather between 4/16/13 – 5/5/13 (LaSalle County was included.)

- FEMA 1800 Severe Storms and Flooding for weather between 9/13/08 – 10/5/08 (LaSalle County was included.)

Both disasters resulted in millions of dollars in damages to critical infrastructure in communities throughout LaSalle County and provided reasoning for mitigation activities. The flooding of Ottawa's Central Intermediate School in 2008 offers an example about the impact and response to the loss of a critical facility.

In 2016 the cities of Marseilles, Ottawa, and Peru all applied for and were awarded FEMA PDM funding for the construction of floodwalls. The Marseilles projects included construction of a floodwall and pumping station to protect the city's wastewater treatment plant. The flood wall included 150 feet of earth construction and 1,210 feet of sheet pile. The project also included a gate closure system for the entrance to the plant. The new floodwall will protect the wastewater treatment plant above a 500-year flood level.

The Ottawa project was coordinated with and was for the Ottawa Township High School for floodwall construction and improvement. The project included 1,500 lineal feet of new floodwall and elevating an existing concrete floodwall and elevating a portion of an existing earthen levee. The entire section of the levee north of Main Street was improved through both elevation and new construction. The extension of the levee and floodwall ensures heightened protection of OTHS campus and surrounding residential neighbors from flood related damages.

Peru constructed a floodwall to protect the city's east wastewater treatment plan. The floodwall was built out of pre-cast concrete blocks. The project also included a gate closure system for the entrance to the plant and a backup generator to ensure the plant can run during high waters if there is a power failure. The new floodwall will protect the wastewater treatment plant above a 500-year flood level.

Ottawa Central Intermediate School

Ottawa's Central Intermediate School was located in a floodplain directly west of the confluence of the Illinois and Fox Rivers. The property was prone to flooding, but in 2008 water entered the crawl space and first level of the building. When waters receded, the extent of the damage was not immediately known. But, as the building was drying out, it became evident that it would cost a substantial amount of money to repair and renovate the building. The building was filled with mildew and mold. Asbestos floor tiling throughout the building would also have to be removed if the building were to be saved. Upon inspection in February 2009, the Illinois Department of Public Health (IDPH) condemned the building and declared it "substantially damaged." The school district eventually leased a former Walmart building to house students. After the building was condemned, the school district considered its options; renovating the building, adding to existing facilities in the district, staying at the interim facility (Wal-Mart), or building a new school. Renovation would have cost $25 million and all repairs to the building would have had to comply with the city's floodplain ordinances. The district also considered building a $7 to 10 million dollar levee, but state and federal permitting wasn't a guarantee. There would also be the cost of remediating contaminated soil on the property, which decades ago was an industrial site. Adding to the existing facilities in the district, would require the purchase of land, likely through eminent domain, because of the lack of property. The cost was estimated at $24 million, not including land purchases and the possibility of lengthy court proceedings. Staying at the former Walmart building was also considered, but the district did not own the building; it was not in the district's jurisdiction and; it would require major renovations and additions. The final option

Ottawa's former Central Intermediate School was located in a floodplain. The September 2008 flood was the 11th time the school had flooded in 20 years. The property flooded again in April 2013 after the school had been condemned.

was to build a new school on land near Shepherd Middle School on the south side of the city well out of the floodplain. The district decided to pursue the final option.

In February 2010, voters approved a referendum to sell $18.5 million in building bonds to construct a new school. FEMA committed $6.9 million to the project. The bonds were sold to make up the difference of funding that was not guaranteed at the time. The district later received a total of $5.4 million from FEMA, the Illinois Emergency Management Agency (IEMA), and their insurance company. The new school was constructed and opened in January 2012.

After five (5) years of negotiations, the school district and the City of Ottawa came to a resolution on the future of the former school site. The city paid $1.00 for the building and $375,000 for the 16 acres that surrounded it. The city received a $2 million dollar federal grant for demolition of the building in addition to $914,000 for buyouts of homes in the "Flats" along the Fox River. In April 2013, the region had another 100-year flood that broke records. The abandoned school was once again flooded confirming that the community made the correct decision about leaving the building. The former school was demolished in September 2013. In 2014, the City of Ottawa adopted a comprehensive land use plan that presented ideas for the property to be turned into a water front park that could include a marina, amphitheater, and recreational complex on the west edge of the property.

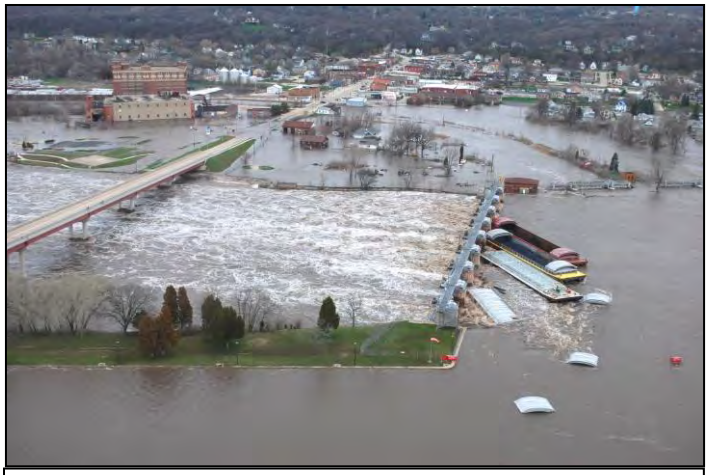
Early May 2019, multiple LaSalle County towns along the Illinois River were preparing for historically high flood levels later this week. Projected levels would be the third-highest ever recorded in the LaSalle-Peru area. The village of Utica, along with Marseilles and Ottawa were impacted as well. The U.S. Army Corps of Engineers has temporarily closed the Illinois Waterway Visitor Center at the Starved Rock Lock and Dam in Ottawa due to rising river levels. Allen Park in Ottawa was closed due to the flooding (see picture below).

Allen Park in Ottawa was closed due to flooding.

September 27, 2019 saw monsoon like rains over all of North Central Illinois — ranging from a reported 8 inches near Streator to 6.29 inches along the Illinois River at Dresden to 3½ inches in 24 hours at Starved Rock Lock and Dam — caused flooding Friday night of small creeks and drainage ditches, followed by a rapid rise of larger rivers and flooding. The Illinois River rose rapidly. Many roads became impassable after the heavy rains. For instance, the Triumph, Troy Grove, and Serena areas including U.S. 52 dealt with flash-flooding issues simply from the inability to drain away all the water from heavy downpours Friday, September 27th. The heavy rains caused water and gravel to cover part of Interstate 80 near Marseilles.

Critical Facility: Marseilles Lock and Dam

Less than five (5) years after a record-breaking flood of 2008, the City of Marseilles was once again subject to severe flooding. Marseilles recorded 6.55 inches of rain at their waste water treatment plant from April 8 – 18, 2013. On the evening of April 18, a towing vessel pushing 14 barges was approaching the Marseilles Lock from the east. The vessel was attempting to enter the Marseilles Canal (not to be confused with the abandoned Illinois and Michigan Canal). Despite the assistance of three (3) other towing vessels, the barge was unable to pass through the canal because of strong cross currents. Several barges broke loose, of which seven (7) hit the dam and four (4) sank. Five (5) of the eight (8) gates on the dam were damaged and water flow was impeded. The levee on the north bank of the Illinois River behind the elementary school was breached. As a result, 1,500 residents were evacuated and 200 homes, along with the elementary school, were flooded. A lift station being constructed to alleviate flooding issues from 2008 was also flooded.



On April 18, 2013, several barges broke loose from their towing vessel and struck the Marseilles Dam. A National Transportation Safety Board brief found that the accident likely worsened flooding.

According to a National Transportation Safety Board (NTSB) brief, the probable cause of the incident was the decision by all parties involved to go forward with moving the barges during high water at significant risk. Effective communication between the dam lockmaster and the captain of the Dale A. Heller tugboat about the actual positioning of the dam's gates before and

during transit contributed to the accident. Flooding in the city of Marseilles was likely exacerbated by the mishap, the report finds. Damage to the dam and barges totaled $54 million.

From the examples above, it is clear that protecting the region's critical infrastructure must be a top priority. Replacing, repairing, and relocating critical infrastructure costs millions of dollars. The region must adopt higher regulatory standards and work with all levels of government to identify activities that will reduce the impact of natural disasters.

Conclusions

Property protection measures are recommended to lessen the impact of natural hazards. Local governments should consider modifying and insuring any and all critical facilities. Protecting critical facilities is necessary to maintain order and ensure help is available during and after a disaster.

Barriers, relocation, retrofitting (elevation, floodproofing, earthquake modifications, tornado shelters, winter storm modifications, and thunderstorm modifications), sewer backup protection, and urban forestry programs are all recommended property protection measures. These measures should be researched and their cost-effectiveness evaluated on a community level basis.

Protection of critical facilities must be a top priority for the region. There are multiple critical facilities at risk that if damaged, would cost millions of dollars to repair or reconstruct.

Recommendations

- Inform owners of properties in floodplains of the requirements for renovating, repairing, or rebuilding.
- Consult with a licensed engineer and appropriate state agencies when implementing mitigation activities in a floodplain.
- Encourage the installation of backwater valves and overhead sewers to eliminate basement backups.
- Communities should consider becoming a Tree City USA.
- Evaluate critical facilities and identify which property protection measures are most feasible.
- Encourage communities to apply for funding through such programs as FEMA PDM for property protection projects especially for community's critical facilities.

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Chapter 6: Flood Control

To begin this chapter, it is important to reiterate the devastation caused by floods. Floods are the most common and widespread natural disaster in the nation. Although flooding causes devastation, it is a natural process. Floods have shaped the landscape, provided habitat for flora and fauna, and contributed to the rich soils prevalent in the Natural Hazard Mitigation Plan (NHMP) region.

The Illinois River can cause devastation through flooding. But it can also provide recreation, tourism, and commerce. Many seek out the Illinois River Valley's outstanding recreational opportunities, from biking and hiking on rail trails to camping and picnicking at the valley's many state sites. The river also plays an important role in the region's economy with the commerce that is shipped up and down the river. Below is a map of the Illinois River and the Illinois River Road National Scenic Byway that runs along both sides of the river promoting the importance and beauty of the Illinois River.

Source: https://www.fhwa.dot.gov/byways/byways/58611/maps/Northern_Section

Picture of flooding in Ottawa, Illinois on Fox River in "the flats" area
Source: https://ottawafloods.org/flood-damage/

Flood control projects are designed to keep floodwaters away from specific areas. They are also known as structural projects. Flood control projects are usually designed by engineers and managed or maintained by public works staff. Knowing why floods occur in a specific area and the actions a community has taken to prevent damage is important when implementing new flood control projects. Controlling floodwaters is a difficult task. The sections in this chapter identify measures that can be implemented for flood control.

Conveyance System Maintenance

A conveyance system includes all of the facilities necessary to collect and transfer stormwater to a receiving body of water. Conveyance systems consist of both natural and manmade facilities. The United States Environmental Protection Agency (EPA) defines a conveyance system as part of a municipal separate storm sewer under the Code of Federal Regulations (CFR) 122.6 (8). The code provides the following definition:

> (8). *Municipal separate storm sewer* means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer

district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the Clean Water Act (CWA) that discharges to waters of the United States;(ii) Designed or used for collecting or conveying storm water;(iii) Which is not a combined sewer; and(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

Conveyance system maintenance is an ongoing process that is necessary to reduce flooding. Debris and pollutants need to be removed from catch basins, storm water inlets, and other structures within the system. Local governments are responsible for maintaining public conveyance systems. Private landowners are responsible for maintaining drainage systems on their property. Preventive maintenance is more cost effective than allowing the system to fail.

Best management practices suggest the following maintenance actions:

1. Regularly inspecting all conveyance system facilities and addressing any deficiencies or issues.
2. Regularly inspecting conveyance systems for illegal dumping and discharging.
3. Documenting system issues and citizen complaints.

Dredging and Erosion Control

Sedimentation is the process of sand and silt washing downstream and settling. It is a natural process, but can be exacerbated by agricultural and industrial practices as well as new development. Sedimentation raises the channel bottom and forms sandbars and islands. This results in the flow of the water being slowed and the displacement of water, which causes flooding. Sedimentation also impacts water quality because of pollutants and contaminants that are carried with the sand and silt. Wildlife and aquatic species are threatened by sedimentation. Furthermore, sedimentation can impact commerce. Many agricultural and mining companies rely on navigable waterways for the efficient movement of goods.

Sedimentation can be addressed by dredging and controlling erosion. According to the National Ocean Service, "Dredging is the removal of sediments and debris from the bottom of lakes, rivers, harbors, and other water bodies." Dredging reduces flooding, improves wildlife and aquatic habitat, and is essential for river commerce. However, dredging is expensive. A feasibility study is necessary to determine if dredging is the most cost-effective measure. Engineering specifications will also be required by a licensed engineer. Dredging in Illinois is subject to permitting by the Illinois Department of Natural Resources (IDNR) Office of Water Resources, the Illinois Environmental Protection Agency, and the U.S. Army Corps of Engineers.

Dredging is only a band-aid approach. If the cause of sedimentation is not resolved, it will reoccur. Controlling erosion will reduce sedimentation. Erosion projects use both natural elements such as trees and mulches, as well as manmade materials such as riprap and sediment trap. Site-specific best management practices for erosion control have the following positive effects:

1. Improved water quality by reducing sediment, nutrients, and other pollutants from entering the waterways.
2. Reducing the need for dredging in the future.
3. Possible habitat restoration.
4. Possible flood reduction.
5. Increased biodiversity.

Several communities in the NHMP region identified the need for dredging of the Illinois River. According to the U.S. Army Corps of Engineers,

> "Annual maintenance dredging of the Illinois Waterway 9-foot Channel Project is generally required at 5 to 15 sites, and the volume of material dredged is approximately 250,000 cubic yards per year. Due to the large sediment load carried by the waterway and continually changing flows, specific dredging locations and quantities to be dredged vary from year-to-year."

The River is dredged, but only to maintain a nine (9) foot navigation channel. Dredging of the entire Illinois Waterway (271 miles) would cost millions of dollars. "The Illinois River provides commerce, recreation, and environmental habitat for a major portion of the state of Illinois. John Marlin of the Illinois Sustainable Technology Center (ISTC) is one of the leaders in the Illinois Rivers 2020 effort to revive the Illinois River. One (1) project element was looking at how to remove sediment from the Illinois River in a cost effective and safe manner."

https://www.istc.illinois.edu/research/waste_utilization/mud_to_parks_il_river_project

Dams and Reservoirs

Reservoirs temporarily store floodwaters behind dams or in detention basins. Reservoirs are usually called artificial lakes. A dam is an artificial barrier that has the ability to impound water for the purpose of storage or water control. This barrier can be used as a means of reducing flooding. Dams have been designed and built in the United States for decades. Dams

are expensive to build and maintain. The devastation that would occur if a dam were to fail is great for both people and the environment. Reservoirs reduce the amount of runoff before it flows downstream. When floodwaters have subsided the reservoir can be emptied by releasing the water or pumping it out. Reservoirs are more efficient in valleys where high volumes can be stored where room is available, or on smaller rivers where there is less water to store.

The U.S. Army Corps of Engineers is implementing several repairs projects for Illinois River locks and dams that could interrupt barge traffic for much of summer 2020. The Starved Rock Lock and Dam near Ottawa and the Marseilles Lock and Dam face up to 120-day closures for installation of massive new miter gates. Corps officials plan the work between July 1 and October 29, 2020 to avoid potential spring floods and reopen the river to barges during harvest season.

Levees and Floodwalls

Levees (made of earth) and floodwalls (made of concrete) are, generally, embankments whose primary purpose is to provide flood protection from seasonal high water. Some levees were designed to protect critical facilities, while others were built as part of lock and dam systems to control water levels on navigable waterways. The Federal Emergency Management Agency (FEMA) defines a levee as "A manmade structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control, or divert the flow of water so as to provide a level of protection from temporary flooding."

Urban levees provide protection from flooding in communities, while agricultural levees provide protection from flooding in lands used for agricultural purposes. No levee system provides full protection from flooding. Levees and floodwalls tend to give a false sense of security.

There are five (5) main types of levees:

1. Mainline and tributary – parallel the main channel and its tributaries.
2. Ring – encircle an area in all directions.
3. Setback – backup to an existing levee that has become endangered.
4. Sub levees – constructed for the purpose of under seepage control.
5. Spur – Project from the main levee and direct erosive river currents riverward.

Levee Certification and Accreditation

FEMA is responsible for determining the flood risk associated with levees. To that end, FEMA accredits levees that have been certified. For a levee to be certified, the levee owner must work with a registered professional engineer who will certify that the levee meets federal requirements set forth by 44 CFR, Section 65.10, that the data is accurate to his or her knowledge, and that the analysis was completed correctly with sound engineering practices in mind. A certified levee meets the criteria to protect an area against a 1% annual flood (100-year flood). However, a levee certification does not warrant or guarantee a levee's performance.

FEMA will accredit a certified levee if the levee provides adequate protection and there is a sound operation and maintenance plan. Areas behind certified levees are shown on a Flood Insurance Rate Map (FIRM) as having a moderate risk of flooding. Therefore, mandatory flood insurance is not required. Areas behind non-certified areas are shown to have a high risk and are required to have flood insurance.

In community's efforts towards implementing the 2015 Natural Hazards Mitigation Plan in 2016 the cities of Marseilles, Ottawa and Peru all applied for and were awarded FEMA PDM funding for the construction of protection project the included floodwalls and/or levees. The Marseilles projects included construction of a floodwall and pumping station to protect the city's wastewater treatment plant. The flood wall included 150 feet of earth construction and 1,210 feet of sheet pile. The project also included a gate closure system for the entrance to the plant. The new floodwall will protect the wastewater treatment plant above a 500-year flood level.

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Open Space Preservation

Preventing new development in floodplains and other hazard prone areas is the best way to minimize future damage to life and property. Protecting open spaces, natural areas, wetlands, forests, and greenways provides numerous ecological, economical, and societal benefits. America has vast open space and natural areas, but every day 6,000 acres of open space are lost. Annually, two (2) million acres of open space is lost to new development, according to LandScope America. LandScope America is an online conservation tool developed by NatureServe and the National Geographic Society used to educate conservationists and the public on how they can protect these lands.

Open space preservation is a mitigation activity that can lessen the impact of flooding. As more land is converted to residential, commercial, and industrial development, water is diverted to other areas and the natural process of infiltration does not occur. Water rushes off of impervious surfaces and causes surface water flooding. Open spaces are not confined to floodplains. Parks, golf courses, and greenways also provide the same benefits of open spaces. In more urban areas, green infrastructure projects can provide similar benefits to open spaces.

Green infrastructure should be incorporated into the design of new development. Plans and ordinances can be created and devised to protect lands for open space through many means such as acquisitions, easements, zones, setbacks, and frontage. When open spaces are protected and green infrastructure projects are implemented, communities benefit by reducing costs associated with flood damage, providing recreational areas for residents, and safeguarding wildlife.

The Illinois Open Land Trust Act (1999) recognizes the benefit of conservation efforts that protect Illinois' open spaces. The law recognizes that these lands provide a source of recreation for Illinoisans, promote public health, and are critical for wildlife habitat. To that end, the law enables the IDNR to provide financial assistance to local governments that have significant conservation and recreation attributes. The Illinois Open Land Trust Program is administered by the IDNR and exists for the acquisition of lands for natural areas to "enhance Illinois' natural environment, create a system of open spaces and natural areas, and improve the quality of life and provide recreational opportunities for citizens of this State now and in the future" (P.A. 91-220, eff. 7-21-99).

Wetlands are considered open space and should be protected. According to the IDNR, wetlands associated with riverine systems have many important functions, which include:

1. Acting as a floodway, transporting pulses from upstream to downstream.
2. Draining back into a stream when water levels are below normal maintaining the flow.
3. Reducing flood velocity (vegetation slows water).
4. Reducing sedimentation.
5. Having microorganisms entrap and break down chemicals while using excess nutrients to enhance growth.

The table below shows that wetlands lower the flow rates.

Percent change in flow rates of streams for every one (1) percent of watershed present as wetland.

REGION	PEAKFLOW	FLOODFLOW	LOWFLOW
Statewide	3.7% decrease	1.4% decrease	7.9% increase
Northern	7.9% decrease	2.3% decrease	15.0% increase
Central	5.9% decrease	4.5% decrease	5.5% increase
Southern	0.8% decrease	No Change	15.9% increase

Source: Demissie and Kahn 1993

Ice Jam Mitigation

Ice jams form when a body of flowing water freezes and unfreezes creating large chunks of ice that impede water flow. Ice jams damage public infrastructure and cause flooding. Once an ice jam has formed, there are a few options to mitigate its impact. Ice weakening, drilling

holes, dusting, blasting, excavation may be possible, but cost prohibitive and dangerous. The best way to prevent damages caused by ice jams is to enforce the community's building codes, zoning ordinances, and floodplain management regulations. Removing structures in floodplains and preventing future construction will reduce the ice jam's impact.

Conclusions

Floods are the most common and widespread natural disasters. Flood control measures include conveyance system maintenance, dredging, dams, reservoirs, floodwalls, and levees.

Many communities in the region expressed the need for dredging of the Illinois River to reduce flooding. Dredging is the removal of sediment that has settled on the riverbed. The U.S. Army Corps of Engineers conducts regular dredging on the River, but only to ensure a nine (9) foot clearance for ships. Dredging is costly and requires several permits. Additionally, dredging will not prevent future sedimentation. Erosion control measures must be taken to address the root of the problem.

Open space preservation is a mitigation activity that can lessen the impact of flooding. As more ground cover is turned into impervious surface, less water is naturally absorbed through infiltration and evapotranspiration. As a result, there is more surface water runoff. Protecting open spaces is a means of flood mitigation, but it also offers recreational opportunities and wildlife habitat benefits.

Recommendations

- Work with the U.S. Army Corps of Engineers on ongoing projects within the jurisdictions.
- Maintain drainage systems to ensure proper function.
- Identify problem areas where ice jams may form and know available options.
- Monitor existing dams, levees, and floodwalls.
- Use best management practices for erosion control.
- Use zoning to maintain or increase the amount of open space in the region.

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Chapter 7: Emergency Management

Emergency management is defined as "a process to reduce loss of life and property and to protect assets from all types of hazards through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery," according to the Federal Emergency Management Agency (FEMA).

Emergency management measures should protect people during and after disasters. Emergency management programs should involve departments at the municipal and county levels. The Illinois Emergency Management Agency (IEMA) coordinates programs at the state level. LaSalle County participated in this plan and has an Emergency Management Agency (EMA). LaSalle County's EMA provides coordination with multiple agencies during and after emergency and disaster situations. The agency helps communities become better prepared for handling future disasters through planning, training, drills, and exercises. Protecting lives and property is at the forefront of the agency's mission. The excerpt below provides an overview of the LaSalle County's EMA.

> "The LaSalle County Emergency Management Agency works with public safety response partner agencies, community organizations, government and non-government/not-for-profits to save lives, protect property, preserve functioning civic government, and to maintain and support economics for survival and recovery from disasters. Our goal is to keep our followers informed, offer training, provide volunteer opportunities, link you to preparedness resources for your personal use, and post relevant meeting calendars/information."

The following sections in this chapter explain the process of mitigation, preparedness, response, and recovery.

Mitigation

Mitigation is action taken to reduce the impact of something. When referring to emergency management, mitigation efforts are taken to minimize the loss of life and property when disasters occur. This is achieved through risk analysis, which results in information that provides a foundation for mitigation activities. This plan is the result of risk analysis that was completed through research, one-on-one interviews, and community surveys. The information that was gathered shaped the mitigation strategies.

Recognizing the risk of natural hazards and the conditions that cause these hazards is imperative to being able to warn the local population of an impending threat. The hazards are discussed in Chapter 2 of this Natural Hazard Mitigation Plan (NHMP). A threat recognition system can enable officials to warn the public in a timely manner.

Thunderstorms and Tornadoes

The National Weather Service (NWS) detects and predicts thunderstorms and tornadoes.

Floods

Recognizing the threat of floods is done by measuring rainfall, soil moisture, and stream flows upstream of the community. A flood recognition system predicts the time and height of the flood crest.

On large rivers, measuring and calculating the threat of floods is done by the NWS. The National Oceanic and Atmospheric Administration (NOAA) Weather Radio (NWR) delivers natural hazard threat predictions for rivers. River gauges and predictions are available on the website at https://water.weather.gov/ahps2/index.php?wfo=ilx. On smaller streams, local communities need river and rainfall gauges to establish their own flood recognition system. Flash flood alerts are issued by the NWS.

Drought and Extreme Heat

The NWS is the main agency that predicts and warns for drought and extreme heat events. High temperatures and lack of precipitation can often be predicted days in advance to give people enough forewarning to prepare. The website www.drought.gov can be accessed to monitor current drought conditions, forecasts, and to learn how drought is affecting the community.

Winter Storms and Extreme Cold

The NWS is the main agency that predicts and warns for winter storms. Winter storm predictions can be forecasted in advance and warnings can, generally, be delivered in a timely fashion giving people time to prepare.

Ice Jams

The NWS issues advisories, but cannot predict the thickness of an ice jam or its potential flooding impact.

Earthquakes

There is no warning system for earthquakes. The United States Geological Survey (USGS) documents and records the location and strength of earthquakes, but cannot predict future earthquakes. Some areas of the world are more prone to earthquakes.

Landslides

The USGS Landslide Hazards Program monitors selected landslides and hillsides at various locations across the United States to have a better understanding of the physical processes and conditions that trigger their occurrence. Geologists, scientists, and other experts are working to develop methods to predict landslides.

Wildfires

The NWS issues Fire Weather Watches and Red Flag Warnings when weather conditions have a high probability to support or cause wildfires.

Preparedness (Warning)

After the threat is determined, the public is warned. If a warning is given within sufficient time, measures to prepare can be taken. Being prepared can help reduce fear, anxiety, as well as the loss of life and property, that accompany disasters. People should be aware of what to do before, during, and after disasters. An individual should be prepared to care for themselves for at least three (3) days.

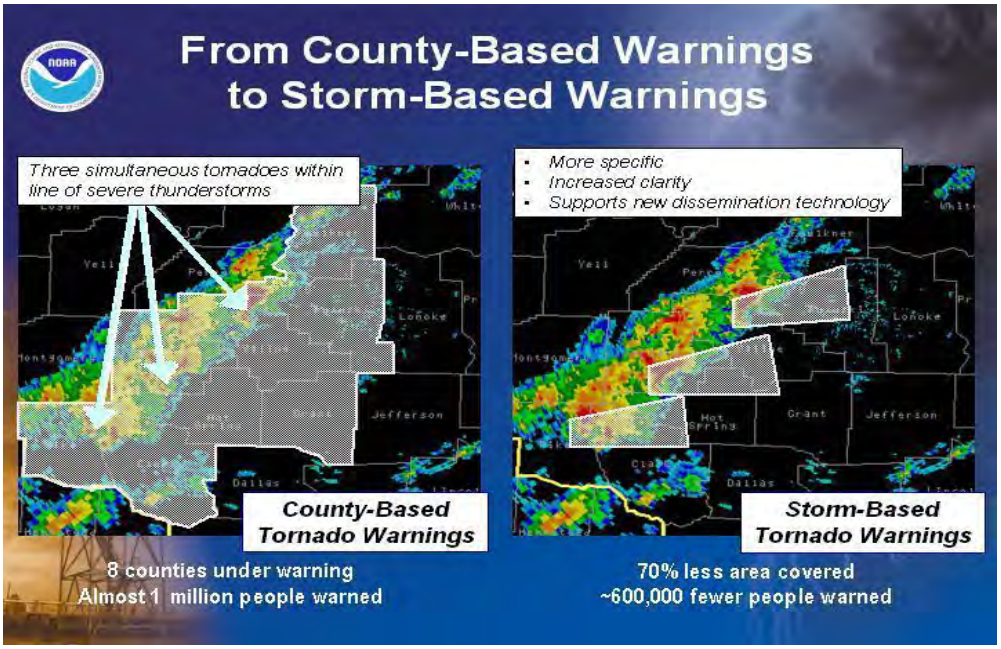
The NWS issues notices to the public using two (2) levels of notification.

***Watch**: A natural hazard is possible. The conditions for a winter storm, a flood, a thunderstorm, and/or a tornado are ideal. Tune into weather radio for information.*

***Warning**: A natural hazard has started or been observed. A natural hazard is occurring. If advised to take shelter or find higher ground, do so.*

Storm-Based Warnings

Prior to October 1, 2007, the National Weather Service (NWS) issued tornado warnings based on geopolitical boundaries, usually counties. The NWS determined that a more precise method was needed to identify where a tornado was located and heading. The NWS now issues storm-based warnings that are defined by polygons that indicate the specific threat area of a tornado. This reduces the overall area that is warned of a tornado. For example, under the prior method when a tornado warning was issued all areas within a county were included in the warning. Under the new method, specific locations that are threatened are identified. The storm-based warning method is now used for all tornado, severe thunderstorm, flood, and marine hazard warnings. The graphic below shows the difference between the old and new methods used for issuing warnings.



Source: https://www.weather.gov/media/pah/WeatherEducation/stormbased.pdf

The storm-based warning method allows warnings for specific areas to be issued to the public through radio, television, navigation systems, electronic highway signs, and traditional and mobile phones.

Integrated Public Alert and Warning Systems (IPAWS) and Community Alert Services

Warnings and watches are issued to the public through the FEMA's IPAWS. IPAWS uses a single interface to disburse alerts and warnings via the Emergency Alert System (EAS), NWR, Wireless Emergency Alerts (WEA), and other public alerting systems. The LaSalle County EMA is authorized to use IPAWS. Residents do not have to sign up to receive IPAWS messages, but their phone must be equipped with IPAWS technology. Newer phones are being made with IPAWS technology. IPAWS delivers messages based on the mobile phone user's location.

Private companies have also developed emergency notification systems to alert the public of dangerous weather. Several local governments in the region subscribe to emergcney alert systems such as CodeRed or Nixle. Residents are required to sign up for alerts after their local government has subscribed to the service to receive alerts. They send text messages that are specific to the user's home location. Residents may also sign up to receive phone calls and email alerts. These programs offer different levels of notification services to communities. The technology can be used to send the public both emergency and non-emergency notifications, such as a road closing or a garbage pickup delay.

Emergency Alert System (EAS) and NOAA Weather Radio (NWR)

The purpose of the EAS is to provide the President of the United States direct access to the American people during a national emergency. Accordingly, the Federal Communications Commission (FCC) states,

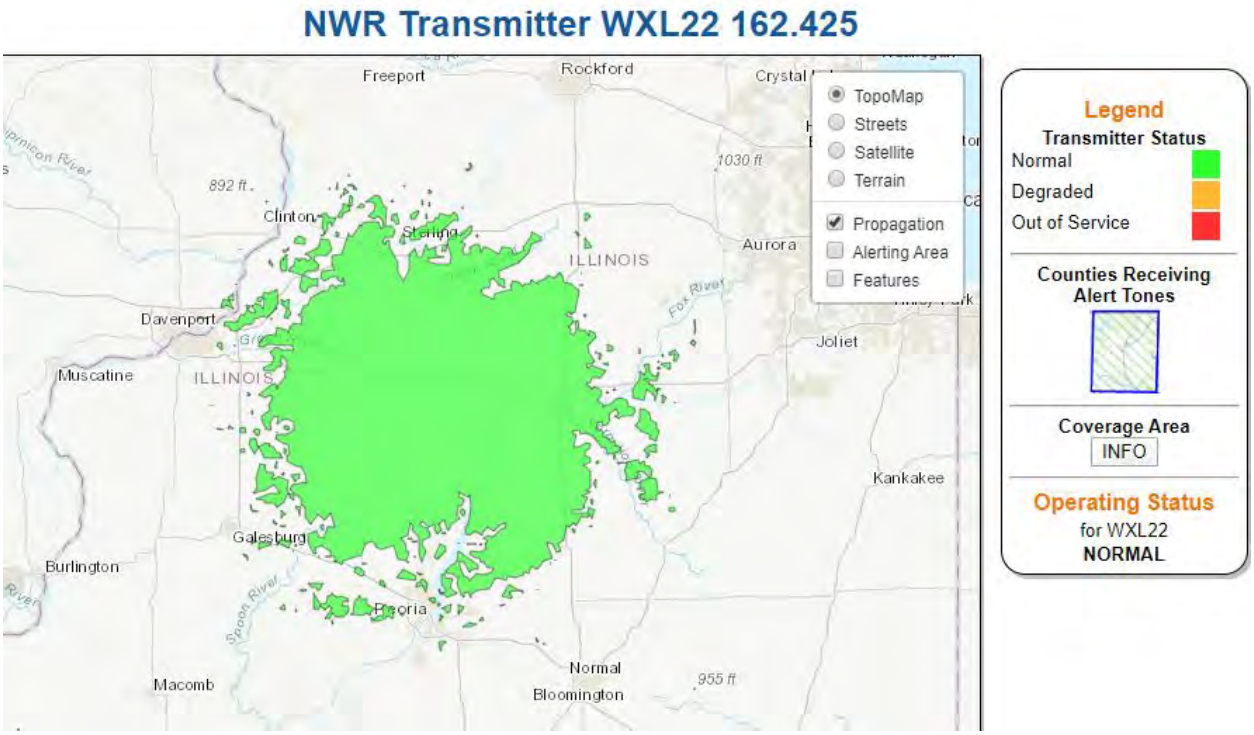
> "The Emergency Alert System is a national public warning system that requires broadcasters, cable television systems, wireless cable systems, satellite digital audio radio service (SDARS) providers, and direct broadcast satellite (DBS) providers to provide the communications capability to the President to address the American public during a national emergency."

The FCC, NWS, and FEMA implement the EAS on the federal level. The EAS is also used at the state and local level to alert the public of dangerous weather and other emergency situations.

The NWR is one (1) means that the public can receive alert messages. The NWR is a nationwide network or radio stations that continuously broadcasts weather information from the nearest National Weather Service office. In conjunction with federal, state, and local emergency managers, as well as public officials, NWR broadcasts post-event information for all hazards including environmental (chemical spills) and public safety (telephone outages). NWR broadcasts forecasts, watches, warnings, and other hazard information around the clock every day of the week. NWR is provided as a public service, which includes over 940 transmitters. NWR requires a special radio receiver. Residents should be informed about the value of

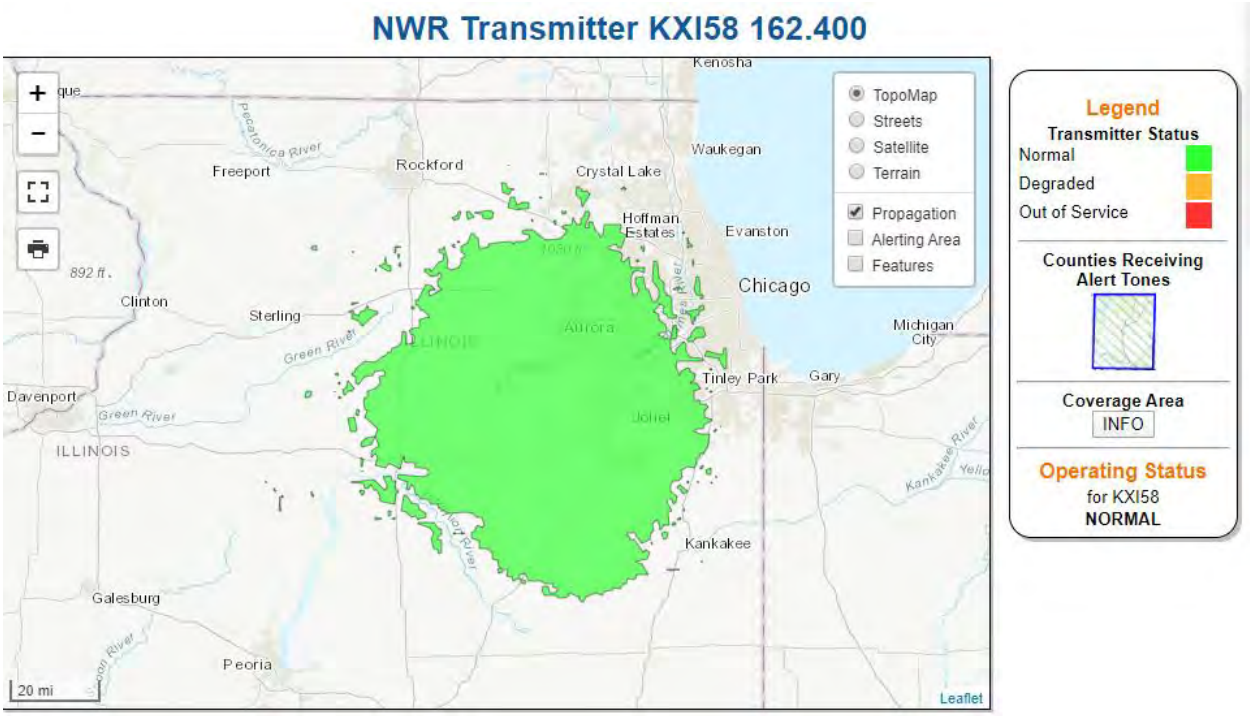
purchasing a NOAA weather radio. A battery operated NOAA weather radio could save their lives during a disaster. NOAA weather radios are available for purchase online and at retail stores, including many pharmacies.

The graphic below shows the coverage area from the NWR service (162.425) out of Princeton, Illinois (Bureau County). This includes most of LaSalle County. LaSalle County broadcasts can be found on the following frequencies: 162.400, 162.425, and 162.450

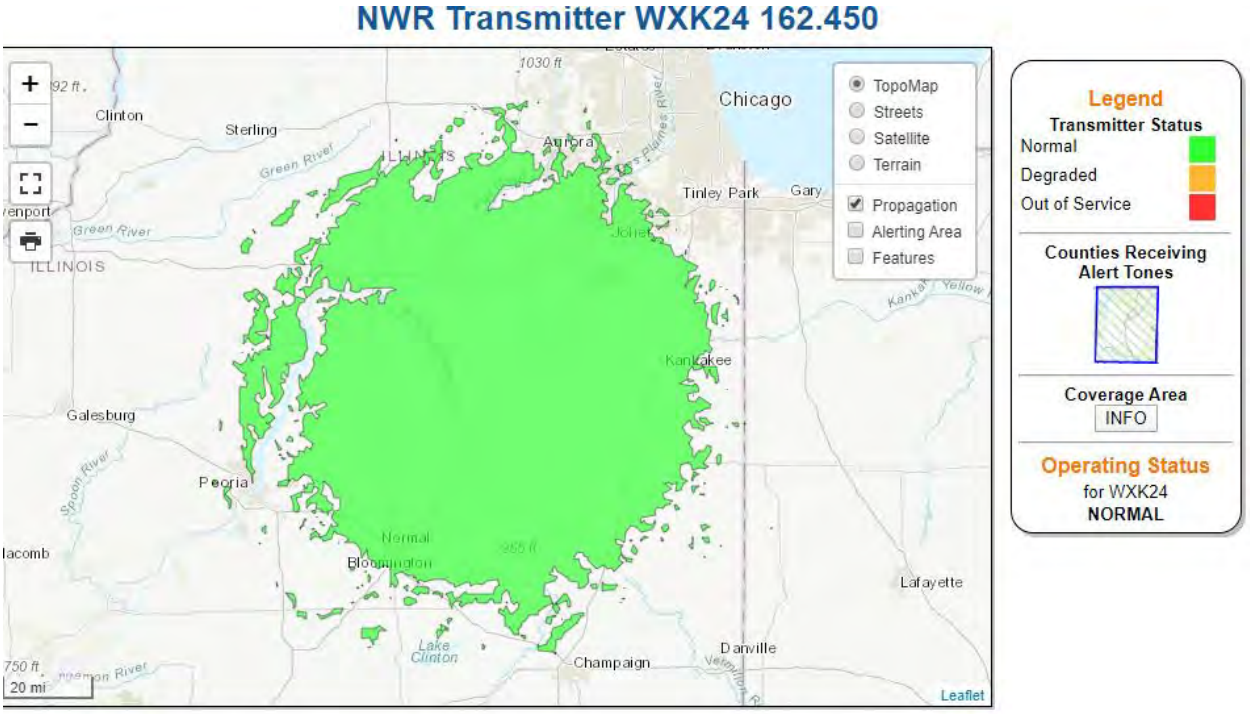


Source: https://www.weather.gov/NWR/sites?site=WXL22

The graphics below shows the coverage area from the NWR service out of Plano, Illinois and Odell, Illinois in LaSalle County. The frequency is 162.400 out of Plano, IL and 162.450 out of Odell.



Source: https://www.weather.gov/NWR/sites?site=KXI58



Source: https://www.weather.gov/NWR/sites?site=WXK24

Outdoor Warning Sirens

In 1950, President Harry S. Truman created the Civil Defense Administration by executive order and Congress passed the Civil Defense Act. The act supported states and communities with purchasing civil defense equipment, such as sirens, to alert the public of a nuclear attack. The use of the sirens to alert the public of tornadoes came about following the end of the Cold War Era. Today, many communities still rely on these sirens to alert the public of tornadoes.[1]

Most communities in the NHMP region have outdoor warning sirens; however, they have various policies on when they are tested and activated during a storm event. For example, some communities only set off early warning sirens when a tornado or funnel cloud has been spotted by a trained weather spotter and/or the NWS has issued a tornado warning while some communities also set off the sirens when the NWS has issued a severe thunderstorm warning that has damaging winds, heavy, rain, or hail. The various policies have led to public confusion about the seriousness of the storm event. The issue of when sirens should be activated is an ongoing debate amongst public officials and emergency personnel across the country. The public's safety is of utmost importance, but the more often sirens are activated, the more likely the public will grow confused about their use.

Several communities have various policies on when their sirens are tested. Communities in the region, generally, test their sirens on the first Tuesday of the month, but the time may vary. One (1) community sets its sirens off every Sunday at 6:00 p.m. In several communities the siren(s) are activated on a daily basis at noon, 5:00 or 6:00. In days past, sirens served as the shift, lunch, or dinner bell, but now the daily sounding of sirens is more of a tradition. Illinois law dictates when testing of outdoor warning sirens is to occur. Section 12 of the IEMA Act states:

> "The testing of disaster warning devices including outdoor warning sirens shall be held only on the first Tuesday of each month at 10 o'clock in the morning or during exercises that are specifically and expressly approved in advance by the Illinois Emergency Management Agency (Source: P.A. 92-73, eff. 1-1-02.)."

North Central Illinois Council of Governments (NCICG) recommends that all communities that have early warning sirens within LaSalle County adhere to Illinois law and only test sirens at 10:00 a.m. on the first Tuesday of each month.

NCICG also recommends a countywide discussion on the implementation of best practices for activating early warning sirens during storm events.

NCICG recognizes that various jurisdictions are responsible for sounding the early warning sirens and that some counties do not own or operate any sirens. However, from a planning perspective, regional guidelines could lessen confusion and ultimately, save lives.

[1] Coleman, T., Elliot, J.B., Knupp, K., Peters, B., & Spann, J. (2011). The History (and Future) of Tornado Warning Dissemination in the United States. *American Meteorological Society*, 567 – 582. doi: 10.1175/2010BAMS3062.1

Local officials, emergency personnel, IEMA, and the public should be invited to participate in the discussions.

Continued public education about early warning sirens can save lives. The public must be made aware that sirens are only meant to be heard while outside.

During the risk analysis phase of this plan, several communities identified the need to purchase a siren or additional sirens to provide full coverage to their residents. It is recommended that communities without sirens or those that have gaps in coverage purchase sirens. Additionally, some tornado sirens are capable of being activated remotely; however, others require manual activation, which could put the person responsible for activation at risk of injury or death. Communities without remote capabilities are encouraged to assess the feasibility of updating their siren systems.

LaSalle County has areas where there is a gap or dead spots where a siren cannot be heard. Updates to outdated sirens and additional sirens need to be added to areas in the county to provide full coverage to all their residents.

StormReady Communities

StormReady is a program of the NWS that was started in 1999. Some 98 percent of all Presidentially declared disasters are weather related, leading to around 500 deaths per year and nearly $15 billion in damage. StormReady helps community leaders and emergency managers strengthen local safety programs. It was designed to help local communities be more prepared with communication and safety skills before and during a natural hazard event. To be StormReady a community must:

1. Establish a 24-hour warning point and emergency operations center.
2. Have more than one (1) way to receive severe weather warnings and forecasts and to alert the public.
3. Create a system that monitors weather conditions locally.
4. Promote the importance of public readiness through community seminars.
5. Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises.

LaSalle County has met all of the requirements to be StormReady. In addition to the county, Ottawa, LaSalle, Marseilles, and Streator are all StormReady communities.

Response

After a disaster, a community should respond with actions that prevent or reduce damage and injury. An emergency action plan assures that all the bases are covered. Emergency action plans are developed along with other agencies. According to state law, every county must have an Emergency Operations Plan (EOP). LaSalle County EMA has and IEMA approved EOP

dated 2019 that goes through a biennial approved cycle. The EOP is reviewed annually and updated as needed.

Listed below are brief descriptions of FEMA's *Emergency Response Action Steps*:

1. *Disaster Alert* – Provide assistance to those in need. People come first.
2. *Safety First* – Remain calm, alert staff to potential dangers.
3. *Getting started off-site* – Create a team big enough for the work, assign tasks, and notify emergency personnel.
4. *Documentation* – Make visual, written, and voice records.
5. *Damage Assessment* – Notify insurance representative or risk manager, look for threats to safety.
6. *Salvage Priorities* – Determine order of salvage priority by group not item.
7. *Historic Buildings* – Contact historic preservation agencies, FEMA, and engineers before cleanup. Follow Secretary of Interior's Standards for Treatment of Historic Properties.

Recovery

Protection of critical facilities is imperative before, during, and after a disaster. It is the responsibility of the community to make sure critical facilities are protected and are able to be used in support of emergency response efforts. There should be an emergency plan in place in case a critical facility is damaged during a natural hazard. Hospitals, nursing homes, and public health facilities are required, by the State of Illinois, to have emergency response plans and to exercise the plans.

Ensuring that the public's basic needs of food, shelter, and water are met should be a top priority during the recovery process. Imperative steps in the recovery process include:

1. *Aiding the injured* - check for injuries; remember not to move seriously injured people unless they are in danger of death or further injury.
2. *Think of your health* – be aware of exhaustion and stress from the situation; be sure to eat food and drink plenty of water.
3. *Be aware of safety issues* – watch for broken glass, gas leaks, contaminated buildings, and damaged electrics.
4. *Check for damage* – check for structural damage to home (if there are concerns, wait for a building inspector to check the home before entering); watch for poisonous and dangerous animals while moving debris.
5. *Keep records* – Take pictures if possible for your records and insurance.

Some organizations that can help are:

1. American Red Cross.
2. Salvation Army.

3. Local volunteer organizations, relief groups, and churches.
4. Crisis counselors (for some major disasters FEMA, State, and/or local governments may provide counselors).

Conclusions

Emergency management consists of mitigation, preparedness, response, and recovery. LaSalle County has an EMA that assists with these activities. LaSalle County has an EOP in place for when a disaster occurs.

The NWS is the primary organization responsible for issuing weather watches and warnings. It is important for the public to know the difference between watches and warnings. The public is alerted to severe weather through multiple platforms including IPAWS and CodeRed. NOAA weather radios are one (1) of the best ways to stay on top of weather information.

Communities should adhere to state law on the testing of early warning sirens. A county-wide discussion on the development of a uniform policy for the activation of sirens during a storm event is needed. Communities without sirens or those that lack coverage should purchase sirens to protect the public.

The NWS now issues storm-based warnings that identify the specific areas in a storm or tornado's path. The new method replaces county-based warnings and reduces the coverage area of warnings.

Responding to the needs of people who have been injured is the first response following a disaster. Once the situation has been stabilized, further assessment of the damage is needed. An EOP can guide the response and recovery process. Ensuring that the public's basic needs are met is a top priority. There are many organizations that can assist a community following a disaster.

Recommendations

- Encourage the public to purchase NOAA weather radios and download weather alert apps.
- Adhere to state law on the testing of early warning sirens.
- Update out of date sirens and purchase sirens for where there are coverage gaps in communities and the county and network sirens for easier activation.
- Have a county-wide discussion on the development of a uniform policy on when sirens should be activated during storm events.
- Educate the public about the purpose of the sirens.
- Utilize apps and other social media to alert residence of weather warnings and emergencies.

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https://www.nps.gov/subjects/fire/index.htm

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https://www.usgs.gov/natural-hazards/landslide-hazards/monitoring

Chapter 8: Public Information

Informing the public about natural hazards is an important step to gain support for mitigation activities. When the public is informed, they will be able to make educated decisions that will reduce property damage and protect their lives. Such decisions might include: constructing a safe room when building a new house to protect against tornadoes; relocating after a flood; or installing an overhead sewer system to eliminate basement backups. The public should also be invited to participate in mitigation planning activities and discussions. Mitigation projects are often costly and use tax payer dollars for their implementation and construction. The public may be more willing to support mitigation activities when they understand the needs of the whole community and how they will directly benefit from the proposed projects.

Each community participating in the LaSalle County Natural Hazard Mitigation Plan update reviewed and discussed in a public meeting the communities risk assessment and gave the public an opportunity to comment. All of the meetings held during update process were open to the public.

Outreach Projects

Outreach projects are designed to inform the public about hazards and encourage them to take their own steps and precautions to protect themselves. Safety, health, and property protection measures must be included in outreach activity projects. Outreach programs are effective on the national level, but are more effective on the local level because people often have experienced the impacts of a natural disaster or know someone who has been impacted.

Effective outreach projects include; promoting websites that provide local information on natural hazards and mitigation activities; the use of home mailings, such as sending important information with utility bills; and the use of newspapers, radio, and television. Natural hazards information should also be made available at public libraries to ensure all residents have access to project materials. The success of any outreach project relies on the ability to effectively distribute information to the public in an understandable format. Outreach projects should clearly define actions that the public can take to reduce and eliminate risk.

To assist communities with outreach to the public, a list of resource links has been put together that communities can put on their website, see Appendix L. The links are to resources that will assist residents in preparing for and recovering from natural hazard events.

Program for Public Information

Communities that are part of the National Flood Insurance Program's (NFIP) Community Rating System (CRS) may receive credit for public information activities that educate the public about their flooding risks and ways to protect their property and lives. Conducting outreach projects, providing map information to the public, and utilization of multiple communication platforms (websites, radio, television, newspapers, etc.) are only a few of the activities that are eligible for credit. Communities that create and adopt a Program for Public Information (PPI) receive bonus credit for implementing public information activities.

According to NFIP, "A PPI is an ongoing local effort to identify, prepare, implement, and monitor a range of public information activities that meet specific local needs." The objective of a PPI is to change public behavior by informing residents about their flooding risks and telling them what they should do to protect their lives and property from those risks. The City of Ottawa in LaSalle County has a PPI (see Appendix M), which was reviewed updated at the end of last year.

In order to receive CRS credit, the PPI must be developed in a seven-step process that involves the public. The process includes:

1. Establishing a PPI Committee: The committee is charged with guiding the process and facilitating discussions and decisions. At least half of the members on the committee must be from outside of the government. A local insurance agency and bank/lender must also be represented on the committee. The City of Ottawa created the Ottawa Flood Commission to guide the process. The commission consists of the required members in addition to emergency responders, local developers, non-profit organizations, and others who have been impacted by flooding. Provide Ottawa update – committee last met December 2019.

2. Assess the Community's Public Information Needs: Identifying the community's flooding problems, assessing what actions have been taken to address flooding, and determining the target audience is the next step. The City of Ottawa has taken great strides to eliminate their risk to riverine flooding. However, urban flooding has presented new challenges for the city. The PPI is targeted toward individuals who own structures in the city's floodplains and those who have and continue to be impacted by urban flooding, including basement backups. The commission has also made an inventory of actions that have been taken to minimize the impact of flooding. A list of organizations and their outreach efforts has also been compiled.

3. Formulate Message: Once the target audiences have been identified, a message must be formulated. The message must clearly state what the public should do and provide direction on where to seek additional information. The City of Ottawa has formulated its PPI messages. Educating the public about the importance of understanding their insurance coverage, especially the need for flood insurance and an additional policy for sewer and drain backups, will be a focus of the city's messages. The city has a new website, www.ottawafloods.org that provides information to the residents about flooding and protective measures.

4. Identify Outreach Projects to Convey the Messages: The PPI will identify the projects that will be implemented to reach the target audience and convey the message. A timeline for project implementation and the responsible person(s) for their implementation must be included. Ottawa has in their PPI a table that presents the target

audience, message, outcome, proposed project, assignment, schedule and stakeholders involved.

5. Examine other Public Information Initiatives: To receive additional CRS credit, the PPI should also include information on other activities the community is implementing and their purpose. Such activities may include providing additional information to the public about drainage system maintenance, flood warning and response, or hazard disclosure.

6. Prepare the PPI Document: The commission's work and findings must be recorded in a formal written document and adopted by the community's governing body. This document is on the City's ottawafloods.org website

7. Implement, Monitor, and Evaluate the Program: The projects identified in the PPI document must be implemented, monitored, evaluated, and revised when necessary. Communities only receive CRS credit for implementing the identified projects. Credit is not given for going through the process of developing a PPI. Ottawa's Flood Commission meets at least twice a year to evaluate the Plan and incorporate the needed revisions showing what work has been completed and in progress.

Assistance

Providing natural hazard mitigation information to the public is necessary in order for individuals to protect their lives and property. Informed residents and business owners may be aware of the hazards and steps they can take to protect their assets, but they may not be comfortable with starting complex mitigation projects. Local building department staffs can help to guide residents in the right direction and can assist residents with permits when necessary. Building and zoning departments will also be able to explain which activities are permissible in a floodplain.

Conclusions

Educating the public about natural hazards and their risks can save lives and protect property. Communities can inform the public through implementing outreach projects. Websites, libraries, newspapers, and radio are a few of the outlets that can be used to inform the public. The effectiveness of public outreach campaigns relies on the ability to effectively convey messages to the public. Reaching various socioeconomic, age, and other groups will require different communication methods. Communities that are part of the CRS can receive additional credit for developing a PPI. The PPI is developed to encourage individuals living in a flood-prone area to take action to protect their lives and property. Local zoning and building officials can provide assistance to the public on how to get started with protecting their assets.

Appendix L has a list of links and resources for the public regarding how the residents can prepare for and recover from natural hazard events. This information was gathered so the

communities can easily copy and paste this information on their websites to better educate the public.

Recommendations

- Inform property owners, businesses, renters, and local officials about hazards and how to protect themselves before, during, and after an event.
- Make natural hazard information available through various communication methods.
- Assist residents and business owners in gathering information to hazard-proof their properties.
- Place the links and resources gathered in Appendix L on a community's website to better educate the public on how to prepare and recover from natural hazard events.
- If a community decides to participate in the CRS program they should develop a Program for Public Information.

References

Developing a Program for Public Information: for credit under the Community Rating System of the National Flood Insurance Program. (2014).

Mike Sutfin- Building and Zoning, City of Ottawa, Illinois

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https://insurancenewsnet.com/oarticle/illinois-valley-flood-resiliency-alliance-gets-proactive-addressing-future-floods#.XmFQU25FxlA Sep 6, 2015

Ottawa's Program for Public Information hosted on www.ottawafloods.org

Chapter 9: Countywide Regional Goals

Countywide Regional Goals

It is important to go through the process of setting goals and defining expectations to give communities a point of reference, a point of direction, and a completion point. The goals listed below were developed with community input during the 2015 Natural Hazard Mitigation Plan (NHMP). During the 2020 update, the public and local leaders/stakeholders were invited to attend public meetings throughout the process and to share their ideas on how to improve the LaSalle County region. The Regional Goals from the 2015 multi county NHMP were reviewed and produced these countywide goals for this LaSalle County NHMP update. The goals identified in this section are countywide goals that all communities should work towards implementing together. An online survey was completed by communities to receive input on the priority of each goal and action item. Each community has individual needs that are addressed in their Community Risk Assessment. The list below should be reviewed annually to reflect projects and activities that have been implemented and new needs.

Goal 1: Protect the lives, health, and safety of the citizens through education about natural hazards. (Priority: very high)

1. Work together as a countywide region to share resources and to create opportunities for the public to be engaged and informed about the risks of natural hazards and mitigation activities and provide ongoing training opportunities. (Priority: very high)
2. Utilize various communication methods including, but not limited to, social media, mobile alerts, print, and radio to inform residents about natural hazards and mitigation activities. (Priority: very high)
3. Educate the public on the importance of purchasing a National Oceanic & Atmospheric Administration (NOAA) weather radio. Consider a cost-sharing program. (Priority: high)
4. Participate in county wide and regional activities (such as the Illinois Valley Flood Resiliency Alliance and the Middle Illinois Basin Regional Water Supply Study) and encourage the public to be involved. (Priority: high)
5. Engage in a countywide discussion on the implementation of best practices for activating early warning sirens during storm events. (Priority: high)
6. All communities with early warning sirens should adhere to Section 12 of the Illinois Emergency Management Agency (IEMA) Act which states that the testing of outdoor early warning sirens shall only be held at 10:00 A.M. on the first Tuesday of each month, unless expressively approved in advance by IEMA. (Priority: high)
7. Encourage participation in the Community Rating System to lower flood insurance premiums for residents. (Priority: high)

Goal 2: Reduce the loss of public and private property, especially critical facilities and infrastructure, through proper planning and by completing mitigation projects. (Priority: high)

1. Work with a local regional planning agency to identify available planning and funding resources. (Priority: high)
2. Seek Federal Emergency Management Agency (FEMA) funding for buyouts (property acquisition) to reduce the number of structures in the floodplain. (Priority: high)
3. Seek FEMA funding for development projects (property protection) to reduce the amount of damage to property or persons caused by flooding or other hazards. (Priority: high)
4. Prohibit the construction of all structures including homes, businesses, and critical facilities in a floodplain. (Priority: very high)
5. Maintain and update county-wide flood damage prevention ordinance. (Priority: high)
6. Install, expand, or update early warning tornado sirens in every community including having regional communication system. (Priority: high)
7. Utilize Geographic Information System (GIS) mapping to identify critical facilities, potential hazard areas, etc. while developing and carrying out mitigation strategies. (Priority: high)

Goal 3: Protect and preserve the region's rivers and floodplains, including, but not limited to the Illinois River, Fox River, and Vermilion River in order to reduce loss from flooding. (Priority: high)

1. Increase the number of Certified Floodplain Managers (CFM) in the county. (Priority: high)
2. Develop a greenways plan that can help preserve the floodplain from development. (Priority: high)
3. Adopt property protection measures and/or flood control measures to maintain channel depth and proper stream flow. (Priority: high)
4. Consider the use of property protection measures and/or flood control measures to maintain storm water infrastructure. (Priority: high)

Goal 4: Manage future development to mitigate the impact of natural hazards. (Priority: very high)

1. Adopt and enforce a building code to ensure that new structures are built with safety in mind. (Priority: high)

2. Develop a regional building inspector training program and develop a process to allow communities, particularly smaller communities, to share building inspectors. (Priority: high)
3. Encourage developers to build weather safe rooms during new construction. (Priority: high)
4. Consider implementation of subdivision ordinances that include concepts such as underground electrical service and storm water management facilities. (Priority: high)

Goal 5: Identify and evaluate specific projects in LaSalle County to achieve hazard mitigation. (Priority: high)

1. Work with other communities in the county when considering mitigation projects. (Priority: high)
2. Continue to identify local flooding problems and identify and implement solutions. (Priority: high)
3. Compile a list of potential problems in your community and work to rank them in order of urgency. (Priority: high)

Goal 6: Implement strategies that will improve economic resiliency. (Priority: high)

1. Encourage businesses to participate in disaster preparedness and recovery planning activities. (Priority: high)
2. Complete critical infrastructure projects that will reduce or eliminate the economic impact of natural disasters. (Priority: high)
3. Develop partnerships with area businesses and non-profit organizations and develop strategies that will help communities strengthen their ability to recover following disasters. (Priority: high)

Risk Assessment

LaSalle County

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**

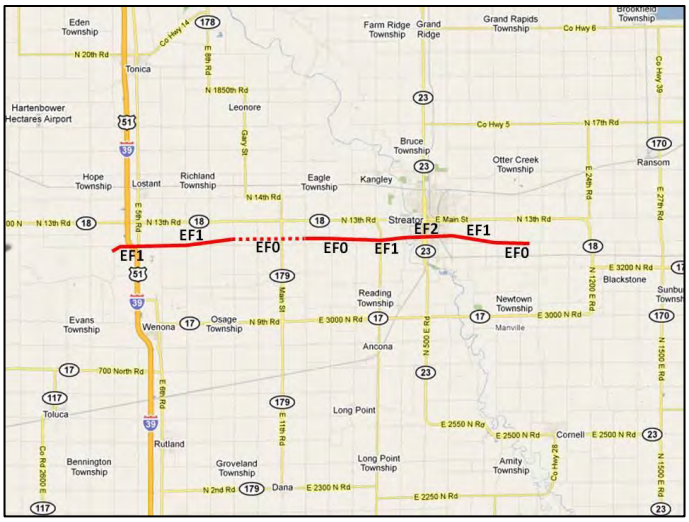
Location: LaSalle County is located in north central Illinois. LaSalle County is bordered by the Counties of Kendall, Grundy, Livingston, Woodford, Marshall, Putnam, Lee, and DeKalb. LaSalle County is included in the Chicago metropolitan area. The county seat of LaSalle County is the City of Ottawa.

Population: 113,924 (2010 Census), 109,430 (2018 estimate)

Major Storm Events since February 2008:

- February 28, 2017 TORNADOS: LaSalle County response included evacuation coordination at LaSalle County Nursing Home night of, Search and Rescue assistance in the Village of Naplate night of, Emergency Operations Center opened night of and staffed for 36 hours to help support the incident response, public information and news conferences for 30 days post incident and long term recovery assistance for a year following the incident
- June 22, 2015 Tornado (Ottawa/ Wedron Area): An EF-1 tornado with wind speeds up to 90 miles per hour struck down eight (8) miles northwest of the City of Ottawa and tracked east to the unincorporated community of Wedron. Several large trees were snapped or uprooted. Approximately six (6) homes had minor damage with roof shingles off. A small trailer next to a garage was picked up and thrown behind a house. No injuries or fatalities were reported with this tornado. The tornado was one (1) of the 12 tornadoes that was associated with a cyclic supercell storm that moved across the Midwest.
- June 30, 2014 Tornado (City of Earlville): Strong thunderstorms moved across the Midwest as a result of two (2) separate derecho events. Straight-line winds with speeds of 80-110 miles per hour impacted the City of Earlville followed by an EF1 tornado around 8:16 P.M. that uprooted trees, damaged roofs, destroyed a garage, and heavily damaged a church. No fatalities or injuries were reported.
- November 17, 2013 Tornado (Village of Dana/ Village of Rutland): Weather conditions were ripe across the Midwest for tornadic activity. A series of supercell thunderstorms produced 10 tornadoes, including three (3) which EF2 tornadoes. An EF2 tornado that began in Tazewell County tracked across Woodford County and entered LaSalle County one (1) half mile east of Illinois Route 251 north of the City of Minonk at 11:41 A.M. The tornado snapped several utility poles, destroyed outbuildings, and badly damaged a few homes. Maximum winds speeds reached 135 miles per hour.
- September 1, 2013 Tornado (Village of Baker- 4 miles south of the Village of Leland): Around 5:47 P.M. trained tornado spotters reported a brief EF0 tornado south of the Village of Leland. The tornado did not cause any damage, fatalities, or injuries.
- June 5, 2010 Tornado: A supercell storm moved east from Magnolia, Illinois in Putnam County where it had produced an EF0 /EF1 strength tornado. After lifting, a new tornado touched down near the Marshall and LaSalle County line due south. The tornado tracked along North 12th Road

Risk Assessment

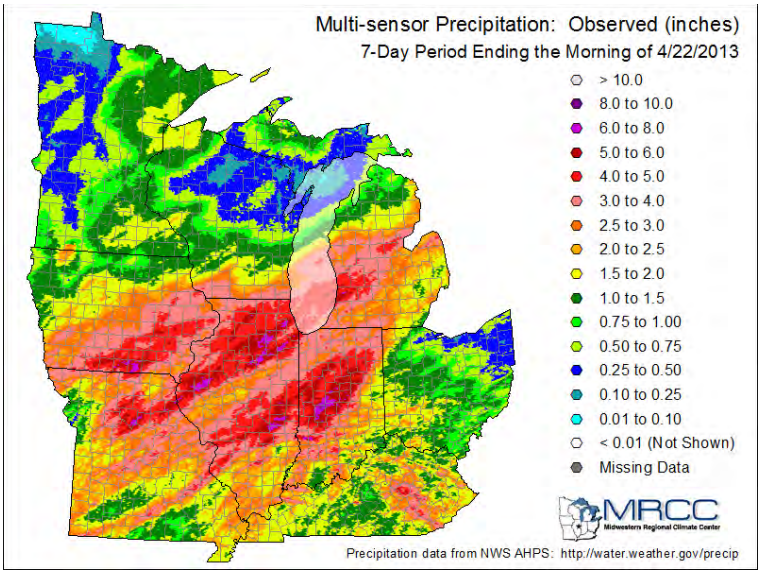


in LaSalle County knocking down trees and power lines. Minor structural damage was also reported. As the EF0/EF1 tornado continued to push east toward the City of Streator, it intensified to an EF-1/EF-2 strength tornado. As it moved through Eagle Pass Subdivision, trees were toppled, roofs were blown off, and several homes were badly damaged or destroyed. The most intense damage occurred along Hall Street near Southside Athletic Park. In all, 21 homes were uninhabitable and had to be destroyed, another 33 were uninhabitable and required major repair, and a total of 150 received some degree of damage. Damage totaled $7 million. Seventeen (17) direct or indirect injuries were reported as a result of the tornado. There were no fatalities. At its strongest, the tornado had winds up to 130 mile per and was one (1) half mile wide. The tornado traveled approximately 18 miles and lasted 22 minutes.

The LaSalle County Emergency Management Agency responded to the Streator tornado by coordinating external resources and volunteers and providing management/supervision. At the request of the City of Streator, the county sheriff took over response operations following the tornado.

- September 2019 Flooding: County response included coordinating damage assessment for the Village of Seneca, hardest hit that requested assistance with that function; coordinating state and federal resources as potential funding sources for homeowners and businesses for repairs due to the flash flooding; provided public information messaging on available assistance through the USDA's Illinois Rural Development Program

- May 2019 Flooding: County response included establishing a communication chain to Peru Township Road Commissioner regarding their embankment failure closing a highly traveled road with potential outside sources for repair, including submission for FEMA Public Assistance; coordinating with Village of Utica and City of Marseilles with FEMA on Public Assistance as LaSalle County was included in on the Governor's State Proclamation for Public Assistance
- April 17, 2013 – April 19, 2013 Flood: A slow moving storm dropped upwards of 10 inches of rain across central and southeast Illinois. Heavy



rain caused record flooding along the Illinois River resulting in record flooding in communities including the City of Marseilles and the City of Ottawa. The LaSalle County Emergency Management Agency assisted with door-to-door evacuations in Marseilles, volunteer management, and damage assessments for FEMA. The county also maintained a damage assessment hotline staffed by volunteers at the Emergency Operations Center. Unfilled sandbags were provided to both Marseilles and Ottawa. The LaSalle County Nursing Home on Dee Bennett Road was evacuated due to roadway flooding preventing access to the nursing home and the potential flooding risk of the structures at the nursing home.

- September 9-18, 2008 Flood: Heavy rain associated with Hurricane Ike and Tropical Storm Gustav impacted much of the region and caused record flooding along the Illinois River. The flood stage for the Illinois River in Ottawa is 463 feet above sea level. The river crested at 472.4 feet. The LaSalle County Nursing Home was evacuated again due to the flooding on the roadway accessing the nursing home and the potential flooding of nursing home structures by the Illinois River.

Tornado Risk: LaSalle County has a "Medium" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. Since 1965, there have been 23 tornadoes touch down in LaSalle County (the unincorporated areas located outside of city/village limits). The county does not have any tornado sirens or tornado shelters in the unincorporated areas.

Flood Risk: LaSalle County has a "Low" risk of flooding.

Type(s) of Flooding: Riverine Flooding/ Ice Jams/ Surface Water Flooding

Area of Risk: All area's located in the Special Flood Hazard Area (SFHA) as identified by FEMA's Flood Insurance Rate Maps (FIRMs), especially those areas that are developed. Ice jams occasionally occur near the unincorporated towns of Dayton and Norway on the Fox River. There are likely several roads, culverts, bridges, etc. throughout the county that have flood issues. These areas are best identified by local road jurisdictions. The county has been steering all developments away from floodplains for a long time; however, there are several "historic" residential developments that were built prior to building and flood development permits being required in areas that may be at risk of flooding.

Critical Facilities at Risk: The LaSalle County Nursing Home and Highway Department are located in a 100-year floodplain along the Illinois River. The photo on the right is an aerial picture of the LaSalle County Nursing Home located west of the City of Ottawa on Dee Bennett Road. The picture was taken during the September flood of 2008. The property surrounding the nursing home has flooded several times over

the past 10 years. Flood waters have not entered the building, but each time the property floods the nursing home's residents have the potential of being evacuated. The access road to the nursing homes floods preventing emergency personnel, including fire, police, and paramedics from reaching the facility.

Repetitive Loss Properties: LaSalle County has four (4) repetitive loss areas. These areas are located near the town of Sheridan along the Fox River, the town of Wedron along the Fox River, and a location near Ottawa along the Illinois River.

National Flood Insurance Program Participant: Yes

Community Rating System Participant: Yes. LaSalle County has a Class 8 rating that provides residents within a floodplain a 10 percent discount on flood insurance premiums.

Winter Storm Risk: LaSalle County has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. LaSalle County has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. LaSalle County has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought was not reported. LaSalle County has a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The county has a "Medium" risk of hail.

Risk Assessment

Landslides - Based on previous occurrences and location, the County has a low risk of landslides occurring.

Wildfires – Based on no previous occurrences and the ground cover the County has a low risk of wildfires occurring.

Additional Information:

- The county has a comprehensive plan that was adopted in 1999 with updates completed in 2008 and 2014. The plan makes reference to the Natural Hazard Mitigation Plan to be updated as needed or required.
- There are maps in the plan that that show the Special Flood Hazard Areas of the county.
- LaSalle County adopted a zoning ordinance in 2006 for the unincorporated areas of the county. The ordinance is amended as needed. The most recent updates were in 2019. The zoning ordinance does not directly address natural hazards..
- The county has a subdivision ordinance that requires all streets and cul-de-sacs to be in compliance with applicable ordinances, including the county's Floodplain Regulation Ordinance. All streets and cul-de-sacs must be elevated above the 100-year floodplain.
- The county has adopted the International Residential Code 2003 and portions of the following codes: International Building Code 2003, International Fire Code 2003, International Mechanical Code 2003, International Fuel Gas Code 2003, and National Electrical Code 2002.
- All new buildings are inspected, except agricultural buildings which are exempt from county building code permit inspections.
- FEMA conducted Community Assistance Visits in 1998 and around 2005.
- The county originally adopted a county floodplain ordinance in 1988. The ordinance has evolved and has been amended many times over the years. In 2014 the county board adopted higher regulatory standards in their ordinance, which includes compensatory storage requirements, two (2) foot flood protection elevation standards, and a cumulative damage clause for structures located in the special flood hazard areas.
- The county requires flood permits to be issued for all development within the SFHA.

Mitigation Activities:

1. **Mitigation Strategy:** Enforce regulations and ordinances that pertain to development in floodplains.
   Hazard Addressed: Floods
   Responsible Entity or Person: LaSalle County Zoning Official(s)/ LaSalle County Environmental Services Department
   Benefit/Cost: High/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: ESLU Fund
   Resources: LaSalle County Board
   Benefits: Restrict development that places lives at risk; reduce the physical and financial impact of flooding; restore the floodplain to its natural purpose.

Deadline: 1-5 Years (Ongoing)
Mitigation Type: Local Plans and Regulations
Activity Status: LaSalle County continues to enforce floodplain regulations in the unincorporated areas of the County. Shortly after publication of this mitigation strategy, LaSalle County adopted "higher regulatory standards" in their floodplain development ordinance to help address the benefits associated with this strategy.

2. **Mitigation Strategy:** Restrict construction of projects that may increase flooding impacts (i.e. levees, buildings, dams, filling, etc.)
   Hazard Addressed: Floods
   Responsible Entity or Person: LaSalle County Board/ LaSalle County Environmental Services Department/ Zoning Official
   Benefit/Cost: High/Medium
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: ESLU Fund
   Resources: LaSalle County Zoning Official /CFM
   Benefits: Prohibit activities that may have an adverse impact on communities and property owners.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: LaSalle County adopted regulations in their flood ordinance to help address these types of construction projects by adding compensatory storage requirements (as well as other "higher regulatory standards" to help offset/minimize potential impacts of such projects. All flood permits are reviewed by CFM. Currently one CFM on staff.

3. **Mitigation Strategy:** Encourage other communities and counties to manage floodplain development.
   Hazard Addressed: Floods
   Responsible Entity or Person: LaSalle County Zoning Official/ LaSalle County Emergency Management Agency/ LaSalle County Environmental Services Department.
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: ESLU Fund/ General Fund
   Resources: LaSalle County Board/ Zoning officials throughout the region.
   Benefits: Work together as a region to minimize the adverse impacts of flooding
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Department staff and County Board members do attend and participate in Senator Rezin's Regional Flood Coalition and assist communities who have questions regarding floodplain development/ordinances/regulations/etc. Department Director was recently appointed

to the Fox River Flood Commission to assist in setting up a coalition similar to Senator Rezin's for the Fox River watershed.

4. **Mitigation Strategy:** Develop and implement a regional stormwater management ordinance that will reduce flooding and protect lives, property, and the environment.
   Hazard Addressed: Floods
   Responsible Entity or Person: County Board Members with regional group
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Staff Time/Engineering Costs/ Planning Consultant
   Revenue Source: ESLU Fund
   Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
   Benefits: Minimize the adverse impact of stormwater on communities.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Develop and implement a regional water resources plan.
   Hazard Addressed: Drought
   Responsible Entity or Person: County Board Members with regional group
   Benefit/Cost: Low/High
   Priority: High, no change since 2015 Plan
   Cost: Staff Time/Engineering Costs/ Planning Consultant
   Revenue Source: General Fund
   Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
   Benefits: Protect the region's water resources and be prepared for a prolonged period of drought.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Ongoing, state doing regional plans. Tri-County Regional Plan Commission (Peoria) is partnering with IDNR to form a regional water supply plan for the Middle Illinois Basin. The MIB consists of seven counties: Peoria, Stark, Marshall, Putnam, Woodford, Livingston, and LaSalle.

6. **Mitigation Strategy:** Educate citizens regarding potential natural hazards and their impacts.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: LaSalle County Emergency Management Agency
   Benefit/Cost: High/Medium
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: General Fund
   Resources: Illinois Emergency Management Agency and Federal Emergency Management Agency
   Benefits: Increase public awareness of the severity of natural hazards and their impacts.

Deadline: 1-5 Years (Ongoing)
Mitigation Type: Education and Awareness Programs
Activity Status: Carried over into the activities list for this plan. LaSalle County EMA provides ongoing public education on natural hazards and their impacts on a monthly radio show, "Morning Meeting" first Friday of every month;; we also share information from the National Weather Service (NWS) on current weather and its impacts on Facebook and Twitter daily; coordinate with NWS on annual severe weather spotter class, have 2 people taught by NWS to teach the course and they go out and provide that training by requests of a minimum of 10 people for each class

7. **Mitigation Strategy:** Educate decision makers about policy measures, ordinances, and decisions that have an impact on mitigation activities, disaster response, and funding capability.
Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
Responsible Entity or Person: LaSalle County Board/ LaSalle County Emergency Management Agency/ LaSalle County Environmental Services Department
Benefit/Cost: High/Medium
Priority: High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: General Fund
Resources: Associations/Organizations
Benefits: Increased awareness and understanding of the county's needs.
Deadline: 1-5 Years (Ongoing)
Mitigation Type: Education and Awareness Programs
Activity Status: Carried over into the activities list for this plan. LaSalle County EMA educates its county board elected officials on a monthly basis at the Public Safety committee meeting about current issues in Emergency Management; we also host Mutual Aid Box Alarm System (MABAS Chiefs) meeting on odd months and educate them on current Emergency Management issues;

8. **Mitigation Strategy:** Encourage conservation development in design techniques.
Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
Responsible Entity or Person: LaSalle County Board and Zoning Official/ LaSalle County Environmental Services Department
Benefit/Cost: Medium/Low
Priority: Low, no change since 2015 Plan
Cost: Staff Time
Revenue Source: General Fund
Resources: Engineers/Developers/Conservation Organizations
Benefits: Preserve open space.
Deadline: 1-5 Years (Ongoing)
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan. Development in the unincorporated areas of LaSalle County has been slow. Large scale commercial developments

have been nearly exclusive to mining/transportation/energy developments. This strategy will be considered as ESLU continues to research and improve subdivision/zoning ordinances.

9. **Mitigation Strategy:** Adopt and enforce stricter building permit/ code requirements.
   Hazard Addressed: Tornadoes, Floods, Dangerous Winds, Extreme Temperatures
   Responsible Entity or Person: LaSalle County Board and Zoning Official/ LaSalle County Environmental Services Department
   Benefit/Cost: Medium/High
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: General Fund
   Resources: International Code Council
   Benefits: Higher regulatory standards that promote safety.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan. ESLU and the Development Committee will readdress code updates in the future. The department will continue to gather information on code updates in the incorporated communities of LaSalle County.

10. **Mitigation Strategy:** Work together as a region to share resources and to create opportunities for the public to be engaged and informed about the risks of natural hazards and mitigation activities.
    Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
    Responsible Entity or Person: LaSalle County Board/ LaSalle County Emergency Management Agency
    Benefit/Cost: Medium/Low
    Priority: High, no change since 2015 Plan
    Cost: Staff Time
    Revenue Source: General Fund
    Resources: Other communities/ North Central Illinois Council of Governments
    Benefits: Collaboration provides opportunities to share ideas and resources.
    Deadline: 1-5 Years (Ongoing)
    Mitigation Type: Education and Awareness Programs
    Activity Status: Carried over into the activities list for this plan. Started, ongoing effort. Status: LaSalle County EMA maintains its membership of Central Illinois Coalition Active in Response Planning (CILCARP) that is an 18 county region where we meet quarterly to discuss current emergency management, public health and hospital issues and where we can share information, training, partner on exercises, etc.; we also enter in to Mutual Aid Agreements with partner organizations to share resources and information; LaSalle County EMA also is a member of the LaSalle County Healthcare Coalition which encompasses hospitals, coroner's office, long term care facilities and other CMS Providers for the coordination of training, planning and exercises

11. **Mitigation Strategy:** Participate in the National Flood Insurance Program's Community Rating System to help residents save on flood insurance premiums.
    Hazard Addressed: Floods

Responsible Entity or Person: LaSalle County Board/ LaSalle County Environmental Services Department/ LaSalle County Emergency Management Agency.
Benefit/Cost: High/High
Priority: Low, no change since 2015 Plan
Cost: Varies depending on activities pursued
Revenue Source: General Fund
Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan. LaSalle County moved from a class 7 to a class 8 in 2017. The County remains at a class 8.

12. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
Hazard Addressed: Tornado and Dangerous Winds
Responsible Entity or Person: A countywide group consisting of all municipal Public Safety Officials
Benefit/Cost: High/Low
Priority: Very High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
Benefits: Guidelines on activating early warning sirens can lessen public confusion and save lives.
Deadline: 2 Years
Mitigation Type: Education and Awareness Program
Activity Status: Carried over into the activities list for this plan. LaSalle County EMA surveyed local jurisdictions earlier in 2019 for numbers and locations of sirens within municipal jurisdictions throughout LaSalle County, that survey continues as not all have responded to date

13. **Mitigation Strategy:** Examine the effects of rural stormwater infrastructure.
Hazard Addressed: Floods
Responsible Entity or Person: LaSalle County Board/ Zoning Officials
Benefit/Cost: Medium/High
Priority: High, no change since 2015 Plan
Cost: Staff Time/ Engineering Studies/ Consulting Firms
Revenue Source: General Fund
Resources: United States Department of Agriculture/ Illinois Department of Natural Resources/ United States Environmental Protection Agency
Benefits: Understanding of the effects of rural stormwater infrastructure
Deadline: 5 Years
Mitigation Type: Local Plans and Regulations

Activity Status: Carried over into the activities list for this plan. A stormwater commission planning group developed and met for several months in 2014. This group developed a strategy and a list of potential members for the Stormwater Planning Commission that would address this process/strategy. State law requires the Chairman of the County Board to appoint such members. Strategy was sent to the County Board's Rules and Legislative Committee. It never made it out of this committee.

14. **Mitigation Strategy:** Identify funding resources and develop a cost share program to provide residents with NOAA weather radios.
    Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Hail
    Responsible Entity or Person: LaSalle County Emergency Management Agency
    Benefit/Cost: High/Medium
    Priority: High, no change since 2015 Plan
    Cost: Cost of radios
    Revenue Source: General Fund
    Resources: NOAA/ Illinois Emergency Management Agency
    Benefits: Increased awareness and preparedness
    Deadline: 2 Years
    Mitigation Type: Education and Awareness Programs
    Activity Status: Carried over into the activities list for this plan. LaSalle County EMA secured Citizen Corps grant funds in 2013 for weather radios of which we give one away each month on our monthly "Morning Meeting" radio show on WCMY

15. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
    Hazard Addressed: All identified hazards
    Responsible Entity or Person: LaSalle County Emergency Management Agency/ LaSalle County Environmental Services and Land Use
    Benefit/Cost: Medium/Low
    Priority: Low, no change, new activity for this plan.
    Cost: Staff time
    Revenue Source: Federal, state, local or grant funds
    Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
    Benefits: Increased awareness and preparedness
    Deadline: 2 Years
    Mitigation Type: Education and Awareness Programs
    Activity Status: New mitigation activity for this plan.

LaSalle County 2020 Flood Hazard Map

Legend

HydrographyLine

HydrographyPolygon

FLD_ZONE

- A
- AE
- AH
- AO

Major Roads

- County Highway
- Interstate Highway
- State Highway
- U.S. Highway
- Township Highway

LASALLE COUNTY
JANUARY 15th 1831

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Community Risk Assessment

City of Earlville

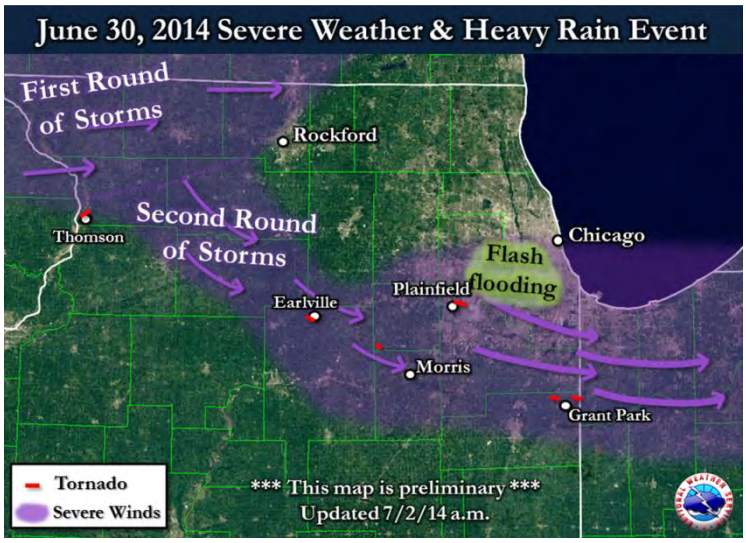
Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Earlville	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: Earlville is located 20 miles northwest of Ottawa along U.S. Route 34 in LaSalle County.

Population: 1,701 (2010 Census), 1,600 (2018 estimate)

Major Storm Events since February 2008:

- January 2011, Severe winter storm
- Summer 2012 and 2013 Dangerous Winds: The exact dates are not known. High winds knocked down tree limbs and power lines throughout the city.
- June 30, 2014 Tornado: Strong thunderstorms moved across the Midwest as a result of two (2) separate derecho events. According to NOAA, derechos are dangerous, long-lived, straight-line winds that can cause extensive damage. To be classified as a derecho, the damaging winds stretch for at least 240 miles and have gusts of 58 miles per hour, with well separated pockets of 75 miles per hour or more. Straight-line winds with speeds of 80-110 miles per hour impacted the City of Earlville followed by an EF1 tornado that uprooted trees, damaged roofs, destroyed a garage, and heavily damaged a church. One (1) home was destroyed. There was no damage to public infrastructure. No fatalities or injuries were reported.



- Earlville had 2 EF1 tornadoes and 1 EF0 reported on June 22, 2016.

Tornado Risk: The City of Earlville has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. Tornado sirens provide full coverage to residents, but there are no tornado shelters. The city has two (2) sirens; one (1) of which the city purchased a few years ago.

Flood Risk: The City of Earlville has a "Low" risk of flooding.

Type(s) of Flooding: Riverine Flooding/ Basement Backups

Community Risk Assessment

Area of Risk: Indian Creek runs along the east edge of the city. The city's FEMA Flood Insurance Rate Map (FIRM) identifies the 100-year floodplain for the creek. One (1) home is at risk of flooding.

During heavy rainstorms, the basements of many homes flood. This may be caused by inflow and infiltration issues such as illegal hookups and deteriorating sewer mains. The sanitary and storm sewer systems are completely separate.

Critical Facilities at Risk: None

National Flood Insurance Program Participant: Yes

Community Rating System Participant: No

Winter Storm Risk: The City of Earlville and LaSalle County have a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. The City of Earlville has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The City of Earlville has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The City of Earlville has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The City of Earlville and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. Four (4) hail events have been reported in the City of Earlville since 1965, although the accuracy of reporting

is uncertain. On May 12, 1998 hail measuring 2.25 inches (the size of a tennis ball) was reported in Earlville. The city has a "Low" risk of hail storms.

Landslides: Based on no previous occurrences and location, the City has no risk of landslides occurring.

Wildfires: Based on no previous occurrences and ground cover, the City has no risk of wildfires occurring.

Additional Information:

- The city is in the process of creating a Disaster Recovery Plan.
- The city's sewer plant is ranked in the top five (5) in Illinois by the American Public Works Association. The ranking is based on the functions of the plant, how it being run, and maintained.
- The city completed codifying the city's zoning ordinance.
- The city has adopted International Building Code 2015 which was an update from the 2003 codes.
- The city does not have a stormwater management ordinance.
- City hall is ADA compliant and can serve as a heating or cooling center.
- The city has generators at the waste water treatment plant and the water treatment plant. The fire department has portable generators.

Mitigation Activities:

1. **Mitigation Strategy:** Line sanitary sewers on the north side to reduce inflow and infiltration problems.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/High
   Priority: High, no change since 2015 Plan
   Cost: Construction
   Revenue Source: Local Funds and grant funds when available
   Resources: City Engineer
   Benefits: Reduce inflow and infiltration that can overwhelm the waste water treatment plant and cause basement backups.
   Deadline: 2 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Investigate suspected areas of combined sewers and separate sanitary and storm sewer lines. Apply for funding when viable projects identified.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/High
   Priority: High
   Cost: Construction

Revenue Source: Local Funds and grant funds when available
Resources: City Engineer
Benefits: Reduce inflow and infiltration that can overwhelm the waste water treatment plant and cause basement backups.
Deadline: 2 Years
Mitigation Type: Structure and infrastructure projects
Activity Status: New mitigation activity for this plan.

3. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
Hazard Addressed: Tornado and Dangerous Winds
Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Department, Local Police Departments, and Local Officials
Benefit/Cost: High/Low
Priority: Very High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: New mitigation activity for this plan.

4. **Mitigation Strategy:** Purchase and install updated outdoor early warning (tornado) sirens in the village and network with county and other communities in county. Make sure gaps of coverage in the village are eliminated.
Responsible Entity or Person: Village Board
Benefit/Cost: High/High
Priority: Very High
Cost: Sirens
Revenue Source: Local Funds and grants if available
Resources: United States Department of Agricultural- Rural Development/ State Appropriation
Benefits: Provide individuals outside time to take cover from approaching storm.
Deadline: 1 Year
Type of Mitigation Action: New mitigation activity for this plan.

5. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
Hazard Addressed: Tornado and Dangerous Winds
Responsible Entity or Person: City Council working with LaSalle County Officials
Benefit/Cost: Medium/High
Priority: Medium, no change since 2015 Plan
Cost: Staff Time/ Cost of Building Inspector

Revenue Source: Local Funds
Resources: International Code Council
Benefits: Communities that are unable to afford a full-time building inspector will have a resource for building inspections.
Deadline: 3 Years
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policies.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Adopt a Comprehensive Land Use Plan and include natural hazard mitigation discussion in the plan.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/High
   Priority: Medium, changed from Low since 2015 Plan
   Cost: Staff Time/Planning Consultant
   Revenue Source: Local Funds/ State Grants
   Resources: Planning Consultant/ Residents/ Public Officials/ Other Stakeholders
   Benefits: Provide the community with an understanding of the city's history, demographics, land use, transportation, and a plan for future development.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

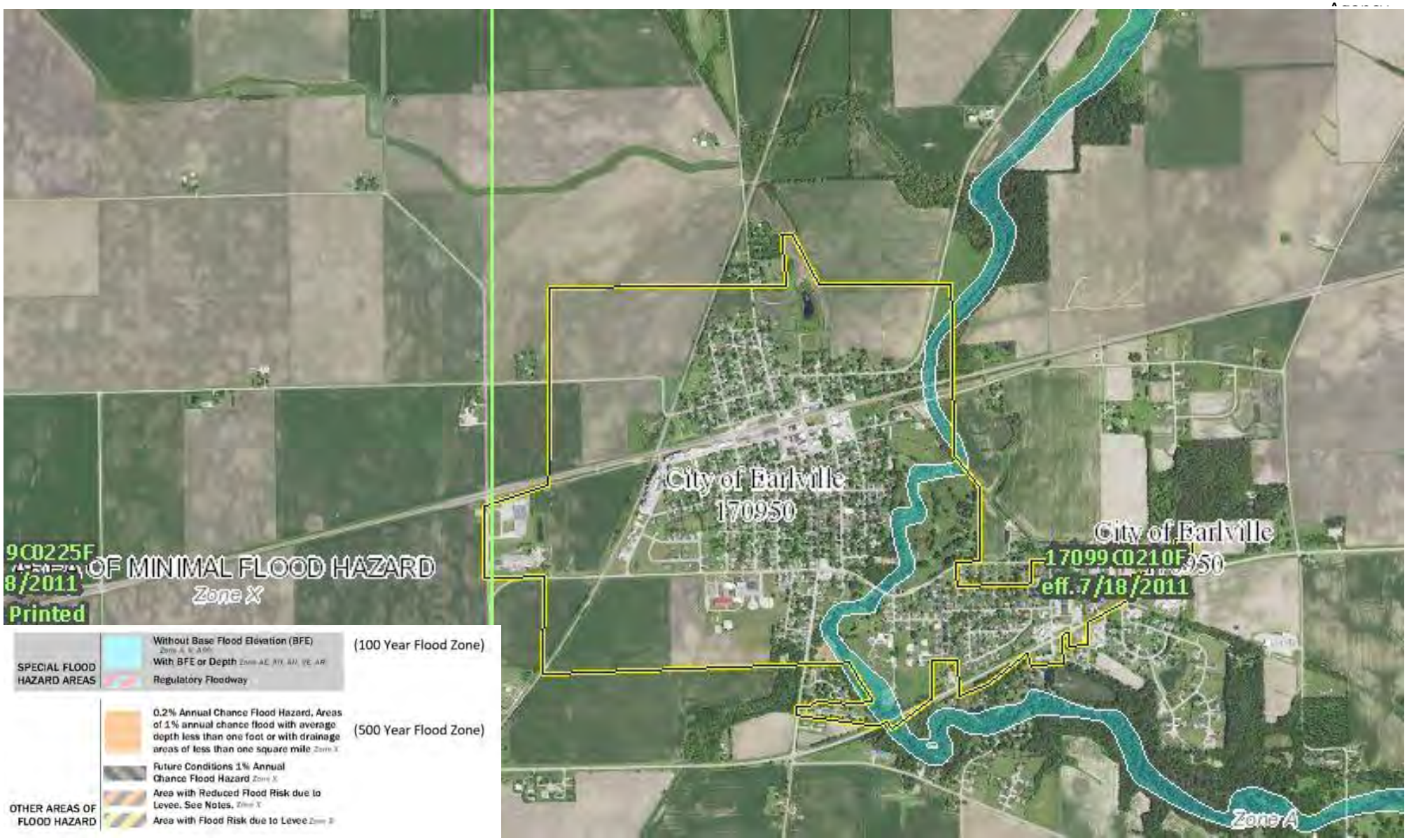
8. **Mitigation Strategy:** Participate in regional planning and mitigation activities and encourage the public to be involved.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: City Council and Staff

Benefit/Cost: Medium/Medium
Priority: Low, no change since 2015 Plan
Cost: Staff time for attending meetings
Revenue Source: Local Funds
Resources: LaSalle County Emergency Management Agency/ North Central Illinois Council of Governments
Benefits: Increased collaboration with neighboring communities provides opportunities to share resources.
Deadline: 1-5 Years (Ongoing)
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

9. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
Hazard Addressed: All identified hazards
Responsible Entity or Person: City Staff
Benefit/Cost: Medium/Low
Priority: Low, no change, new activity for this plan.
Cost: Staff time
Revenue Source: Federal, state, local or grant funds
Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
Benefits: Increased awareness and preparedness
Deadline: 2 Years
Mitigation Type: Education and Awareness Programs
Activity Status: New mitigation activity for this plan.

City of Earlville 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

Village of Grand Ridge

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Grand Ridge	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of Grand Ridge is located 7.8 miles south of the City of Ottawa in LaSalle County.

Population: 560 (2010 Census), 526 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The Village of Grand Ridge has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. Tornado sirens provide full coverage to residents, but there are no tornado shelters.

Flood Risk: The Village of Grand Ridge has a "Low" risk of flooding.

Type(s) of Flooding: Basement Backups

Area of Risk: There are no 100-year floodplains in the village.

During heavy rainstorms, there are basement backups throughout the village. This is a result of the storm sewer being overwhelmed. The village does not have a sanitary sewer system.

The village has a storm water drainage system that adequately prevents surface water flooding issues.

North of the village on Illinois Route 23 pooling of the roadway is a problem during heavy rain events. The Illinois Department of Transportation is responsible for addressing this issue.

Critical Facilities at Risk: None

National Flood Insurance Program Participant: No

Community Rating System Participant: No

Winter Storm Risk: The Village of Grand Ridge has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace

utilized energy, the body is susceptible to hypothermia and frostbite. The Village of Grand Ridge has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of Grand Ridge has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. Based on the reported data, the Village of Grand Ridge has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of Grand Ridge and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of Grand Ridge has a "Low" risk of hail.

Landslides - Based on no previous occurrences and location the Village has no risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- The village has a zoning ordinance.
- The village does not have a storm water management ordinance.
- The village has adopted a version of the International Building Code. New buildings are only inspected to ensure that the home is built on within the property owner's boundaries.
- The village does not have cooling/heating centers for residents to use during extreme temperatures.

Mitigation Activities:

1. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds

Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
Benefit/Cost: High/Low
Priority: Very High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
Hazard Addressed: Tornado and Dangerous Winds
Responsible Entity or Person: Village Board
Benefit/Cost: Medium/High
Priority: Medium, no change since 2015 Plan
Cost: Staff Time/ Cost of Building Inspector
Revenue Source: Local Funds
Resources: International Code Council
Benefits: Communities that are unable to afford a full-time building inspector will have a resource for building inspections.
Deadline: 3 Years
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

3. **Mitigation Strategy:** Identify and promote heating and cooling center locations to residents and ensure that such facilities are compliant with the American Disabilities Act (1990) 2010 Standards for Accessibility Design Requirements.
Hazard Addressed: Extreme Temperatures and Winter Storms
Responsible Entity or Person: Village Board
Benefit/Cost: High/Low
Priority: High, no change since 2015 Plan
Cost: Staff Time/ Engineer Inspection/ Promotional Expenses
Revenue Source: Local Funds
Resources: 2010 Standards for Accessibility Design Requirements/ Village Engineer
Benefits: Provide a safe environment to residents during extreme periods of cold and heat.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Adopt a Comprehensive Land Use Plan
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/Medium
   Priority: Low, no change since 2015 Plan
   Cost: Staff Time/Planning Consultant
   Revenue Source: Local Funds/ State Grants
   Resources: Planning Consultant/ Residents/ Public Officials/ Other Stakeholders
   Benefits: Provide the community with an understanding of the village's history, demographics, land use, transportation, and a plan for future development.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Participate in regional planning and mitigation activities and encourage the public to be involved.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: Village Board and Staff
   Benefit/Cost: Medium/Medium
   Priority: Low, no change since 2015 Plan
   Cost: Staff time for attending meetings
   Revenue Source: Local Funds
   Resources: LaSalle County Emergency Management Agency/ North Central Illinois Council of Governments
   Benefits: Collaboration with neighboring communities provides opportunities to share resources and ideas.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Education and Awareness Programs
   Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: Village Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
   Benefits: Increased awareness and preparedness
   Deadline: 2 Years
   Mitigation Type: Education and Awareness Programs
   Activity Status: New mitigation activity for this plan.

Village of Grand Ridge (No Floodplain) 2020

Source: Federal Emergency Management Agency

Community Risk Assessment

Village of Kangley

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Kangley	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of Kangley is located 16 miles south of the City of Ottawa, near the northwest corner of the City of Streator, in LaSalle County.

Population: 251 (2010 Census), 237 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The Village of Kangley has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The village installed a tornado siren in April 2015. The siren will cover the entire village. There are no tornado shelters in the village.

Flood Risk: The Village of Kangley has a "Low" risk of flooding.

Type(s) of Flooding: Urban Drainage- Surface Water Runoff

Area of Risk: The village's FEMA Flood Insurance Rate Map (FIRM) has identified a 100-year floodplain for a creek that runs between 9th and 12th Streets. The creek starts as an agricultural ditch west of the village. Several homes are located within the floodplain, but have never flooded.

The village has experienced ongoing issues with flooding of roadways and basements as a result of deteriorating storm water ditches and culverts. In 2014, the village received a $135,000 state appropriation grant to grade ditches, replace several culverts, and re-establish an alley with parallel drainage ditches. Locations for improvements include: An alley west of Section Street, Section Street and East 15th Road, Kangley Street and 12th Street, and 8th Street.

The village has a storm sewer system, but does not have a sanitary sewer system.

Critical Facilities at Risk: None

National Flood Insurance Program Participant: No. The village has been suspended from the program. The village is working on getting their participation reinstated.

Community Rating System Participant: No

Winter Storm Risk: The Village of Kangley has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Community Risk Assessment

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. The Village of Kangley has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of Kangley has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. Based on the reported data, the Village of Kangley has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of Kangley and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of Kangley has a "Low" risk of hail.

Landslides - Based on previous occurrences and location the Village has a low risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- The village adopted a zoning ordinance in 2012.
- The village does not have adopted building codes. New buildings are only inspected to ensure that they are being built on the owner's property.
- The village adopted a storm water management ordinance in 1972.
- The village restricts development in the floodplain.
- The village's community center/village hall is ADA accessible and can be used for a heating and cooling center.
- The village has developed and adopted a Disaster Response Plan
- Completed mitigation activity of purchasing backhoe to maintain stormwater drainage ditches.

Community Risk Assessment

Mitigation Activities:

1. **Mitigation Strategy:** Identify and implement actions to become compliant with the National Flood Insurance Program.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Depends on identified projects
   Revenue Source: Local Funds
   Resources: Illinois Department of Natural Resources/ Illinois Emergency Management Agency
   Benefits: Enable village resident to purchase flood insurance.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

2. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

3. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board working with LaSalle County officials
   Benefit/Cost: Medium/High
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time/ Cost of Building Inspector
   Revenue Source: Local Funds
   Resources: International Code Council
   Benefits: Communities that are unable to afford a full-time building inspector will have a resource for building inspections.

Deadline: 3 Years
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Adopt a Comprehensive Land Use Plan
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/Medium
   Priority: Low, no change since 2015 Plan
   Cost: Staff Time/Planning Consultant
   Revenue Source: Local Funds/ State Grants
   Resources: Planning Consultant/ Residents/ Public Officials/ Other Stakeholders
   Benefits: Provide the community with an understanding of the village's history, demographics, land use, transportation, and a plan for future development.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Participate in regional activities and encourage the public to be involved.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: Village Board and Staff
   Benefit/Cost: Medium/Medium
   Priority: Low, no change since 2015 Plan
   Cost: Staff time for attending meetings
   Revenue Source: Local Funds
   Resources: LaSalle County Emergency Management Agency/ North Central Illinois Council of Governments
   Benefits: Increased collaboration with neighboring communities provides opportunities to share resources and ideas.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Purchase and install updated outdoor early warning (tornado) sirens in the village and network with county and other communities in county.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/High
   Priority: Very High
   Cost: Sirens
   Revenue Source: Local Funds and grants if available
   Resources: United States Department of Agricultural- Rural Development/ State Appropriation

Benefits: Provide individuals outside time to take cover from approaching storm.
Deadline: 1 Year
Type of Mitigation Action: Structure and Infrastructure Projects
Activity Status: New mitigation activity for this plan.

7. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: Village Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
   Benefits: Increased awareness and preparedness
   Deadline: 2 Years
   Mitigation Type: Education and Awareness Programs
   Activity Status: New mitigation activity for this plan.

Village of Kangley 2020

Community Risk Assessment

City of LaSalle

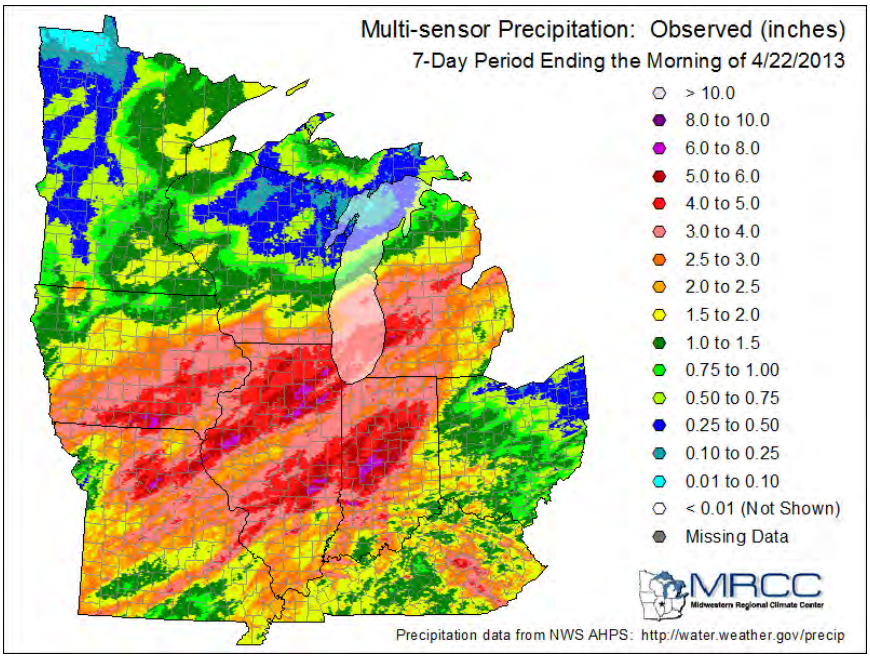
Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
LaSalle	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The City of LaSalle is located 15.4 miles west of the City of Ottawa on U.S. Route 6 in LaSalle County.

Population: 9,609 (2010 Census), 9,064 (2018 estimate)

Major Storm Events since February 2008:

- September 9-18, 2008 Flood: Heavy rain associated with Hurricane Ike and Tropical Storm Gustav impacted much of the region and caused record flooding along the Illinois River. Illinois Route 351 south of the river was completely flooded. The city's south waste water treatment plant took on water and sustained damages. Raw sewage was discharged into the river because of flooding.
- April 17, 2013 – April 19, 2013 Flood: A slow moving storm dropped upwards of 10 inches of rain across central and southeast Illinois. Heavy rain caused record flooding along the Illinois River resulting in catastrophic damage in several communities. The April 2013 flood damaged the City of LaSalle's south waste water treatment plant chlorination building located in the lagoon area. A dike protected the south waste water treatment plant.



- Winter 2013-2014 Extreme Freeze: A long period of below freezing temperatures caused water main in a section of the city to burst. The water main was only about 18 inches below the ground. Dozens of homes went without water for up to two (2) months. The city provided water to the residents until the main was repaired.

Community Risk Assessment

Tornado Risk: The City of LaSalle has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The city has tornado sirens, but additional sirens are needed. The city has expanded north since the original sirens were installed. The city does not have any public tornado shelters.

Flood Risk: The City of LaSalle has a "Low" risk of flooding.

Type(s) of Flooding: Riverine Flooding/ Basement Backups

Area of Risk: The FEMA Flood Insurance Rate Map (FIRM) for the city shows the 100-year floodplain for the Little Vermilion and Illinois Rivers. The Little Vermilion River does not pose a significant threat to the city. However, the Illinois River threatens the city because there are critical facilities located in the floodplain.

Basement backups occur in various locations throughout the city. The city continues to work toward separating the sanitary and storm sewers, which is expected to reduce basement backups.

Critical Facilities at Risk: The city's south waste water treatment plant and well fields are located in a 100-year floodplain. The waste water treatment plant is protected by a dike. Private entities including an Ameren substation, CSX Railroad, and several industrial and private buildings are also in the floodplain and at risk.

National Flood Insurance Program Participant: Yes

Community Rating System Participant: No

Winter Storm Risk: The City of LaSalle has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The City of LaSalle has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The City of LaSalle has a "Medium" risk of dangerous winds.

Community Risk Assessment

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. Based on the reported data, the City of LaSalle has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The City of LaSalle and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The City of LaSalle has a "Low" risk of hail.

Landslides: Based on no previous occurrences and location, the City has no risk of landslides occurring.

Wildfires: Based on no previous occurrences and the ground cover, the City has no risk of wildfires occurring.

Additional Information:

- In 2014, the city adopted a new comprehensive plan that reflects future floodplain issues.
- The city has a zoning ordinance, but has not adopted a storm water management ordinance.
- The city has adopted International Building Code (IBC) 2003 and the National Electrical Code (NEC) 2002. New buildings are inspected and both codes are enforced.
- The city has backup generators at the waste water treatment plan, water treatment plant, and the police station.
- Various churches, the fire station, and the city hall are suited to be warming or cooling centers during extreme temperatures. The city hall is ADA-compliant.
- Since 2008, the city has completed five (5) sewer separation projects, two (2) regional detention facilities, and implemented CodeRed, a public notification system for phone and text
- The City of LaSalle is a StormReady community.
- Sirens are able to be sounded remotely.

Mitigation Activities:

1. **Mitigation Strategy:** Drill new wells outside of the floodplain. (For a short term fix the city raised well heads)
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Design/Engineering/Construction
   Revenue Source: Local Funds/ State and Federal Grants

Resources: City Engineer
Benefits: Provide the city with a secure source of water.
Deadline: 5 Years
Mitigation Type: Structure and infrastructure projects

Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Increase the number of outdoor early warning (tornado) sirens to cover gaps and network with others.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: Very High, no change since 2015 Plan
   Cost: Design/Engineering/Construction
   Revenue Source: Local Funds/ Community Facilities Loan or grants if available
   Resources: United States Department of Agriculture- Rural Development
   Benefits: Provide all individuals who are within the city's corporate limits an early warning of approaching severe weather. (Note: Sirens are only intended to be heard outside).
   Deadline: 2 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: Carried over into the activities list for this plan.

3. **Mitigation Strategy:** Continue to implement a long-term control plan to minimize combined sewer overflows.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council and City Engineer
   Benefit/Cost: High/High
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: City Engineer
   Benefits: Prevent the release of untreated waste water into the Illinois River.
   Deadline: 2 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: Carried over into the activities list for this plan. (The city has received CDBG grant funds for two combined sewer separation projects)

4. **Mitigation Strategy:** Secure standby generators for auxiliary power at the well fields, water treatment plant, and south chlorination building for the waste water treatment plant.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High /High
   Priority: High, no change since 2015 Plan
   Cost: Generators
   Revenue Source: Local Funds

Resources: City Engineer
Benefits: Ensure that operations at the waste water treatment plant are not interrupted and secure an ongoing supply of water.
Deadline: 4 Years
Mitigation Type: Structure and infrastructure projects
Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Install underground catch basins to limit surface water flooding.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/ City Engineer
   Benefit/Cost: High /High
   Priority: Medium, no change since 2015 Plan
   Cost: Design/Engineering/Construction
   Revenue Source: Local Funds
   Resources: City Engineer
   Benefits: Minimize surface water flooding.
   Deadline: 3 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Implement a program to check illegal connections to the sanitary sewer system.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council and Building/Zoning Officials
   Benefit/Cost: Medium/ Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Examine policies of other communities
   Benefits: Minimize basement backups and the waste water treatment plant from being overwhelmed.
   Deadline: 2 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council and Staff
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency

Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
Deadline: 1 Year
Mitigation Type: Education and awareness
Activity Status: Carried over into the activities list for this plan.

8. **Mitigation Strategy:** Participate in the development of a regional stormwater management ordinance that will reduce flooding and protect lives, property, and the environment.
Hazard Addressed: Floods
Responsible Entity or Person: City Council
Benefit/Cost: Medium/Medium
Priority: High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
Benefits: Minimize the adverse impact of stormwater on communities.
Deadline: 4 Years
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

9. **Mitigation Strategy:** Work together as a region to share resources and to create opportunities for the public to be engaged and informed about the risks of natural hazards and mitigation activities.
Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
Responsible Entity or Person: City Council
Benefit/Cost: Medium/Medium
Priority: High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: Other communities/ North Central Illinois Council of Governments
Benefits: Collaboration provides opportunities to share ideas and resources.
Deadline: 1-5 Years (Ongoing)
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

10. **Mitigation Strategy:** Participate in the National Flood Insurance Program's Community Rating System to help residents save on flood insurance premiums.
Hazard Addressed: Floods
Responsible Entity or Person: City Council
Benefit/Cost: High/High
Priority: Low, no change since 2015 Plan
Cost: Varies depending on activities pursued
Revenue Source: Local Funds

Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

11. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events and network with other systems.
Hazard Addressed: Tornado and Dangerous Winds
Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
Benefit/Cost: High/Low
Priority: Very High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

12. **Mitigation Strategy:** Improve Interoperable Radio communications for disaster situations.
Hazard Addressed: Tornado and Dangerous Winds
Responsible Entity or Person: A group consisting of Emergency Management, Fire Department, Police Departments, and Local Officials
Benefit/Cost: Medium/Medium
Priority: Very High
Cost: Staff Time
Revenue Source: Local funds and state or federal grant funds when available
Resources: Analysis of existing communications and investigating communications other communities use.
Benefits: Improved communication system available during disaster situations.
Deadline: 2 Year
Mitigation Type: Local Plans and Regulations
Activity Status: New mitigation activity added to this plan.

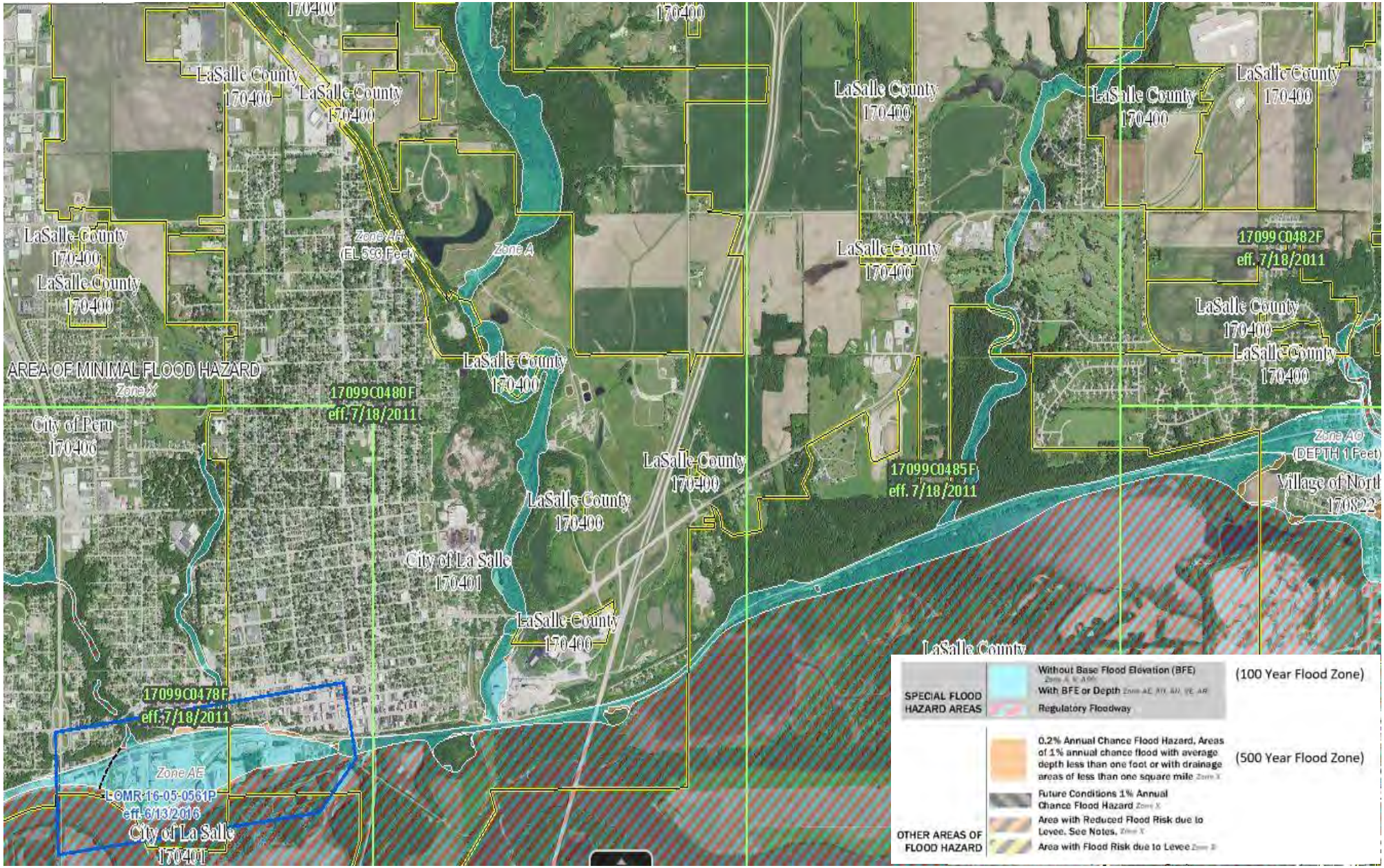
13. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
Hazard Addressed: All identified hazards
Responsible Entity or Person: City Staff

Community Risk Assessment

Benefit/Cost: Medium/Low
Priority: Low, no change, new activity for this plan.
Cost: Staff time
Revenue Source: Federal, state, local or grant funds
Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
Benefits: Increased awareness and preparedness
Deadline: 2 Years
Mitigation Type: Education and Awareness Programs
Activity Status: New mitigation activity for this plan.

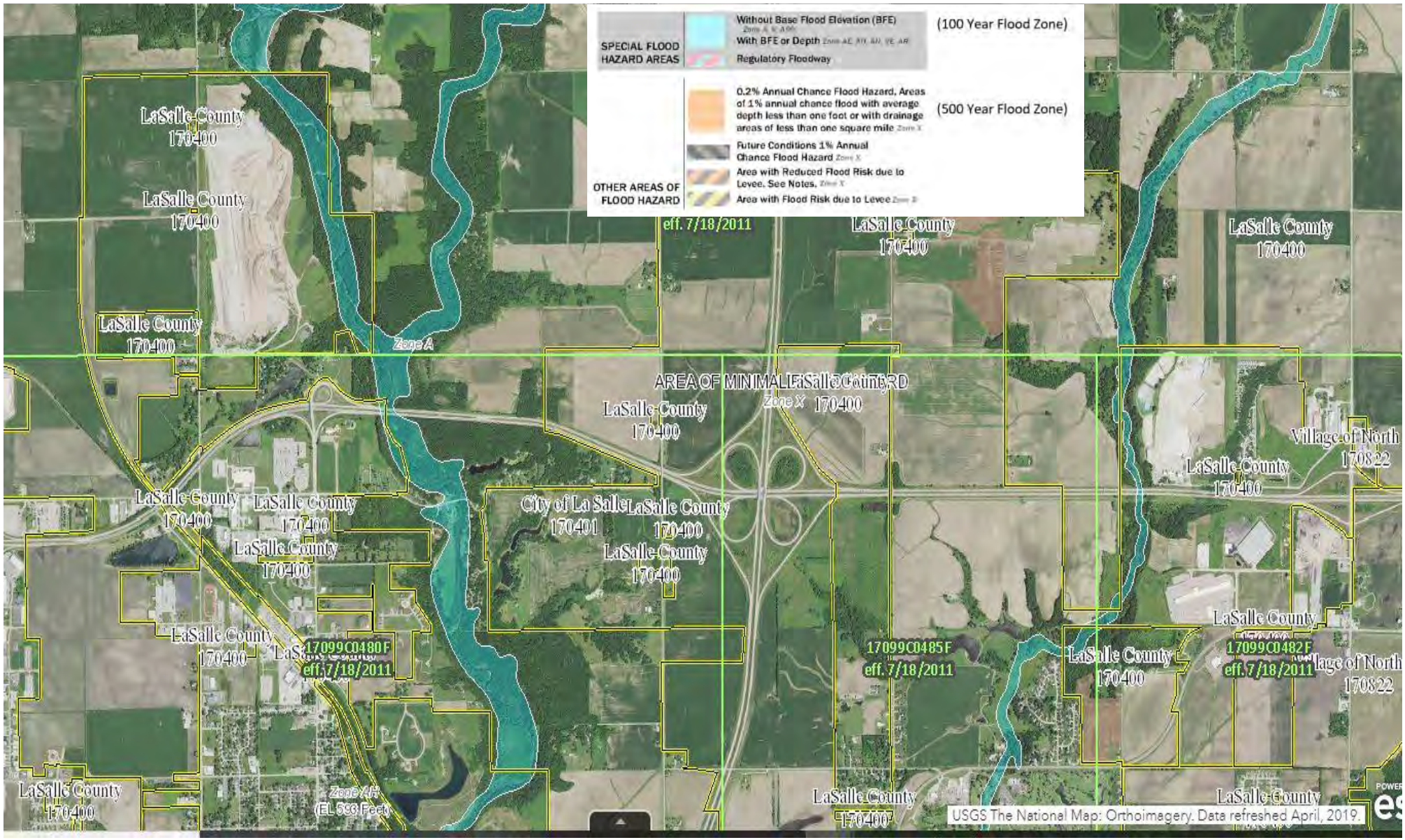
City of LaSalle (Central) 2020

Source: Federal Emergency Management Agency



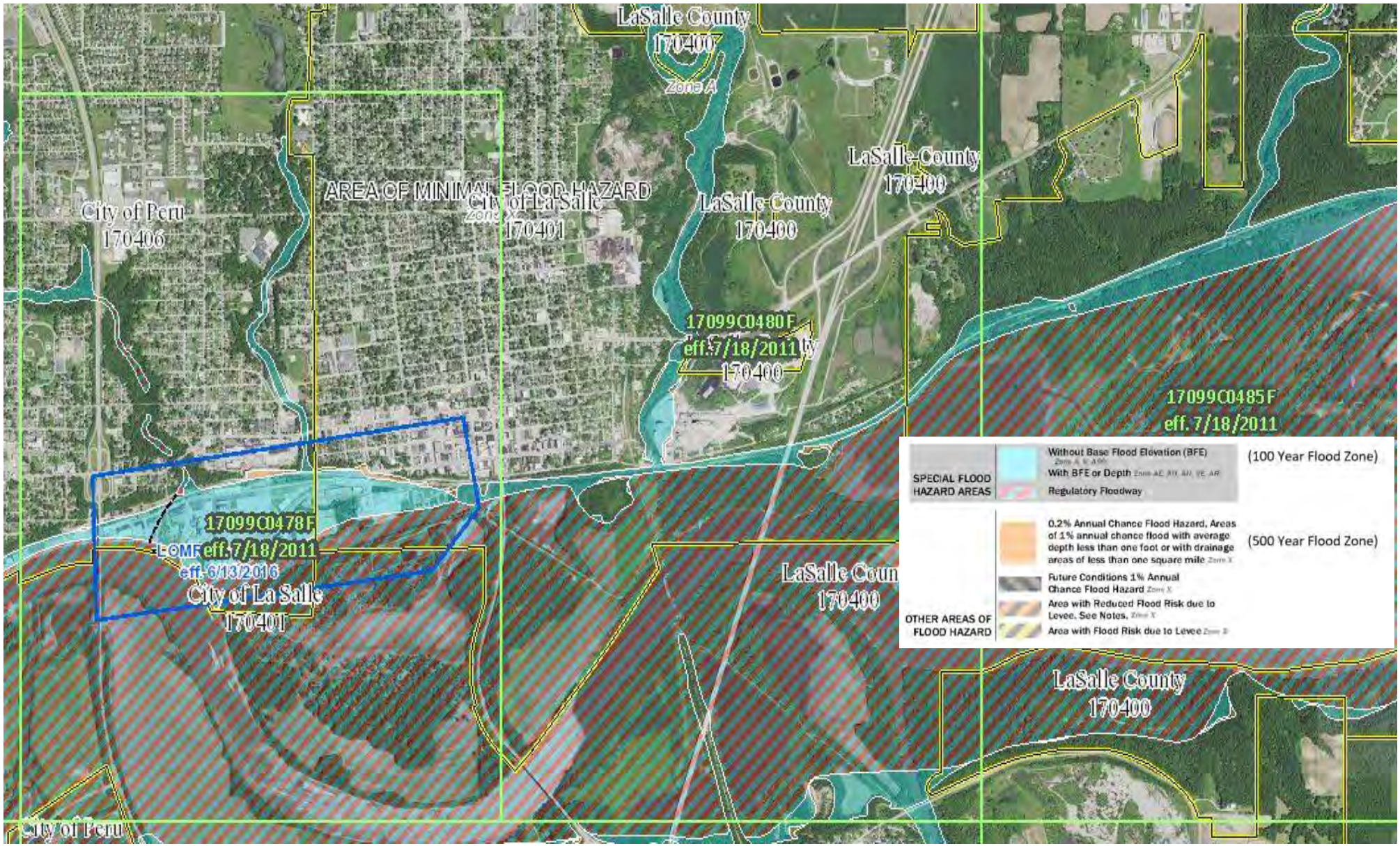
City of LaSalle (North) 2020

Source: Federal Emergency Management Agency



City of LaSalle (South) 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

Village of Leland

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Leland	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of Leland is located 20.6 miles north of Ottawa on Illinois Route 23 in LaSalle County.

Population: 977 (2010 Census), 923 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The Village of Leland has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. A funnel Cloud was spotted in 2016 and 2017 in Leland, no damages to structures or trees were reported. The village has a tornado siren, but does not have any tornado shelters.

Flood Risk: The Village of Leland has a "Low" risk of flooding.

> **Type(s) of Flooding:** Urban Drainage- Surface Water Runoff/ Basement Backups
>
> **Area of Risk:** The FEMA Flood Insurance Rate Map (FIRM) shows a 100-year floodplain on the north side of the village; however, due to changes in elevation no homes are at risk.
>
> **Critical Facilities at Risk:** None
>
> **National Flood Insurance Program Participant:** No
>
> **Community Rating System Participant:** No

Winter Storm Risk: The Village of Leland has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The Village of Leland has a "Medium" risk for extreme temperatures.

Community Risk Assessment

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of Leland has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. On May 6, 200,9 lightning struck a resident's home. The following narrative was submitted to NOAA.

> "Lightning struck a house on Grant Street in Leland. All of the electrical wiring and plumbing in the house was destroyed, but there was no fire. The lightning apparently traveled 300 to 400 feet through the water lines rupturing a water main. The lightning also caused a large hole in the roof and blew out some windows. The occupants of the house were home when the lightning strike occurred but were not injured."

The Village of Leland has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of Leland and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of Leland has a "Low" risk of hail.

Landslides - Based on no previous occurrences and location the Village has no risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- The village does not have a comprehensive plan.
- The village's zoning ordinance was adopted in April 1992.
- The village has adopted International Building Code (IBC) 2001; however, a building inspector only looks at setbacks.
- The village has a storm sewer system, but does not have a sanitary sewer system.
- The fire department has a backup generator. There are no locations for heating or cooling centers.

Community Risk Assessment

- The Village is continuing work in 2020 on the NW side adding storm drainage extension and tiling to mitigate storm flooding.

Mitigation Activities:

1. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board working with LaSalle County officials
   Benefit/Cost: Medium/High
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time/ Cost of Building Inspector
   Revenue Source: Local Funds
   Resources: International Code Council
   Benefits: Communities that are unable to afford a full-time building inspector will have a resource for building inspections.
   Deadline: 3 Years
   Mitigation Type: Education and Awareness Programs
   Activity Status: Carried over into the activities list for this plan.

3. **Mitigation Strategy:** Identify and promote heating and cooling center locations to residents and ensure that such facilities are compliant with the American Disabilities Act (1990) 2010 Standards for Accessibility Design Requirements.
   Hazard Addressed: Extreme Temperatures and Winter Storms
   Responsible Entity or Person: Village Board
   Priority: High, no change since 2015 Plan
   Cost: Staff Time/ Engineer Inspection/ Promotional Expenses

Revenue Source: Local Funds
Resources: 2010 Standards for Accessibility Design Requirements/ Village Engineer
Benefits: Provide a safe environment to residents during extreme periods of cold and heat.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Adopt a Comprehensive Land Use Plan
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/High
   Priority: Low, no change since 2015 Plan
   Cost: Staff Time/Planning Consultant
   Revenue Source: Local Funds/ State Grants
   Resources: Planning Consultant/ Residents/ Public Officials/ Other Stakeholders
   Benefits: Provide the community with an understanding of the village's history, demographics, land use, transportation, and a plan for future development.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board and Staff
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
   Deadline: 1 Year
   Mitigation Type: Education and Awareness Programs
   Activity Status: Carried over into the activities list for this plan.

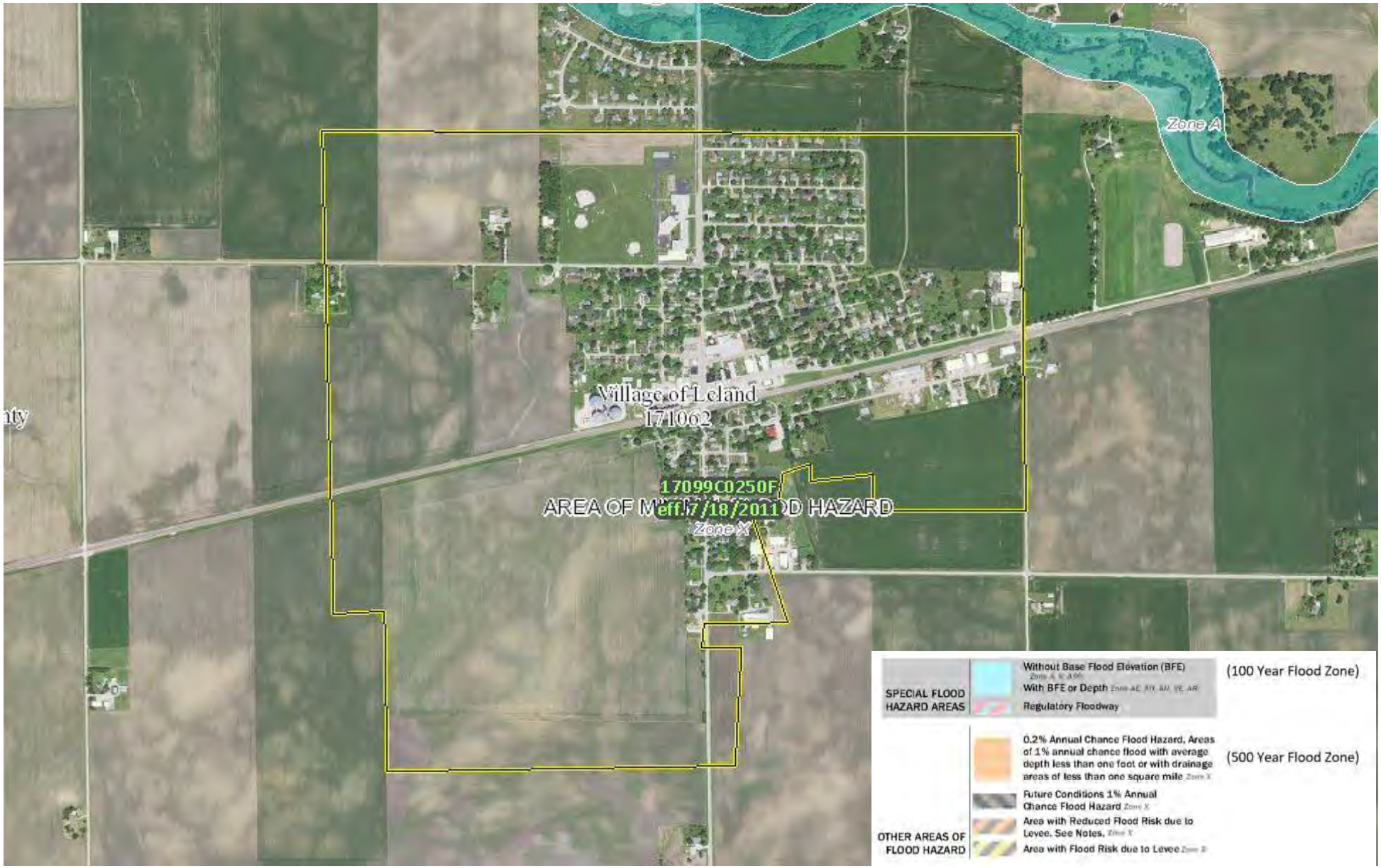
6. **Mitigation Strategy:** Participate in regional planning and mitigation activities and encourage the public to be involved.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: Village Board and Staff
   Benefit/Cost: Medium/Medium
   Priority: Low, no change since 2015 Plan
   Cost: Staff time for attending meetings
   Revenue Source: Local Funds

Resources: LaSalle County Emergency Management Agency/ North Central Illinois Council of Governments
Benefits: Collaboration with neighboring communities provides opportunities to share resources and ideas.
Deadline: 1-5 Years (Ongoing)
Mitigation Type: Education and Awareness Programs
Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: Village Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
   Benefits: Increased awareness and preparedness
   Deadline: 2 Years
   Mitigation Type: Education and Awareness Programs
   Activity Status: New mitigation activity for this plan.

Village of Leland 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

Village of Lostant

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Lostant	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of Lostant is located 22.5 miles southwest of Ottawa on Illinois Route 251 South to Route 39 in LaSalle County.

Population: 498 (2010 Census), 484 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The Village of Lostant has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. In 2000 a tornado was reported in in the Village, but no reported damage. The village has a tornado siren, but does not have any tornado shelters.

Flood Risk: The Village of Lostant has a "Low" risk of flooding.

Type(s) of Flooding: Urban Drainage- Surface Water Runoff/ Basement Backups

Area of Risk: The FEMA Flood Insurance Rate Map (FIRM) shows a 100-year floodplain on the north side of the village; however, due to changes in elevation no homes are at risk.

Critical Facilities at Risk: None

National Flood Insurance Program Participant: No

Community Rating System Participant: No

Winter Storm Risk: The Village of Lostant has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The Village of Lostant has a "Medium" risk for extreme temperatures.

Community Risk Assessment

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of Lostant has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to The Village of Lostant has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of Lostant and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of Lostant has a "Low" risk of hail.

Landslides - Based on no previous occurrences and location the Village has no risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- The 2020 plan is the first time the village participated in the LaSalle County Natural Hazard Mitigation Plan.

Mitigation Activities:

1. **Mitigation Strategy:** Identify and complete projects to minimize surface water flooding issues on Village Streets.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/High
   Priority: High
   Cost: Design/ Engineering/ Construction
   Revenue Source: Local Funds/ State Funds
   Resources: North Central Illinois Council of Governments
   Benefits: Ensure proper drainage of stormwater
   Deadline: 4 years

Mitigation Type: Structure and Infrastructure Projects
Activity Status: New mitigation activity for this plan.

2. **Mitigation Strategy:** Purchase and install outdoor early warning (tornado) sirens in the village
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/High
   Priority: Very High
   Cost: Sirens
   Revenue Source: Local Funds
   Resources: United States Department of Agricultural- Rural Development/ State Appropriation
   Benefits: Provide individuals outside time to take cover from approaching storm.
   Deadline: 2 Years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: New mitigation activity for this plan.

3. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: New mitigation activity for this plan.

4. **Mitigation Strategy:** Identify and promote heating and cooling center locations to residents and ensure that such facilities are compliant with the American Disabilities Act (1990) 2010 Standards for Accessibility Design Requirements.
   Hazard Addressed: Extreme Temperatures and Winter Storms
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/Low
   Priority: Low
   Cost: Staff Time/ Promotional Expenses
   Revenue Source: Local Funds
   Resources: 2010 Standards for Accessibility Design Requirements
   Benefits: Provide a safe environment to residents during extreme periods of cold and heat.

Deadline: 1 Year
Mitigation Type: Structure and Infrastructure Projects
Activity Status: New mitigation activity for this plan.

5. **Mitigation Strategy:** Adopt a Comprehensive Land Use Plan
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/High
   Priority: Low
   Cost: Staff Time/Planning Consultant
   Revenue Source: Local Funds/ State Grants
   Resources: Planning Consultant/ Residents/ Public Officials/ Other Stakeholders
   Benefits: Provide the community with an understanding of the village's history, demographics, land use, transportation, and a plan for future development.
   Deadline: 3 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

6. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board working with LaSalle County officials
   Benefit/Cost: Medium/High
   Priority: Medium
   Cost: Staff Time/ Cost of Building Inspector
   Revenue Source: Local Funds
   Resources: International Code Council
   Benefits: Communities that are unable to afford a full-time building inspector will have a resource for building inspections.
   Deadline: 3 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

7. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: Village Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency

Community Risk Assessment

Benefits: Increased awareness and preparedness
Deadline: 2 Years
Mitigation Type: Education and Awareness Programs
Activity Status: New mitigation activity for this plan.

Village of Lostant (No Floodplain) 2020

Source: Federal Emergency Management Agency

Community Risk Assessment

City of Marseilles

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Marseilles	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Medium**	**Low**

Location: The City of Marseilles is located 8.3 miles east of the City of Ottawa on U.S. Route 6 in LaSalle County.

Population: 5,094 (2010 Census), 4,873 (2018 estimate)

Major Storm Events since February 2008:

Since February 2008, the City of Marseilles has experienced three (3) floods that have caused significant damage.

- June 14 & 22, 2015: Heavy rain caused flash flooding in downtown Marseilles. The roads became impassable because of the flooding.
- September 9-18, 2008 Flood: Heavy rains associated with Hurricane Ike and Tropical Storm Gustav impacted much of the region and caused record flooding along the Illinois River. The pool above the Marseilles Dam reached an elevation of 486.84 feet, almost four (4) feet higher than normal elevation, on September 18, 2008. City workers and volunteers placed 1,000 sandbags on the levee surrounding the waste water treatment plant (WWTP) to prevent flooding. Their efforts were successful to protect the facility from river flooding, but the plant's pumps were unable to keep up with the increased flow of the sanitary sewer system. The flow exceeded the facility's capacity. The plant was inundated with water which caused basement backups in 400 homes. Surface water flooding impacted homes on Commercial Street and the Marseilles Public Works Building, ADM terminal, and ADM offices were flooded.
- July 2011 Flood: Heavy rains resulted in basement flooding throughout the lower part of the city. Pacific Street was greatly impacted.
- April 8-18, 2013: Less than five (5) years after a record-breaking flood, the City of Marseilles was once again subject to severe flooding. Over the course of a week, a slow-moving storm dropped upwards of 10 inches of rain across the region. The City of Marseilles recorded 6.55 inches of rain at their WWTP between April 8-18. On the evening of April 18, the levee on the north bank of the Illinois River behind the elementary school was

breached. As a result, 1,500 residents were evacuated and 200 homes, along with the elementary school, were flooded. A lift station being constructed to alleviate flooding issues from 2008 was also flooded.

The bridge crossing the Illinois River in Marseilles was closed because of flooding and the Illinois Valley Cellular building, west of the bridge, was flooded.

On the evening of April 18, 2013, a towing vessel pushing 14 barges was approaching the Marseilles Lock from the east. The vessel was attempting to enter the Marseilles Canal (not to be confused with the abandoned Illinois and Michigan Canal). Despite the assistance of three (3) other towing vessels, the barge was unable to pass through the canal because of strong cross currents. Several barges broke loose, hit the dam, and sank. Five (5) of the eight (8) gates on the dam were damaged and water flow was impeded. According to a National Transportation Safety Board report, miscommunication between all parties involved in the decision to move the barges may have contributed to the outcome. The report notes that the accident likely worsened flooding in the city.

The total cost of damages created by the 2013 flood was in the millions. Repairs to the elementary school cost $6 million alone. The Army Core of Engineers is in the process of repairing the Marseilles Dam, which sustained $50 million in damages.

Tornado Risk: The City of Marseilles has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The city utilizes its fire whistle as a tornado siren. Two (2) additional sirens are needed. The city has limited access to the LaSalle County Generating Station's warning sirens.

Flood Risk: Despite catastrophic flooding in 2013, the City of Marseilles has a "Low" risk of flooding. This risk is based on the number of flood events (8) that have been reported to NOAA since 1965. Climate change and future land use decisions will impact the city's long-term risk.

Type(s) of Flooding: Riverine Flooding/ Urban Drainage- Surface Water Runoff/ Basement Flooding & Backups

Area of Risk: Most areas of the city that are at risk of flooding are not located in a 100-year floodplain. According to the FEMA Flood Insurance Rate Map (FIRM) for the city, the area east of Main Street and south of the Illinois and Michigan Canal (Tolin Street) is not in a floodplain. This area sustained extensive damage in 2013 after the barge accident. A temporary dike has been constructed while construction on the dam continues. If a 100-year flood occurs before the completion of repairs on the dam, the impact could be catastrophic. It is important to note, that the levy that was topped was not designed to prevent flooding, but to control the pool on the north side of the dam.

Riverfront Drive (Illinois Valley Cellular building) west of Main Street is not located in a floodplain either, but flooded in 2013.

The city has identified other areas that are at risk of flooding including:

Community Risk Assessment

Long Creek- Water backs up on to Young Street.

The Illinois and Michigan Canal (I & M) - The canal has silted in over the years, which causes water to top the canal's banks during heavy periods of rain. Aurora and Young Streets have been flooded by the canal. The I & M Canal tops its banks near Wallace Street allowing water to enter the sanitary sewer system.

Gum Creek- Located on the east edge of the city, the creek overflows onto Union Street.

Basement backups are common throughout the city when the sanitary sewer system has reached capacity. The city has separate sanitary and storm sewer systems, but illegal hookups and other sources of inflow and infiltration can overwhelm the system.

Critical Facilities at Risk: The city's waste water treatment plant is at risk of flooding although it is not located in a 100-year floodplain. City staff and volunteers sandbagged the levee surrounding the WWTP in 2008 and 2013.

National Flood Insurance Program Participant: Yes

Community Rating System Participant: No

Winter Storm Risk: The City of Marseilles has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The City of Marseilles has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The City of Marseilles has a "High" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The City of Marseilles has a "Low" risk of lightning that could result in property damage or bodily harm.

Community Risk Assessment

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The City of Marseilles and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The City of Marseilles has a "Low" risk of hail.

Landslides: Based on no previous occurrences and location, the City has no risk of landslides occurring.

Wildfires: Based on no previous occurrences and ground cover, the City has a no risk of wildfires occurring.

Additional Information:

- The city's comprehensive plan was updated in 2014. The plan includes a section on flooding issues.
- The city has adopted International Building Code (IBC) 2003. New construction is inspected.
- The city's zoning ordinance was adopted in 1989. It addresses the National Flood Insurance Program (NFIP).
- The fire department can serve as a heating and cooling center.
- The city has backup generators at the fire department and at the waste water treatment plant.
- The City of Marseilles is a StormReady community. The city utilizes CodeRED, an emergency notification system.
- Expanded the storm sewer system and built storm retention areas, i.e. Perry Street and Fillebrowne Street.
- Keeping drainage structures clear in critical areas.
- Built a floodwall around the sewage treatment plant completed 2019.

Pictures of completed floodwall at WWTP.

Community Risk Assessment

Pictures of flood water at WWTP on May 19, 2020

Mitigation Activities:

1. **Mitigation Strategy:** Implement a program to check illegal connections to the sanitary sewer system.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council and Building/Zoning Officials
   Benefit/Cost: Medium/Low
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds

Resources: Examine policies of other communities
Benefits: Minimize basement backups and the waste water treatment plant from being overwhelmed.
Deadline: 2 Years
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council and Staff
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
   Deadline: 1 Year
   Mitigation Type: Education and Awareness
   Activity Status: Carried over into the activities list for this plan.

3. **Mitigation Strategy:** Participate in the development of a regional stormwater management ordinance that will reduce flooding and protect lives, property, and the environment.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
   Benefits: Minimize the adverse impact of stormwater on communities.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Enforce regulations and ordinances that pertain to development in floodplains.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/Zoning and Building Official
   Benefit/Cost: Medium/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: General Fund
   Resources: City Zoning Official

Benefits: Restrict development that places lives at risk; reduce the physical and financial impact of flooding; restore the floodplain to its natural purpose.
Deadline: 1-5 Years (Ongoing)
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Restrict construction of projects that may increase flooding impacts (i.e. levees, buildings, dams, filling, etc.)
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/Zoning and Building Official
   Benefit/Cost: Medium/Medium
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: City Zoning Official
   Benefits: Prohibit activities that may have an adverse impact on communities and property owners.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Participate in the National Flood Insurance Program's Community Rating System to help residents save on flood insurance premiums.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: Low, no change since 2015 Plan
   Cost: Varies depending on activities pursued
   Revenue Source: Local Funds
   Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
   Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low

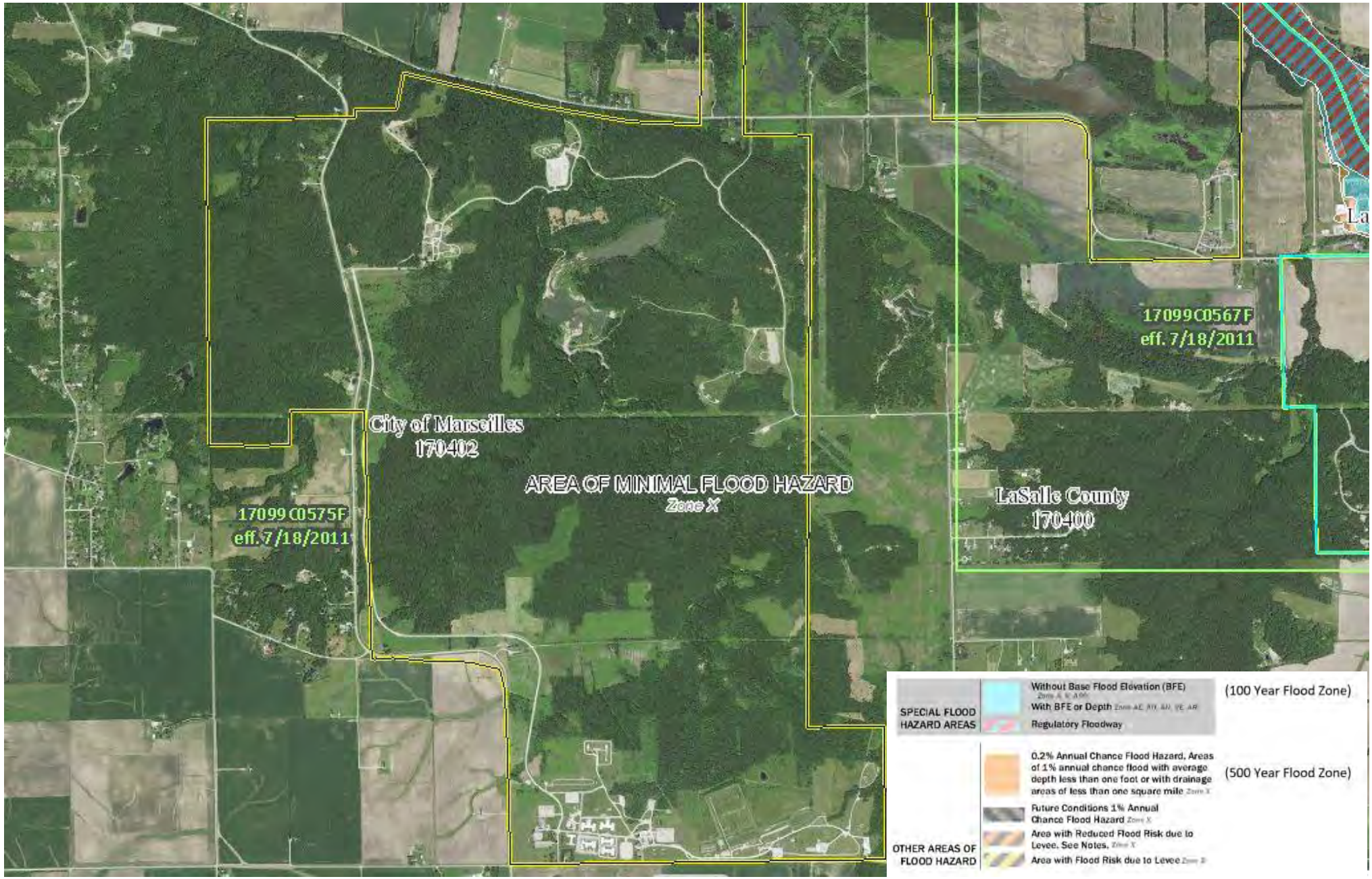
Priority: Very High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

8. **Mitigation Strategy:** Work together as a region to share resources and to create opportunities for the public to be engaged and informed about the risks of natural hazards and mitigation activities.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: City Council
   Benefit/Cost: High/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Other communities/ North Central Illinois Council of Governments
   Benefits: Collaboration provides opportunities to share ideas and resources.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Education and Awareness
   Activity Status: Carried over into the activities list for this plan.

9. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: City Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
   Benefits: Increased awareness and preparedness
   Deadline: 2 Years
   Mitigation Type: Education and Awareness Programs
   Activity Status: New mitigation activity for this plan.

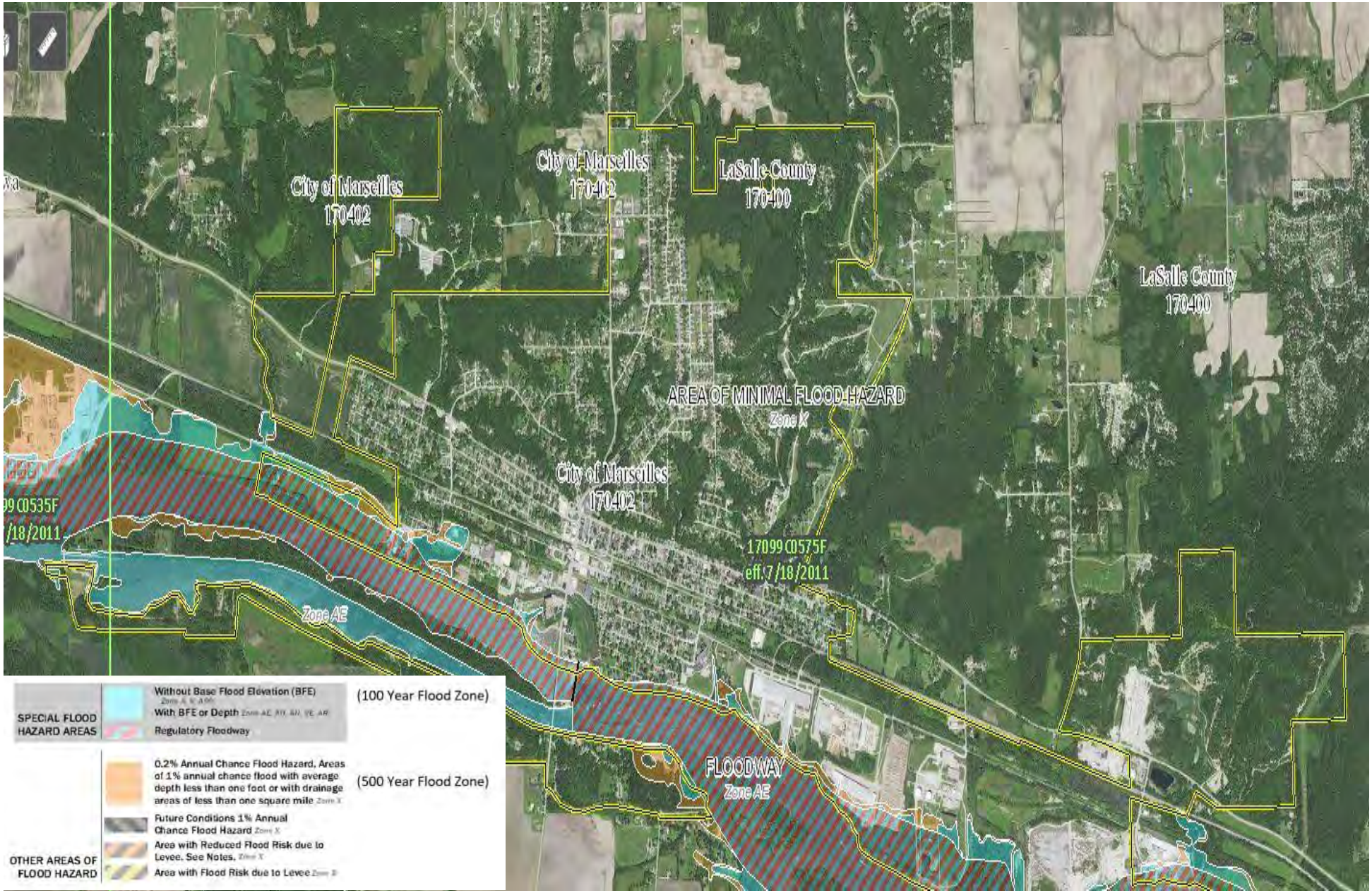
City of Marseilles (South) 2020

Source: Federal Emergency Management Agency



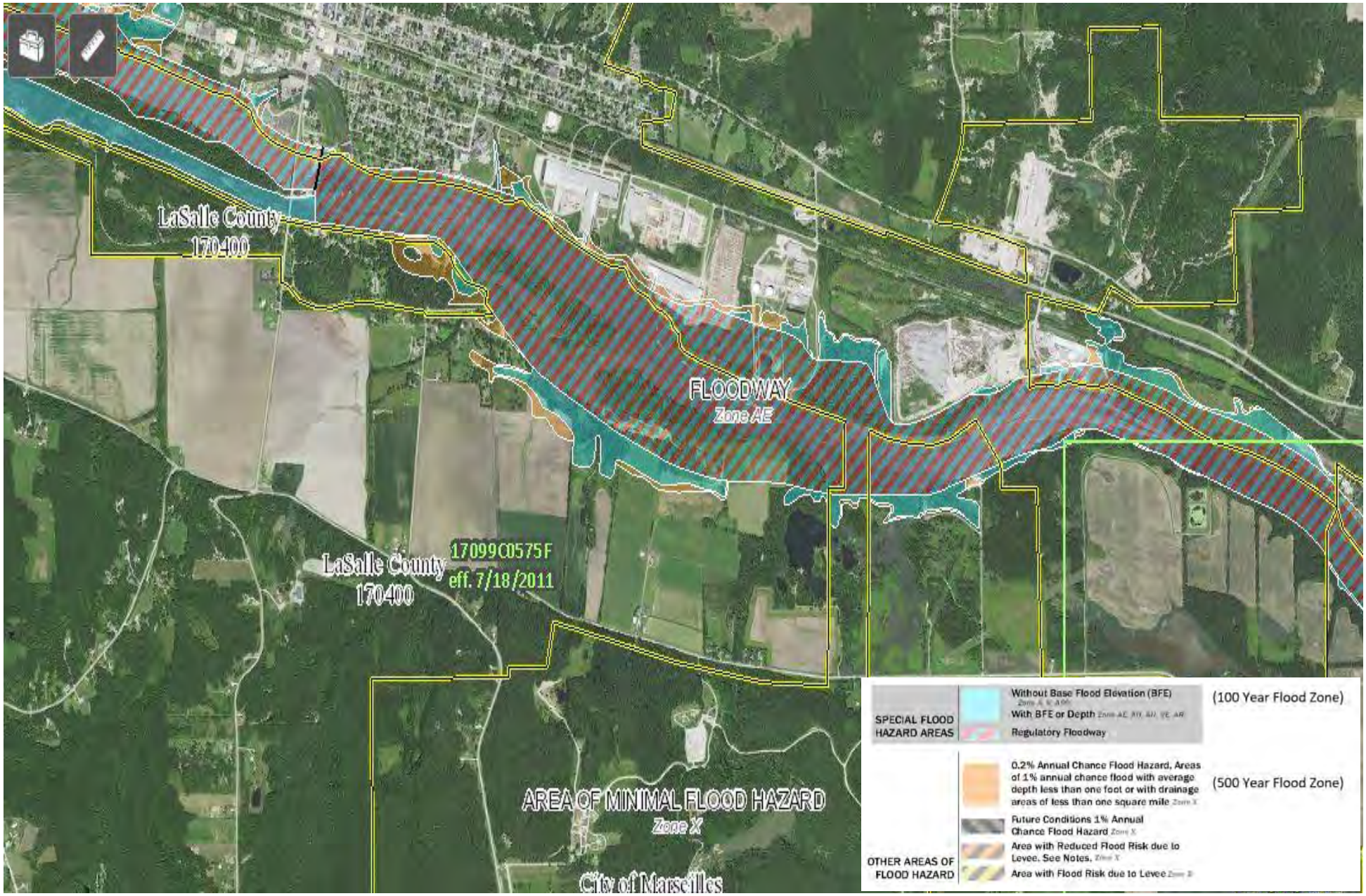
City of Marseilles (North) 2020

Source: Federal Emergency Management Agency



City of Marseilles (Central) 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

City of Mendota

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Mendota	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Medium**	**Low**

Location: The City of Mendota is located on I-39, Rt 251 and US Route 24, 30.5 miles northwest of Ottawa using I-80 West to I-39 north in LaSalle County.

Population: 7,372 (2010 Census), 7,057 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The City of Mendota has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years.

Flood Risk: The City of Mendota has a "Low" risk of flooding.

> **Type(s) of Flooding:** Urban Drainage- Surface Water Runoff/ Basement Backups
>
> **Area of Risk:** The FEMA Flood Insurance Rate Map (FIRM) shows a 100-year floodplain on the passes through the city in several locations. Lake Kakusha was constructed in 1976 to help control flooding.
>
> **Critical Facilities at Risk:** The WWTP in the south of the city is located in the floodplain.
>
> **National Flood Insurance Program Participant:** Yes
>
> **Community Rating System Participant:** No

Winter Storm Risk: The City of Mendota has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The City of Mendota has a "Medium" risk for extreme temperatures.

Community Risk Assessment

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The City of Mendota has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to The City of Mendota has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The City of Mendota and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The City of Mendota has a "Low" risk of hail.

Landslides: Based on no previous occurrences and location, the City has no risk of landslides occurring.

Wildfires: Based on no previous occurrences and ground cover, the City has no risk of wildfires occurring.

Additional Information:

- The 2020 plan is the first time the city participated in the LaSalle County Natural Hazard Mitigation Plan.
- The city has adopted the International Building Codes
- The 2 viaducts in the city flood on occasion with heavy rains. Pumps are there to assist in removing stormwater.
- The city does have a stormwater management ordinance
- The city does have a zoning ordinance that address floodplain
- First Avenues has occasional closures due to stormwater flowing over the roadway

Mitigation Activities: (Work with community to develop)

1. **Mitigation Strategy:** Identify and repair walls along Mendota Creek as it passes through the city.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/ High
   Priority: High
   Cost: Construction
   Revenue Source: Local Funds and state and federal grant funds when available

Resources: City Engineer
Benefits: Stop deterioration of the creek banks and keep water way clear to deter blockage of creek.
Deadline: 2 Years
Mitigation Type: Structure and infrastructure projects
Activity Status: New mitigation activity for this plan.

2. **Mitigation Strategy:** Identify and repair/replace locations of inflow and infiltration into the sanitary sewer lines.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/ High
   Priority: Medium
   Cost: Construction
   Revenue Source: Local Funds and grant funds when available
   Resources: City Engineer
   Benefits: Reduce inflow and infiltration that can overwhelm the waste water treatment plant and cause basement backups.
   Deadline: 2 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: New mitigation activity for this plan.

3. **Mitigation Strategy:** Seek and implement further remedies to lessen flooding of 2 viaducts when heavy rains occur.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/ High
   Priority: High
   Cost: Construction
   Revenue Source: Local Funds and state and federal grant funds when available
   Resources: City Engineer
   Benefits: Minimize roadway flooding hazard
   Deadline: 4 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: New mitigation activity for this plan.

4. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Department, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High

Cost: Staff Time
Revenue Source: Local Funds
Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: New mitigation activity for this plan.

5. **Mitigation Strategy:** Purchase and install updated outdoor early warning (tornado) sirens in the city and network with county and other communities in county. Make sure gaps of coverage in the city are eliminated.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: Very High
   Cost: Sirens
   Revenue Source: Local Funds and grants if available
   Resources: United States Department of Agricultural- Rural Development/ State Appropriation
   Benefits: Provide individuals outside time to take cover from approaching storm.
   Deadline: 1 Year
   Type of Mitigation Action: Structure and Infrastructure Projects
   Activity Status: New mitigation activity for this plan.

6. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: City Council working with LaSalle County Officials
   Benefit/Cost: Medium/High
   Priority: Medium
   Cost: Staff Time/ Cost of Building Inspector
   Revenue Source: Local Funds
   Resources: International Code Council
   Benefits: Communities that are unable to afford a full-time building inspector will have a resource for building inspections.
   Deadline: 3 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

7. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policies.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/Low

Priority: High
Cost: Minimal/Letters to residents
Revenue Source: Local Funds
Resources: Insurance agencies/ Federal Emergency Management Agency
Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
Deadline: 1 Year
Mitigation Type: Education and awareness
Activity Status: New mitigation activity for this plan.

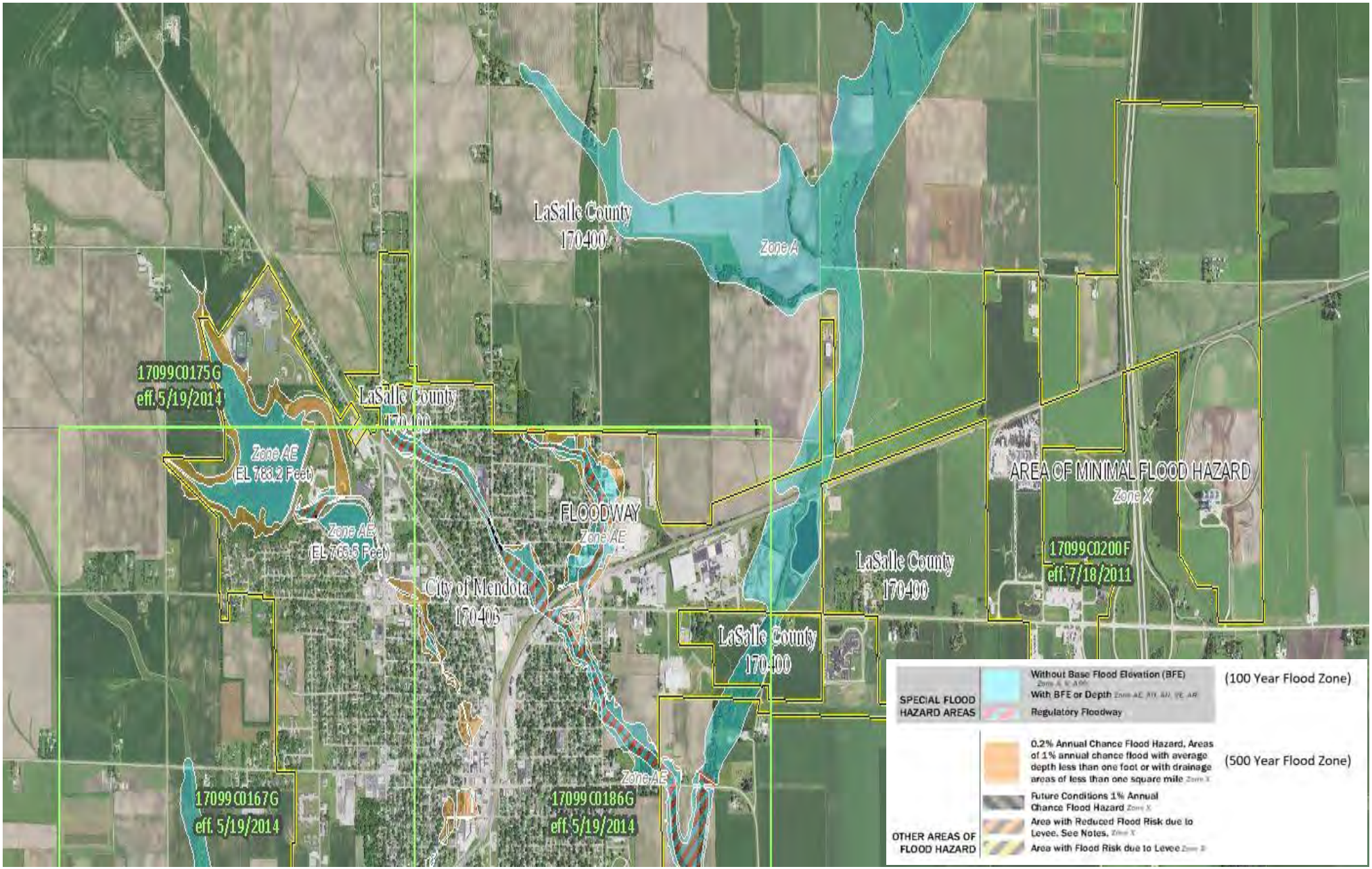
8. **Mitigation Strategy:** Update Comprehensive Land Use Plan and include natural hazard mitigation discussion in the plan.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/High
   Priority: Medium
   Cost: Staff Time/Planning Consultant
   Revenue Source: Local Funds/ State Grants
   Resources: Planning Consultant/ Residents/ Public Officials/ Other Stakeholders
   Benefits: Provide the community with an understanding of the city's history, demographics, land use, transportation, and a plan for future development.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

9. **Mitigation Strategy:** Participate in regional planning and mitigation activities and encourage the public to be involved.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: City Council and Staff
   Benefit/Cost: Medium/Medium
   Priority: Low
   Cost: Staff time for attending meetings
   Revenue Source: Local Funds
   Resources: LaSalle County Emergency Management Agency/ North Central Illinois Council of Governments
   Benefits: Increased collaboration with neighboring communities provides opportunities to share resources.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

10. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
    Hazard Addressed: All identified hazards
    Responsible Entity or Person: City Staff
    Benefit/Cost: Medium/Low
    Priority: Low, no change, new activity for this plan.
    Cost: Staff time
    Revenue Source: Federal, state, local or grant funds
    Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
    Benefits: Increased awareness and preparedness
    Deadline: 2 Years
    Mitigation Type: Education and Awareness Programs
    Activity Status: New mitigation activity for this plan.

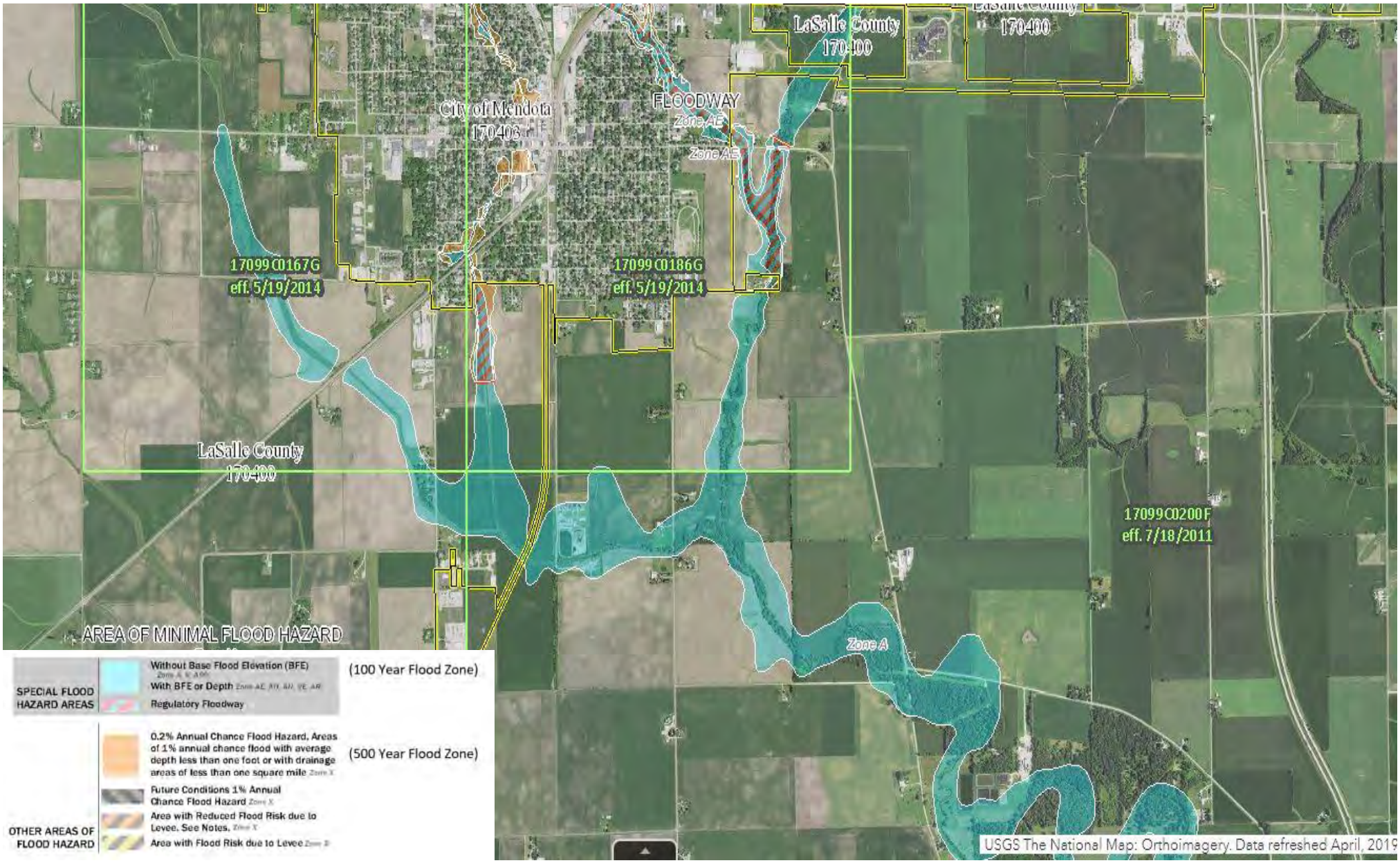
City of Mendota (North) 2020

Source: Federal Emergency Management Agency



City of Mendota (South) 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

Village of Naplate

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Naplate	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of Naplate is located 2.4 miles west of Ottawa in LaSalle County.

Population: 496 (2010 Census), 476 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The Village of Naplate has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. On February 28, 2017 an EF-3 tornado struck the Village. The tornado caused extensive damage to residential homes and structures, civic buildings, private property, trees, and businesses. Dozens of homes were destroyed or damaged from the strength of the tornado. The Pilkington Glass Plant sustained major damage as well.

Flood Risk: The Village of Naplate has a "Low" risk of flooding.

> **Type(s) of Flooding:** Urban Drainage- Surface Water Runoff/ Basement Backups
>
> **Area of Risk:** The FEMA Flood Insurance Rate Map (FIRM) shows a 100-year floodplain on the north side of the village; however, due to changes in elevation no homes are at risk.
>
> **Critical Facilities at Risk:** None
>
> **National Flood Insurance Program Participant:** No
>
> **Community Rating System Participant:** No

Winter Storm Risk: The Village of Naplate has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The Village of Naplate has a "Medium" risk for extreme temperatures.

Community Risk Assessment

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of Naplate has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to The Village of Naplate has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of Naplate and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of Naplate has a "Low" risk of hail.

Landslides - Based on no previous occurrences and location the Village has no risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- The 2020 plan is the first time the village participated in the LaSalle County Natural Hazard Mitigation Plan.
- The village installed new tornado siren in 2018.

Mitigation Activities:

1. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/Low
   Priority: High
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.

Deadline: 1 Year
Mitigation Type: Education and Awareness
Activity Status: New mitigation activity for this plan.

2. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

3. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/High
   Priority: Medium
   Cost: Staff Time/ Cost of Building Inspector
   Revenue Source: Local Funds
   Resources: International Code Council
   Benefits: Communities unable to afford a full-time building inspector will have a resource for building inspections.
   Deadline: 3 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

4. **Mitigation Strategy:** Improve local hazardous weather operations by becoming a StormReady community.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Hail
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/Medium
   Priority: Medium
   Cost: Staff Time

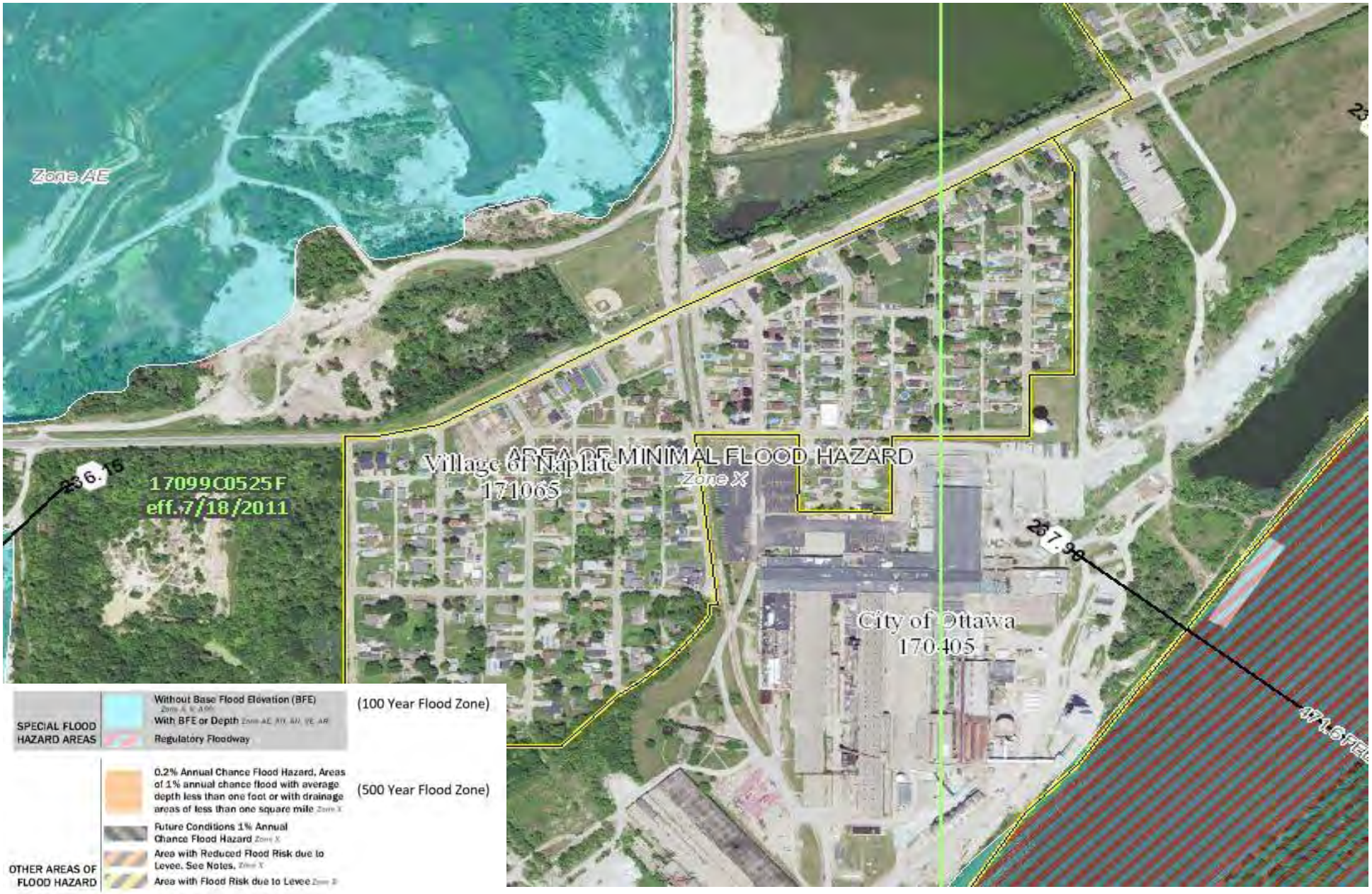
Revenue Source: Local Funds
Resources: Weather Spotters/ Emergency Responders –Fire, Police, Paramedics/ Emergency Management Personnel
Benefits: Immediate disbursement of information to residents during severe weather.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: New mitigation activity for this plan.

5. **Mitigation Strategy:** Participate in the National Flood Insurance Program's Community Rating System to help residents save on flood insurance premiums.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board/ Village Building and Zoning Official/ Village Engineer
   Benefit/Cost: High/High
   Priority: Medium
   Cost: Varies depending on activities pursued
   Revenue Source: Local Funds
   Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
   Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

6. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: Village Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
   Benefits: Increased awareness and preparedness
   Deadline: 2 Years
   Mitigation Type: Education and Awareness Programs
   Activity Status: New mitigation activity for this plan.

Village of Naplate 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

Village of North Utica

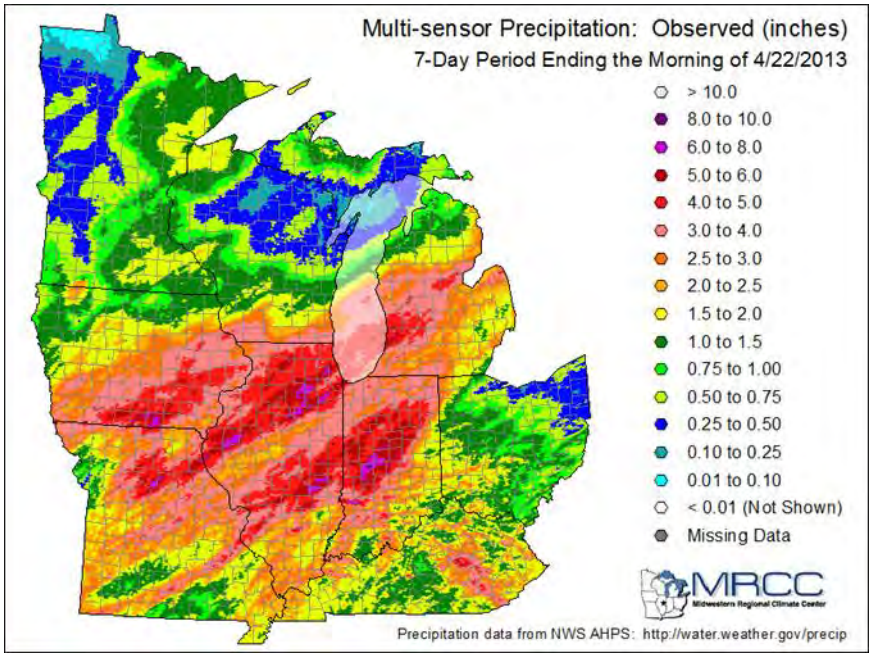
Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
North Utica	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of North Utica is located nine (9) miles west of the City of Ottawa in LaSalle County. The village sits along the north shore of the Illinois River.

Population: 1,352 (2010), 1,346 (2018 estimate)

Major Storm Events since February 2008:

- September 18, 2008 Flood: Heavy rain associated with Hurricane Ike and Tropical Storm Gustav impacted much of the region and caused record flooding along the Illinois River. Several feet of water covered Clark Street. Twenty-five (25) homes and up to 15 businesses were damaged south of the Illinois and Michigan (I&M) Canal. Residents were evacuated from the area and County Route 178 leading to Starved Rock was closed. The power to the station was shut off and the village's elementary school was also closed. The recently-built village hall was spared damage by the 2008 flood. The waste water treatment plant was not impacted.
- April 17-19, 2013 Flood: A slow-moving storm drenched the region with as much as 10 inches of rain causing widespread flooding along the Illinois River. Flooding once again inundated the village south of the I&M Canal. Up to 35 homes or businesses were flooded. Despite being constructed 1.5 feet higher than the 100-year flood elevation, the village hall took on water. Route 178 was closed.



Community Risk Assessment

Tornado Risk: The Village of North Utica has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The village has tornado sirens and a tornado shelter at Carey Memorial Park. The shelter also serves as restroom facility. The village is aware of the devastation caused by tornadoes. On April 20, 2004 an F3 (previous scale system) hit the community destroying or severely damaging several homes and businesses and toppling trees and power lines. Eight (8) people lost their lives and seven (7) had to be rescued from a sandstone building that collapsed on Clark and Church Streets. On February 28, 2017 an EF3 tornado touched down at North Utica Airpark Airport with 14 injuries and 2 deaths reported.

Flood Risk: Despite the community having record flooding in 2008 and 2013, and 2019 North Utica's flood is risk is "Low". This determination was based on the number of floods and heavy rain events over the past 50 years reported to NOAA (only three (3)). Climate change and land development are likely to impact the community's future long-term risk beyond the five (5)-year scope of this plan.

Type(s) of Flooding: Riverine Flooding/ Urban Drainage- Surface Water Runoff

Area of Risk: The village's FEMA Flood Insurance Rate Map (FIRM) shows that most of the village, south of the bluff (Lincoln Street), is located in a 100-year floodplain. The village has two (2) primary sources of flooding: the Illinois River on the south edge of the village and Clark Run, which runs on the north edge of downtown.

The village has been proactive in eliminating the flood risk from Clark Run. Several mobile homes have been purchased and removed from the floodplain.

During 2013, the Illinois River flooded from Dee Bennett Road to Willows Hotel on Clark Street and East and West of Illinois Route 178. This area needs to be assessed to determine how to reduce the impact of future floods.

Critical Facilities at Risk: The village's waste water treatment plant and village hall are located less than one (1) half mile north of the Illinois River and are located within a 100-year floodplain.

National Flood Insurance Program Participant: Yes

Community Rating System Participant: The village's participation in the Community Rating System has been rescinded by FEMA. The village is working to identify activities that will bring the village into compliance with CRS requirements.

Winter Storm Risk: The Village of North Utica has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Community Risk Assessment

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The Village of North Utica has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of North Utica has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The Village of North Utica has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of North Utica and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of North Utica has a "Low" risk of hail.

Landslides - Based on no previous occurrences and location the Village has no risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- Realignment of Route 178 likely prevented flooding north of the I&M Canal in 2013.
- An upsized drainage structure that was constructed near the rail bridge on Clark Run has greatly reduced the likelihood of flooding the downtown.

Community Risk Assessment

- The village's storm and sanitary sewers remain combined in some locations. Subdivisions north of the bluff have septic systems.
- The village hall can serve as a heating and cooling center.
- The village updated the comprehensive plan in 2016 and has a disaster plan which both reflect flooding issues.
- The village has a stormwater management ordinance
- The Utica Fire Protection District is located north of the downtown near U.S. Route 6. A railroad crosses Illinois Route 178 and Mill Street and separates responders from the majority of the village.

Mitigation Activities:

1. **Mitigation Strategy:** Construct a box culvert along Clark Street to divert water from Clark run to the Illinois and Michigan Canal. (*FEMA PDM funds were applied for but was not selected for further review – need additional H&H studies completed before it can be funded. FEMA BRIC program may be an avenue for funding for these needed studies*)
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: High /High
   Priority: High, no change since 2015 Plan
   Cost: $1, 200,000 *Estimate need updated*
   Revenue Source: Local Funds/ State and Federal Grants
   Resources: North Central Illinois Council of Governments/ Illinois Department of Commerce and Economic Opportunity/ Federal Emergency Management Agency
   Benefits: Reduce the risk of flooding downtown North Utica.
   Deadline: 3-5 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: Carried over into the activities list for this plan. (FEMA PDM funds were applied for but was not selected for further review – need additional H&H studies completed before it can be funded. FEMA BRIC program may be an avenue for funding for these needed studies)

2. **Mitigation Strategy:** Consider options to prevent the village hall from flooding, including floodproofing, elevation, and relocation. Identify an option and take action.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: High /High
   Priority: High, no change since 2015 Plan
   Cost: Design/ Engineering/ Construction
   Revenue Source: Local Funds/ State and Federal Grants
   Resources: North Central Illinois Council of Governments/ Illinois Department of Commerce and Economic Opportunity/ Federal Emergency Management Agency
   Benefits: Ensure that the village hall is accessible at all times and avoid costly repairs.
   Deadline: 5 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: Carried over into the activities list for this plan.

Community Risk Assessment

3. **Mitigation Strategy:** Develop a plan, through a public process, that identifies actions and projects that will minimize the impact of river flooding on homes and businesses from Dee Bennett Road to the Willows Hotel (both sides of Illinois Route 178 are impacted).
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: High /High
   Priority: Very High, no change since 2015 Plan
   Cost: Depends on actions taken
   Revenue Source: Local Funds/ State and Federal Grants
   Resources: Illinois Emergency Management Agency/ Federal Emergency Management Agency/ Homeowners/ Businesses / North Central Illinois Council of Governments
   Benefits: Become more disaster resilient, minimize flood damage, and reduce the threat to the public's health and safety.
   Deadline: 3 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Identify actions to become compliant with the National Flood Insurance Program's Community Rating System.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board/ Director of Village Affairs/ Village Building and Zoning Official
   Benefit/Cost: High/Medium
   Priority: High, no change since 2015 Plan
   Cost: Varies depending on activities pursued
   Revenue Source: Local Funds
   Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
   Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board and Staff
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.

Deadline: 1 Year (ongoing)
Mitigation Type: Education and awareness
Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Participate in the development of a county stormwater management ordinance that will reduce flooding and protect lives, property, and the environment.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
   Benefits: Minimize the adverse impact of stormwater on communities.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Restrict construction of projects that may increase flooding impacts (i.e. levees, buildings, dams, filling, etc.)
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board/ Building and Zoning Official
   Benefit/Cost: Medium/Medium
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Ordinances
   Benefits: Prohibit activities that may have an adverse impact on communities and property owners.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

8. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.

Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

9. **Mitigation Strategy:** Purchase and install updated outdoor early warning (tornado) sirens in the village and network with county and other communities in county. Make sure gaps of coverage in the village are eliminated.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/High
   Priority: Very High
   Cost: Sirens
   Revenue Source: Local Funds and grants if available
   Resources: United States Department of Agricultural- Rural Development/ State Appropriation
   Benefits: Provide individuals outside time to take cover from approaching storm.
   Deadline: 1 Year
   Type of Mitigation Action: Structure and Infrastructure Projects
   Activity Status: New mitigation activity for this plan.

10. **Mitigation Strategy:** Work together with other partners to share resources and to create opportunities for the public to be engaged and informed about the risks of natural hazards and mitigation activities.
    Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Hail
    Responsible Entity or Person: Village Board
    Benefit/Cost: Medium/Medium
    Priority: High, no change since 2015 Plan
    Cost: Staff Time
    Revenue Source: Local Funds
    Resources: Other communities/ North Central Illinois Council of Governments
    Benefits: Collaboration provides opportunities to share ideas and resources.
    Deadline: 1-5 Years (Ongoing)
    Mitigation Type: Local Plans and Regulations
    Activity Status: Carried over into the activities list for this plan.

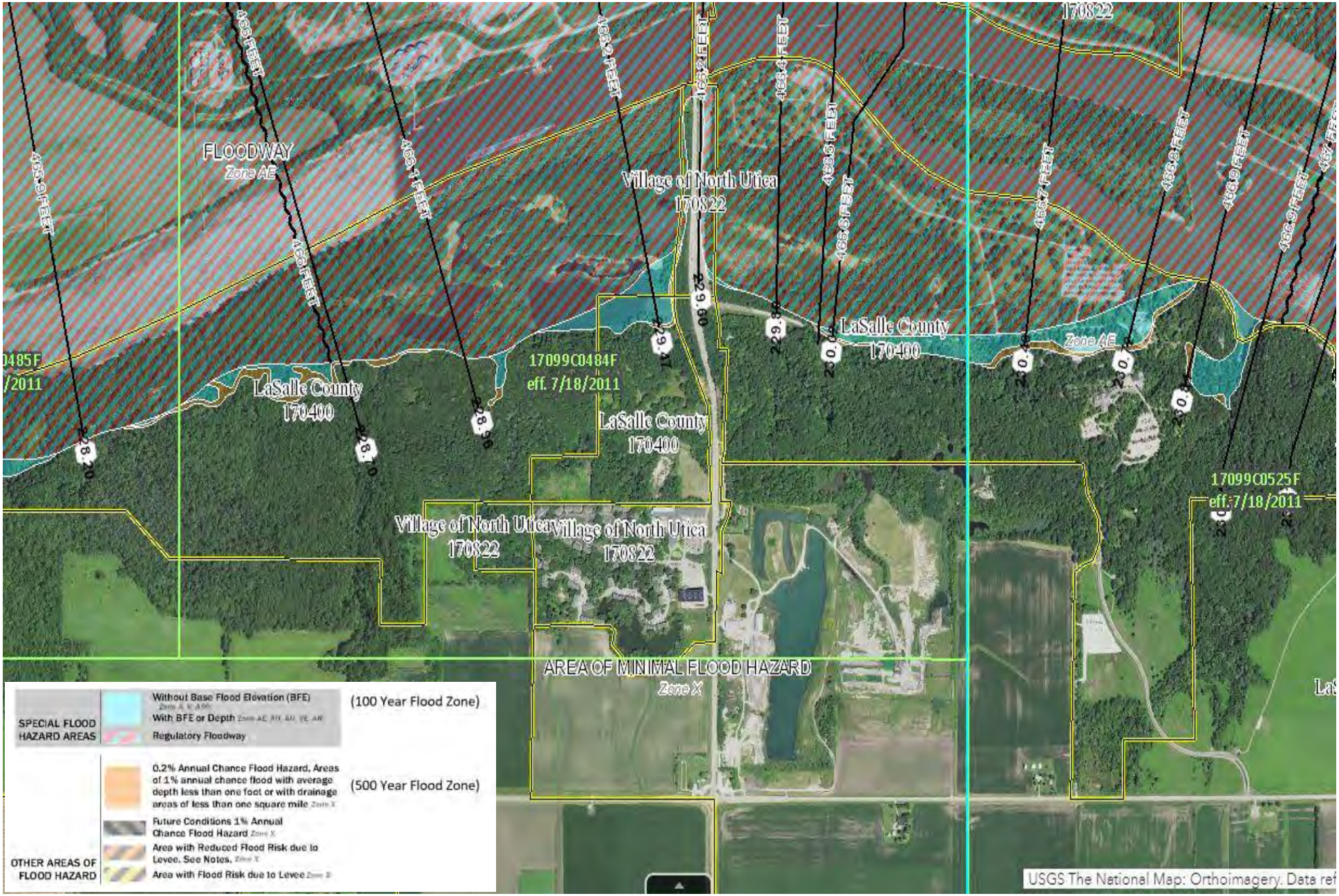
11. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
    Hazard Addressed: All identified hazards
    Responsible Entity or Person: Village Staff
    Benefit/Cost: Medium/Low
    Priority: Low, no change, new activity for this plan.
    Cost: Staff time
    Revenue Source: Federal, state, local or grant funds
    Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
    Benefits: Increased awareness and preparedness

Community Risk Assessment

Deadline: 2 Years
Mitigation Type: Education and Awareness Programs
Activity Status: New mitigation activity for this plan.

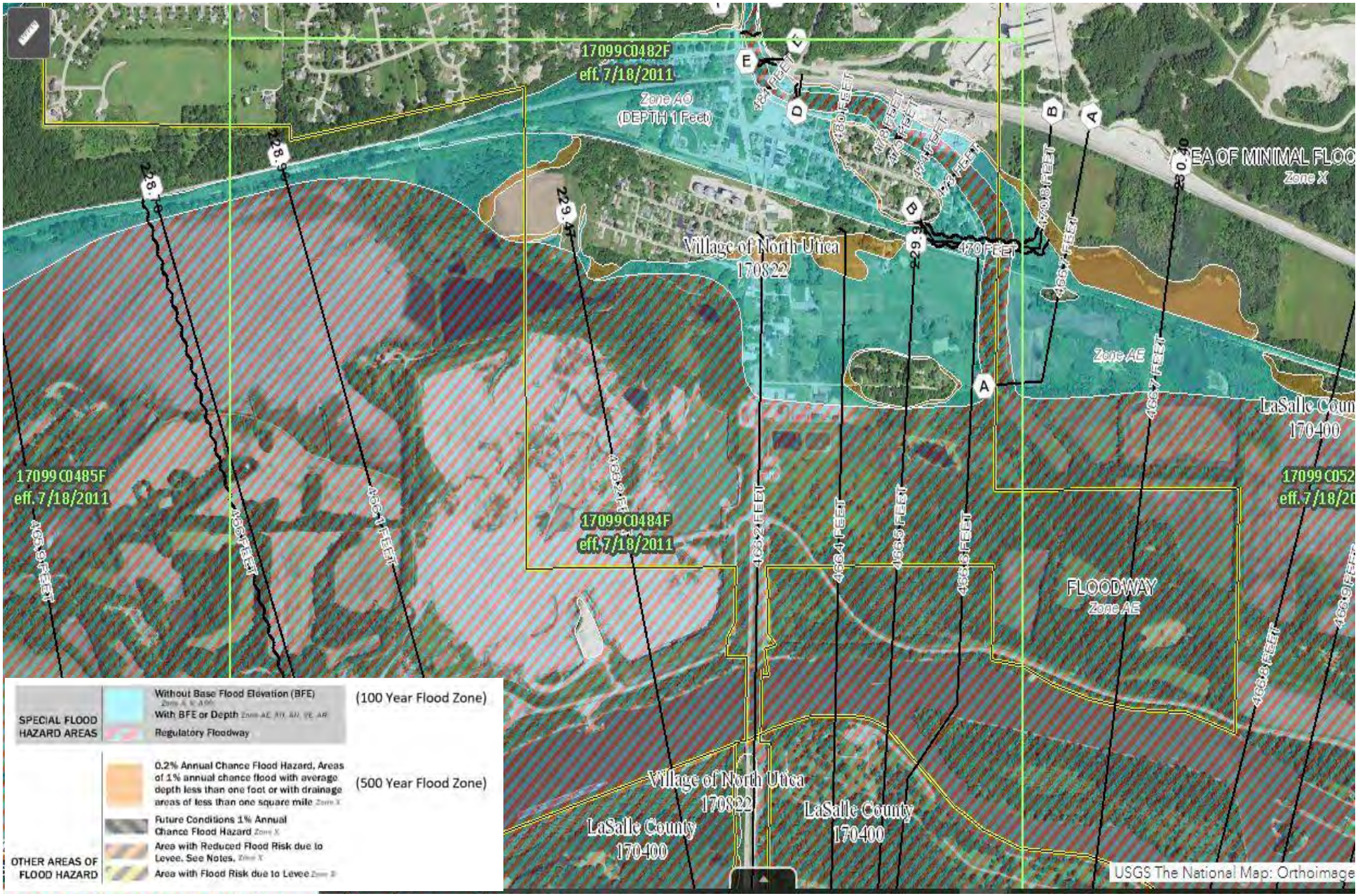
Village of North Utica (South) 2020

Source: Federal Emergency Management



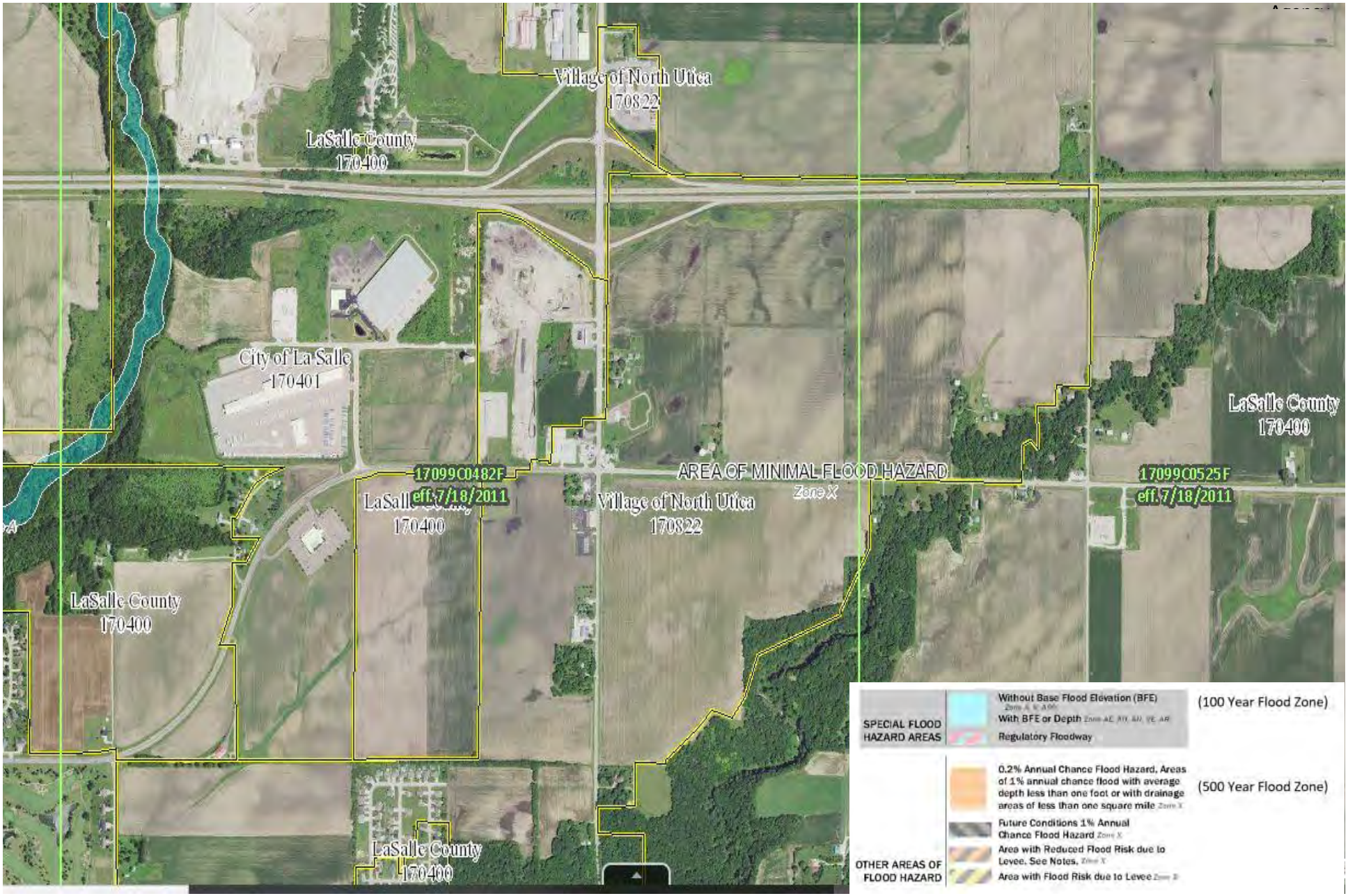
Village of North Utica (River) 2020

Source: Federal Emergency Management Agency



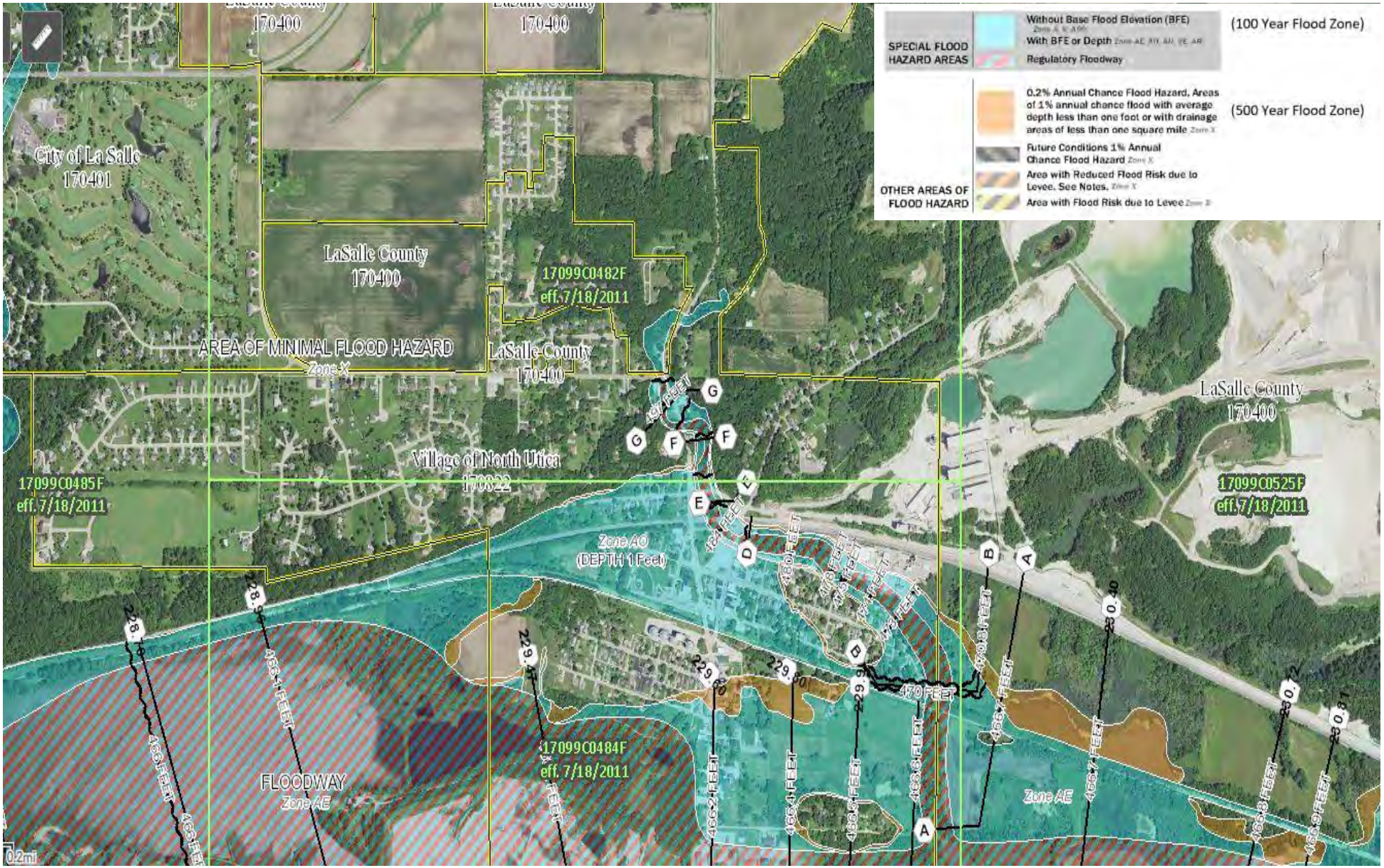
Village of North Utica (North) 2020

Source: Federal Emergency Management



Village of North Utica (Central) 2020

Source: Federal Emergency Management



Community Risk Assessment

Northville Township

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Northville Township	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Northville Township is just north of the Fox River and the Village of Sheridan and is includes the southern portion of Somonauk and the Lake Holiday development in LaSalle County.

Population: 7,410 (2010 Census), 7,178 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The Northville Township has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years.

Flood Risk: The Northville Township has a "Low" risk of flooding.

> **Type(s) of Flooding:** Urban Drainage- Surface Water Runoff/ Basement Backups
>
> **Area of Risk:** The FEMA Flood Insurance Rate Map (FIRM) shows a 100-year floodplain goes through the township from Lake Holiday down to the Fox River.
>
> **Critical Facilities at Risk:** None
>
> **National Flood Insurance Program Participant:** No
>
> **Community Rating System Participant:** No

Winter Storm Risk: The Northville Township has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The Northville Township has a "Medium" risk for extreme temperatures.

Community Risk Assessment

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Northville Township has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to The Northville Township has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Northville Township and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Northville Township has a "Low" risk of hail.

Landslides: Based on no previous occurrences and location the Township has no risk of landslides occurring.

Wildfires: Based on no previous occurrences and the ground cover the Township has a low risk of wildfires occurring.

Additional Information:

- The 2020 plan is the first time the township participated in the LaSalle County Natural Hazard Mitigation Plan.
- There are several bridges and township roads that would be impacted if the dam at Lake Holiday failed.
- There is a major pipeline that passes through the township
- Flooding on East 29th Road – John's Estates
- Flooding on Somonauk Creek and Fox River – home sites

Mitigation Activities:

1. **Mitigation Strategy:** Purchase and install outdoor early warning (tornado) sirens in the township and network with other communities in the county.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Township Board
   Benefit/Cost: High/High
   Priority: Very High

Cost: Sirens
Revenue Source: Local Funds
Resources: United States Department of Agricultural- Rural Development/ State Appropriation
Benefits: Provide individuals outside time to take cover from approaching storm.
Deadline: 1 Year
Mitigation Type: Structure and infrastructure projects
Activity Status: New mitigation activity for this plan.

2. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau County, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High
   Cost: Township Board and Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

3. **Mitigation Strategy:** Participate in the development of a regional policy for activating early warning sirens for testing and severe weather.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High
   Cost: Township Board and Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Increase public knowledge of the purpose of the sirens.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

4. **Mitigation Strategy:** Address surface water flooding on township roads.
   Hazard Addressed: Floods
   Responsible Entity or Person: Township Board

Benefit/Cost: High /High
Priority: High
Cost: Staff Time/ Engineering Costs/ Construction
Revenue Source: Local Funds
Resources: Residents/ Public Officials/ Engineers
Benefits: Prevent or minimize surface water flooding especially on E 29th Road
Deadline: 3 years
Mitigation Type: Structure and infrastructure projects
Activity Status: New mitigation activity for this plan.

5. **Mitigation Strategy:** Identity issues with dam and seek funding to address those issues and potential damages caused if dam fails.
   Hazard Addressed: Floods
   Responsible Entity or Person: Township Board with Lake Holiday Board
   Benefit/Cost: Medium/High
   Priority: High
   Cost: Staff Time/ Engineering Costs/ Construction
   Revenue Source: Local Funds, State and Federal Grants as available
   Resources: Residents/ Public Officials/ Engineers
   Benefits: Prevent failure of dam and preventing downstream damage from dam
   Deadline: 3 -5 years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: New mitigation activity for this plan.

6. **Mitigation Strategy:** Identity activities that would lessen flooding impact of home sites on Somonauk Creek and Fox River and apply for funding to implement those activities.
   Hazard Addressed: Floods
   Responsible Entity or Person: Township Board
   Benefit/Cost: High /High
   Priority: High
   Cost: Staff Time/ Engineering Costs/ Construction
   Revenue Source: Local Funds, State and Federal Grants as available
   Resources: Residents/ Public Officials/ Engineers
   Benefits: Prevent damage and expense of flooding by alleviating impact
   Deadline: 3 -5 years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: New mitigation activity for this plan.

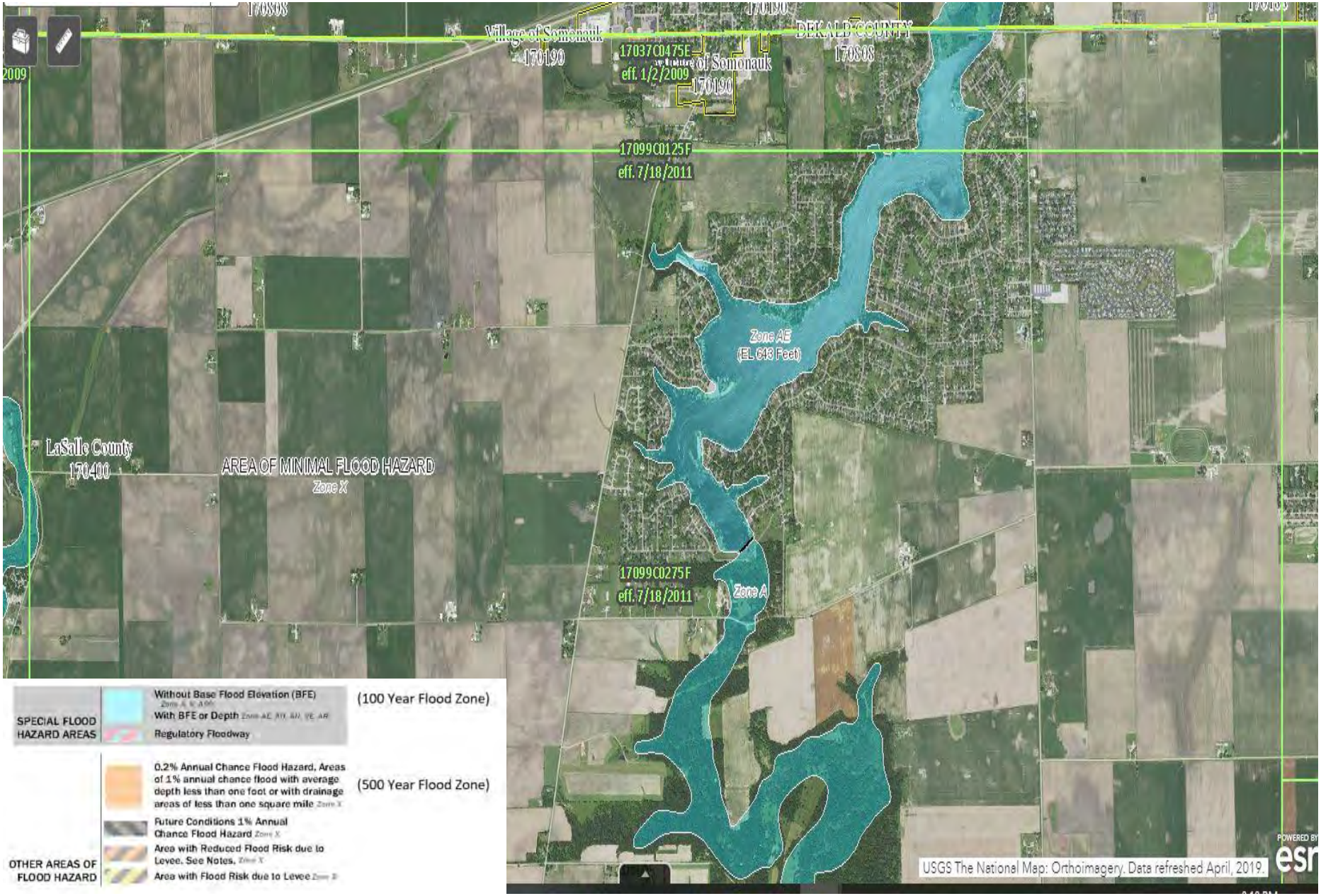
7. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: Township Board and Staff
   Benefit/Cost: High/Low
   Priority: Low

Cost: Minimal/ Letters to residents
Revenue Source: Local Funds
Resources: Insurance agencies/ Federal Emergency Management Agency
Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
Deadline: 1 Year
Mitigation Type: Education and awareness
Activity Status: New mitigation activity for this plan.

8. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
Hazard Addressed: All identified hazards
Responsible Entity or Person: Township Staff
Benefit/Cost: Medium/Low
Priority: Low, no change, new activity for this plan.
Cost: Staff time
Revenue Source: Federal, state, local or grant funds
Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
Benefits: Increased awareness and preparedness
Deadline: 2 Years
Mitigation Type: Education and Awareness Programs
Activity Status: New mitigation activity for this plan.

Northville Township (North) 2020

Source: Federal Emergency Management Agency



Northville Township (South) 2020

Source: Federal Emergency Management Agency

Community Risk Assessment

City of Oglesby

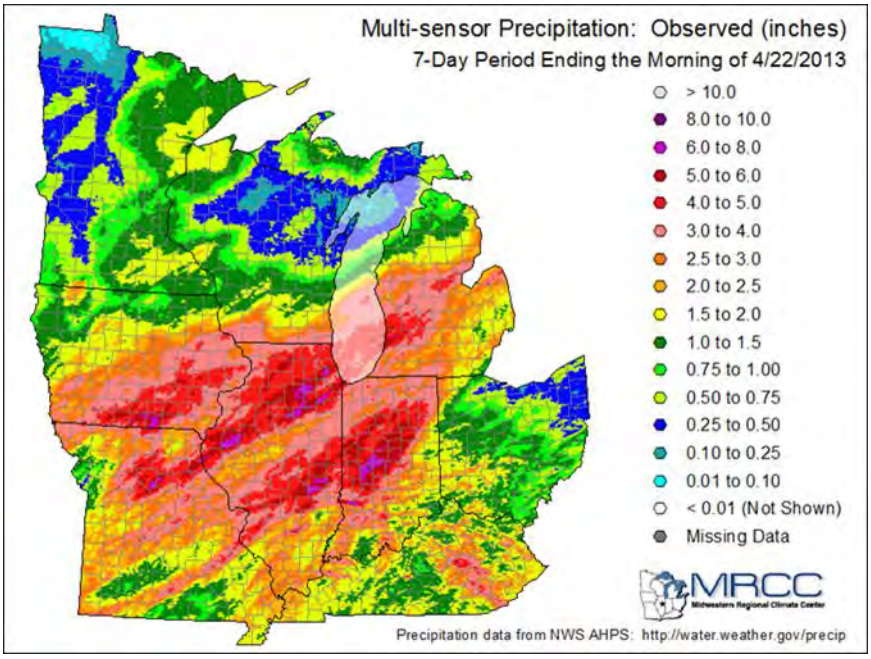
Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Oglesby	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The City of Oglesby is located 13 miles southwest of the City of Ottawa in LaSalle County. The city is bordered by Interstate 39 on the west, the Illinois River on the north, and the Little Vermilion River on the east.

Population: 3,791 (2010 Census), 3,587 (2018 estimate)

Major Storm Events since February 2008:

- January 31, 2011-February 3, 2011 Snowstorm: A heavy snowstorm forced communities across the region to deplete their salt piles and required their employees to work overtime to keep the streets cleared. A major federal disaster declaration was designated for LaSalle County and neighboring counties. The City of Oglesby opened up shelters at the fire station and grade school for stranded travelers.
- April 17-19, 2013 Flood: A slow-moving storm drenched the region with as much as 10 inches of rain causing widespread flooding throughout the region. The storm caused sewer backups and damage to a new dam and retention pond.



Tornado Risk: The City of Oglesby has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The city has tornado sirens that provide full coverage. There is a tornado shelter located at the city hall.

Flood Risk: The City of Oglesby has a "Low" risk of flooding.

Type(s) of Flooding: Riverine Flooding

Community Risk Assessment

Area of Risk: The FEMA Flood Insurance Rate Map (FIRM) for the city shows the 100-year floodplain for the Little Vermilion River. Two (2) homes on Water Street are possibly at risk of flooding from the river.

Critical Facilities at Risk: None

National Flood Insurance Program Participant: Yes

Community Rating System Participant: No

Winter Storm Risk: The City of Oglesby has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can also be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The City of Oglesby has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The City of Oglesby has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The City of Oglesby has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The City of Oglesby and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The City of Oglesby has a "Low" risk of hail.

Community Risk Assessment

Landslides - Based on previous occurrences and location the City has a low risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the City has no risk of wildfires occurring.

Additional Information:

- The city has separate (90 percent) sanitary and storm sewer systems.
- The city's comprehensive plan was adopted in 2020 and addresses natural hazards.
- The city's adopted a Land Development Code in 2018.
- The city has adopted International Building Code (IBC) 2003.
- The city adopted a stormwater management ordinance in 2007.
- The city utilizes CodeRed, an emergency alert notification system for residents.

Mitigation Activities:

1. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Replace outdated sirens with new and purchase sirens for gap areas identified in the city. Network sirens with other communities.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/High
   Priority: Very High
   Cost: Staff Time
   Revenue Source: Local Funds, State and Federal grants when available
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities

Benefits: Reliable sirens that better cover the city for notifying residents. Also make regional activation coordination easier.
Deadline: 1 Year
Mitigation Type: Structure and infrastructure projects
Activity Status: New mitigation activity for this plan.

3. **Mitigation Strategy:** Identify areas of combined sewers in the city and separate storm sewer from sanitary sewer line.
   Hazard Addressed: Floods
   Responsible Entity or Person: Water and Sewer departments, city engineer and city council
   Benefit/Cost: High/High
   Priority: Very High
   Cost: Staff Time, engineering and construction
   Revenue Source: Local Funds, State and Federal grants when available
   Resources: IEPA, DCEO, FEMA
   Benefits: Eliminate inflow and infiltration into sewer system causing unnecessary treatment of rainwater. Eliminate basement backups from heavy rains and potential excess flows into WWTP.
   Deadline: 1-2 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: New mitigation activity for this plan.

4. **Mitigation Strategy:** Identify and promote heating and cooling center locations to residents and ensure that such facilities are compliant with the American Disabilities Act (1990) 2010 Standards for Accessibility Design Requirements.
   Hazard Addressed: Extreme Temperatures and Winter Storms
   Responsible Entity or Person: City Council
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Staff Time/ Engineer Inspection/ Promotional Expenses
   Revenue Source: Local Funds
   Resources: 2010 Standards for Accessibility Design Requirements/ City Engineer
   Benefits: Provide a safe environment to residents during extreme periods of cold and heat.
   Deadline: 1 Year
   Mitigation Type: Education and Awareness Programs
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council and Staff
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Minimal/Letters to residents

Revenue Source: Local Funds
Resources: Insurance agencies/ Federal Emergency Management Agency
Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
Deadline: 1 Year
Mitigation Type: Education and Awareness Programs
Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Participate in the development of a regional stormwater management ordinance that will reduce flooding and protect lives, property, and the environment.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
   Benefits: Minimize the adverse impact of stormwater on communities.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Work together as a region to share resources and to create opportunities for the public to be engaged and informed about the risks of natural hazards and mitigation activities.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Hail
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Other communities/ North Central Illinois Council of Governments
   Benefits: Collaboration provides opportunities to share ideas and resources.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

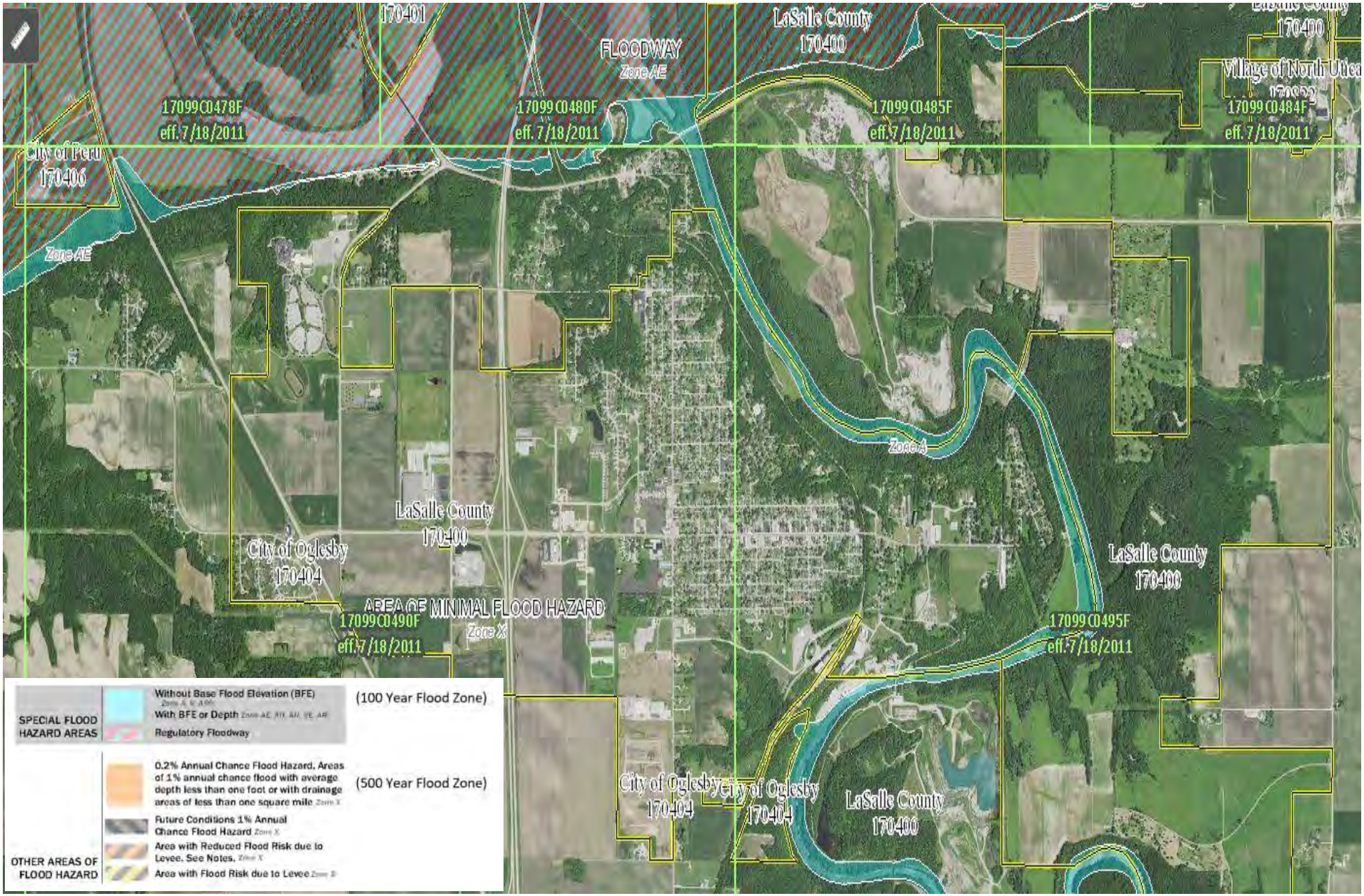
8. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: City Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time

Community Risk Assessment

Revenue Source: Federal, state, local or grant funds
Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
Benefits: Increased awareness and preparedness
Deadline: 2 Years
Mitigation Type: Education and Awareness Programs
Activity Status: New mitigation activity for this plan

City of Oglesby 2020

Source: Federal Emergency Management



Community Risk Assessment

City of Ottawa

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Ottawa	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**

Location: The City of Ottawa is centrally located in LaSalle County at the confluence of the Illinois and Fox Rivers. The city is the county seat.

Population: 18,768 (2010 Census), 18,128 (2018 estimate)

Major Storm Events since February 2008:

- September 9-18, 2008 Flood: Heavy rain associated with Hurricane Ike and Tropical Storm Gustav impacted much of the region and caused record flooding along the Illinois River. The flood stage for the Illinois River in Ottawa is 463 feet above sea level. The river crested at 472.4 feet. Ottawa's Central Intermediate School was inundated with flood water, ultimately, resulting in the school being designated as substantially damaged and unusable. Classes at Ottawa Township High School were canceled because the river was close to breaching the top of the levy. The levy surrounding the city's waste water treatment plant (WWTP) was within inches of being breached. Along the Fox River, homes located in the "Flats," (south of Superior Street and east of Calumet Street) flooded. The parking lot of the Ottawa YMCA (southwest of the Flats) was also flooded.
- April 18-19, 2013 Flood: A slow-moving storm dropped upwards of 10 inches of rain across the region causing flooding along the Illinois and Fox Rivers that surpassed 2008 records. The Illinois River crested 1.4 feet higher than in 2008 at 473.8 feet. However, because of the city's flood mitigation efforts, damage was less severe than from the 2008 storm; Ottawa Township High School was closed as a precaution; the waste water treatment plant was sandbagged, but water did not enter the facility; and only a couple of homes remaining in the Flats flooded- others had been purchased by the city as part of a buyout program. The Ottawa YMCA had substantial flooding on the lower level of the building. The city's lift station in the parking lot was submerged and damaged. It has since been protected with a flood wall.

The East Main Street Bridge was closed because of high flood waters. When the Illinois and Fox Rivers flood, Green Street becomes impassable and the east side of Ottawa becomes an island. Residents on the east side were encouraged to evacuate, but not forced too. Fire and police services were stationed on the east side.

Tornado Risk: The City of Ottawa has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The city has tornado sirens (3 new ones installed 2017/2018 and 4 more to be installed in 2020) that provide full coverage throughout the corporate boundaries. Since 2008, the city purchased and installed an additional siren. The city does not have any designated tornado shelters. On February 28, 2017 an EF-1 / EF-2 tornado struck the Ciy. The tornado caused extensive damage to residential homes and structures, civic buildings, private property, trees, and businesses. Hundreds of homes were destroyed or damaged from the strength of the tornado and thousands of trees were damaged.

Flood Risk: The City of Ottawa has a "Low" risk of flooding based on the risk analysis. Seven (7) floods have been reported since 1964 to NOAA. Zero (0) to 10 occurrences in the last 50 years is considered a "low" probability of future disasters. When combined with other factors including vulnerability, severity, and population, the city is close to having a "Medium" risk.

Record floods have occurred in 1974, 1982, 1983, 1996, 2007, 2008, 2009, and 2013. The flood of 2013 crested 1.5 feet above any recorded event. The 1974, 1983, 1996, 2007, 2008, and 2013 floods all resulted in Federal Disaster Declarations. The City continues to experienced flooding on an annual basis.

Type(s) of Flooding: Riverine Flooding- Overbank Flooding- Flash Floods- Levee Failure- Ice Jam Flooding/ Basement Backups

Area of Risk: All properties located within the Special Flood Hazard Area (SFHA) as identified on FEMA Flood Insurance Rate Maps (FIRMs) are at risk of flooding.

The City of Ottawa has two (2) primary sources of flooding: the Illinois River and the Fox River. The Illinois and Fox Rivers create a watershed for more than 11,000 square miles. The Illinois River threatens properties on the east side of Ottawa that are located south of Main Street. When both rivers rise, Green Street becomes impassable and the east side of the city becomes an island. Ottawa's Downtown Waterfront is also at risk of flooding. Central School, which formerly sat on the property, has been demolished and there are plans to develop the site into a park. Across the Illinois River, Allen Park and the waste water treatment plant are at risk of flooding. The Flats (now Fox River Park) flood, but all residential structures have been purchased and removed. Superior Street becomes impassable. Ice jams on the Fox River may increase the likelihood of localized flash flooding.

Another source of flash flooding is Goose Creek, which originates near Fox Hill Lane, east of Illinois Route 23. The creek then heads south along Prairie Street and then cuts eastward through a residential neighborhood before reaching the Fox River. The Goose Creek watershed is significantly smaller, only 6.58 square miles, and does not pose a serious flood risk.

There were 567 reported basement backups in the City of Ottawa as a result of the April 2013 flood (see the attached Damage Report Map). The city has only partially separated storm and

sanitary sewer systems, which theoretically should reduce the number of basements backups. Homeowners of century-old homes that have never flooded reported basement backups in 2013. Ottawa has combined sewers covering about one-third of the town. The remaining majority of the city has separate storm and sanitary sewers. The status of combined or not, did not seem to affect the likelihood of backups. The city is investigating the cause to determine a solution. Funding for sewer/repair separation is needed to address basement issues/flooding.

Critical Facilities at Risk: The city's waste water treatment plant is at risk of flooding. In 2011, the city applied for but was not awarded state funding to build a flood protection wall around the plant. In 2017 the City completed the construction of the waste water treatment plant flood wall and back-up generator.

Ottawa Township High School (East Main Street) is surrounded by a levee, but in March 2010 the levee lost its accreditation when FEMA digitalized FIRMs and raised the base flood elevation by 1.5 feet. The high school is now at a greater risk of flooding. In 2019 the school completed construction of elevating a portion of the existing floodwall and completion of the remaining unprotected section along the Fox River. The school now has full floodwall protection along both the Illinois and Fox River frontage. The recently completed wall is still awaiting Army Corps accreditation.

The Ottawa River Rescue building located east of the Downtown Waterfront has flooded multiple times. The structure is located in the floodway. Plans and property have been finalized to move the facility to the south side of the Illinois River out of the floodplain. River Resuce broke ground on the new headquarters in early 2019 and have completed the project.

OSF Saint Elizabeth Medical Center (Hospital) is protected by a 500-year flood wall.

A massive flood may place the Fox River Aqueduct on the Illinois and Michigan Canal at risk. The aqueduct is no longer utilized for barge traffic, but is a historic structure and supports the canal's tow path and bicycle trail. If the structure were to be washed out, it likely will impede or obstruct the flow of the Fox River and cause the hospital just upstream, to flood. A similar occurrence happened in Morris, Illinois during the 2013 flood.

National Flood Insurance Program Participant: Yes, since 1975.

Community Rating System Participant: Yes, the City of Ottawa has a class two (2) rating that entitles city residents to a 40 percent discount on flood insurance premiums.

Winter Storm Risk: The City of Ottawa has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace

utilized energy, the body is susceptible to hypothermia and frostbite. The City of Ottawa has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. The City of Ottawa has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The City of Ottawa has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The City of Ottawa and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The City of Ottawa has a "Medium" risk of hail. There have 17 hail events in Ottawa since 1965.

Landslides: Based on no previous occurrences and location, the City has no risk of landslides occurring.

Wildfires: Based on no previous occurrences and the ground cover the City has no risk of wildfires occurring.

Additional Information:

- The city recently updated its comprehensive plan. The plan addresses flooding issues. The city also has an emergency response plan that addresses natural hazards.
- The city's last zoning ordinance is periodically updated.
- The city has adopted International Residential Code 2012, the International Building Code 2012, the International Energy Conservation Code 2012, and the 2014 National Electrical Code. All new buildings are inspected. Recently updated to go into effect July 2020.
- The City adopted a storm water management ordinance.
- Sixty (60) percent of the city's sanitary sewer and storm sewer systems have been separated.
- The City of Ottawa is a StormReady community.
- The City of Ottawa has an "All Hazard Plan."
- Completed floodwall around the waste water treatment plant.
- Floodwall around Ottawa Township High School is completed. Still requires FEMA certification.

Mitigation Activities:

Community Risk Assessment

1. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: Building and Zoning Official/ Ottawa Flood Commission
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Letters to residents/ Website maintenance
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
   Deadline: 1 Year
   Mitigation Type: Education and Awareness
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Vertically realign Green Street to prevent the east side of Ottawa from being isolated during a flood event.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: Very High, no change since 2015 Plan
   Cost: Design/ Engineering/ Construction
   Revenue Source: Local Funds/ State and Federal Funding
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency/ Illinois Department of Commerce and Economic Opportunity
   Benefits: Provide emergency responders access to the east side of Ottawa at all times.
   Deadline: 5 Years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan. The City applied for PDM fund from FEMA for this project and are waiting to hear if the project has been funded

3. **Mitigation Strategy:** Dredge and rechannel the Fox River near the Illinois and Michigan Canal Aqueduct.
   Hazard Addressed: Floods
   Responsible Entity or Person: State of Illinois
   Benefit/Cost: Medium/High
   Priority: High, no change since 2015 Plan
   Cost: Engineering/ Construction
   Revenue Source: Various Sources- General Fund/ Special Appropriation/ Illinois Department of Natural Resources
   Resources: Illinois Department of Natural Resources
   Benefits: Lessen localized flooding.
   Deadline: 5 Years
   Mitigation Type: Structures and Infrastructures
   Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Participate in the development of a regional stormwater management ordinance that will reduce flooding and protect lives, property, and the environment.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/ City Engineer
   Benefit/Cost: Medium/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
   Benefits: Minimize the adverse impact of stormwater on communities.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Assist the Ottawa YMCA with identifying solutions to minimize flood damage.
   Hazard Addressed: Floods
   Responsible Entity or Person: Ottawa YMCA/ City Engineer/ Building and Zoning Official
   Benefit/Cost: High/High
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: YMCA Staff/ City Engineers
   Benefits: Provide long-term protection for an important community organization.
   Deadline: 3 Years
   Mitigation Type: Structure and Infrastructure Plans
   Activity Status: Carried over into the activities list for this plan. The YMCA is looking at relocating their facility to a new location.

6. **Mitigation Strategy:** Continue with the installation of separation ejectors to limit combined sewer overflows.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Plumbing Inspector/ Engineer
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Design/ Engineering/ Construction
   Revenue Source: Local Funds
   Resources: City Engineer
   Benefits: Minimize pollution of soils and waterways.
   Deadline: 1-5 Years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Continue to pursue activities that will maintain the city's Community Rating System score to help residents save on flood insurance premiums.
   Hazard Addressed: Floods

Responsible Entity or Person: City Building and Zoning Official, City Engineer, Ottawa Flood Commission
Benefit/Cost: High/Medium
Priority: High, no change since 2015 Plan
Cost: Varies depending on activities/ projects
Revenue Source: Local Funds
Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
Deadline: 1-5 Years (ongoing)
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

8. **Mitigation Strategy:** Construct a fire station on the north side of the city.
   Hazard Addressed: Tornadoes, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Hail
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Design/ Engineering/ Construction/ Equipment/ Staffing
   Revenue Source: Local Funds
   Resources: N/A
   Benefits: Provide increased fire protection to all businesses and residents within the City of Ottawa.
   Deadline: 5 Years
   Mitigation Type: Structures and Infrastructures Project
   Activity Status: Carried over into the activities list for this plan.

9. **Mitigation Strategy:** Develop and implement an Emergency Operations Plan for snow removal.
   Hazard Addressed: Winter Storms, Dangerous Winds
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Ready.gov
   Benefits: A plan to efficiently remove snow will ensure that emergency responders can access all parts of the city.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

10. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.

Hazard Addressed: Tornado and Dangerous Winds
Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
Benefit/Cost: High/Low
Priority: Very High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

11. **Mitigation Strategy:** Work together with partners to share resources and to create opportunities for the public to be engaged and informed about the risks of natural hazards and mitigation activities.
Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
Responsible Entity or Person: City Council
Benefit/Cost: Medium/Medium
Priority: High, no change since 2015 Plan
Cost: Staff Time
Revenue Source: Local Funds
Resources: Other communities/ North Central Illinois Council of Governments , Flood Commission, Upper Illinois River Flood Alliance
Benefits: Collaboration provides opportunities to share ideas and resources.
Deadline: 1-5 Years
Mitigation Type: Education and Awareness
Activity Status: Carried over into the activities list for this plan.

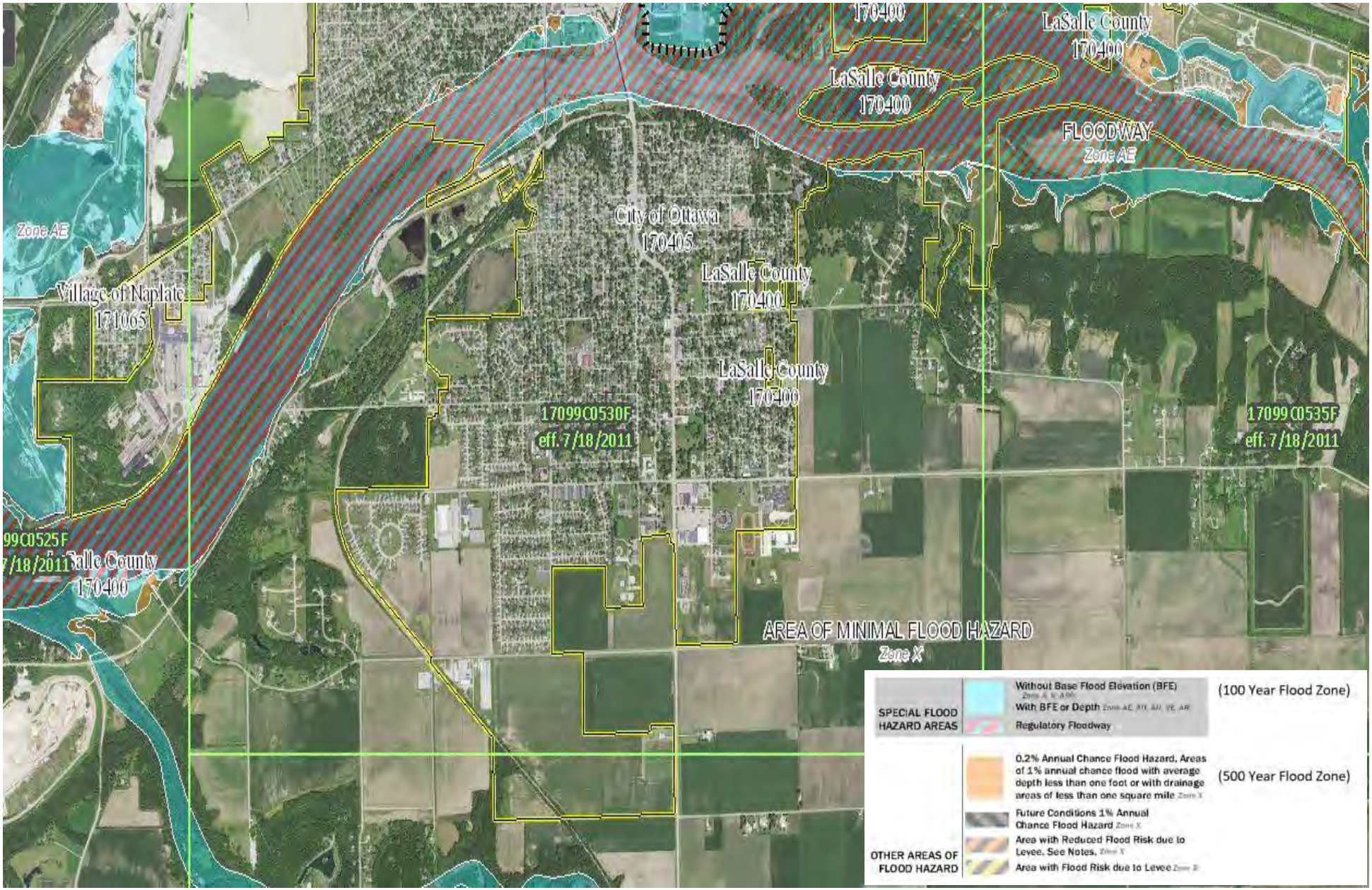
12. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
Hazard Addressed: All identified hazards
Responsible Entity or Person: City Staff
Benefit/Cost: Medium/Low
Priority: Low, no change, new activity for this plan.
Cost: Staff time
Revenue Source: Federal, state, local or grant funds
Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
Benefits: Increased awareness and preparedness
Deadline: 2 Years
Mitigation Type: Education and Awareness Programs

Community Risk Assessment

Activity Status: New mitigation activity for this plan.

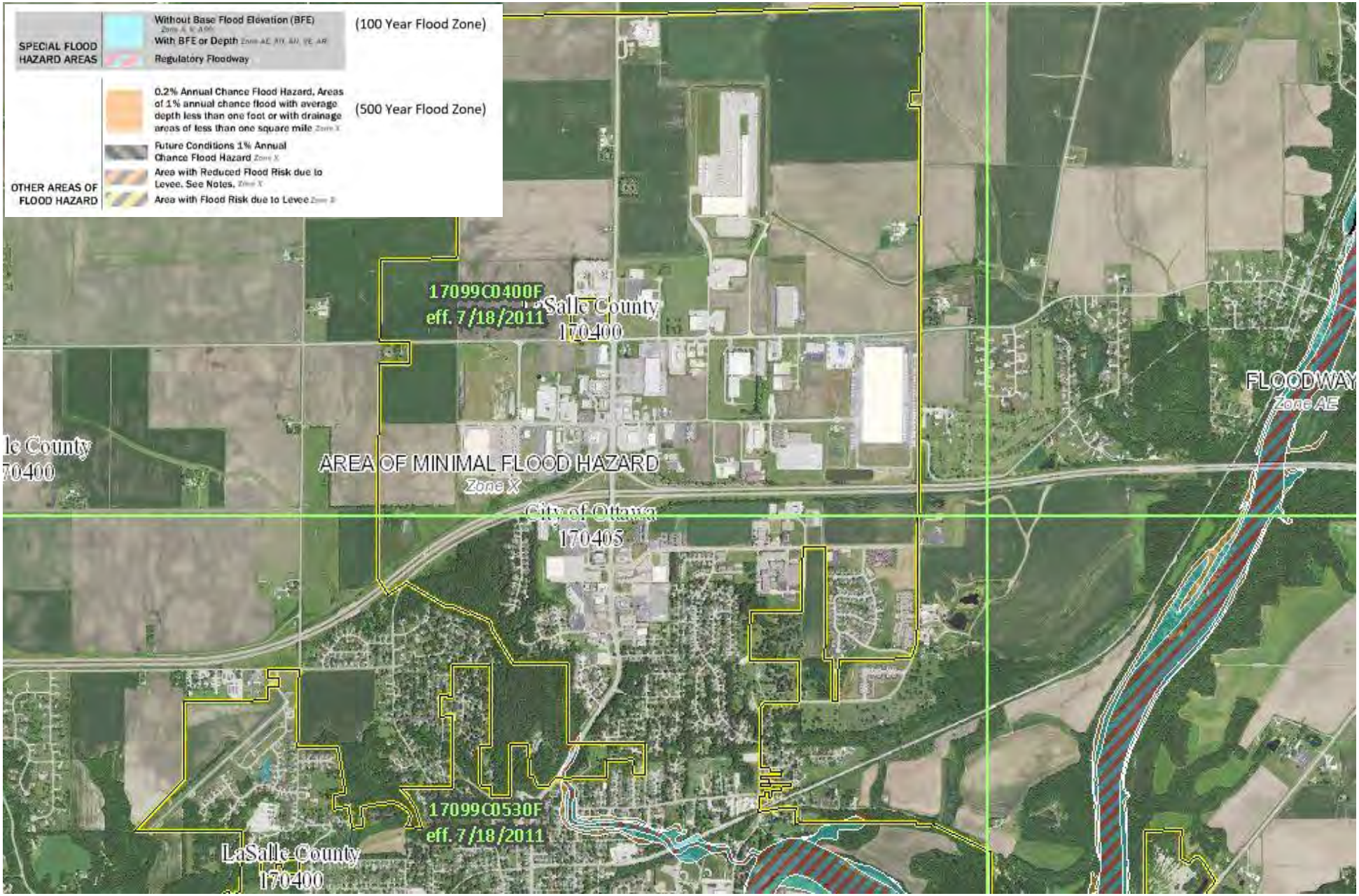
City of Ottawa (South) 2020

Source: Federal Emergency Management Agency



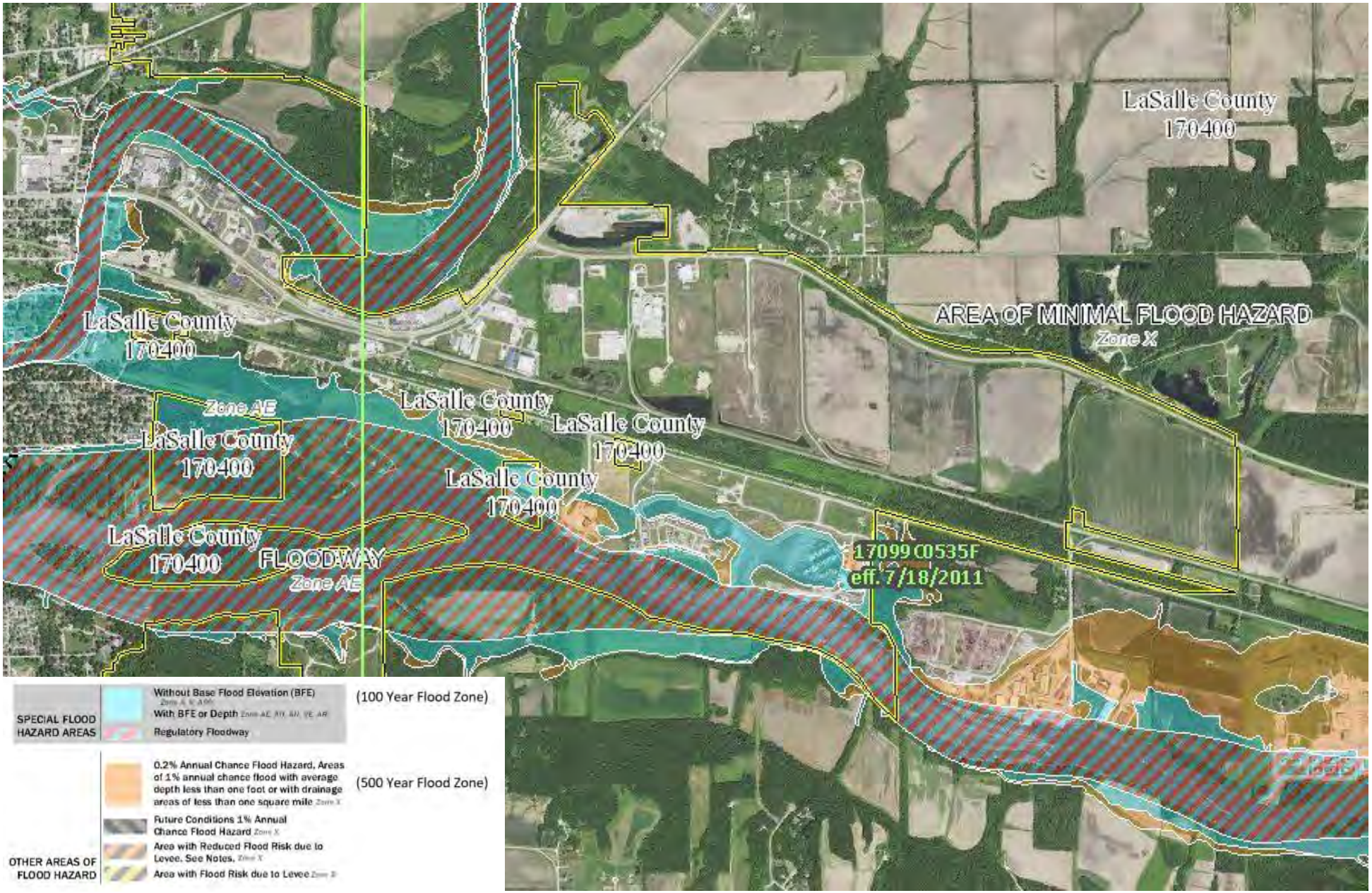
City of Ottawa (North) 2020

Source: Federal Emergency Management Agency



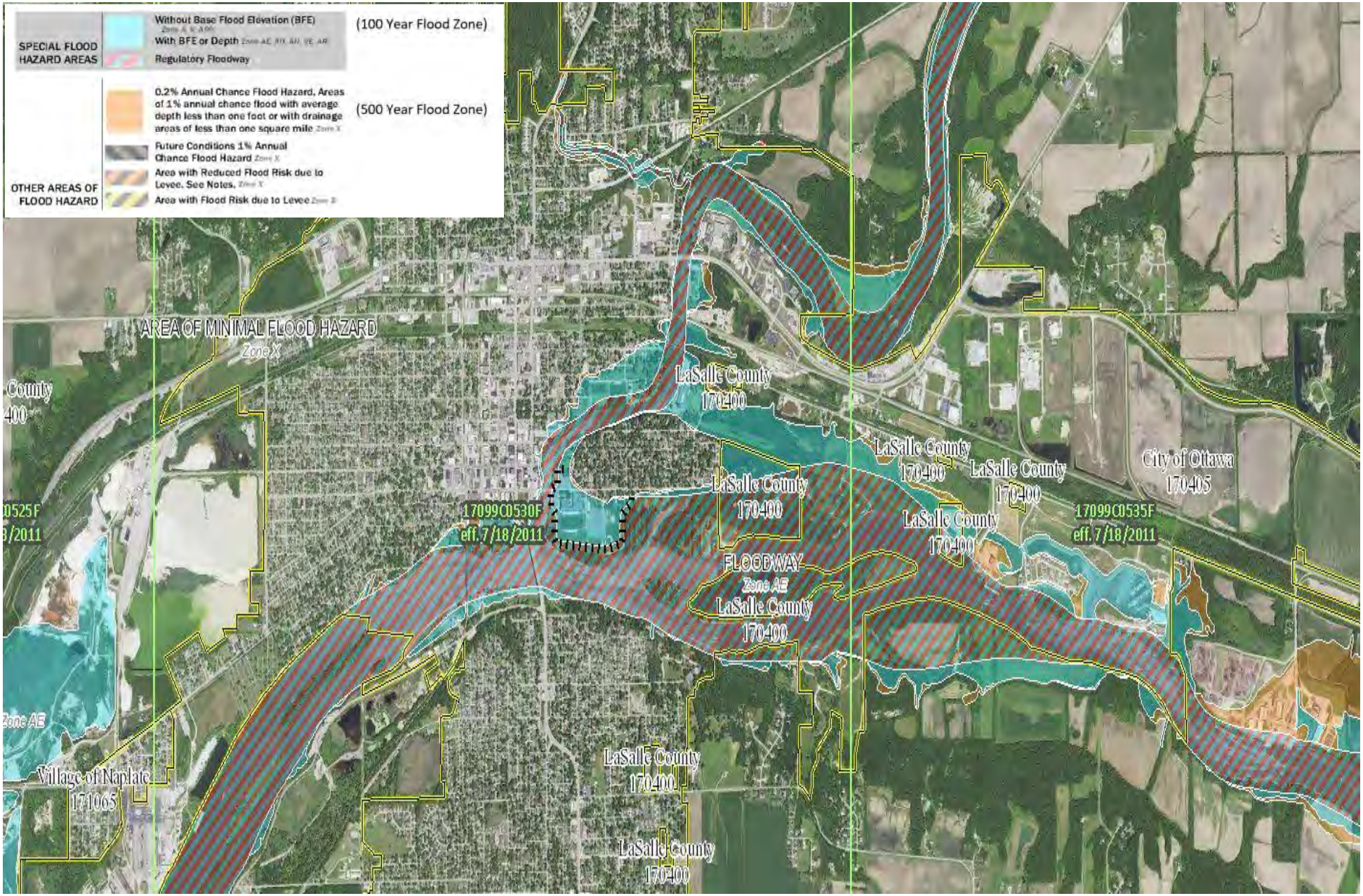
City of Ottawa (East) 2020

Source: Federal Emergency Management Agency



City of Ottawa (Central) 2020

Source: Federal Emergency Management



Community Risk Assessment

Ottawa Township

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Ottawa Township	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**

Location: The Ottawa Township is north of the Illinois River and encompasses Naplate and much of downtown Ottawa.

Population: 11,766 (2010 Census), 11,320 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The Ottawa Township has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. Tornado in 2017, no reported damage. .

Flood Risk: The Ottawa Township has a "Low" risk of flooding.

Type(s) of Flooding: Urban Drainage- Surface Water Runoff/ Basement Backups

Area of Risk: The FEMA Flood Insurance Rate Map (FIRM) shows a 100-year floodplain on the southern area of the township along the Illinois River.

Critical Facilities at Risk: LaSalle County Nursing home

National Flood Insurance Program Participant: No

Community Rating System Participant: No

Winter Storm Risk: Ottawa Township has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The

age and condition of water mains can also play a factor. Ottawa Township has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. Ottawa Township has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to The Ottawa Township has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. Ottawa Township and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. Ottawa Township has a "Low" risk of hail.

Landslides: Based on no previous occurrences and location the Township has no risk of landslides occurring.

Wildfires: Based on no previous occurrences and the ground cover the Township has a low risk of wildfires occurring.

Additional Information:

- The 2020 plan is the first time the township participated in the LaSalle County Natural Hazard Mitigation Plan.
- The former location of the location on the highway departments was re-located, to a location well above the 100 year flood plain, migrating future chances of flooding problems.
- The intersection of Dee Bennett Road and Koenig Road are prone to flooding. Main access to the LaSalle County Nursing Home

Mitigation Activities:

1. **Mitigation Strategy:** Purchase and install outdoor early warning (tornado) sirens in the township.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Township Board
   Benefit/Cost: High/High

Priority: Very High
Cost: Sirens
Revenue Source: Local Funds
Resources: United States Department of Agricultural- Rural Development/ State Appropriation
Benefits: Provide individuals outside time to take cover from approaching storm.
Deadline: 1 Year
Mitigation Type: Structure and infrastructure projects
Activity Status: New mitigation activity for this plan.

2. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau County, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High
   Cost: Township Board and Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

3. **Mitigation Strategy:** Participate in the development of a regional policy for activating early warning sirens for testing and severe weather.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High
   Cost: Township Board and Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Increase public knowledge of the purpose of the sirens.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: New mitigation activity for this plan.

4. **Mitigation Strategy:** Address surface water flooding on township roads.
   Hazard Addressed: Floods

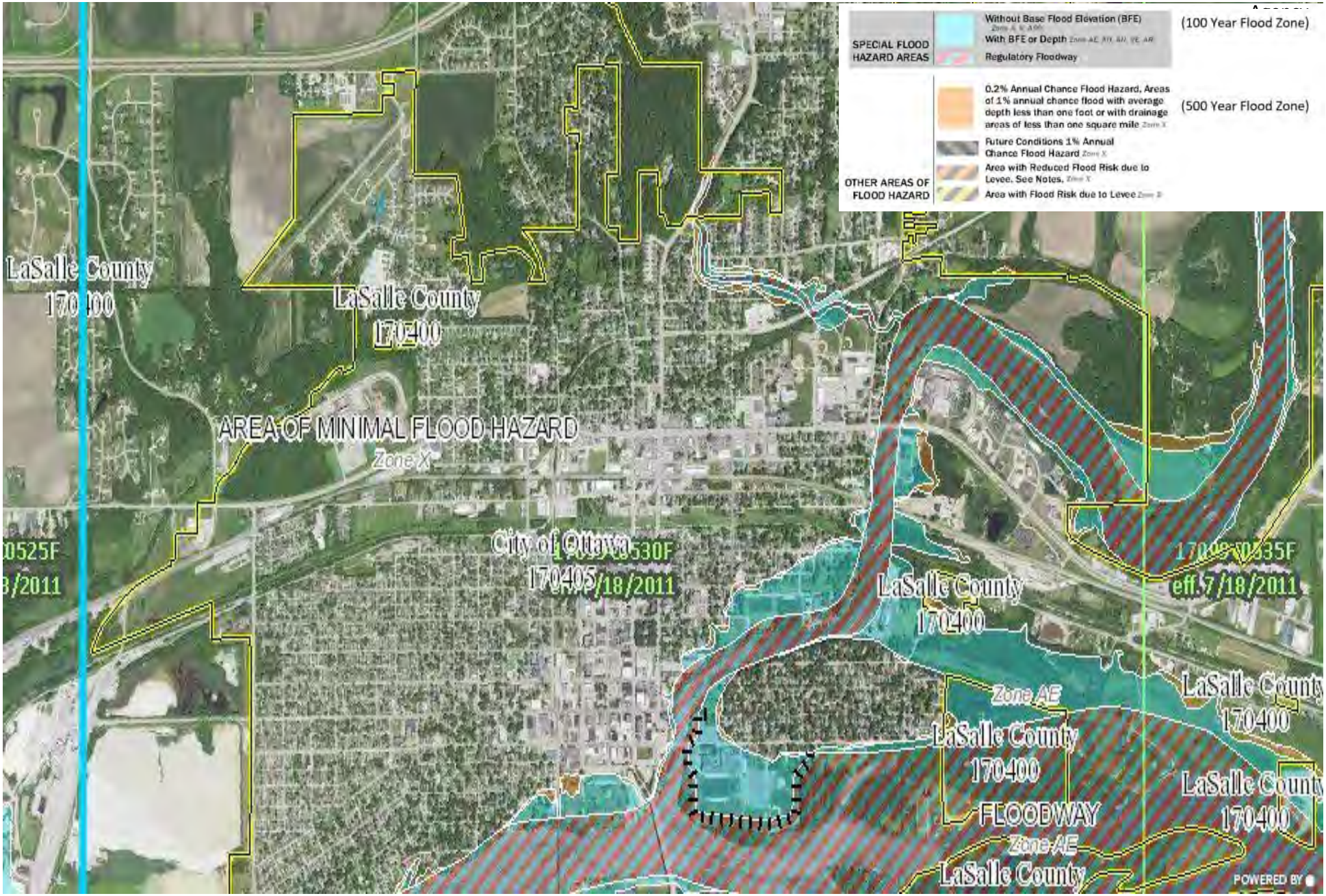
Responsible Entity or Person: Township Board
Benefit/Cost: Medium /High
Priority: High
Cost: Staff Time/ Engineering Costs/ Construction
Revenue Source: Local Funds
Resources: Residents/ Public Officials/ Engineers
Benefits: Prevent or minimize surface water flooding on intersection of Dee Bennett Road and Koenig Road
Deadline: 3 years
Mitigation Type: Structure and infrastructure projects
Activity Status: New mitigation activity for this plan.

5. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: Township Board and Staff
   Benefit/Cost: High/Low
   Priority: Low
   Cost: Minimal/ Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
   Deadline: 1 Year
   Mitigation Type: Education and awareness
   Activity Status: New mitigation activity for this plan.

6. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: Township Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
   Benefits: Increased awareness and preparedness
   Deadline: 2 Years
   Mitigation Type: Education and Awareness Programs
   Activity Status: New mitigation activity for this plan.

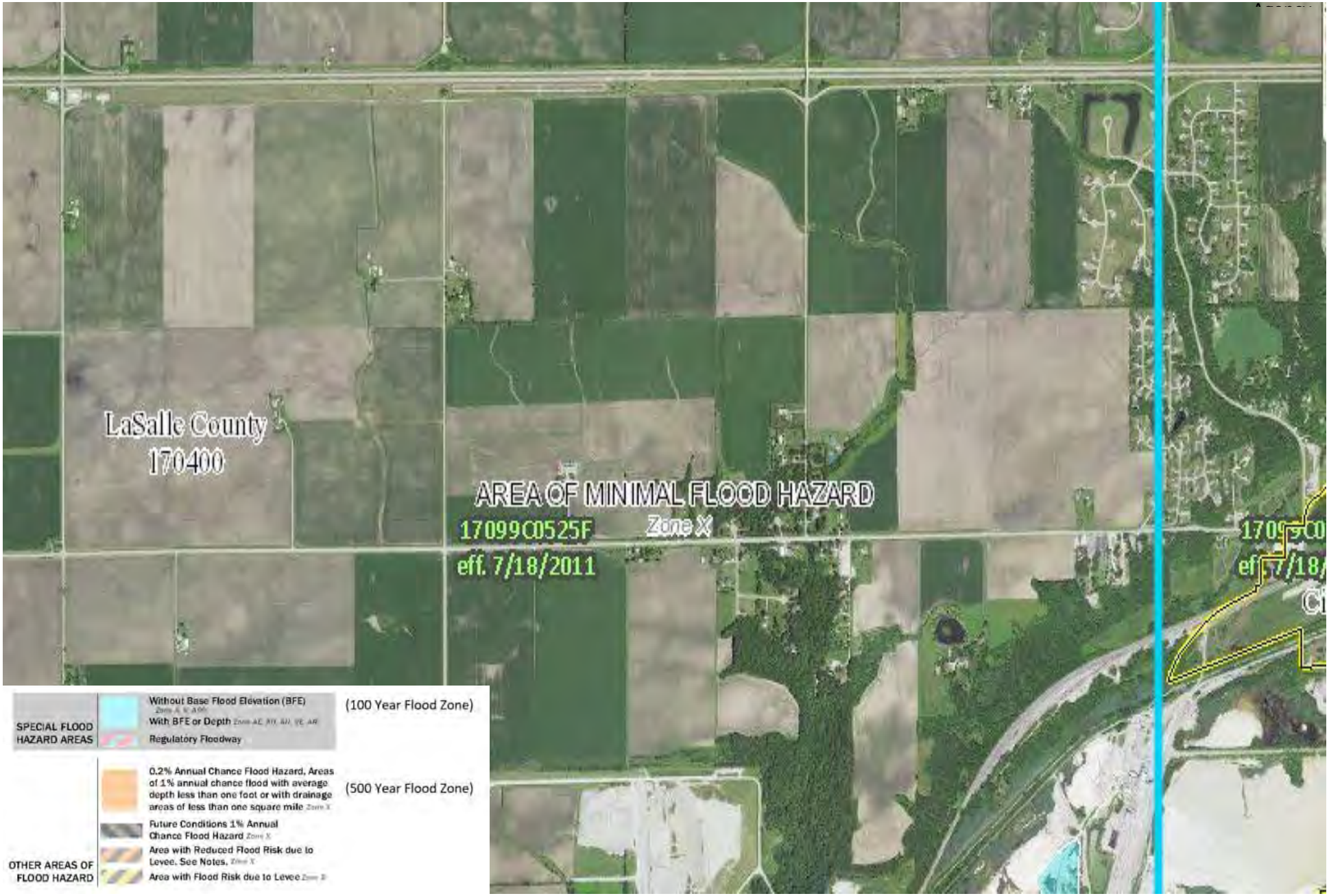
Ottawa Township - East 2020

Source: Federal Emergency Management



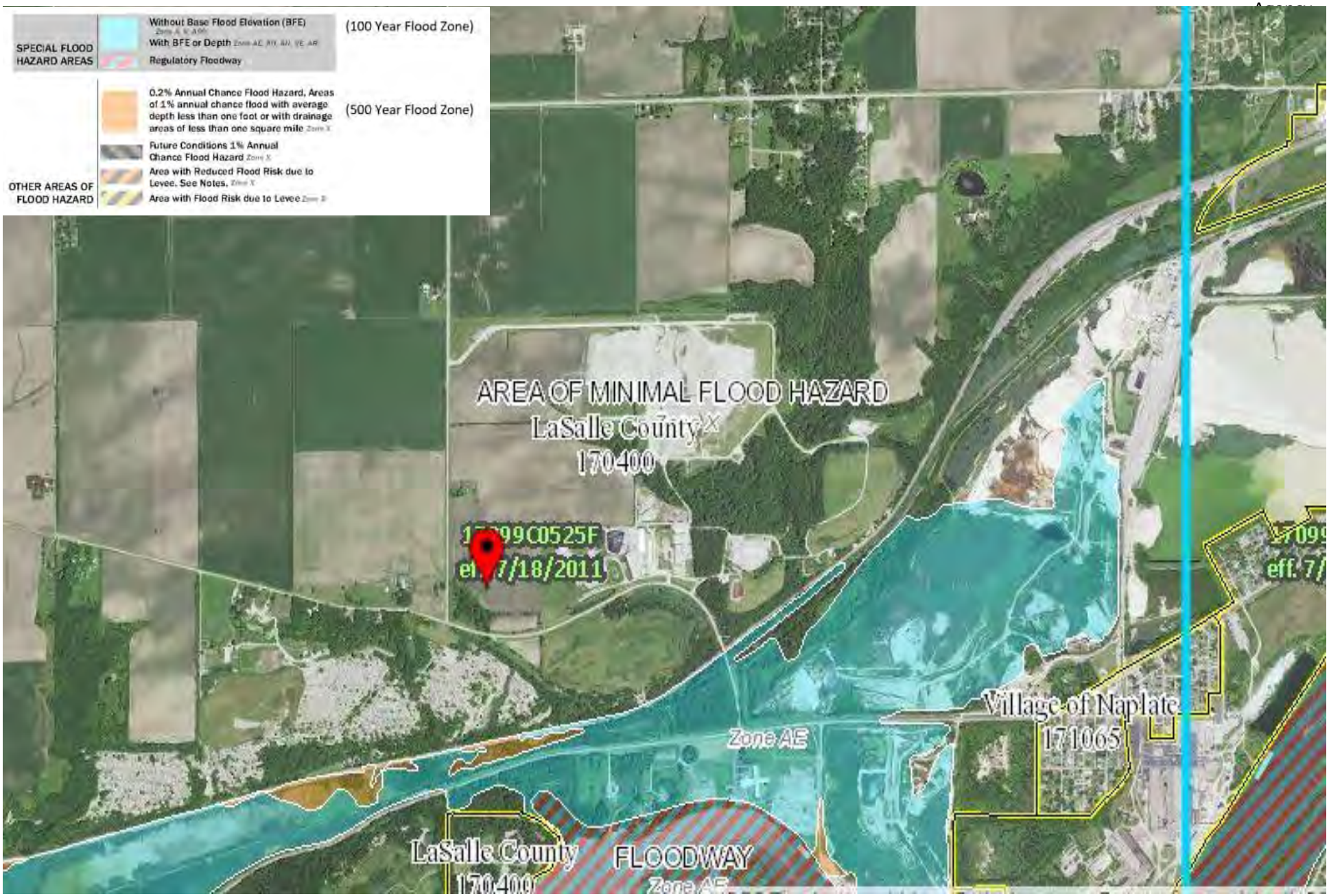
Ottawa Township – North West 2020

Source: Federal Emergency Management



Ottawa Township – South West 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

City of Peru

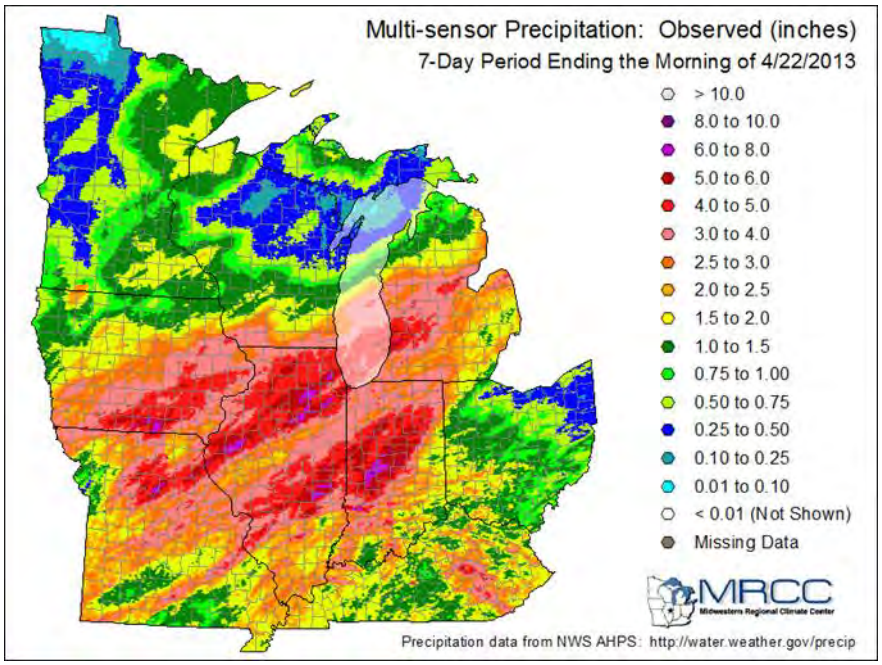
Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Peru	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**

Location: The City of Peru is located 17 miles west of the City of Ottawa and directly west of the City of LaSalle. The City of Peru is located on U.S. Route 6.

Population: 10,295 (2010 Census), 9,798 (2018 estimate)

Major Storm Events since February 2008:

- April 17-19, 2013 Flood: A slow-moving storm dropped as much as 10 inches of rain across the region causing widespread flooding along the Illinois River. The city placed sandbags around the east side waste water treatment plant to prevent flooding. Several homes throughout the city experienced basement backups. The city is currently in the initial stages of design and permitting for a floodwall protection project at the east waste water treatment plant.



Tornado Risk: The City of Peru has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The city has tornado sirens that provide full coverage, but there are no tornado shelters in the city.

Flood Risk: The City of Peru has a "Low" risk of flooding.

Type(s) of Flooding: Riverine Flooding/ Urban Drainage- Surface Water Runoff/ Basement Backups

Area of Risk: The FEMA Flood Insurance Rate Map (FIRM) for the city shows that properties along the Illinois River have the greatest risk of flooding. An electrical substation on Water

Street and the city's east waste water treatment plant, south of Pine Street, are at risk. Both public facilities are located in a 100-year floodplain.

Basement backups have occurred in parts of the city. Many older homes have their footing tiles connected to the sanitary sewer service lines, which can overwhelm the sanitary sewer and cause basement backups. The city offers a cost-share program to residents to encourage residents to disconnect their footing tiles from the sanitary sewer.

Critical Facilities at Risk: The city's east side waste water treatment plant, south of Pine Street, and an electrical substation on Water Street are at risk of flooding.

National Flood Insurance Program Participant: Yes

Community Rating System Participant: No

Winter Storm Risk: The City of Peru has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can also be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The City of Peru has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The City of Peru has a "High" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. On three (3) documented occasions lightning has struck in Peru resulting in damage. In 2005, a church steeple was struck causing roof damage. In 2007, a house fire was caused by lightning and a lightning strike near a hospital caused pumps in the laundry room to activate and release bleach fumes. Several patients had to be relocated because of the fumes. The City of Peru has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle

Community Risk Assessment

County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The City of Peru and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The City of Peru and LaSalle County have a "Medium" risk of hail.

Landslides: Based on no previous occurrences and location, the City has no risk of landslides occurring.

Wildfires: Based on no previous occurrences and ground cover, the City has no risk of wildfires occurring.

Additional Information:

- The city's most recent zoning ordinance was adopted in 2001.
- The city has adopted International Building Code 2003.
- The city is working to separate the sanitary and storm sewer systems. Approximately 50 percent of the city has separate sewer systems. Several sanitary sewer improvement projects have been completed in the City of Peru to alleviate basement backups, to control flow at the waste water treatment plants, and to increase the capacity of the sewer system. Listed below are projects the City of Peru has completed.
    - 28th Street upsizing
    - St. Johns – Meadowlawn Street
    - Diversion Project near Hy-Vee
    - Peoria Street – Shooting Park – 9th Street
- Completed a flood wall around the WWTP in 2019.
- Installed a back-up generator at the WWTP.
- Completed the reconstruction of Water Street.

Mitigation Activities:

1. **Mitigation Strategy:** Continue to work with homeowners to separate drain tiles from the sewer system.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Building and Zoning Official
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Construction
   Revenue Source: Local Funds
   Resources: N/A
   Benefits: Reduce basement backups and overwhelming the waste water treatment plant.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Continue to separate the sanitary and storm sewer systems throughout the city.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/ City Engineer/ City Building and Zoning Official
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Design/ Engineering/ Construction
   Revenue Source: Local Funds
   Resources: City Engineer
   Benefits: Reduce basement backups and overwhelming the waste water treatment plant.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Continue to implement improvements and carried over into the activities list for this plan.

3. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Identify and promote heating and cooling center locations to residents and ensure that such facilities are compliant with the American Disabilities Act (1990) 2010 Standards for Accessibility Design Requirements.
   Hazard Addressed: Extreme Temperatures and Winter Storms
   Responsible Entity or Person: City Council
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Staff Time/ Engineer Inspection/ Promotional Expenses
   Revenue Source: Local Funds
   Resources: 2010 Standards for Accessibility Design Requirements/ City Engineer
   Benefits: Provide a safe environment to residents during extreme periods of cold and heat.
   Deadline: 1 Year
   Mitigation Type: Education and Awareness

Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council and Staff
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
   Deadline: 1 Year
   Mitigation Type: Education and Awareness
   Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Participate in the development of a regional stormwater management ordinance that will reduce flooding and protect lives, property, and the environment.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
   Benefits: Minimize the adverse impact of stormwater on communities.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulation
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Participate in the National Flood Insurance Program's Community Rating System to help residents save on flood insurance premiums.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Varies depending on activities pursued
   Revenue Source: Local Funds
   Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
   Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

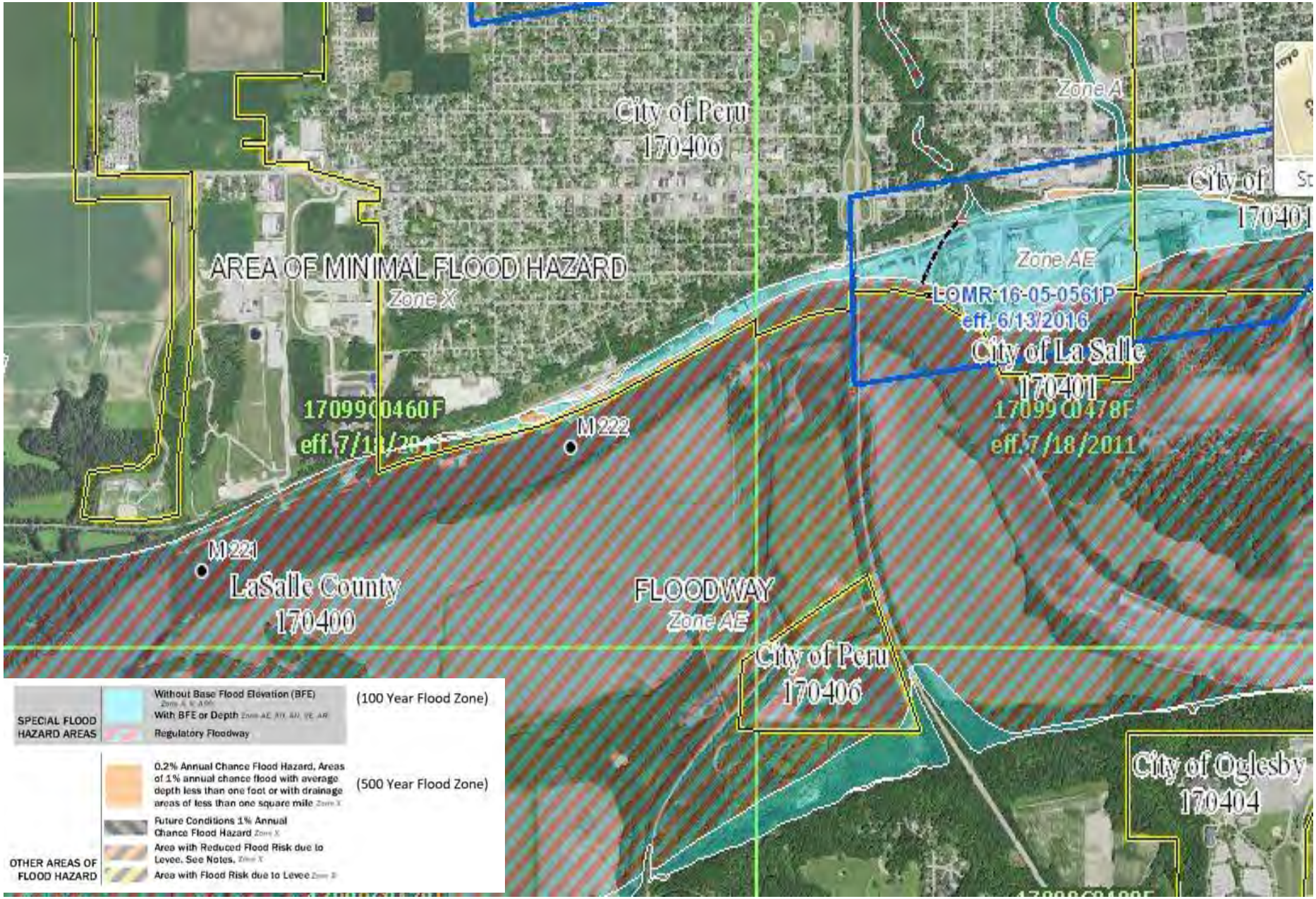
8. **Mitigation Strategy:** Work together with regional partners to share resources and to create opportunities for the public to be engaged and informed about the risks of natural hazards and mitigation activities.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Other communities/ North Central Illinois Council of Governments
   Benefits: Collaboration provides opportunities to share ideas and resources.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Education and Awareness
   Activity Status: Carried over into the activities list for this plan.

9. **Mitigation Strategy:** Relocate the City of Peru Electric Water Street Substation to a location outside of the floodplain.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/Medium
   Priority: High
   Cost: Staff Time/ Installation/ Maintenance
   Revenue Source: Local Funds/ Hazard Mitigation Assistance Funds
   Resources: Seek any permits if necessary.
   Benefits: Ensure that the plant will continue operating and treating sewage if the normal power supply is lost.
   Deadline: 1-3 Years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: New mitigation activity for this plan.

10. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
    Hazard Addressed: All identified hazards
    Responsible Entity or Person: City Staff
    Benefit/Cost: Medium/Low
    Priority: Low, no change, new activity for this plan.
    Cost: Staff time
    Revenue Source: Federal, state, local or grant funds
    Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
    Benefits: Increased awareness and preparedness
    Deadline: 2 Years
    Mitigation Type: Education and Awareness Programs
    Activity Status: New mitigation activity for this plan.

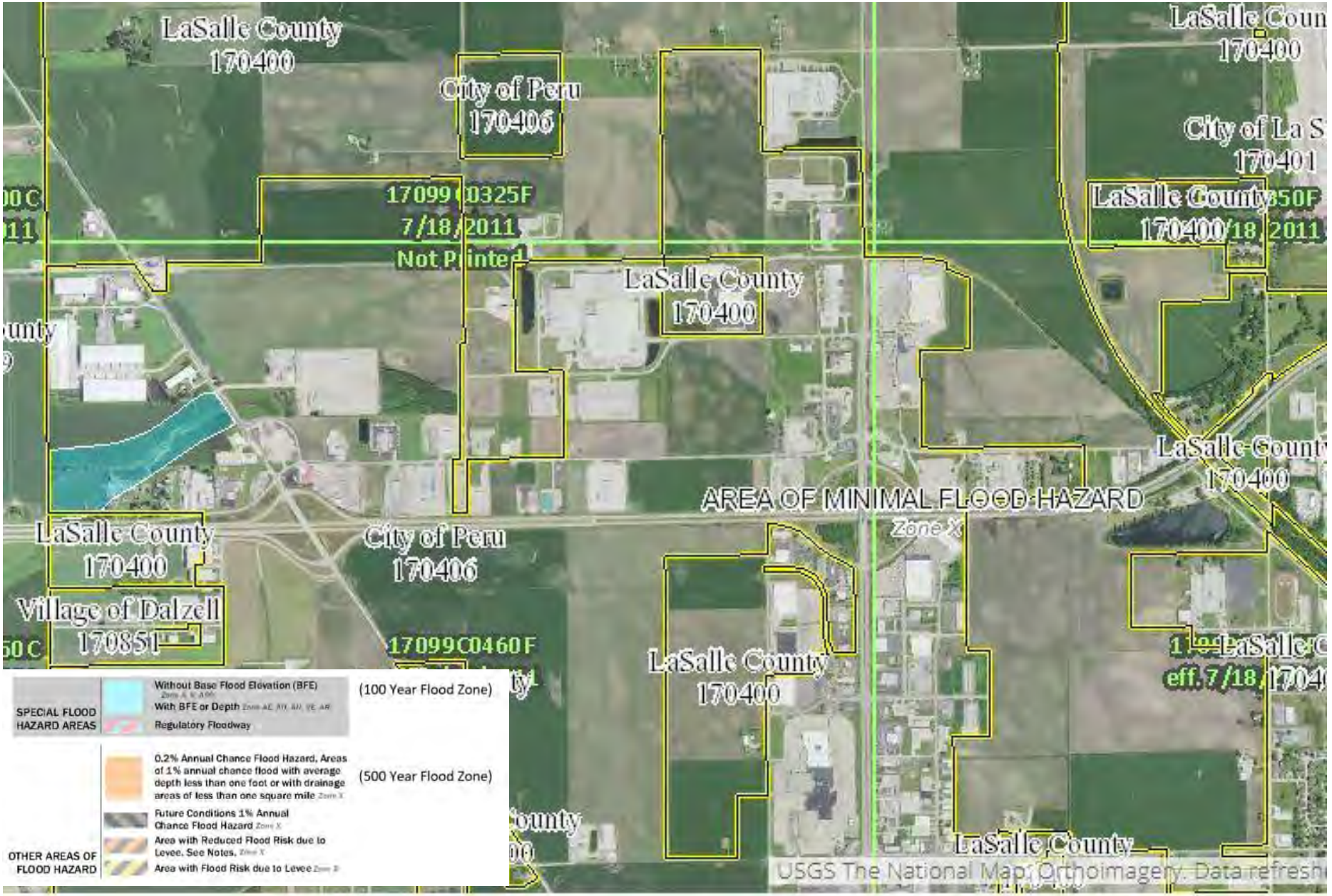
City of Peru – South 2020

Source: Federal Emergency Management Agency



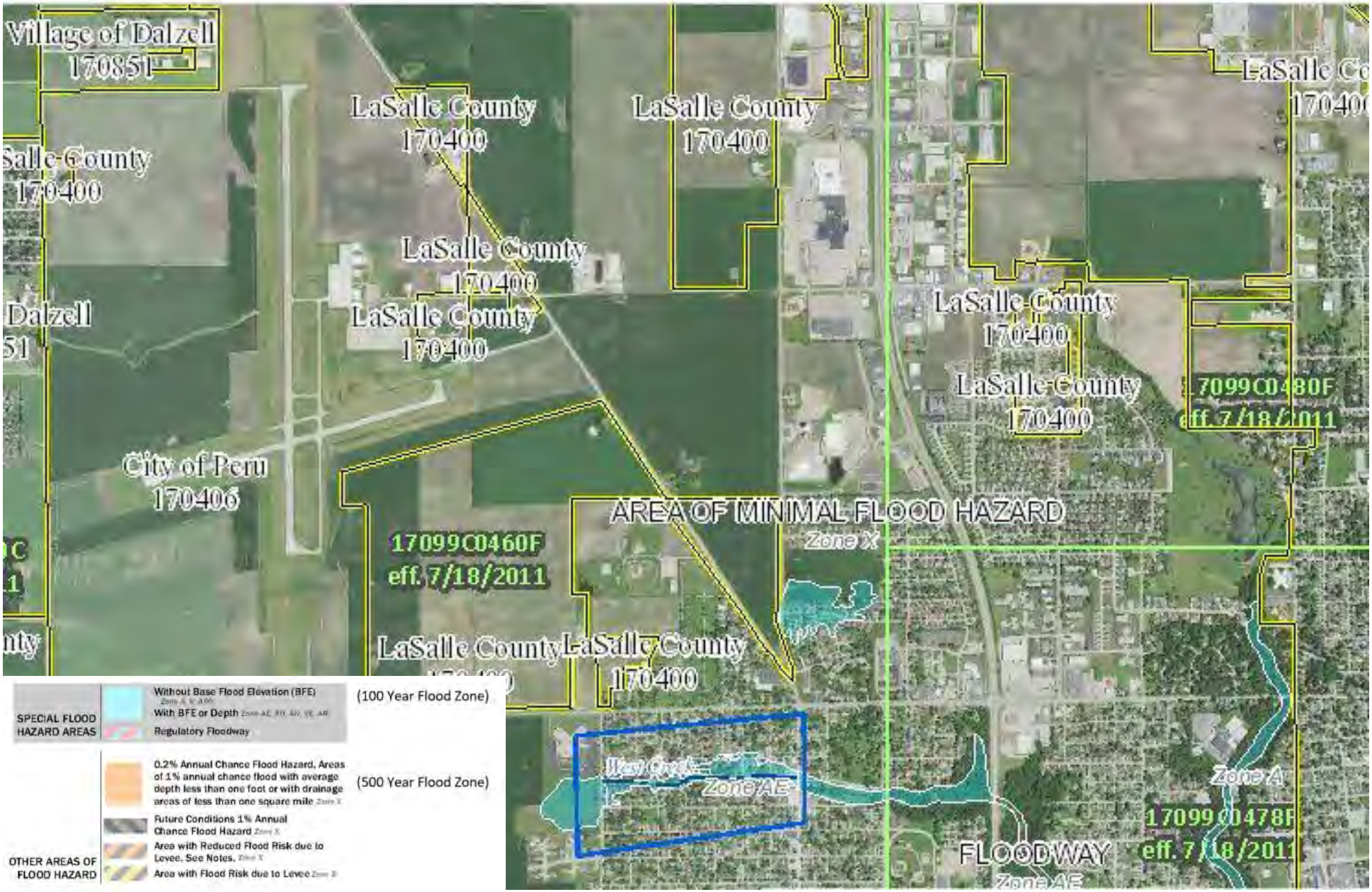
City of Peru – North 2020

Source: Federal Emergency Management Agency



City of Peru – Central 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

Village of Ransom

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Ransom	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of Ransom is located 23.5 miles (via Illinois Route 23 and County Route 5) southeast of the City of Ottawa in LaSalle County.

Population: 384 (2010 Census), 359 (2018 estimate)

Major Storm Events since February 2008: None

Tornado Risk: The Village of Ransom has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The village does not have tornado sirens or shelters.

Flood Risk: The Village of Ransom has a "Low" risk of flooding.

Type(s) of Flooding: Urban Drainage- Surface Water Runoff

Area of Risk: The village does not have any 100-year floodplains. Surface water drainage issues cause flooding at the following locations in the village:

- Campbell Street- A concrete pad obstructs a drainage ditch.
- Drainage issues on the corner of Campbell and Columbus Streets.
- Drainage issues on the corner of Thomas and South Columbus Streets.
- Drainage issues on the corner of South Columbus and Roosevelt Streets.
- Drainage issues on the north side of the East Plumb Street at the Illinois Route 170 intersection.

Critical Facilities at Risk: None

National Flood Insurance Program Participant: No

Community Rating System Participant: No

Winter Storm Risk: The village has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace

utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can also be problematic for public water systems. The village no longer owns the water system. It was sold to Illinois American Water. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The Village of Ransom has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of Ransom has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The Village of Ransom has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of Ransom and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of Ransom has "Low" risk of hail.

Landslides - Based on no previous occurrences and location the Village has no risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- The village has a storm sewer system, but does not have a sanitary sewer system.
- The village does not have its own police force. The county provides minimal coverage.
- The village uses the Dana Police Force for coverage by and intergovernmental agreement.
- Televised sewers, cleaned sewers where necessary, and repaired and replaced sewers.

Mitigation Activities:

Community Risk Assessment

1. **Mitigation Strategy:** Identify and complete projects to minimize surface water flooding issues on Campbell, Columbus, Thomas, Roosevelt, and East Plumb Streets.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Design/ Engineering/ Construction
   Revenue Source: Local Funds/ State Funds
   Resources: North Central Illinois Council of Governments
   Benefits: Ensure proper drainage of stormwater.
   Deadline: 4 years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Purchase and install outdoor early warning (tornado) sirens in the village. LaSalle Station is nearby with siren.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/High
   Priority: Very High, no change since 2015 Plan
   Cost: Sirens
   Revenue Source: Local Funds
   Resources: United States Department of Agricultural- Rural Development/ State Appropriation
   Benefits: Provide individuals outside time to take cover from approaching storm.
   Deadline: 2 Years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

3. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Identify and promote heating and cooling center locations to residents and ensure that such facilities are compliant with the American Disabilities Act (1990) 2010 Standards for Accessibility Design Requirements.
   Hazard Addressed: Extreme Temperatures and Winter Storms
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/Low
   Priority: Low, no change since 2015 Plan
   Cost: Staff Time/ Promotional Expenses
   Revenue Source: Local Funds
   Resources: 2010 Standards for Accessibility Design Requirements
   Benefits: Provide a safe environment to residents during extreme periods of cold and heat.
   Deadline: 1 Year
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Adopt a Comprehensive Land Use Plan
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Drought, Hail
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/High
   Priority: Low, no change since 2015 Plan
   Cost: Staff Time/Planning Consultant
   Revenue Source: Local Funds/ State Grants
   Resources: Planning Consultant/ Residents/ Public Officials/ Other Stakeholders
   Benefits: Provide the community with an understanding of the village's history, demographics, land use, transportation, and a plan for future development.
   Deadline: 3 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board working with LaSalle County officials
   Benefit/Cost: Medium/High
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time/ Cost of Building Inspector
   Revenue Source: Local Funds
   Resources: International Code Council
   Benefits: Communities that are unable to afford a full-time building inspector will have a resource for building inspections.
   Deadline: 3 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: Village Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
   Benefits: Increased awareness and preparedness
   Deadline: 2 Years
   Mitigation Type: Education and Awareness Programs
   Activity Status: New mitigation activity for this plan.

Village of Ranson (No Floodplain) 2020

Source: Federal Emergency Management Agency

Community Risk Assessment

Village of Seneca

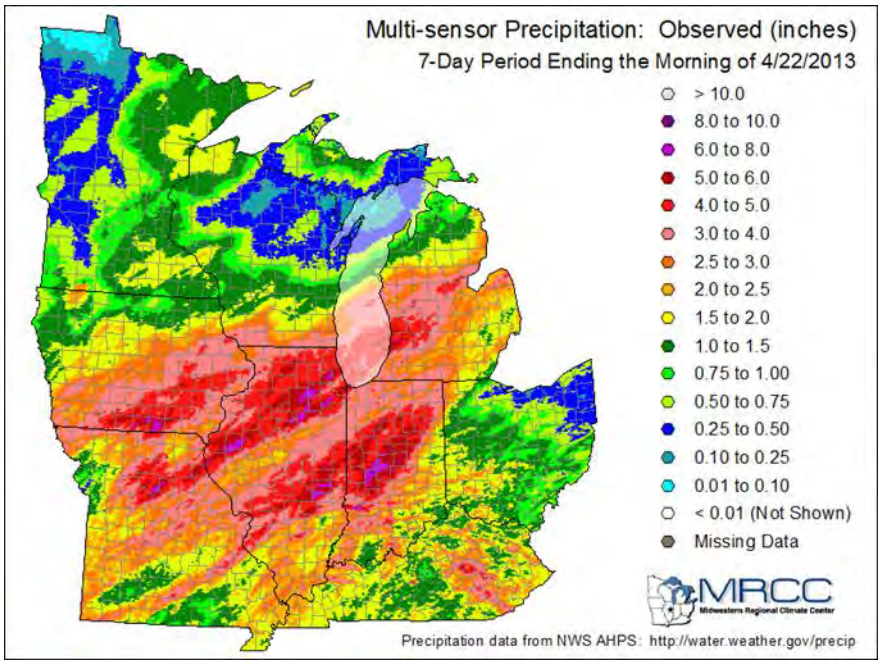
Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Seneca	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of Seneca is located 14.4 miles east of the City of Ottawa along U.S. Route 6 in LaSalle County.

Population: 2,371 (2010 Census), 2,261 (2018 estimate)

Major Storm Events since February 2008:

- June 2015 Heavy Rain and Flooding: The village has been experiencing flash flooding coming off the hill from the north end of town. The water flows through a trailer park, the BP gas station at the corner of 170 and Jackson, across the railroad tracks and onward to Crotty Creek and Rat Run.
- April 17-19, 2013 Flood: A slow-moving storm dropped as much as 10 inches of rain across the region causing widespread flooding along the Illinois River and local creeks to swell. There was minor surface water flooding east of Main Street near Shipyard Road. Flooding from Rat Run, a creek that runs east to west through town, nearly flooded the waste water treatment plant on West Union Street. The street was also closed preventing access to the village's garages. When the Illinois River floods, water backups onto the creek. On the north side of town, Crotty Creek flooded and pushed water into a subdivision on Valley View Drive, placing 100 homes at risk; however, none of the homes were damaged. Scouring of road aprons occurred.



Tornado Risk: The Village of Seneca has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years.

Community Risk Assessment

A memorandum of understanding has been entered into between Grundy County, LaSalle County, and the Village of Seneca for the Conditional Dual Control of outdoor early warning sirens that are owned and maintained by Exelon Nuclear. The outdoor warning sirens are part of the LaSalle Nuclear Power Station Prompt Notification System. Exelon Nuclear has no objections to Dual Control of the sirens. Under the agreement, when the Village of Seneca requests that the sirens be activated, the village will give the public prompt notification through radio stations as to why the sirens were activated. The village will ensure that the LaSalle County Emergency Management Agency and the LaSalle County Dispatch have been notified. For non-radiological activation of the sirens, the village will contact the Grundy County Dispatch Center for activation. For radiological-related activity and testing, the sirens will be activated by the LaSalle County Dispatch. The sirens will be tested on the first Tuesday of each month at 10:00 and again at 10:30. The memorandum of understanding was a significant undertaking by all parties involved.

From a planning perspective, North Central Illinois Council of Governments would recommend that as a long-term goal the village consider purchasing separate outdoor early warning sirens for severe weather to eliminate any confusion between a nuclear activity situation and a severe weather event. NCICG recognizes that at the current time, the village may not have the financial resources to pursue the purchase of new sirens.

Flood Risk: The Village of Seneca has a "Low" risk of flooding.

Type(s) of Flooding: Riverine Flooding/ Urban Drainage- Surface Water Runoff

Area of Risk: The FEMA Flood Insurance Rate Map (FIRM) for the village shows that the 100-year floodplains for Rat Run and Crotty Creek pose the greatest threat of flooding to the community. Rat Run traverses east to west through town and threatens to flood Seneca High School's athletic fields, sections of Commerce and Main Streets, and the village's waste water treatment plant. The creek swells when the Illinois River floods. Agricultural lands bordering the creek become inundated with water. The 100-year floodplain for Crotty Creek starts near East Jackson Street and runs south to Vaughey Street until it meets the Illinois and Michigan Canal. The creek has the potential to flood multiple homes in the Valley View Drive Subdivision. The village monitors Crotty Creek when heavy rains is expected or occurs.

Spring Brook Marina and its creek have consistent flooding issues when the river gets too high. Road closures, culvert issues, and home flooding have occurred. The marina has also been closed at times.

Critical Facilities at Risk: The village's waste water treatment plant on West Union Street is located in a 100-year floodplain.

National Flood Insurance Program Participant: Yes

Community Rating System Participant: No

Winter Storm Risk: The Village of Seneca has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter

weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can also be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The Village of Seneca has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of Seneca has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The Village of Seneca has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of Seneca and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of Seneca has a "Low" risk.

Landslides - Based on no previous occurrences and location the Village has no risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- The village adopted a comprehensive plan in 2008. It does not address natural hazards.
- The village's most recent zoning ordinance was adopted in 2009. It does not address natural hazards.

Community Risk Assessment

- The village has adopted International Building Code 2003.
- The village does not have a storm water management ordinance.
- The village has at least 95 percent of the sanitary and storm sewer systems separated.
- The village's library can serve as a heating and cooling center during extreme temperatures.
- The village has cleared various areas in town that collected debris and silt. Upsized drainage tiles have also been constructed by the high school.
- A backflow check and valve compliance survey is currently being worked on with the water department.
- Bids have been put out for work on the sewer system in Valley View Subdivision to address infiltration issues. The work should help with flooding and erosion issues.
- A great number for ash borer diseased trees have been identified that could fall and plug the flow of the Illinois & Michigan Canal.
- There is some risk of mine subsidence on the north side of the village where coal mines once were located.
- In January 2014, a procedure was developed for a short-term cooling and warming center at Seneca High School during extreme weather conditions. This is not a shelter, but a center until further arrangements can be made.
- The village has outdoor sirens for tornadoes and lightening detectors.

Mitigation Activities:

1. **Mitigation Strategy:** Encourage the Illinois Department of Natural Resources to dredge the Illinois and Michigan Canal.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board/ Village Building and Zoning Official
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Local Legislators
   Benefits: Increase flow of water and reduce flooding caused by the canal.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Assess the waste water treatment plant's risk of flooding and implement projects and activities to minimize risk.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Building and Zoning Official/ Village Engineer
   Benefit/Cost: High/High
   Priority: Very High, no change since 2015 Plan
   Cost: Depends on activities and projects pursued
   Revenue Source: Local Funds
   Resources: Village Engineer

Benefits: Protection of a critical facility and reduce the likelihood of an environmental and public health disaster.
Deadline: 3 Years
Mitigation Type: Structure and Infrastructure Projects
Activity Status: Carried over into the activities list for this plan.

3. **Mitigation Strategy:** Identify and implement activities and projects to minimize the impact of flooding on homes in the Valley View Drive Subdivision.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Building and Zoning Official
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Staff Time/ Varies depending on activities and projects pursued
   Revenue Source: Local Funds
   Resources: Village Engineer/ Village Building and Zoning Official
   Benefits: Minimize the impact of flooding in the subdivision.
   Deadline: 4 Years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board
   Benefit/Cost: High/Low
   Priority: High, no change since 2015 Plan
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
   Deadline: 1 Year
   Mitigation Type: Education and Awareness
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time

Revenue Source: Local Funds
Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Participate in the development of a building inspector training program with neighboring communities and/or a mutual agreement to share trained building inspectors.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/High
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time/ Cost of Building Inspector
   Revenue Source: Local Funds
   Resources: International Code Council
   Benefits: Communities unable to afford a full-time building inspector will have a resource for building inspections.
   Deadline: 3 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Improve local hazardous weather operations by becoming a StormReady community.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Hail
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/Medium
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Weather Spotters/ Emergency Responders –Fire, Police, Paramedics/ Emergency Management Personnel
   Benefits: Immediate disbursement of information to residents during severe weather.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

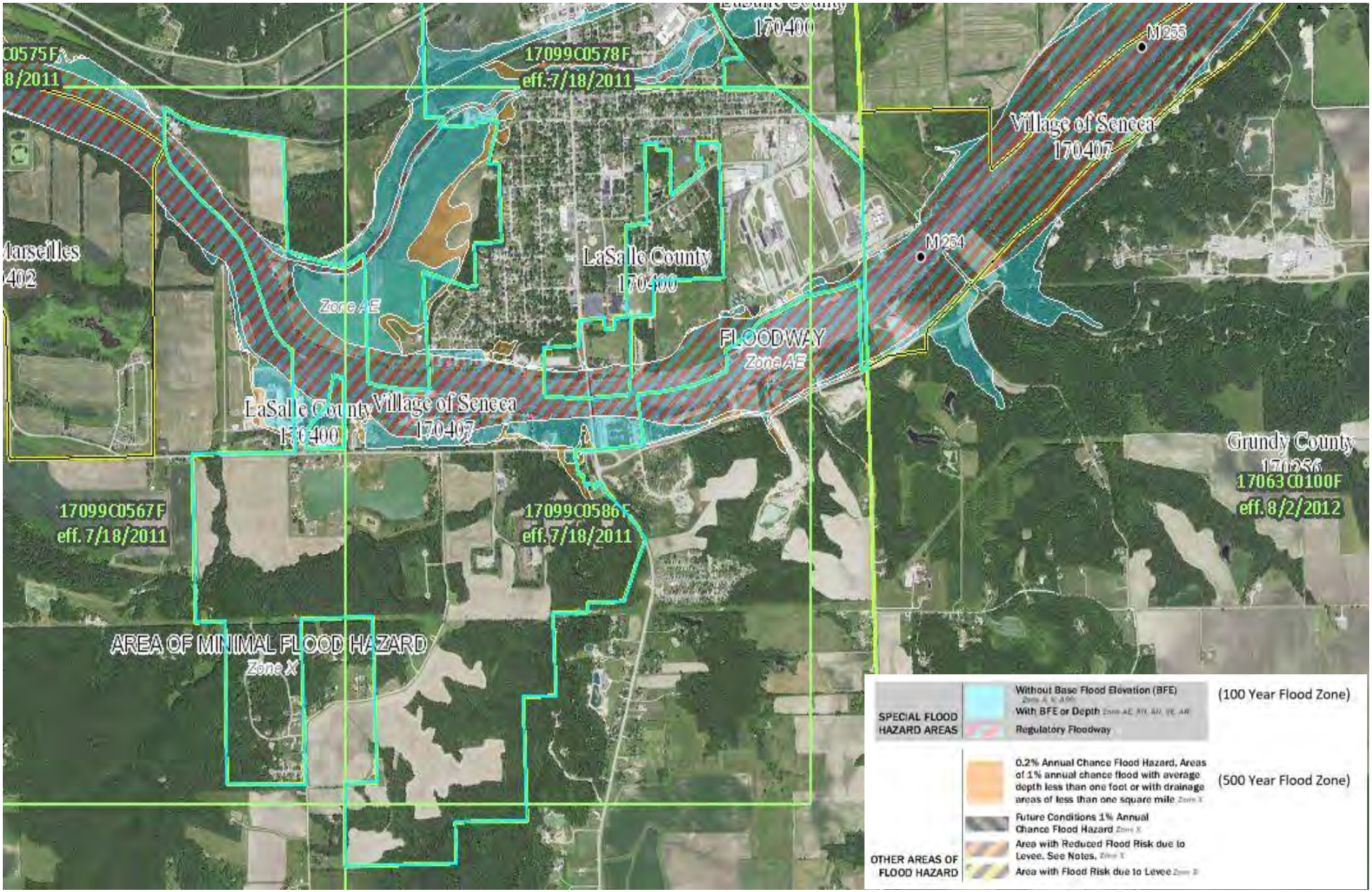
8. **Mitigation Strategy:** Participate in the National Flood Insurance Program's Community Rating System to help residents save on flood insurance premiums.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board/ Village Building and Zoning Official/ Village Engineer
   Benefit/Cost: High/High
   Priority: Medium, no change since 2015 Plan

Cost: Varies depending on activities pursued
Revenue Source: Local Funds
Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
Deadline: 1 Year
Mitigation Type: Local Plans and Regulations
Activity Status: Carried over into the activities list for this plan.

9. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
Hazard Addressed: All identified hazards
Responsible Entity or Person: Village Staff
Benefit/Cost: Medium/Low
Priority: Low, no change, new activity for this plan.
Cost: Staff time
Revenue Source: Federal, state, local or grant funds
Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
Benefits: Increased awareness and preparedness
Deadline: 2 Years
Mitigation Type: Education and Awareness Programs
Activity Status: New mitigation activity for this plan.

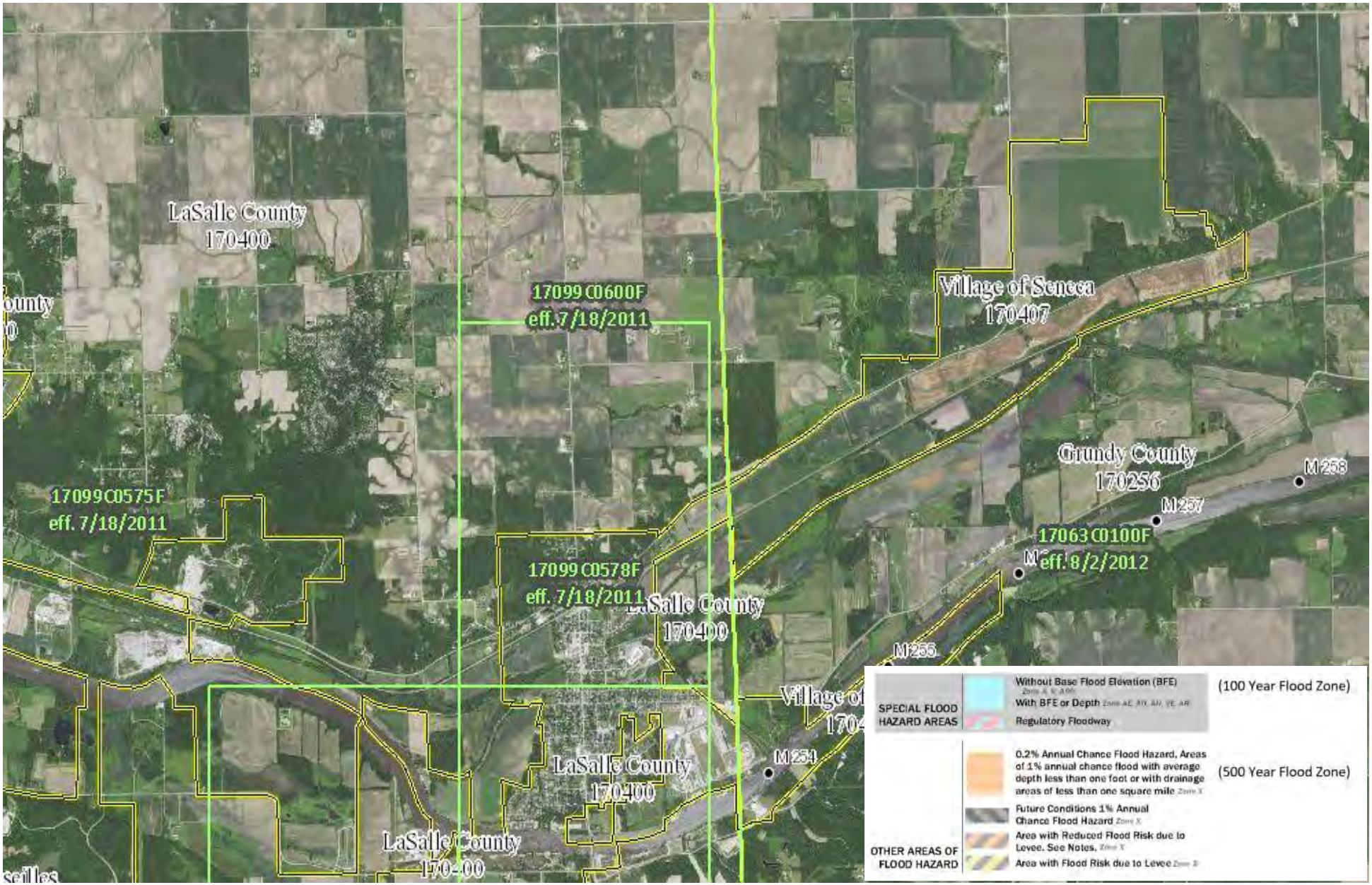
Village of Seneca (North-N) 2020

Source: Federal Emergency Management



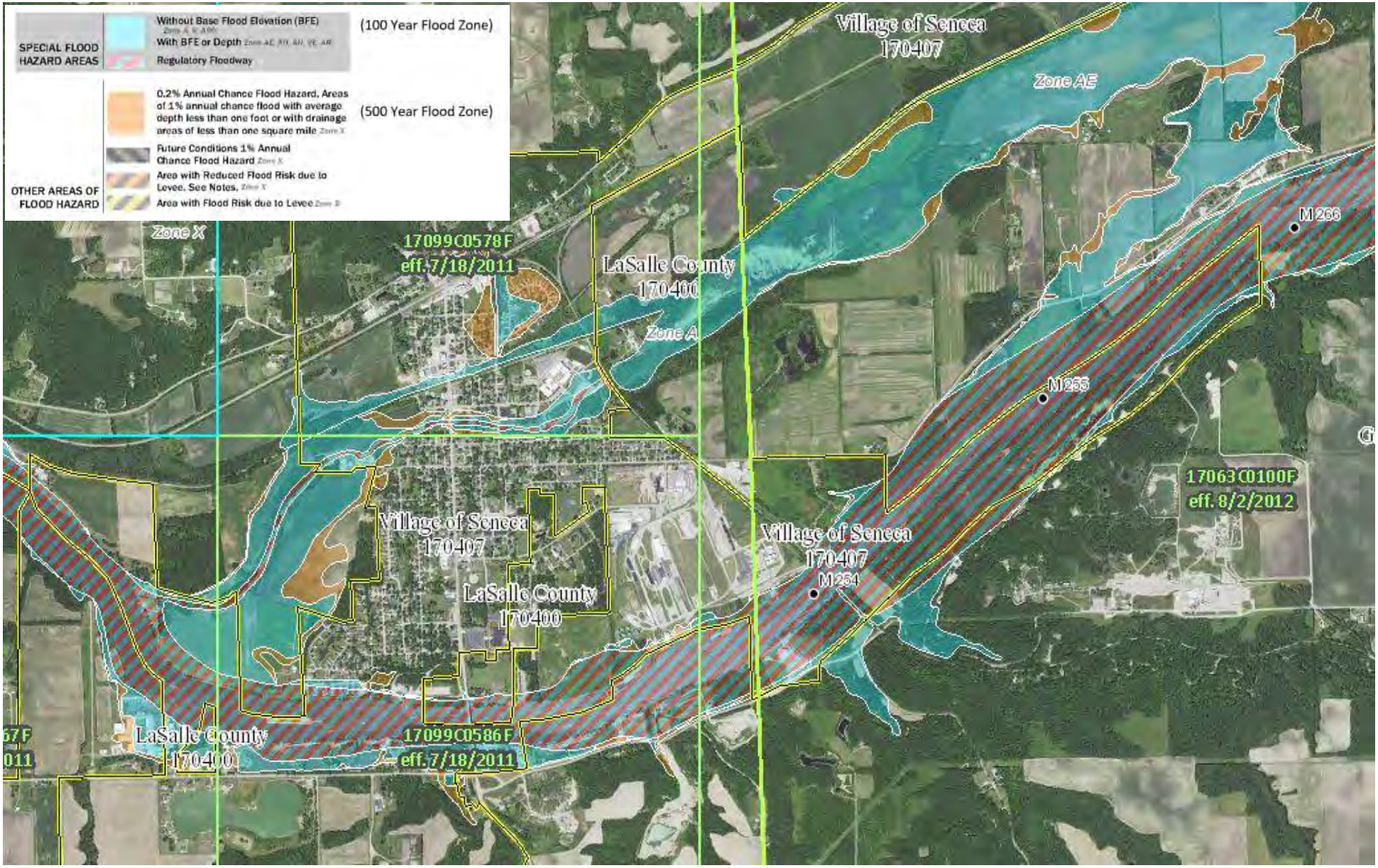
Village of Seneca (North) 2020

Source: Federal Emergency Management Agency



Village of Seneca (Central) 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

Village of Sheridan

Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Sheridan	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Medium**	**Low**

Location: The Village of Sheridan is located 18.4 miles (via Illinois Route 71) from the City of Ottawa in LaSalle County.

Population: 2,137 (2010 Census), 2,529 (2018 estimate)

Major Storm Events since February 2008:

- Specific dates were not provided, but the village has experienced several snowstorms resulting in road closures and several dangerous winds events that knocked down trees.

Tornado Risk: The Village of Sheridan has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The village has tornado sirens that provide full coverage within the village's corporate boundaries. There are no tornado shelters within the village.

Flood Risk: The Village of Sheridan has a "Low" risk of flooding. Heavy Rain July 18, 2019.

Type(s) of Flooding: Riverine Flooding

Area of Risk: The Fox River runs along west and north boundaries of the village. The village's FEMA Flood Insurance Rate Map (FIRM) identifies the 100-year floodplain for the river. A campground utility building and accessory structures are located in the floodplain.

Critical Facilities at Risk: None. The village's waste water treatment plant (WWTP) is located near the Fox River on the west edge of town. The WWTP is not located in a 100-year floodplain, but is considerably close.

National Flood Insurance Program Participant: Yes (since 1983)

Community Rating System Participant: No

Winter Storm Risk: The village has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace

utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The Village of Sheridan has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. LaSalle County has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage. The Village of Sheridan has a "Medium" risk of dangerous winds.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The Village of Sheridan has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The Village of Sheridan and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The Village of Sheridan has "Low" risk of hail.

Landslides - Based on no previous occurrences and location the Village has no risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the Village has no risk of wildfires occurring.

Additional Information:

- The village's comprehensive plan was adopted in 2000 and amended in 2006. It addresses floodplain issues.
- The villages zoning ordinance was adopted in 2007 and has had several subsequent amendments. It addresses floodplain issues.
- All new streets must be elevated above the 100-year flood level.
- The village has several building codes in place including: the National Electrical Code (1999), the International Mechanical Code (2000), the Illinois State Plumbing Code (2004), the International Building Code (2000), and the International Residential Code (2000).

Community Risk Assessment

- All new buildings are inspected, except where exempt by code.
- The village has reduced flooding issues by lining sanitary sewers and replacing storm sewers.
- Diseased trees pose a risk to the community. The village is in the process of cutting down trees that have been overtaken by the Emerald Ash Borer.
- Backup generators are located at the police station, fire department, and village hall.
- The American Legion is ADA compliant and can be used as a heating or cooling center.
- Completed mitigation activity of removing trees from village property that were effected by Emerald Ash Borer.
- Completed mitigation activity of purchasing backup generators for emergencies.
- Village is able to sound sirens via cell phone.

Mitigation Activities:

1. **Mitigation Strategy:** Develop and implement an Emergency Operations Plan for snow removal.
   Hazard Addressed: Winter Storms, Dangerous Winds, and Extreme Temps.
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/High
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Illinois Emergency Management Agency
   Benefits: A plan to efficiently remove snow will ensure that emergency responders can access all parts of the village during and after a snowstorm.
   Deadline: 1 Year (continue to work on this)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Develop emergency shelter plans.
   Hazard Addressed: Extreme Temperatures and Winter Storms
   Responsible Entity or Person: Village Board/ Emergency Responders – Fire, Police, Ambulance
   Benefit/Cost: High/Low
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Illinois Emergency Management Agency
   Benefits: Having a procedure in place for when a natural disaster occurs.
   Deadline: 2 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Village continues to work on and carried over into the activities list for this plan.

3. **Mitigation Strategy:** Consider utilizing CodeRed, an emergency alert notification system, to increase awareness and preparedness of severe weather. **Hazard Addressed:** Tornadoes, Flood**,** Extreme Temperatures and Winter Storms

Responsible Entity or Person: Village Board/ Police Department
Benefit/Cost: High/Low
Priority: Medium, no change since 2015 Plan
Cost: Staff Time/ Annual user fees
Revenue Source: General Fund
Resources: CodeRed/LaSalle County Emergency Management Agency/ Bureau County Sheriff's Department
Benefits: Increase public awareness of severe weather.
Deadline: 2 Years
Mitigation Type: Education and awareness
Activity Status: Carried over into the activities list for this plan. (Continue to find best avenues for this)

4. **Mitigation Strategy:** Purchase new sirens, network with others and engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
   Hazard Addressed: Tornado and Dangerous Winds
   Responsible Entity or Person: A regional group consisting of County Emergency Management Agency, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
   Benefit/Cost: High/High
   Priority: Very High
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
   Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
   Deadline: 1 Year
   Mitigation Type: Structure and infrastructure projects
   Activity Status: New mitigation activity for this plan.

5. **Mitigation Strategy:** Improve local hazardous weather operations by becoming a StormReady community.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Hail
   Responsible Entity or Person: Village Board
   Benefit/Cost: Medium/Medium
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Weather Spotters/ Emergency Responders –Fire, Police, Paramedics/ Emergency Management Personnel
   Benefits: Immediate disbursement of information to residents during severe weather.
   Deadline: 1 Year (working on)

Mitigation Type: Education and awareness
Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Participate in the National Flood Insurance Program's Community Rating System to help residents save on flood insurance premiums.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board/ Village Building and Zoning Official/ Village Engineer
   Benefit/Cost: High/High
   Priority: Medium, no change since 2015 Plan
   Cost: Varies depending on activities pursued
   Revenue Source: Local Funds
   Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
   Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Identify best measure to protect WWTP from flooding and apply for funding to implement.
   Hazard Addressed: Floods
   Responsible Entity or Person: Village Board/ Village Building and Zoning Official/ Village Engineer
   Benefit/Cost: High/High
   Priority: High
   Cost: Varies depending on activities pursued
   Revenue Source: Local Funds, State and Federal Grants as available
   Resources: Engineers/ WWTP operators and examples from other communities
   Benefits: Prevent damage to critical facility and potential ongoing cost of repairs from flooding
   Deadline: 2-3 Years
   Mitigation Type: Structure and infrastructure projects
   Activity Status: New mitigation activity for this plan.

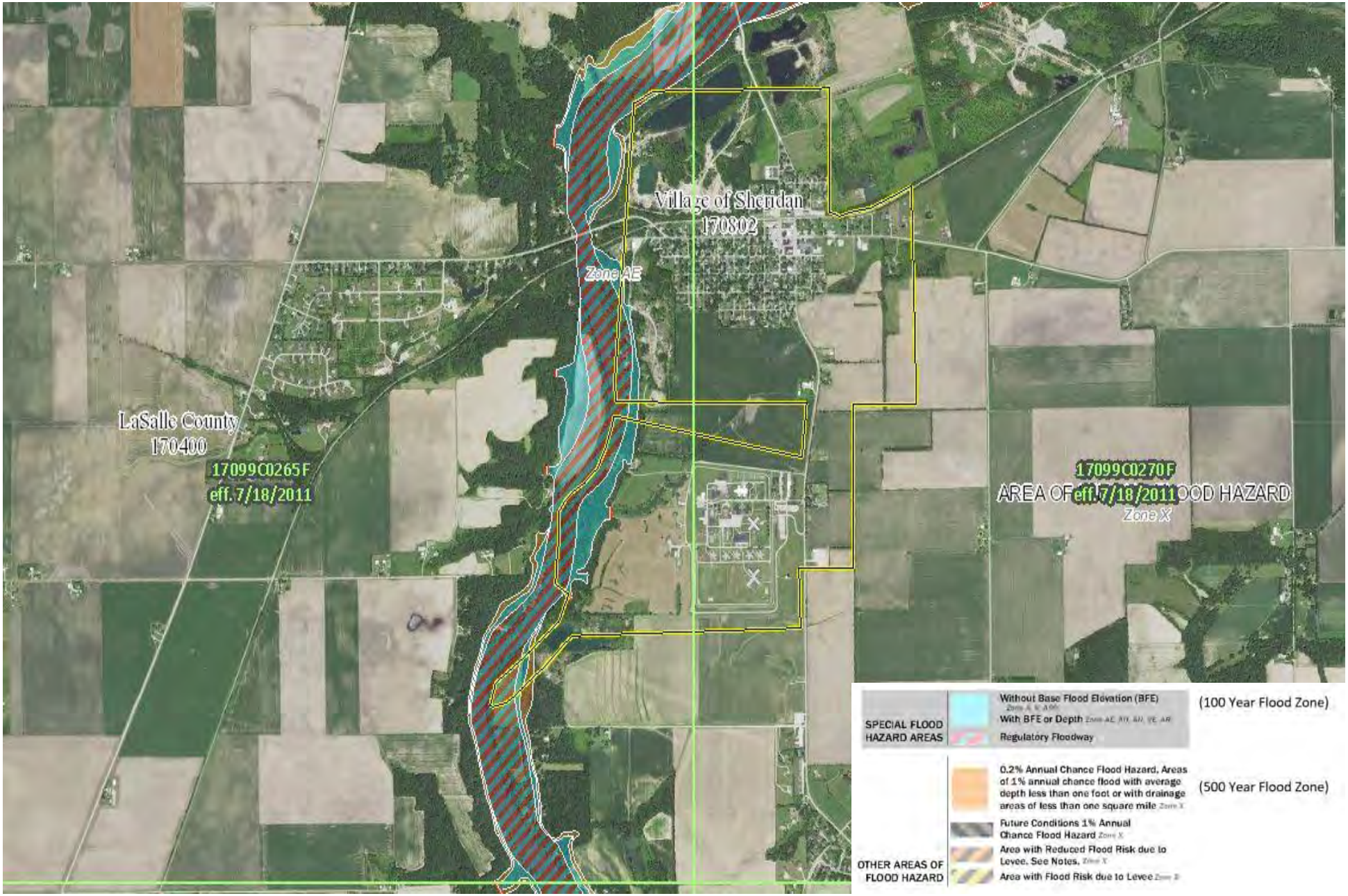
8. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
   Hazard Addressed: All identified hazards
   Responsible Entity or Person: Village Staff
   Benefit/Cost: Medium/Low
   Priority: Low, no change, new activity for this plan.
   Cost: Staff time
   Revenue Source: Federal, state, local or grant funds
   Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
   Benefits: Increased awareness and preparedness

Community Risk Assessment

Deadline: 2 Years
Mitigation Type: Education and Awareness Programs
Activity Status: New mitigation activity for this plan.

Village of Sheridan 2020

Source: Federal Emergency Management Agency



Community Risk Assessment

City of Streator

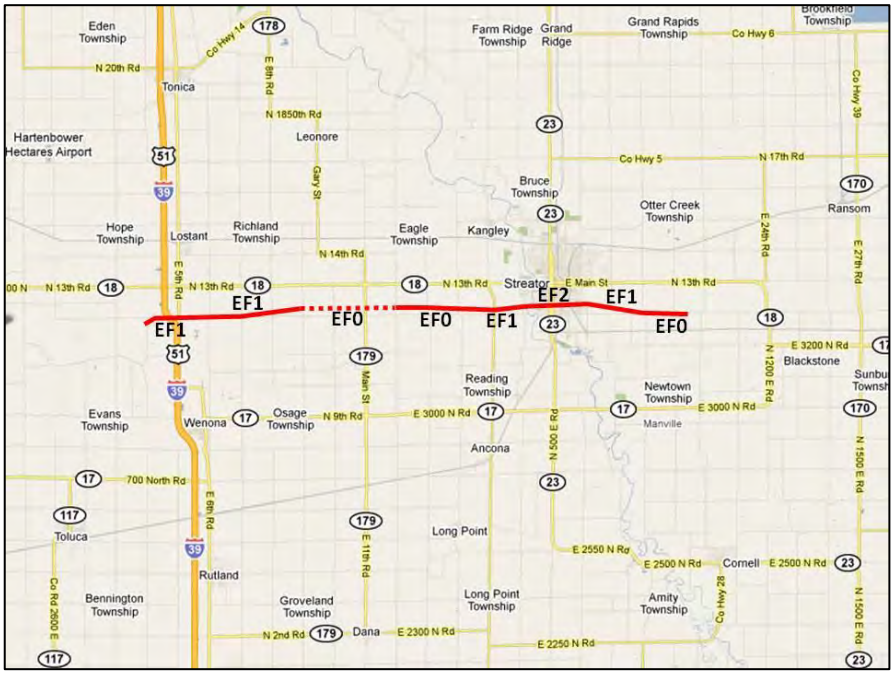
Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**
Streator	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Medium**	**Medium**

Location: The City of Streator is located 16 miles south of the City of Ottawa in LaSalle and Livingston Counties.

Population: 13,710 (2010 Census), 13,196 (2018 estimate)

Major Storm Events since February 2008:

- June 5, 2010 Tornado: A supercell storm moved east from Magnolia, Illinois in Putnam County where it had produced an EF-0 /EF-1 strength tornado. After lifting, a new tornado touched down near the Marshall and LaSalle County line due south. The tornado tracked along North 12th Road in LaSalle County knocking down trees and power lines. Minor structural damage was also reported. As the EF-0/EF-1 tornado continued to push east toward the City of Streator, it intensified to an EF-1/EF-2 strength tornado. As it moved through Eagle Pass Subdivision, trees were toppled, roofs were blown off, and several homes were badly damaged or destroyed. The most intense damage occurred along Hall Street near Southside Athletic Park. In all, 21 homes were uninhabitable and had to be destroyed, another 33 were uninhabitable and required major repair, and a total of 150 received some degree of damage. Seventeen (17) direct or indirect injuries were reported as a result of the tornado. At its strongest, the tornado had winds up to 130 mile per and was one (1) half mile wide. The tornado traveled approximately 18 miles and lasted 22 minutes.



- April 17, 2013 – April 19, 2013 Flood: A slow moving storm dropped upwards of 10 inches of rain across the region causing rivers and creeks to overflow their banks. One (1) bridge over

Prairie Creek was destroyed and another was damaged. One (1) bridge over Coal Run Creek was also destroyed.

The underpass on Bazore Street for the BNSF railroad floods when there is heavy rain. The city is putting in a pump station to prevent future flooding.

Multiple homes throughout the city had basement flooding (backups).

Tornado Risk: The City of Streator has a "Low" risk of tornadoes. There have been 60 reported tornadoes and funnel clouds in LaSalle County in the past 50 years. The city has tornado sirens that provide full coverage within the city limits. The basement of the city hall is designated as a public tornado shelter but it is not ADA accessible.

Flood Risk: The City of Streator has a "Low" risk of flooding.

Type(s) of Flooding: Riverine Flooding/ Basement Backups/ Urban Drainage- Surface Water Runoff/ Ice Jams

Area of Risk: The City of Streator has several sources of flooding including the Vermillion River, which runs along and through the west side of the city, Prairie Creek, which runs through the north side of the city, Otter Creek, which runs through the northeast corner of the city, and Coal Creek, which runs through the south side of the city. An area of town known as Riverside, south of River View Cemetery, is also flood prone. FEMA's Flood Insurance Rate Maps (FIRMs) for the city show the 100-year floodplains for the river and creeks. Westgate Shopping Center, roughly 75 homes, and Marilla Park are located within a floodplain.

There are several areas that obstruct or impede the flow of water during floods. These areas include: the Norfolk Southern Bridge north of Bronson Street, the Route 23 bridge over Prairie Creek, Route 23 bridge over Coal Run Creek, and the Norfolk Southern Bridge, south of Lundy Street.

The city has a levy along the western shore of the Vermillion River that surrounds West Gate Shopping Center. The levy has been decertified by FEMA because of a gap that is created by the bridge on Bridge Street. The city is working to address the issue to get the levy recertified.

Erosion on the eastern shore of the Vermilion River directly north of the Illinois Route 18 bridge placed several homes in danger. The city stabilized the shoreline to protect 15 homes and bought out two (2) commercial buildings.

During heavy periods of rain, the city is susceptible to surface water flooding and basement backups. The city's sanitary and storm sewer systems are 50-60 percent separated. The city plans to have the entire system separated by 2060.

Community Risk Assessment

Critical Facilities at Risk: The city's waste water treatment plant (WWTP) is located at the west end of Grant Street. The WWTP is located in a 100-year floodplain. The city's public works barn is also in the floodplain.

National Flood Insurance Program Participant: Yes

Community Rating System Participant: No

Winter Storm Risk: The City of Streator has a "High" risk of experiencing winter storms including blizzards, heavy snowstorms, and ice storms. Early frost and freeze events are another form of winter weather that are factored into determining the winter storm risk level. There have been 61 weather events in LaSalle County in the past 50 years.

Extreme Temperatures Risk: Extreme heat and cold can have detrimental effects on the human body including illness and death. Exposure to extreme heat can lead to heat rash, exhaustion, and stroke. When exposed to extremely cold temperatures, the human body loses heat quickly. Unable to replace utilized energy, the body is susceptible to hypothermia and frostbite. Extreme heat and cold can also be problematic for public water systems. Although water main breaks are thought to occur more frequently during the winter, they can happen anytime of the year. According to AccuWeather.com, prolonged hot and cold temperatures cause the ground to shift more abruptly, which leads to water main breaks. The age and condition of water mains can also play a factor. The City of Streator has a "Medium" risk for extreme temperatures.

Dangerous Winds Risk: This category includes thunderstorm winds, high winds, and strong winds. The City of Streator has a "High" risk of having dangerous winds that can lead to property damage and crop damage. During high winds, people are at a greater risk for injury and death as a result of flying debris and falling trees and power lines. LaSalle County reported 313 dangerous wind events in the past 50 years that caused approximately $972,000 in property damage.

Lightning Risk: Lightning is caused by the buildup and release of atmospheric electricity. Whenever there is a thunderstorm, lightning has occurred. Lightning can strike anywhere and has the potential to cause fatalities, injury, and property damage. The City of Streator has a "Low" risk of lightning that could result in property damage or bodily harm.

Drought Risk: Drought is caused by a lack of precipitation over an extended period of time. A prolonged drought can have a devastating impact on a region's economy and quality of life. LaSalle County's last reported drought was between June 2005 and February 2006. The impact of the drought is not known. The City of Streator and LaSalle County have a "Medium" risk of drought.

Hail Risk: Hailstones can be found within the middle and upper portions of most thunderstorms. Hailstones are compacted layers of ice and snow that look like snowballs. Hailstones may be as small as marbles or as large as softballs. Hailstones cause damage to property and crops. There have been 13 hail events in Streator since 1965. Between 1970-2019 there have been 145 hail events that caused property damage totaling $1 million in LaSalle County. The City of Streator has a "Medium" risk of hail.

Community Risk Assessment

Landslides - Based on previous occurrences and location the City has a low risk of landslides occurring.

Wildfires - Based on no previous occurrences and the ground cover the City has no risk of wildfires occurring.

Additional Information:

- The city's comprehensive plan was adopted in January 2014. The plan addresses natural hazards, but the future land use map does not reflect floodplain issues.
- The city's last zoning ordinance was adopted in 2004. The ordinance addresses natural hazards.
- The city has adopted International Building Code 2012. New buildings are inspected.
- The city adopted a storm water management ordinance in 2004.
- The Salvation Army and the American Red Cross buildings serve as heating/cooling centers during extreme temperatures.
- The city has adopted a disaster recovery plan.
- Mine subsidence is an issue in the City of Streator. Historic coal mines lie beneath 85 percent of the city. Homeowners are required to have mine subsidence insurance.
- The city is continuing the separation of storm and sanitary sewers.
- The city became a StormReady community.

Mitigation Activities:

1. **Mitigation Strategy:** Clearing of channels around bridges over Prairie Creek, Coal Creek, and the Little Vermilion River.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/High
   Priority: High, no change since 2015 Plan
   Cost: Engineering/ Clearing
   Revenue Source: Local Funds/ Stand and Federal Funds
   Resources: Illinois Department of Natural Resources
   Benefits: Prevent scouring of bridges.
   Deadline: 3 Years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

2. **Mitigation Strategy:** Relocation of the city's public works barn out of flood-prone area.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: High/High
   Priority: Low, no change since 2015 Plan
   Cost: Moving or Reconstruction
   Revenue Source: Local Funds
   Resources: City Council
   Benefits: Provide access to the barn at all times.
   Deadline: 3 Years

Mitigation Type: Structure and Infrastructure Projects
Activity Status: Carried over into the activities list for this plan.

3. **Mitigation Strategy:** Identify and complete necessary activities to have the city's levy recertified by the Federal Emergency Management Agency.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/ City Engineer
   Benefit/Cost: High/High
   Priority: High, no change since 2015 Plan
   Cost: Depends on activities
   Revenue Source: Local Funds
   Resources: Illinois Department of Natural Resources/ Federal Emergency Management Agency
   Benefits: Minimize the risk of flooding near the Westgate Shopping Center.
   Deadline: 3 Years
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

4. **Mitigation Strategy:** Continue to separate the city's sanitary and storm sewer systems.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/ City Engineer
   Benefit/Cost: Medium/High
   Priority: High, no change since 2015 Plan
   Cost: Construction
   Revenue Source: Local Funds
   Resources: City Engineer
   Benefits: Minimize basement backups and prevent the waste water treatment plant from being overwhelmed during high period of rain.
   Deadline: 1-5+ Years (Ongoing)
   Mitigation Type: Structure and Infrastructure Projects
   Activity Status: Carried over into the activities list for this plan.

5. **Mitigation Strategy:** Participate in the National Flood Insurance Program's Community Rating System to help residents save on flood insurance premiums.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/ City Building and Zoning Official/ City Engineer
   Benefit/Cost: High/High
   Priority: Medium, no change since 2015 Plan
   Cost: Varies depending on activities pursued
   Revenue Source: Local Funds
   Resources: Insurance Services Office/ Illinois Department of Natural Resources/ Illinois Emergency Management Agency
   Benefits: Lower flood insurance premiums for residents/ Activities reduce the impact of flooding.
   Deadline: 1 Year
   Mitigation Type: Local Plans and Regulations

Activity Status: Carried over into the activities list for this plan.

6. **Mitigation Strategy:** Inform residents on the importance of understanding their flood insurance policy.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council and Staff
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Minimal/Letters to residents
   Revenue Source: Local Funds
   Resources: Insurance agencies/ Federal Emergency Management Agency
   Benefits: Residents should be aware that their flood insurance policy may not cover basement backups. A separate sewer and drain policy may be required.
   Deadline: 1 Year
   Mitigation Type: Education and Awareness
   Activity Status: Carried over into the activities list for this plan.

7. **Mitigation Strategy:** Participate in the development of a regional stormwater management ordinance that will reduce flooding and protect lives, property, and the environment.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council
   Benefit/Cost: Medium/Medium
   Priority: High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: Residents/ Public Officials/ Hydrologists/ Attorneys/ Planning Officials
   Benefits: Minimize the adverse impact of stormwater on communities.
   Deadline: 4 Years
   Mitigation Type: Local Plans and Regulations
   Activity Status: Carried over into the activities list for this plan.

8. **Mitigation Strategy:** Enforce regulations and ordinances that pertain to development in floodplains.
   Hazard Addressed: Floods
   Responsible Entity or Person: City Council/Zoning and Building Official
   Benefit/Cost: High/Low
   Priority: Very High, no change since 2015 Plan
   Cost: Staff Time
   Revenue Source: Local Funds
   Resources: City Zoning Official
   Benefits: Restrict development that places lives at risk; reduce the physical and financial impact of flooding; restore the floodplain to its natural purpose.
   Deadline: 1-5 Years (Ongoing)
   Mitigation Type: Local Plans and Regulations
   Activity Status: Continued to enforce and carried over into the activities list for this plan.

9. **Mitigation Strategy:** Consider utilizing CodeRed, an emergency alert notification system, to increase awareness and preparedness of severe weather.
   Hazard Addressed: Tornadoes, Floods, Winter Storms, Extreme Temps, Dangerous Winds, Lightning, Hail
   Responsible Entity or Person: City Council/ Police Department
   Benefit/Cost: High/Medium
   Priority: Medium, no change since 2015 Plan
   Cost: Staff Time/ Annual user fees
   Revenue Source: General Fund
   Resources: CodeRed/LaSalle County Emergency Management Agency/ LaSalle County Sheriff's Department
   Benefits: Increase public awareness of severe weather.
   Deadline: 2 Years
   Mitigation Type: Education and Awareness
   Activity Status: Carried over into the activities list for this plan.

10. **Mitigation Strategy:** Engage in a regional discussion on the implementation of best practices for activating early warning sirens during storm events.
    Responsible Entity or Person: A regional group consisting of County Emergency Management Agencies for Bureau/ LaSalle/ Marshall/ Putnam/ and Stark Counties, Local Fire Departments, Fire Protection Districts, County Sheriff's Departments, Local Police Departments, and Local Officials
    Benefit/Cost: High/Low
    Priority: Very High, no change since 2015 Plan
    Cost: Staff Time
    Revenue Source: Local Funds
    Resources: NOAA/ Illinois Emergency Management Agency/ Policies for other communities
    Benefits: Regional guidelines on activating early warning sirens can lessen public confusion and save lives.
    Deadline: 1 Year
    Mitigation Type: Local Plans and Regulations
    Activity Status: Carried over into the activities list for this plan.

11. **Mitigation Strategy:** Develop educational information and publicize, including preventative and preparedness safety procedures, for residents regarding all identified risks.
    Hazard Addressed: All identified hazards
    Responsible Entity or Person: City Staff
    Benefit/Cost: Medium/Low
    Priority: Low, no change, new activity for this plan.
    Cost: Staff time
    Revenue Source: Federal, state, local or grant funds
    Resources: Federal Emergency Management Agency/ Illinois Emergency Management Agency
    Benefits: Increased awareness and preparedness
    Deadline: 2 Years
    Mitigation Type: Education and Awareness Programs

Community Risk Assessment

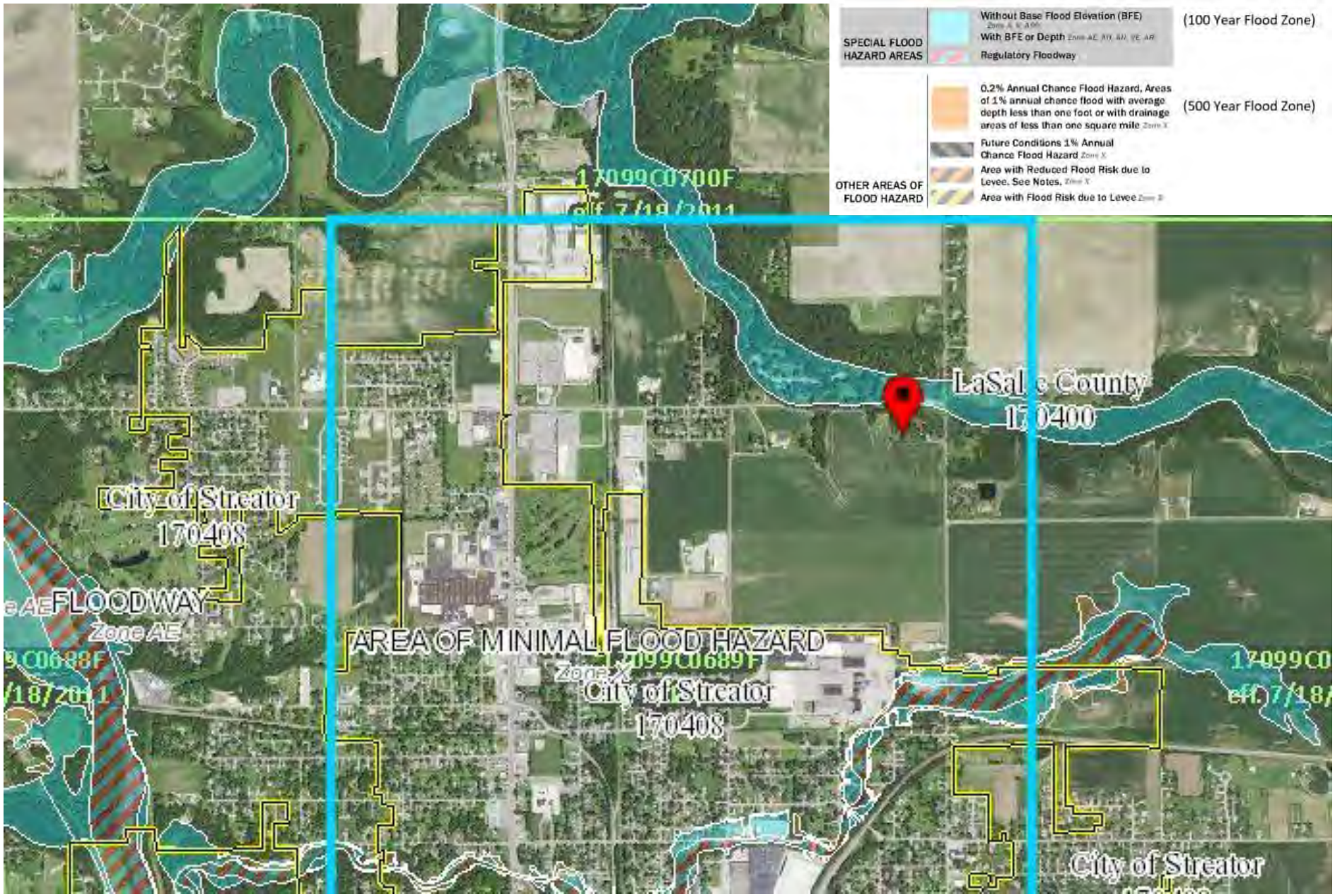
Activity Status: New mitigation activity for this plan

City of Streator – South 2020

Source: Federal Emergency Management

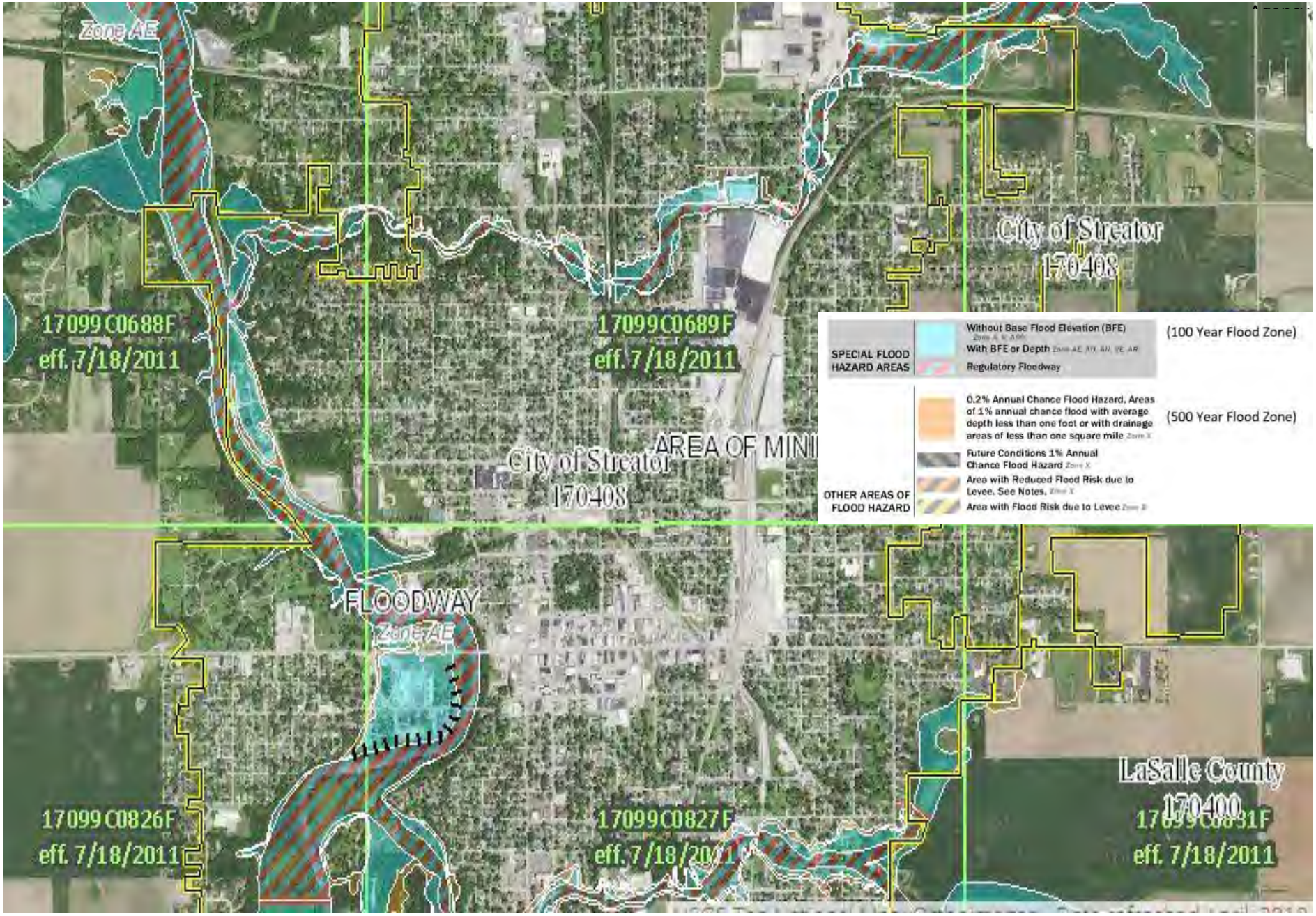
City of Streator – North 2020

Source: Federal Emergency Management Agency



City of Streator – Central 2020

Source: Federal Emergency Management



2020

LaSalle County

Natural Hazards Mitigation Plan

Appendices

Statement of Intent in All-Hazard Mitigation Planning

City of LaSalle

As a potential participant in the Hazard Mitigation Assistance Program, the City of LaSalle, Illinois hereby states their interest in participating in the LaSalle County All-Hazard Mitigation Plan.

After FEMA funding approval and during the planning implementation, the City of LaSalle, Illinois agrees to participate in the hazard mitigation planning process.

We understand that the process will include a variety of meetings and/or workgroups that will require a degree of participation from a designated representative(s) from the City.

As, signed, we further understand that this is a voluntary program and participation may benefit our jurisdiction by identifying hazards and prioritizing potential projects to mitigate the effects of these natural hazards. This statement of intent is nonbinding and is subject to any applicable local legal requirements.

Signature of Authorized Representative	Date
BRIAN D. BROWN	CITY ENGINEER
Print Name	Title of Representative

Statement of Intent in All-Hazard Mitigation Planning

City of Marseilles

As a potential participant in the Hazard Mitigation Assistance Program, the City of Marseilles, Illinois hereby states their interest in participating in the LaSalle County All-Hazard Mitigation Plan.

After FEMA funding approval and during the planning implementation, the City of Marseilles, Illinois agrees to participate in the hazard mitigation planning process.

We understand that the process will include a variety of meetings and/or workgroups that will require a degree of participation from a designated representative(s) from the City.

As, signed, we further understand that this is a voluntary program and participation may benefit our jurisdiction by identifying hazards and prioritizing potential projects to mitigate the effects of these natural hazards. This statement of intent is nonbinding and is subject to any applicable local legal requirements.

James Hollenbeck — 01-25-19

Signature of Authorized Representative — Date

JAMES HOLLENBECK — MAYOR

Print Name — Title of Representative

Statement of Intent in All-Hazard Mitigation Planning

City of Ottawa

As a potential participant in the Hazard Mitigation Assistance Program, the City of Ottawa, Illinois hereby states their interest in participating in the LaSalle County All-Hazard Mitigation Plan.

After FEMA funding approval and during the planning implementation, the City of Ottawa, Illinois agrees to participate in the hazard mitigation planning process.

We understand that the process will include a variety of meetings and/or workgroups that will require a degree of participation from a designated representative(s) from the City.

As, signed, we further understand that this is a voluntary program and participation may benefit our jurisdiction by identifying hazards and prioritizing potential projects to mitigate the effects of these natural hazards. This statement of intent is nonbinding and is subject to any applicable local legal requirements.

01/25/2019

Signature of Authorized Representative — Date

Robert M. Eschbach — Mayor

Print Name — Title of Respresentative

Statement of Intent in All-Hazard Mitigation Planning

City of Streator

As a potential participant in the Hazard Mitigation Assistance Program, the City of Streator, Illinois hereby states their interest in participating in the LaSalle County All-Hazard Mitigation Plan.

After FEMA funding approval and during the planning implementation, the City of Streator, Illinois agrees to participate in the hazard mitigation planning process.

We understand that the process will include a variety of meetings and/or workgroups that will require a degree of participation from a designated representative(s) from the City.

As, signed, we further understand that this is a voluntary program and participation may benefit our jurisdiction by identifying hazards and prioritizing potential projects to mitigate the effects of these natural hazards. This statement of intent is nonbinding and is subject to any applicable local legal requirements.

	1/25/19
Signature of Authorized Representative	Date
JEREMY PALM	COMMUNITY DEVELOPMENT DIRECTOR
Print Name	Title of Representative

NHMP Community Survey

If you need more space to complete the survey, please attach additional sheets.

Name of community: _____

Your name: _____

- Does your town have a comprehensive plan? _____
- If yes, what year was it adopted? _____
- Does the plan address natural hazards? _____
- Does the future land use map reflect any floodplain issues? _____
- What year was your latest zoning ordinance adopted? _____
- Does the zoning ordinance address natural hazards (floodplains, etc.)? _____
- Does your town have a subdivision ordinance? _____
- If yes, what year was it adopted? _____
- Are there minimum street and cul-de-sac standards regarding road width and height above flood level?
  _____
- Are new developments required to set aside drainage ways as public easements?
  _____
- Are utility lines required to be buried? _____
- Does your town have building codes in place? _____
- If yes, what code is used and what year is the code? _____
- Are all new buildings inspected? _____
- Is your town part of the National Flood Insurance Program (NFIP)?_____
- If yes, what year did the town become part of the program? _____
- When did a Federal Emergency Management Agency (FEMA) Community Assistance Visit (CAV) take place? _____
  Please provide a copy of the report if possible.

- Does your town have a newsletter? _____Name:_____
- Does your town have a website? _____Address:_____
- If yes to either, do they include info on potential hazards? _____
- Are there any critical facilities/buildings located in your community (police / fire stations, hospital / clinic, schools, treatment plants, wells)?
  _____
  _____
  _____
- Are any of the critical facilities/buildings located within a floodplain? _____
- Please list critical facilities/buildings located in floodplain; include a map if possible.
  _____
  _____
  _____
- Does your town participate in the NFIP's Community Rating System (CRS) program? _____
- Has the city done anything to prevent flood problems or taken buildings out of the floodplain? If yes, please describe the project and when it was conducted.
  _____
  _____
  _____
- Does your community have a stormwater management ordinance? _____
- If yes, what year was it adopted? _____
- List the number (and location) of repetitive loss areas (do not need specific properties). Repetitive loss areas are considered as at least two flood insurance claims of at least $1,000 since 1978.
- List the number (and location) of flood insurance claims for single-family and non-residential and the average claim cost for each 1978.
- Identify other flood prone areas (plot/mark on map, if possible).
  _____
  _____
  _____
  _____
- List the number of buildings in your town by category (single-family homes, manufactured homes, multiple-family residential units, non-residential buildings).

- List the number of buildings in your town by category in a floodplain (single-family homes, manufactured homes, multiple-family residential units, non-residential buildings).

- List areas obstructing or impeding flow water during floods.

  _____
  _____
  _____

- Has your community been impacted by a disaster since 2015? If so, please explain the type of disaster that occurred, when it occurred, and the impact it had on the community.

  _____
  _____
  _____

- What actions could have been taken prior to the disaster to reduce its impact?

  _____
  _____
  _____

- Identify mitigation projects that will reduce the impact of future natural disasters in your community?

  _____
  _____
  _____

- If the project is not pursued, what is the potential impact the disaster will have on your community?

  _____
  _____
  _____

- What mitigation projects (non-flood related) has your community completed since 2015?

  _____
  _____
  _____

- List all village contacts who should be a part of the NHMP process

(Name, Phone Number, and Email)

1. _____
2. _____
3. _____
4. _____
5. _____

Severity of Impact–The various detailed parameters are identified in this table. When evaluating each county based on the 60+ year history, if there is any conflicting data the highest level will be assumed. In keeping with this philosophy, and since the worst known earthquake (1811-1812) occurred outside of the 60+ year period of time, the decision was made to overlay the ATC map with the Modified Mercalli Scale Map (Modified Mercalli Intensities based on a 7.6 Magnitude Earthquake along the New Madrid Seismic Fault) to evaluate Illinois counties.

Population– Population growth by county in Illinois is based on US Census Data 2017.This information was used in supplying information for the fourth and fifth tables. Using the tables in this rating process, the information has been extracted and analyzed in the following manner:

The following pages are the Illinois Hazard Rating by County. These hazard ratings were obtained utilizing the methodology established by the Illinois Natural Hazard Mitigation Planning Committee. Local hazard mitigation plan hazard ratings have been evaluated and translated into the State Hazard Rating System for comparison. This correlation was completed in an effort to improve the level of detail and comprehensiveness of statewide risk assessments and coordination of State hazard mitigation goals and objects with local goals and objectives. Hazard ratings were utilized from Counties with approved LHMPs and were compared to the hazard rating calculated by the State. This correlation can be viewed in detail on page 28 in Section V of the INHMP.

C. Illinois Hazard Rating Process

The overall objective of this process is to devise a method to compare and evaluate natural hazards in Illinois. In order to accomplish this task, a period of time was selected, data was collected on the natural hazards and categories for evaluation were identified. These categories were sub-divided into three divisions and scores for each division were given. The exact procedure is discussed in the next several pages and this section is concluded with a table revealing the results of this process. This Hazard Rating Process was reviewed and updated by Supporting State Agency Hazard Mitigation Planning Members in an effort to ensure that the identified rating process continued to produce an accurate depiction of the hazards associated with the State of Illinois. Three of the four hazard rating categories remained unchanged as their relevance remained consistent. The Historic/Probability (frequency) was subsequently updated to more effectively reflect the increased amount of historic data available.

There are four categories (Historical/Probability, Vulnerability, Severity of Impact and Population) that will identify and define the ratings of each hazard, noted in the five tables on the next three pages. The first table will identify what has occurred in the past as a guide to projecting the probability for future occurrences. The second table identifies the number of citizens who might be impacted based on individual criteria identified in the methodology. The third table estimates the severity by considering health and safety, continuity of operations, property, facilities, infrastructure, environment, economic and financial situation. The fourth category is population with two tables: table 4A is based on the 2017 population and table 4B is based on the projected population growth for 2020.

The first three tables are weighted three times as much as the last two tables combined. Each hazard (for example flood) will have a score from each of the five tables. These tables are displayed and the score to

be used is identified on the following pages by table. This last column under each hazard will be the total overall score of the five tables. This overall score will be evaluated, as shown below:

Very Low – 0 to 12 (green)
Low – 13 to 24 (Pink)
Medium – 25 to 36 (orange)
High – 37 to 48 (blue)
Severe – 49 to 60 (red)

For example, under flood there will be a number from each of the five tables. These five numbers will be totaled to arrive at the overall risk for floods. This rating process is being done by county for all major natural hazards in Illinois. These numbers will be transferred onto a separate spreadsheet by county and colored coded as indicated above to readily indicate the hazard ratings.

1) HISTORICAL/PROBABILITY (frequency)

- The number of times that a disaster has occurred in a county in the past 66 years
- The information is being used to determine and evaluate the likelihood for future disasters

Very Low (6)	0 to 12 occurrences in the last 66 years
Medium (12)	13 to 60 occurrences in the last 66 years
High (18)	More than 60 occurrences in the last 66 years

2) VULNERABILITY (percentage of people)

- The relationship of where people live in or near the hazard area
- The percentage of people that will be adversely affected should the hazard occur

Low (6)	Less than 10% of the total population of the county
Medium (12)	10% to 25% of the total population of the county
High (18)	More than 25% of the total population of the county

3) SEVERITY OF IMPACT (injuries, fatalities, personal property & infrastructure)

- The worst conceivable impact to human life and property which could result from a hazard
- The essential facilities are defined for this purpose as PUBLIC SAFETY (fire, police & local government) and UTILITIES (electric, gas, telephone water & sewer)

Low (6)	Minor injuries (under 50) & property damage (under $1,000,000), or less than 24 hour shutdown of essential facilities
Medium (12)	Serious injury (more than 50), major property damage (structural stability) ($1,000,001 to $15,000,000), or 24 to 72-hour shutdown of essential facilities
High (18)	Multiple deaths (more than five), property destroyed or damaged beyond repair (more than $15,000,000), or more than three days of shutdown for essential facilities

4) POPULATION

The committee included growth as a factor for the risk assessment. After a review of the data, the committee concluded that giving the future growth equal weight with the other factors skewed the risk assessment. Counties range in population from approximately 5,000 to 5,000,000. To conclude that a population growth of 25% in a smaller county (1,250) would have more of an impact than a 10% growth in a larger county (500,000) was not palatable to the committee.

The committee also determined that because of the large population disparity between counties the Vulnerability and Severity of Impact didn't fully distinguish the quantity of people that could be exposed to risk. The committee decided to give the population of the counties equal weight with the growth factor. The planning committee discussed the impact of population on the risk assessment at length. While population is acknowledged to be an important factor to be considered, it is of lesser significance than the first three criteria and has been assigned 1/3 the value. On a scale of 100 the first three tables would receive 30 each and the remaining 10 was allocated to population.

a) POPULATION (number in jurisdiction)

- The actual 2017 population census figure per county
- The quantity will be used to identify a slight increase in risk

Low (1)	0 to 100,000 population in the county
Medium (2)	100,001 to 500,000 population in the county
High (3)	More than 500,000 population in the county

b) POPULATION GROWTH (percentage of increase)

- The projected population growth in a jurisdiction over the next 10 years
- The population growth estimates will be used to identify a potential increase to risk

Low (1)	% of decrease to 10% projected population increase in the county
Medium (2)	11% to 25% projected population increase in the county
High (3)	More than 25% projected population increase in the county

Criteria and Methodology Established by the Illinois Natural Hazard Mitigation Planning Committee

Ratings Updated 1/2/2018

Key	
Very Low=0-12	Low=13-24
Medium=25-36	High=37-48
Severe=49-60	

County Name	Population	Severe Storms	Floods	Severe Winter Storms	Drought	Extreme Heat	Earthquake	Tornado
Adams	66,578	High	Medium	High	Low	High	Low	Medium
Alexander	6,478	Severe	High	High	High	Medium	Severe	Medium
Bond	16,824	High	Low	High	Low	High	Medium	Medium
Boone	53,503	High	Medium	High	Low	Medium	Low	Medium
Brown	6,762	High	Low	High	Low	High	Low	Medium
Bureau	33,359	Severe	Low	High	High	Medium	Low	Medium
Calhoun	4,894	High	Medium	High	Low	High	Medium	Low
Carroll	14,539	Severe	Medium	High	High	Medium	Low	Medium
Cass	12,676	Severe	Low	High	Medium	Medium	Medium	Medium
Champaign	208,419	Severe	Low	High	Medium	Medium	Medium	High
Christian	33,309	Severe	Medium	Severe	Medium	Medium	Medium	Medium
Clark	15,938	High	Low	High	Medium	Medium	Medium	Low
Clay	13,300	Severe	Low	High	Medium	Medium	High	Medium
Clinton	37,729	High	Low	High	Low	High	Medium	High
Coles	54,000	Severe	Low	Severe	Medium	Medium	Medium	High
Cook	5,203,499	Severe	Medium	Severe	Low	High	Low	High
Crawford	19,308	Severe	Medium	High	Medium	Medium	Medium	Medium
Cumberland	10,858	High	Low	Severe	Medium	Medium	Medium	Low
DeKalb	104,528	Severe	Medium	High	Low	Medium	Low	Medium
De Witt	16,226	Severe	Low	High	Medium	Medium	Medium	Medium
Douglas	19,630	Severe	Medium	High	Medium	Medium	Medium	Medium
DuPage	929,368	Severe	Medium	High	Low	Medium	Low	Medium
Edgar	17,566	Severe	Low	High	Medium	Medium	Medium	Medium
Edwards	6,523	Severe	Medium	High	High	High	High	Medium
Effingham	34,386	Severe	Medium	High	Medium	Medium	Medium	Medium
Fayette	21,789	High	Low	High	Low	High	Medium	Medium
Ford	13,575	Severe	Low	High	Low	Medium	Low	Medium

County Name	Population	Severe Storms	Floods	Severe Winter Storms	Drought	Extreme Heat	Earthquake	Tornado
Franklin	39,156	Severe	High	High	Medium	High	High	Medium
Fulton	35,536	Severe	High	High	Medium	Medium	Low	High
Gallatin	5,212	Severe	High	High	Medium	High	High	Medium
Greene	13,093	High	Medium	High	Low	High	Medium	Medium
Grundy	50,437	Severe	Medium	High	Low	Medium	Low	High
Hamilton	8,061	High	Medium	High	Medium	High	High	Medium
Hancock	18,508	Severe	Medium	High	High	Medium	Low	High
Hardin	4,024	High	Medium	High	Medium	High	High	Low
Henderson	6,869	High	Medium	High	High	Medium	Low	Medium
Henry	49,280	Severe	Medium	High	High	Medium	Low	High
Iroquois	28,334	Severe	Medium	High	Low	Medium	Low	Medium
Jackson	58,870	Severe	High	High	Medium	Medium	High	Medium
Jasper	9,536	Severe	Low	High	Medium	Medium	Medium	Medium
Jefferson	38,460	Severe	Low	High	Medium	High	High	Medium
Jersey	22,025	High	Medium	High	Low	High	Medium	Medium
Jo Daviess	21,770	Severe	Medium	High	High	Medium	Low	Medium
Johnson	12,902	Severe	Medium	High	Medium	Medium	High	Medium
Kane	531,715	Severe	Medium	High	Low	Low	Low	Medium
Kankakee	110,008	Severe	Medium	High	Low	Medium	Low	High
Kendall	124,695	High	Medium	High	Low	Low	Low	Medium
Knox	50,938	Severe	Medium	High	Medium	Medium	Low	Medium
Lake	703,047	Severe	Medium	High	Low	Low	Low	High
La Salle	110,642	High	Medium	High	Low	Medium	Low	Medium
Lawrence	16,377	Severe	Medium	High	Medium	Medium	Medium	Medium
Lee	34,251	High	Low	High	Low	Medium	Low	Medium
Livingston	36,526	High	Medium	High	Low	Medium	Medium	Medium
Logan	29,527	Severe	Low	High	Medium	Medium	Medium	High
McDonough	30,996	Severe	Medium	High	High	Medium	Low	Medium
McHenry	307,004	High	Medium	High	Low	Low	Low	High
McLean	172,418	Severe	High	High	Medium	Medium	Low	High
Macon	106,550	Severe	Medium	High	Medium	Medium	Medium	High
Macoupin	45,908	High	Medium	High	Low	High	Medium	Medium
Madison	265,759	Severe	Low	High	Low	High	Medium	High
Marion	38,140	High	Low	High	Low	High	High	Medium
Marshall	11,939	High	Low	High	Medium	Medium	Low	Medium

County Name	Population	Severe Storms	Floods	Severe Winter Storms	Drought	Extreme Heat	Earthquake	Tornado
Mason	13,507	Severe	Medium	High	Medium	Medium	Low	Medium
Massac	14,658	Severe	Low	High	Medium	Medium	High	Medium
Menard	12,516	Severe	Low	High	Medium	Medium	Medium	Medium
Mercer	15,730	Severe	Medium	High	Medium	Medium	Low	Medium
Monroe	34,068	Severe	Medium	High	Low	High	High	Medium
Montgomery	28,952	High	Low	High	Low	High	Medium	Medium
Morgan	34,277	Severe	High	High	Medium	Medium	Medium	Medium
Moultrie	14,827	Severe	Low	High	Medium	Medium	Medium	Medium
Ogle	51,273	Severe	Medium	High	Low	Medium	Low	Medium
Peoria	185,006	Severe	Medium	High	Medium	Medium	Low	High
Perry	21,357	Severe	Medium	High	Medium	High	High	Medium
Piatt	16,560	Severe	Low	High	Medium	Medium	Medium	Medium
Pike	15,950	High	High	High	Low	High	Medium	Medium
Pope	4,157	High	Medium	High	Medium	Medium	High	Medium
Pulaski	5,619	High	High	High	Medium	Medium	Severe	Medium
Putnam	5,611	Severe	Low	High	Medium	Medium	Low	Medium
Randolph	32,621	High	Medium	High	Low	High	High	Medium
Richland	15,930	High	Low	High	Medium	Medium	High	Medium
Rock Island	144,784	Severe	Medium	High	Medium	Medium	Low	Medium
St. Clair	262,759	Severe	Medium	High	Low	High	High	High
Saline	24,307	Severe	Medium	High	Medium	Medium	High	Medium
Sangamon	197,499	Severe	High	High	Medium	Medium	Medium	High
Schuyler	6,923	Severe	Low	High	Medium	Medium	Low	Medium
Scott	5,053	Severe	Medium	High	Medium	High	Medium	Medium
Shelby	21,717	Severe	Medium	High	Medium	Medium	Medium	Medium
Stark	5,776	High	Low	High	Medium	Medium	Low	Medium
Stephenson	45,624	Severe	Medium	High	High	Medium	Low	Medium
Tazewell	134,385	Severe	High	High	Medium	Medium	Low	High
Union	17,212	Severe	Medium	High	Medium	Medium	Severe	Medium
Vermilion	78,111	Severe	Low	High	Medium	Medium	Medium	High
Wabash	11,492	Severe	Medium	High	Medium	Medium	High	High
Warren	17,378	Severe	Medium	High	High	Medium	Low	Medium
Washington	14,154	High	Low	High	Low	High	High	Medium
Wayne	16,396	Severe	Medium	High	Medium	Medium	High	Medium
White	14,292	Severe	High	High	Medium	Medium	High	Medium

County Name	Population	Severe Storms	Floods	Severe Winter Storms	Drought	Extreme Heat	Earthquake	Tornado
Whiteside	56,536	Severe	Medium	High	High	Medium	Low	Medium
Will	689,529	Severe	Medium	High	Low	Low	Low	High
Williamson	67,560	Severe	Medium	High	Medium	Medium	High	High
Winnebago	285,873	Severe	Medium	High	Low	Medium	Low	Medium
Woodford	39,140	Severe	High	High	Medium	Medium	Low	Medium

D. Severe Storms (Wind, Lightning and Hail)

Description

In Illinois, thunderstorms occur when there is a collision of moist, warm air moving north from the Gulf of Mexico with colder fronts moving east from the Rocky Mountains resulting in cold air overriding a layer of warm air causing the warm air to rise rapidly. Thunderstorms may occur singly, in clusters, or in lines. In the course of a few hours, it is possible for several thunderstorms to affect one location or a single thunderstorm to affect one location for an extended time. Thunderstorms typically are 15 miles in diameter and produce heavy rain anywhere from 30 minutes to an hour.

Of the estimated 100,000 thunderstorms each year, pproximately 10 percent are classified severe. Severe storms either produce hail at least one inch in diameter, have winds of 58 miles per hour or higher, or produce a tornado. In Illinois, severe thunderstorms frequently occur in the late afternoon or evening. Thunderstorms can bring heavy rain, strong winds, hail, lightning and tornadoes. Thunderstorms can cause several types of damaging wind. The public is not as familiar with the extent of damage that may accompany a downburst or straight line winds as they are with tornadoes. In thunderstorms, straight-line winds are winds without any rotation. This classification differentiates them from tornadic winds. In severe thunderstorms, downbursts are created by falling rain and associated sinking air, resulting in winds that can reach speeds of 125 mph.

E. Tornadoes

Description

Tornado is almost always spawned from a severe storm. However, there are a few instances that a tornado can develop from a non-severe storm, but it is quite rare. A tornado is a rapidly rotating column of air that is in contact with both the surface of the Earth and a cumulonimbus cloud or, in rare cases, the base of a cumulus cloud.

The top 10 states for tornadoes as of the most recent (1991-2015) average are as follows, in order from high to low: Texas, Kansas, Oklahoma, Florida, Nebraska, Illinois, Colorado, Iowa, Alabama, Missouri, and Mississippi.

LaSalle County Severe Winter Weather (1/1/1970 - 12/31/19)							
Location	**Date**	**Event**	**Mag.**	**Deaths**	**Injuries**	**PrD**	**CrD**
LA SALLE (ZONE)	1/15/1997	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	3/9/1998	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/1/1999	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	3/8/1999	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/19/2000	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/18/2000	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/11/2000	Blizzard		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/31/2002	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	3/2/2002	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	3/4/2003	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	5/3/2004	Frost/freeze		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/20/2006	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	11/30/2006	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/1/2006	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/13/2007	Blizzard		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/25/2007	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/1/2007	Ice Storm		0	0	2.00K	0.00K
LA SALLE (ZONE)	1/29/2008	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/31/2008	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/1/2008	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/18/2008	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/21/2008	Blizzard		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/13/2009	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/6/2010	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/3/2010	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/11/2010	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/24/2010	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/1/2011	Blizzard		1	0	0.00K	0.00K
LA SALLE (ZONE)	1/20/2012	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	3/5/2013	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/4/2014	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/26/2014	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/1/2014	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/4/2014	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/17/2014	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/5/2015	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/1/2015	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	11/20/2015	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/28/2015	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/4/2016	Heavy Snow		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/5/2018	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/8/2018	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	3/24/2018	Winter Storm		0	0	0.00K	0.00K

LA SALLE (ZONE)	11/25/2018	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/12/2019	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/22/2019	Winter Weather		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/5/2019	Winter Weather		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/11/2019	Ice Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/17/2019	Winter Weather		0	0	0.00K	0.00K
LA SALLE (ZONE)	4/14/2019	Winter Storm		0	0	0.00K	0.00K
LA SALLE (ZONE)	10/31/2019	Winter Weather		0	0	0.00K	0.00K
Total Weather Events: 51			**Total**	**1**	**0**	**2.00K**	**0.00K**

LaSalle County Tornadoes (1/1/1970 - 12/31/19)						
Location	**Date**	**Event**	**Mag.**	**Injuries**	**PrD**	**CrD**
ALTMAR	6/5/2010	Tornado	EF0	0	0.00K	0.00K
BAKER	9/1/2013	Tornado	EF0	0	0.00K	0.00K
BAKER	6/22/2016	Tornado	EF1	0	0.00K	0.00K
CEDAR PT	2/28/2017	Tornado	EF0	0	0.00K	0.00K
EARLVILLE	6/30/2014	Tornado	EF1	0	250.00K	0.00K
EARLVILLE	6/22/2016	Tornado	EF1	0	0.00K	0.00K
EARLVILLE	6/22/2016	Tornado	EF0	0	0.00K	0.00K
EARLVILLE	6/22/2016	Tornado	EF1	0	0.00K	0.00K
EAST WENONA	6/5/2010	Tornado	EF2	17	7.000M	0.00K
GRAND RIDGE	4/14/2006	Tornado	F0	0	0.00K	0.00K
KANGLEY	9/4/2006	Funnel Cloud		0	0.00K	0.00K
LA SALLE CO.	11/12/1965	Tornado	F2	0	250.00K	0.00K
LA SALLE CO.	7/14/1972	Tornado	F0	1	2.50K	0.00K
LA SALLE CO.	8/23/1972	Tornado	F1	0	2.50K	0.00K
LA SALLE CO.	7/1/1974	Tornado	F0	0	0.00K	0.00K
LA SALLE CO.	9/12/1974	Tornado	F2	0	2.50K	0.00K
LA SALLE CO.	6/14/1975	Tornado	F2	0	250.00K	0.00K
LA SALLE CO.	6/30/1977	Tornado		0	25.00K	0.00K
LA SALLE CO.	6/30/1977	Tornado		0	0.00K	0.00K
LA SALLE CO.	6/25/1978	Tornado	F1	0	2.50K	0.00K
LA SALLE CO.	6/25/1978	Tornado	F2	0	25.00K	0.00K
LA SALLE CO.	4/29/1984	Tornado	F1	0	250.00K	0.00K
LA SALLE CO.	7/9/1985	Tornado	F2	8	250.00K	0.00K
LA SALLE CO.	9/29/1986	Tornado	F1	0	250.00K	0.00K
LA SALLE CO.	8/16/1987	Tornado	F2	0	250.00K	0.00K
LA SALLE CO.	5/8/1988	Tornado	F1	2	250.00K	0.00K
LA SALLE CO.	4/29/1991	Tornado	F1	0	25.00K	0.00K
LA SALLE CO.	5/25/1991	Tornado	F0	0	0.00K	0.00K
LEEDS	2/28/2017	Tornado	EF2	0	0.00K	0.00K
LELAND	7/7/2016	Funnel Cloud		0	0.00K	0.00K
LELAND	8/1/2017	Funnel Cloud		0	0.00K	0.00K
LOSTANT	5/18/2000	Tornado	F0	0	0.00K	0.00K
(MMO)MARSEILLI	6/22/2016	Tornado	EF2	0	0.00K	0.00K
(MMO)MARSEILLI	2/28/2017	Tornado	EF1	0	0.00K	0.00K
(MMO)MARSEILLI	5/30/2018	Tornado	EF0	0	0.00K	0.00K
MARSEILLES	8/9/1995	Tornado	F0	0	0.00K	0.00K
MENDOTA	7/28/1996	Funnel Cloud		0	0.00K	0.00K
MENDOTA	7/6/2000	Funnel Cloud		0	0.00K	0.00K
MENDOTA	8/22/2002	Funnel Cloud		0	0.00K	0.00K
MENDOTA	6/22/2015	Tornado	EF1	0	100.00K	0.00K
OTTAWA	6/11/1997	Tornado	F0	0	0.00K	0.00K
PERU	5/30/2003	Tornado	F0	0	0.00K	0.00K
PERU	4/20/2004	Tornado	F3	0	0.00K	0.00K
PRAIRIE CENTER	6/22/2015	Tornado	EF1	0	100.00K	0.00K

PRAIRIE CENTER	6/22/2016	Tornado	EF1	0	0.00K	0.00K
PRAIRIE CENTER	6/22/2016	Tornado	EF1	0	0.00K	0.00K
PRISCILLA	6/5/2010	Tornado	EF0	0	5.00K	0.00K
RUTLAND	4/19/1996	Tornado	F1	0	0.00K	0.00K
RUTLAND	11/17/2013	Tornado	EF2	0	150.00K	0.00K
RUTLAND	2/28/2017	Tornado	EF0	0	0.00K	0.00K
SERENA	8/1/2017	Funnel Cloud		0	0.00K	0.00K
SHERIDAN	5/30/2003	Tornado	F0	0	0.00K	0.00K
SHERIDAN	4/20/2004	Tornado	F0	0	0.00K	0.00K
STAVANGER	6/22/2015	Tornado	EF1	0	0.00K	0.00K
STREATOR	6/14/2001	Funnel Cloud		0	0.00K	0.00K
TROY GROVE	6/22/2016	Tornado	EF1	0	0.00K	0.00K
TWIN BLUFFS	6/5/2010	Tornado	EF0	0	0.00K	0.00K
UTICA	4/20/2004	Tornado	F2	7	0.00K	0.00K
UTICA AIRPARK A	2/28/2017	Tornado	EF3	14	0.00K	0.00K
WEDRON	4/20/2004	Tornado	F1	0	0.00K	0.00K
Total Weather Events: 60			**Total**	**35**	**9.190M**	**0.00K**

LaSalle County Floods (1/1/1970 - 12/31/19)							
Location	**Date**	**Event**	**Mag.**	**Deaths**	**Injuries**	**PrD**	**CrD**
(MMO)MARSEILLES	6/13/2015	Flash Flood		0	0	100.00K	0.00K
CEDAR PT	7/12/2008	Flash Flood		0	0	150.00K	0.00K
COUNTYWIDE	6/6/1996	Flash Flood		0	0	0.00K	0.00K
COUNTYWIDE	7/6/1998	Flood		0	0	0.00K	0.00K
COUNTYWIDE	10/17/1998	Flood		0	0	0.00K	0.00K
COUNTYWIDE	5/12/2002	Flood		0	0	0.00K	0.00K
EARLVILLE	6/2/2010	Flash Flood		0	0	10.00K	0.00K
EARLVILLE	5/25/2011	Flood		0	0	0.00K	20.00K
EAST PORTION	7/10/2000	Flash Flood		0	0	0.00K	0.00K
EAST WENONA	1/8/2008	Flood		0	0	0.00K	0.00K
GARFIELD	5/29/2006	Flash Flood		0	0	10.00K	0.00K
GARFIELD	9/14/2008	Flash Flood		0	0	5.000M	0.00K
GARFIELD	5/6/2012	Flood		0	0	0.00K	0.00K
KANGLEY	4/27/2009	Flood		0	0	0.00K	0.00K
LA SALLE	7/3/2001	Flood		0	0	0.00K	0.00K
LA SALLE	5/15/2009	Heavy Rain		0	0	0.00K	0.00K
LA SALLE	5/25/2011	Flood		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/20/1997	Flood		0	0	0.00K	0.00K
LA SALLE (ZONE)	6/4/2002	Flood		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/13/2005	Flood		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/15/2005	Flood		0	0	0.00K	0.00K
LA SALLE CO.	6/20/2011	Flash Flood		0	0	75.00K	0.00K
LA SALLE CO.	6/21/2011	Flood		0	0	50.00K	0.00K
LA SALLE CO.	4/17/2013	Flash Flood		0	0	0.00K	0.00K
LA SALLE CO.	4/18/2013	Flash Flood		1	0	75.000M	0.00K
LAKE HOLIDAY	9/14/2008	Flood		0	5	15.00K	0.00K
LOSTANT	3/23/2007	Flood		0	0	0.00K	0.00K
LOSTANT	5/15/2009	Flood		0	0	0.00K	0.00K
LOSTANT	5/14/2011	Flood		0	0	0.00K	0.00K
MARSEILLES	4/16/2006	Flash Flood		0	0	25.00K	0.00K
MARSEILLES	9/13/2008	Flash Flood		0	0	N/A	N/A
MARSEILLES	8/27/2009	Heavy Rain		0	0	0.00K	0.00K
MARSEILLES	4/19/2011	Flood		0	0	0.00K	0.00K
MARSEILLES	5/25/2011	Flood		0	0	0.00K	0.00K
MARSEILLES	6/21/2011	Flood		0	0	0.00K	0.00K
MARSEILLES	5/6/2012	Flash Flood		0	0	0.00K	0.00K
MARSEILLES	4/17/2013	Flash Flood		0	0	0.00K	0.00K
MARSEILLES	6/13/2015	Flash Flood		0	0	0.00K	0.00K
MENDOTA	5/30/2004	Flash Flood		0	0	0.00K	0.00K
MENDOTA	9/13/2008	Flash Flood		0	0	0.00K	0.00K
MENDOTA	8/19/2009	Flood		0	0	0.00K	0.00K
MENDOTA	5/25/2011	Flash Flood		0	0	0.00K	0.00K
MENDOTA	9/18/2015	Flash Flood		0	0	0.00K	0.00K

MENDOTA	9/18/2015	Heavy Rain		0	0	0.00K	0.00K
MENDOTA ARPT	9/27/2019	Flash Flood		0	0	0.00K	0.00K
MENDOTA ARPT	9/28/2019	Flood		0	0	0.00K	0.00K
NORTHEAST	7/17/1996	Flash Flood		0	0	0.00K	0.00K
NORTHEAST PORTIO	6/16/1998	Flash Flood		0	0	0.00K	0.00K
NORTHWEST PORTIO	6/4/2002	Flash Flood		0	0	0.00K	0.00K
OTTAWA	8/10/2006	Flood		0	0	0.00K	0.00K
OTTAWA	6/26/2007	Flood		0	0	0.00K	0.00K
OTTAWA	8/23/2007	Flash Flood		0	0	250.00K	0.00K
OTTAWA	8/23/2007	Flood		0	0	0.00K	0.00K
OTTAWA	9/13/2008	Flash Flood		0	0	N/A	N/A
OTTAWA	5/25/2011	Flash Flood		0	0	N/A	N/A
OTTAWA	4/17/2013	Flash Flood		0	0	N/A	N/A
OTTAWA	7/21/2017	Flood		0	0	0.00K	0.00K
PERU	8/19/2007	Flash Flood		0	0	0.00K	0.00K
PERU	9/13/2008	Flash Flood		0	0	N/A	N/A
PERU	8/27/2009	Heavy Rain		0	0	0.00K	0.00K
PERU	5/25/2011	Flash Flood		0	0	0.00K	0.00K
PERU	8/8/2011	Flash Flood		0	0	2.00K	0.00K
PERU	4/17/2013	Flash Flood		0	0	N/A	N/A
SENECA	9/15/2008	Flood		0	0	5.000M	0.00K
SENECA	2/20/2018	Flood		0	0	0.00K	0.00K
SENECA	9/27/2019	Flash Flood		0	0	0.00K	0.00K
SERENA	7/24/2009	Flood		0	0	0.00K	0.00K
SHERIDAN	7/18/2019	Heavy Rain		0	0	0.00K	0.00K
SOUTH PORTION	4/16/2006	Flash Flood		0	0	0.00K	0.00K
STREATOR	5/30/2004	Flash Flood		0	0	0.00K	0.00K
STREATOR	1/8/2008	Flash Flood		0	0	0.00K	0.00K
STREATOR	8/12/2016	Flash Flood		0	0	0.00K	0.00K
STREATOR EAST	5/15/2009	Flash Flood		0	0	0.00K	0.00K
STREATOR WEST	5/15/2009	Flood		0	0	0.00K	0.00K
TRIUMPH	8/30/2016	Flood		0	0	2.00K	0.00K
NORTH UTICA	9/13/2008	Flash Flood		0	0	N/A	N/A
NORTH UTICA	5/25/2011	Flash Flood		0	0	N/A	N/A
NORTH UTICA	4/17/2013	Flash Flood		0	0	N/A	N/A
UTICA	5/1/2019	Flood		0	0	0.00K	0.00K
TWIN BLUFFS	6/20/2011	Flash Flood		0	0	0.00K	0.00K
WEDRON	8/24/2007	Flood		0	0	1.000M	0.00K
WELLAND	2/17/2008	Flood		0	0	100.00K	0.00K
Total Weather Events: 69		**Total**		**1**	**5**	**86.9M**	**20.00K**

LaSalle County Lightning (1/1/1970 - 12/31/19)							
Location	**Date**	**Event**	**Mag.**	**Deaths**	**Injuries**	**PrD**	**CrD**
LA SALLE	5/17/1999	Lightning		0	5	0.00K	0.00K
LA SALLE	6/19/2009	Lightning		0	0	1.00K	0.00K
LELAND	5/6/2009	Lightning		0	0	50.00K	0.00K
MENDOTA	6/5/2001	Lightning		0	0	2.00K	0.00K
OGLESBY	4/19/2000	Lightning		0	1	0.00K	0.00K
OGLESBY	7/8/2003	Lightning		0	1	0.00K	0.00K
OTTAWA	7/6/2003	Lightning		0	0	0.00K	0.00K
OTTAWA	7/24/2011	Lightning		0	0	20.00K	0.00K
OTTAWA	8/8/2011	Lightning		0	0	50.00K	0.00K
OTTAWA	8/23/2011	Lightning		0	1	0.00K	0.00K
PERU	9/19/2005	Lightning		0	0	0.00K	0.00K
PERU	8/19/2007	Lightning		0	0	5.00K	0.00K
PERU	8/22/2007	Lightning		0	0	20.00K	0.00K
SHERIDAN	7/4/2018	Lightning		0	2	0.00K	0.00K
TONICA	6/9/2011	Lightning		0	0	10.00K	0.00K
Total Weather Events: 15			**Total**	**0**	**8**	**158.00K**	**0.00K**

LaSalle County Extreme Temperatures (1/1/1970 - 12/31/19)							
Location	**Date**	**Event**	**Mag.**	**Deaths**	**Injuries**	**PrD**	**CrD**
LA SALLE (ZONE)	2/2/1996	Cold/wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/23/2003	Cold/wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/29/2004	Cold/wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	2/3/2007	Extreme Cold/wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/15/2009	Extreme Cold/wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	7/26/2011	Heat		0	1	0.00K	0.00K
LA SALLE (ZONE)	7/4/2012	Excessive Heat		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/6/2014	Extreme Cold/wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	12/31/2017	Extreme Cold/Wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/1/2018	Extreme Cold/Wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/1/2018	Extreme Cold/Wind Chill		0	0	0.00K	0.00K
LA SALLE (ZONE)	6/29/2018	Excessive Heat		0	0	0.00K	0.00K
LA SALLE (ZONE)	6/30/2018	Excessive Heat		0	0	0.00K	0.00K
LA SALLE (ZONE)	1/29/2019	Extreme Cold/Wind Chill		0	0	0.00K	0.00K
Total Weather Events: 14			**Total**	**0**	**1**	**0.00K**	**0.00K**

LaSalle County Thunderstorm, High, & Strong Winds (1/1/1970 - 12/31/19)							
Location	**Date**	**Event**	**Mag.**	**Deaths**	**Injuries**	**PrD**	**CrD**
(MMO)MARSEILLES	6/2/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
(MMO)MARSEILLES	7/23/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
ASHKUM	6/24/1995	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
CATHARINE	6/30/2014	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
CEDAR PT	4/30/2003	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COUNTYWIDE	10/29/1996	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
COUNTYWIDE	7/18/1997	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
COUNTYWIDE	6/18/1998	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
COUNTYWIDE	6/28/1998	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
COUNTYWIDE	7/7/2003	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
COUNTYWIDE	7/27/2003	Thunderstorm Wind	57 kts. EG	0	0	0.00K	0.00K
DANA	5/8/2000	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
DANA	4/13/2006	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
DANA	6/2/2010	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
DAYTON	5/11/2014	Thunderstorm Wind	59 kts. MG	0	0	0.00K	0.00K
EARLVILLE	7/28/1996	Thunderstorm Wind		0	0	0.00K	0.00K
EARLVILLE	8/4/1997	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
EARLVILLE	8/9/2001	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
EARLVILLE	8/22/2007	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
EARLVILLE	8/4/2008	Thunderstorm Wind	65 kts. EG	0	0	5.00K	0.00K
EARLVILLE	6/27/2009	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
EARLVILLE	11/22/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
EARLVILLE R AND R A	5/29/2011	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
EAST WENONA	5/30/2004	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
GARFIELD	7/26/2005	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
GARFIELD	4/13/2006	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
GRAND RIDGE	6/4/2005	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
GRAND RIDGE	12/23/2007	Thunderstorm Wind	60 kts. EG	0	0	10.00K	0.00K
HARDING	8/30/2013	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
KERNAN	7/17/1996	Thunderstorm Wind		0	0	0.00K	0.00K
LA SALLE	7/17/1996	Thunderstorm Wind		0	0	0.00K	0.00K
LA SALLE	11/10/1998	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
LA SALLE	4/20/2000	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
LA SALLE	7/11/2003	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
LA SALLE	8/23/2007	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
LA SALLE	6/15/2008	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
LA SALLE	7/10/2008	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
LA SALLE	7/21/2008	Thunderstorm Wind	55 kts. EG	0	0	1.00K	0.00K
LA SALLE	6/18/2010	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
LA SALLE	9/3/2011	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
LA SALLE (ZONE)	3/25/1996	High Wind	45 kts.	0	0	0.00K	0.00K
LA SALLE (ZONE)	9/29/1997	High Wind	40 kts.	0	0	0.00K	0.00K
LA SALLE (ZONE)	11/10/1998	High Wind	56 kts.	0	0	0.00K	0.00K
LA SALLE (ZONE)	2/25/2001	Strong Wind		0	0	0.00K	0.00K
LA SALLE (ZONE)	3/9/2002	High Wind	51 kts. M	0	0	0.00K	0.00K
LA SALLE (ZONE)	5/11/2003	Strong Wind	47 kts. MG	0	0	1.00K	0.00K

LA SALLE (ZONE)	11/13/2003	High Wind	50 kts. MG	0	0	0.00K	0.00K
LA SALLE (ZONE)	3/5/2004	High Wind	53 kts. MG	0	0	0.00K	0.00K
LA SALLE (ZONE)	5/24/2007	Strong Wind	40 kts. EG	0	0	2.00K	0.00K
LA SALLE (ZONE)	12/23/2007	High Wind	50 kts. EG	0	0	5.00K	0.00K
LA SALLE (ZONE)	1/29/2008	High Wind	52 kts. EG	0	0	250.00K	0.00K
LA SALLE (ZONE)	4/11/2008	Strong Wind	37 kts. MG	0	0	2.00K	0.00K
LA SALLE (ZONE)	5/11/2008	Strong Wind	41 kts. MG	0	0	10.00K	0.00K
LA SALLE (ZONE)	6/6/2008	Strong Wind	45 kts. EG	0	0	5.00K	0.00K
LA SALLE (ZONE)	4/29/2010	Strong Wind	43 kts. EG	0	0	2.00K	0.00K
LA SALLE (ZONE)	10/26/2010	High Wind	50 kts. MG	0	0	50.00K	0.00K
LA SALLE (ZONE)	10/27/2010	High Wind	50 kts. MG	0	0	10.00K	0.00K
LA SALLE (ZONE)	3/12/2011	Strong Wind	35 kts. MG	0	0	2.00K	0.00K
LA SALLE (ZONE)	2/20/2014	High Wind	35 kts. MS	0	0	0.00K	0.00K
LA SALLE (ZONE)	11/12/2015	High Wind	52 kts. EG	0	1	0.00K	0.00K
LA SALLE (ZONE)	2/19/2016	High Wind	59 kts. EG	0	2	0.00K	0.00K
LA SALLE (ZONE)	4/2/2016	High Wind	51 kts. EG	0	0	20.00K	0.00K
LA SALLE (ZONE)	1/10/2017	High Wind	52 kts. EG	0	0	0.00K	0.00K
LA SALLE (ZONE)	2/24/2019	High Wind	52 kts. EG	0	0	20.00K	0.00K
LA SALLE CO.	7/2/1970	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	7/2/1970	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	4/6/1972	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/16/1973	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/16/1973	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	3/4/1974	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/20/1974	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/20/1974	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/20/1974	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/20/1974	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	7/22/1974	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
LA SALLE CO.	9/12/1974	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	4/18/1975	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/13/1975	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
LA SALLE CO.	3/4/1976	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	3/4/1976	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
LA SALLE CO.	3/4/1976	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	4/20/1976	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	9/17/1978	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/8/1979	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	7/9/1980	Thunderstorm Wind	51 kts.	0	0	0.00K	0.00K
LA SALLE CO.	7/7/1982	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
LA SALLE CO.	7/1/1983	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	8/3/1983	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	8/3/1983	Thunderstorm Wind	53 kts.	0	0	0.00K	0.00K
LA SALLE CO.	8/27/1983	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
LA SALLE CO.	4/29/1984	Thunderstorm Wind	0 kts.	0	2	0.00K	0.00K
LA SALLE CO.	5/14/1985	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	5/14/1985	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	5/14/1985	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K

LA SALLE CO.	9/24/1986	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
LA SALLE CO.	5/11/1987	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
LA SALLE CO.	5/20/1987	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
LA SALLE CO.	5/21/1987	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	8/16/1987	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	4/5/1988	Thunderstorm Wind	63 kts.	0	0	0.00K	0.00K
LA SALLE CO.	5/8/1988	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/2/1990	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/13/1990	Thunderstorm Wind	0 kts.	0	1	0.00K	0.00K
LA SALLE CO.	6/29/1990	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	7/19/1990	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	11/27/1990	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	5/30/1991	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	5/30/1991	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/13/1991	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	9/9/1991	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
LA SALLE CO.	12/8/1991	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
LA SALLE CO.	6/17/1992	Thunderstorm Wind	53 kts.	0	0	0.00K	0.00K
(VYS) ILLINOIS VALLEY	11/27/2019	Thunderstorm Wind	55 kts	0	0	0.00K	0.00K
(VYS) ILLINOIS VALLEY	11/27/2019	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
LAKE HOLIDAY	6/14/2017	Thunderstorm Wind	55 kts.	0	0	0.00K	0.00K
LAKE HOLIDAY	6/14/2017	Thunderstorm Wind	63 kts.	0	0	0.00K	0.00K
LELAND	7/28/1996	Thunderstorm Wind		0	0	0.00K	0.00K
LELAND	8/1/2003	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
LELAND	8/3/2006	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
LELAND	6/12/2013	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
LEONORE	7/13/2004	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
LEONORE	9/22/2005	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
LOSTANT	5/31/2000	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
LOSTANT	6/4/2005	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
LOSTANT	7/12/2008	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
LOSTANT	6/21/2011	Thunderstorm Wind	52 kts. MG	0	0	0.00K	0.00K
LOSTANT	4/9/2015	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
LOSTANT	6/20/2015	Thunderstorm Wind	50 kts.	0	0	1.00K	0.00K
LOSTANT	11/11/2015	Thunderstorm Wind	50 kts.	0	0	1.00K	0.00K
LOSTANT	6/19/2018	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
MARSEILLES	7/7/1994	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
MARSEILLES	7/19/1994	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MARSEILLES	9/11/2000	Thunderstorm Wind	58 kts. M	0	0	0.00K	0.00K
MARSEILLES	5/1/2003	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MARSEILLES	8/1/2003	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
MARSEILLES	8/22/2007	Thunderstorm Wind	50 kts. MG	0	0	0.00K	0.00K
MARSEILLES	7/21/2008	Thunderstorm Wind	56 kts. MG	0	0	0.00K	0.00K
MARSEILLES	7/23/2010	Thunderstorm Wind	50 kts. EG	0	0	10.00K	0.00K
MARSEILLES	7/24/2011	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
MARSEILLES	5/28/2013	Thunderstorm Wind	65 kts. EG	0	0	5.00K	0.00K
MENDOTA	8/9/1995	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
MENDOTA	5/18/1997	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K

MENDOTA	8/16/1997	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
MENDOTA	6/4/2002	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
MENDOTA	8/3/2006	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MENDOTA	8/10/2006	Thunderstorm Wind	55 kts. EG	0	0	2.00K	0.00K
MENDOTA	6/1/2007	Thunderstorm Wind	60 kts. EG	0	0	5.00K	0.00K
MENDOTA	6/1/2007	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
MENDOTA	5/26/2008	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
MENDOTA	6/8/2008	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
MENDOTA	6/12/2008	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
MENDOTA	6/28/2008	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
MENDOTA	6/27/2009	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
MENDOTA	6/12/2010	Thunderstorm Wind	55 kts. EG	0	0	1.00K	0.00K
MENDOTA	7/23/2010	Thunderstorm Wind	60 kts. EG	0	0	2.00K	0.00K
MENDOTA	7/24/2011	Thunderstorm Wind	60 kts. EG	0	0	1.00K	0.00K
MENDOTA	6/24/2013	Thunderstorm Wind	74 kts. EG	0	0	5.00K	0.00K
MENDOTA	6/30/2014	Thunderstorm Wind	60 kts. EG	0	0	50.00K	0.00K
MENDOTA	6/15/2015	Thunderstorm Wind	70 kts.	0	0	50.00K	0.00K
MENDOTA	6/22/2015	Thunderstorm Wind	70 kts.	0	0	10.00K	0.00K
MENDOTA	7/6/2016	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
MENDOTA	7/13/2016	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
MENDOTA	5/17/2017	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
MENDOTA	9/25/2018	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
MENDOTA	6/30/2019	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
MILLA	12/27/2008	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
NORWAY	7/10/2008	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
NORWAY	8/4/2012	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
OGLESBY	8/6/2000	Thunderstorm Wind	70 kts. E	0	0	0.00K	0.00K
OGLESBY	10/3/2000	Thunderstorm Wind	90 kts. E	0	0	0.00K	0.00K
OGLESBY	8/23/2007	Thunderstorm Wind	60 kts. EG	0	0	25.00K	0.00K
OGLESBY	6/15/2008	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
OGLESBY	8/19/2009	Thunderstorm Wind	50 kts. EG	0	0	50.00K	0.00K
OGLESBY	6/23/2010	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
OTTAWA	6/17/1996	Thunderstorm Wind		0	0	0.00K	0.00K
OTTAWA	4/5/1997	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
OTTAWA	4/5/1997	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
OTTAWA	8/4/1997	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
OTTAWA	6/29/1998	Thunderstorm Wind	59 kts.	0	0	0.00K	0.00K
OTTAWA	6/23/2000	Thunderstorm Wind	56 kts. E	0	0	0.00K	0.00K
OTTAWA	8/6/2000	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
OTTAWA	8/6/2000	Thunderstorm Wind	70 kts. E	0	0	0.00K	0.00K
OTTAWA	10/3/2000	Thunderstorm Wind	90 kts. E	0	0	100.00K	0.00K
OTTAWA	6/28/2003	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
OTTAWA	7/6/2003	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
OTTAWA	5/30/2004	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
OTTAWA	5/30/2004	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
OTTAWA	6/8/2005	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
OTTAWA	7/26/2005	Thunderstorm Wind	51 kts. EG	0	0	0.00K	0.00K
OTTAWA	5/29/2006	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K

OTTAWA	8/3/2006	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
OTTAWA	8/3/2006	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
OTTAWA	9/22/2006	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
OTTAWA	5/26/2007	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
OTTAWA	8/14/2007	Thunderstorm Wind	55 kts. EG	0	0	5.00K	0.00K
OTTAWA	8/23/2007	Thunderstorm Wind	61 kts. MG	0	0	0.00K	0.00K
OTTAWA	8/23/2007	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
OTTAWA	8/23/2007	Thunderstorm Wind	55 kts. MG	0	0	0.00K	0.00K
OTTAWA	12/23/2007	Thunderstorm Wind	55 kts. EG	0	0	2.00K	0.00K
OTTAWA	7/10/2008	Thunderstorm Wind	56 kts. EG	0	0	0.00K	0.00K
OTTAWA	8/5/2008	Thunderstorm Wind	56 kts. EG	0	0	3.00K	0.00K
OTTAWA	5/7/2009	Thunderstorm Wind	50 kts. MG	0	0	0.00K	0.00K
OTTAWA	6/27/2009	Thunderstorm Wind	54 kts. MG	0	0	0.00K	0.00K
OTTAWA	6/27/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
OTTAWA	7/23/2010	Thunderstorm Wind	50 kts. EG	0	0	5.00K	0.00K
OTTAWA	7/23/2010	Thunderstorm Wind	60 kts. EG	0	0	30.00K	0.00K
OTTAWA	8/4/2010	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
OTTAWA	6/24/2013	Thunderstorm Wind	54 kts. MG	0	0	0.00K	0.00K
OTTAWA	9/18/2013	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
OTTAWA	6/30/2014	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
OTTAWA	7/6/2016	Thunderstorm Wind	65 kts.	0	0	0.00K	0.00K
OTTAWA	7/13/2016	Thunderstorm Wind	54 kts.	0	0	0.00K	0.00K
OTTAWA	2/28/2017	Thunderstorm Wind	61 kts	0	0	0.00K	0.00K
OTTAWA	3/7/2017	Thunderstorm Wind	52 kts.	0	0	1.00K	0.00K
OTTAWA ARPT	7/10/2008	Thunderstorm Wind	50 kts. MG	0	0	0.00K	0.00K
PERU	8/9/1995	Thunderstorm Wind	0 kts.	0	0	5.00K	0.00K
PERU	3/27/1998	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
PERU	6/1/1999	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
PERU	5/31/2000	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
PERU	7/27/2003	Thunderstorm Wind	51 kts. MG	0	0	0.00K	0.00K
PERU	7/13/2004	Thunderstorm Wind	70 kts. EG	0	0	0.00K	0.00K
PERU	10/2/2006	Thunderstorm Wind	63 kts. EG	0	0	50.00K	0.00K
PERU	6/1/2007	Thunderstorm Wind	55 kts. EG	0	0	15.00K	0.00K
PERU	8/23/2007	Thunderstorm Wind	50 kts. MG	0	0	0.00K	0.00K
PERU	8/23/2007	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
PERU	5/26/2008	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
PERU	5/31/2008	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
PERU	7/12/2008	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
PERU	7/12/2008	Thunderstorm Wind	60 kts. MG	0	0	0.00K	0.00K
PERU	7/21/2008	Thunderstorm Wind	55 kts. MG	0	0	0.00K	0.00K
PERU	7/21/2008	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
PERU	6/5/2010	Thunderstorm Wind	50 kts. MG	0	0	0.00K	0.00K
PERU	7/23/2010	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
PERU	6/21/2011	Thunderstorm Wind	65 kts. MG	0	0	0.00K	0.00K
PERU	9/3/2011	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
PERU	9/3/2011	Thunderstorm Wind	50 kts. MG	0	0	0.00K	0.00K
PERU	6/17/2013	Thunderstorm Wind	51 kts. MG	0	0	0.00K	0.00K
PERU	6/24/2013	Thunderstorm Wind	60 kts. EG	0	0	25.00K	0.00K

PERU	11/17/2013	Thunderstorm Wind	50 kts. MG	0	0	0.00K	0.00K
PERU	6/13/2015	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
PERU	7/13/2016	Thunderstorm Wind	55 kts.	0	0	0.00K	0.00K
PERU	5/17/2017	Thunderstorm Wind	51 kts.	0	0	0.00K	0.00K
PERU	8/10/2017	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
RANSOM	6/29/2012	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
RANSOM	11/17/2013	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
RUTLAND	3/31/2007	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
RUTLAND	6/12/2010	Thunderstorm Wind	61 kts. EG	0	0	1.00K	0.00K
SENECA	6/6/1999	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
SENECA	5/8/2000	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
SENECA	9/11/2000	Thunderstorm Wind	65 kts. M	0	0	0.00K	0.00K
SENECA	8/1/2003	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
SERENA	8/14/2007	Thunderstorm Wind	55 kts. EG	0	0	10.00K	0.00K
SERENA	6/19/2009	Thunderstorm Wind	56 kts. EG	0	0	0.00K	0.00K
SHERIDAN	5/30/2003	Thunderstorm Wind	65 kts. EG	0	0	0.00K	0.00K
SHERIDAN	7/21/2003	Thunderstorm Wind	57 kts. EG	0	0	0.00K	0.00K
SHERIDAN	5/30/2004	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
SHERIDAN	3/31/2007	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
SHERIDAN	8/22/2007	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
SHERIDAN	7/29/2008	Thunderstorm Wind	56 kts. EG	0	0	0.00K	0.00K
SHERIDAN	8/4/2008	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
SHERIDAN	7/23/2010	Thunderstorm Wind	60 kts. EG	0	0	1.00K	0.00K
SHERIDAN	7/13/2016	Thunderstorm Wind	54 kts.	0	0	0.00K	0.00K
STAVANGER	8/6/2000	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
STAVANGER	6/22/2016	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
STAVANGER	6/14/2017	Thunderstorm Wind	55 kts.	0	0	5.00K	0.00K
STREATOR	6/17/1994	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
STREATOR	7/26/1995	Thunderstorm Wind	0 kts.	0	0	0.00K	0.00K
STREATOR	4/19/1996	Thunderstorm Wind		0	0	0.00K	0.00K
STREATOR	8/4/1997	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
STREATOR	4/20/2000	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
STREATOR	5/31/2000	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
STREATOR	6/20/2000	Thunderstorm Wind	52 kts. E	0	0	0.00K	0.00K
STREATOR	7/8/2001	Thunderstorm Wind	55 kts. E	0	0	0.00K	0.00K
STREATOR	7/22/2001	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
STREATOR	6/4/2002	Thunderstorm Wind	50 kts. E	0	0	0.00K	0.00K
STREATOR	5/7/2004	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
STREATOR	7/13/2004	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
STREATOR	10/2/2006	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
STREATOR	8/5/2008	Thunderstorm Wind	56 kts. EG	0	0	3.00K	0.00K
STREATOR	7/24/2009	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
STREATOR	7/24/2009	Thunderstorm Wind	61 kts. EG	0	0	0.00K	0.00K
STREATOR	6/23/2010	Thunderstorm Wind	56 kts. EG	0	0	0.00K	0.00K
STREATOR	11/11/2015	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
STREATOR	7/13/2016	Thunderstorm Wind	65 kts.	0	0	0.00K	0.00K
STREATOR	7/21/2016	Thunderstorm Wind	52 kts.	0	0	0.00K	0.00K
STREATOR	6/14/2017	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K

STREATOR	6/14/2017	Thunderstorm Wind	60 kts.	0	0	0.00K	0.00K
STREATOR	10/14/2017	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
STREATOR	6/30/2019	Thunderstorm Wind	61 kts.	0	0	0.00K	0.00K
STREATOR WEST	8/19/2009	Thunderstorm Wind	70 kts. EG	0	0	5.00K	0.00K
TONICA	9/11/2000	Thunderstorm Wind	58 kts. E	0	0	0.00K	0.00K
TONICA	6/4/2005	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
TONICA	7/19/2006	Thunderstorm Wind	52 kts. EG	0	0	0.00K	0.00K
TONICA	7/21/2008	Thunderstorm Wind	55 kts. EG	0	0	3.00K	0.00K
TONICA	6/24/2013	Thunderstorm Wind	65 kts. EG	0	0	25.00K	0.00K
TONICA	6/14/2017	Thunderstorm Wind	60 kts.	0	0	20.00K	0.00K
TONICA	6/19/2018	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
TONICA	9/25/2018	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
TRIUMPH	6/14/2001	Thunderstorm Wind	55 kts. M	0	0	2.00K	0.00K
TROY GROVE	3/31/2007	Thunderstorm Wind	56 kts. EG	0	0	0.00K	0.00K
TROY GROVE	6/24/2013	Thunderstorm Wind	65 kts. EG	0	0	0.00K	0.00K
TROY GROVE	6/4/2019	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
TWIN BLUFFS	7/21/2008	Thunderstorm Wind	55 kts. EG	0	0	8.00K	0.00K
UTICA	8/4/1997	Thunderstorm Wind	50 kts.	0	0	0.00K	0.00K
UTICA	10/3/2000	Thunderstorm Wind	90 kts. E	0	0	0.00K	0.00K
UTICA	4/16/2006	Thunderstorm Wind	50 kts. EG	0	0	3.00K	0.00K
UTICA	8/3/2006	Thunderstorm Wind	50 kts. EG	0	0	2.00K	0.00K
UTICA	7/12/2008	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
UTICA	8/4/2012	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
UTICA	2/28/2017	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
UTICA	5/17/2017	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
UTICA AIRPARK ARPT	7/23/2010	Thunderstorm Wind	55 kts. EG	0	0	0.00K	0.00K
UTICA AIRPARK ARPT	6/30/2014	Thunderstorm Wind	60 kts. EG	0	0	0.00K	0.00K
WEDRON	3/24/2009	Thunderstorm Wind	50 kts. EG	0	0	1.00K	0.00K
WEDRON	6/4/2019	Thunderstorm Wind	50 kts. EG	0	0	0.00K	0.00K
Total Weather Events: 315			**Total**	**0**	**3**	**972.00K**	**0.00K**

LaSalle County Hail (10/1/1970 - 12/31/19)							
Location	**Date**	**Event**	**Mag.**	**Deaths**	**Injuries**	**PrD**	**CrD**
(MMO)MARSEILLES	5/20/2013	Hail	1.00 in.	0	0	0.00K	0.00K
CEDAR PT	8/1/2003	Hail	1.75 in.	0	0	0.00K	0.00K
CEDAR PT	3/30/2005	Hail	1.75 in.	0	0	0.00K	0.00K
CEDAR PT	4/3/2011	Hail	0.75 in.	0	0	0.00K	0.00K
COUNTYWIDE	6/18/1998	Hail	1.75 in.	0	0	0.00K	0.00K
DANA	6/24/1995	Hail	1.75 in.	0	0	0.00K	0.00K
DANA	5/7/2004	Hail	0.75 in.	0	0	0.00K	0.00K
DANA	4/14/2006	Hail	1.75 in.	0	0	0.00K	0.00K
EARLVILLE	5/12/1998	Hail	2.25 in.	0	0	0.00K	0.00K
EARLVILLE	5/27/2006	Hail	1.00 in.	0	0	0.00K	0.00K
EARLVILLE	5/27/2006	Hail	1.00 in.	0	0	0.00K	0.00K
EARLVILLE	6/12/2013	Hail	1.00 in.	0	0	0.00K	0.00K
EAST WENONA	3/18/2012	Hail	0.75 in.	0	0	0.00K	0.00K
GARFIELD	5/29/2006	Hail	0.88 in.	0	0	0.00K	0.00K
GARFIELD	5/29/2006	Hail	0.88 in.	0	0	0.00K	0.00K
IROQUOIS	6/24/1995	Hail	0.75 in.	0	0	0.00K	0.00K
JONESVILLE	7/10/2017	Hail	1.00 in.	0	0	0.00K	0.00K
LA SALLE	5/7/2004	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE	6/15/2008	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE	9/3/2011	Hail	0.88 in.	0	0	0.00K	0.00K
LA SALLE	3/18/2012	Hail	1.00 in.	0	0	0.00K	0.00K
LA SALLE	11/17/2013	Hail	1.00 in.	0	0	0.00K	0.00K
LA SALLE	5/12/2014	Hail	1.00 in.	0	0	0.00K	0.00K
LA SALLE AND PERU	8/9/1995	Hail	1.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	7/11/1969	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	6/14/1974	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	6/13/1975	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	3/28/1977	Hail	1.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	8/5/1979	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	8/5/1979	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	11/9/1984	Hail	1.00 in.	0	0	0.00K	0.00K
LA SALLE CO.	3/27/1985	Hail	1.00 in.	0	0	0.00K	0.00K
LA SALLE CO.	5/14/1985	Hail	2.00 in.	0	14	0.00K	0.00K
LA SALLE CO.	6/23/1989	Hail	1.00 in.	0	0	0.00K	0.00K
LA SALLE CO.	6/13/1990	Hail	2.00 in.	0	0	0.00K	0.00K
LA SALLE CO.	3/27/1991	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	3/27/1991	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	3/27/1991	Hail	1.00 in.	0	0	0.00K	0.00K
LA SALLE CO.	4/27/1991	Hail	0.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	5/30/1991	Hail	1.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	4/15/1992	Hail	2.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	4/15/1992	Hail	1.75 in.	0	0	0.00K	0.00K
LA SALLE CO.	4/15/1992	Hail	1.75 in.	0	0	0.00K	0.00K

LAKE HOLIDAY	10/2/2006	Hail	0.75 in.	0	0	0.00K	0.00K
LAKE HOLIDAY	8/13/2011	Hail	0.75 in.	0	0	0.00K	0.00K
LAKE HOLIDAY	6/14/2017	Hail	0.88 in.	0	0	0.00K	0.00K
LEONORE	4/19/1996	Hail	0.75 in.	0	0	0.00K	0.00K
LEONORE	7/11/2003	Hail	0.75 in.	0	0	0.00K	0.00K
LEONORE	3/30/2005	Hail	1.00 in.	0	0	0.00K	0.00K
LEONORE	3/12/2006	Hail	1.00 in.	0	0	0.00K	0.00K
LOSTANT	5/13/1995	Hail	0.75 in.	0	0	0.00K	0.00K
LOSTANT	3/12/2006	Hail	1.00 in.	0	0	0.00K	0.00K
LOSTANT	3/12/2006	Hail	1.25 in.	0	0	0.00K	0.00K
LOSTANT	4/9/2015	Hail	1.00 in.	0	0	0.00K	0.00K
LOSTANT	3/15/2016	Hail	1.25 in.	0	0	0.00K	0.00K
MARSEILLES	4/10/1995	Hail	0.50 in.	0	0	0.00K	0.00K
MARSEILLES	6/14/2001	Hail	0.88 in.	0	0	0.00K	0.00K
MARSEILLES	7/6/2003	Hail	0.75 in.	0	0	0.00K	0.00K
MARSEILLES	7/17/2003	Hail	0.75 in.	0	0	0.00K	0.00K
MARSEILLES	8/1/2003	Hail	1.00 in.	0	0	0.00K	0.00K
MARSEILLES	3/30/2005	Hail	0.75 in.	0	0	0.00K	0.00K
MARSEILLES	4/14/2006	Hail	1.75 in.	0	0	0.00K	0.00K
MARSEILLES	9/22/2006	Hail	1.00 in.	0	0	0.00K	0.00K
MARSEILLES	5/13/2011	Hail	0.88 in.	0	0	0.00K	0.00K
MARSEILLES	7/13/2015	Hail	3.75 in.	0	0	1.00MM	0.00K
MARSEILLES	5/16/2019	Hail	1.00 in.	0	0	0.00K	0.00K
MENDOTA	7/13/2004	Hail	1.75 in.	0	0	0.00K	0.00K
MENDOTA	3/12/2006	Hail	1.00 in.	0	0	0.00K	0.00K
MENDOTA	9/4/2006	Hail	0.88 in.	0	0	0.00K	0.00K
MENDOTA	7/10/2008	Hail	0.88 in.	0	0	0.00K	0.00K
MENDOTA	6/22/2015	Hail	0.75 in.	0	0	0.00K	0.00K
MENDOTA	2/28/2017	Hail	1.00 in.	0	0	0.00K	0.00K
OGLESBY	5/11/2011	Hail	1.00 in.	0	0	0.00K	0.00K
OGLESBY	3/18/2012	Hail	0.75 in.	0	0	0.00K	0.00K
OGLESBY	11/17/2013	Hail	1.00 in.	0	0	0.00K	0.00K
OTTAWA	6/28/2003	Hail	1.00 in.	0	0	0.00K	0.00K
OTTAWA	7/6/2003	Hail	1.75 in.	0	1	0.00K	0.00K
OTTAWA	7/6/2003	Hail	0.75 in.	0	0	0.00K	0.00K
OTTAWA	7/8/2003	Hail	1.00 in.	0	0	0.00K	0.00K
OTTAWA	7/11/2003	Hail	0.75 in.	0	0	0.00K	0.00K
OTTAWA	4/20/2004	Hail	1.75 in.	0	0	0.00K	0.00K
OTTAWA	7/13/2004	Hail	1.25 in.	0	0	0.00K	0.00K
OTTAWA	3/30/2005	Hail	1.00 in.	0	0	0.00K	0.00K
OTTAWA	4/14/2006	Hail	0.75 in.	0	0	0.00K	0.00K
OTTAWA	8/3/2006	Hail	0.75 in.	0	0	0.00K	0.00K
OTTAWA	9/22/2006	Hail	0.75 in.	0	0	0.00K	0.00K
OTTAWA	3/31/2007	Hail	0.75 in.	0	0	0.00K	0.00K
OTTAWA	4/3/2007	Hail	1.50 in.	0	0	0.00K	0.00K

OTTAWA	9/21/2010	Hail	1.00 in.	0	0	0.00K	0.00K
OTTAWA	9/21/2010	Hail	0.88 in.	0	0	0.00K	0.00K
OTTAWA ARPT	7/19/2008	Hail	0.75 in.	0	0	0.00K	0.00K
OTTAWA ARPT	9/3/2011	Hail	1.00 in.	0	0	0.00K	0.00K
OTTAWA	7/13/2015	Hail	1.75 in.	0	0	0.00K	0.00K
OTTAWA	7/13/2016	Hail	1.00 in.	0	0	0.00K	0.00K
OTTAWA	2/28/2017	Hail	2.75 in.	0	0	0.00K	0.00K
PERU	4/19/1996	Hail	1.00 in.	0	0	0.00K	0.00K
PERU	4/20/2004	Hail	2.50 in.	0	0	0.00K	0.00K
PERU	4/20/2004	Hail	1.00 in.	0	0	0.00K	0.00K
PERU	6/15/2008	Hail	0.88 in.	0	0	0.00K	0.00K
PERU	6/15/2008	Hail	1.00 in.	0	0	0.00K	0.00K
PERU	6/15/2008	Hail	0.88 in.	0	0	0.00K	0.00K
PERU	7/12/2008	Hail	0.88 in.	0	0	0.00K	0.00K
PERU	4/20/2009	Hail	0.88 in.	0	0	0.00K	0.00K
PERU	11/22/2010	Hail	1.00 in.	0	0	0.00K	0.00K
PERU	4/3/2011	Hail	1.75 in.	0	0	0.00K	0.00K
PERU	4/19/2011	Hail	1.00 in.	0	0	0.00K	0.00K
PERU	3/15/2016	Hail	1.25 in.	0	0	0.00K	0.00K
PERU	7/10/2017	Hail	1.50 in.	0	0	0.00K	0.00K
PRAIRIE CENTER	9/4/2006	Hail	0.88 in.	0	0	0.00K	0.00K
PRISCILLA	6/24/1995	Hail	0.75 in.	0	0	0.00K	0.00K
RANSOM	5/30/2004	Hail	0.88 in.	0	0	0.00K	0.00K
RANSOM	3/12/2006	Hail	1.75 in.	0	0	0.00K	0.00K
RANSOM	3/12/2006	Hail	1.00 in.	0	0	0.00K	0.00K
RUTLAND	9/11/2000	Hail	1.75 in.	0	0	0.00K	0.00K
RUTLAND	4/9/2001	Hail	1.00 in.	0	0	0.00K	0.00K
RUTLAND	8/9/2012	Hail	1.00 in.	0	0	0.00K	0.00K
SENECA	3/30/2005	Hail	0.88 in.	0	0	0.00K	0.00K
SERENA	5/9/2004	Hail	1.00 in.	0	0	0.00K	0.00K
SERENA	6/12/2013	Hail	1.25 in.	0	0	0.00K	0.00K
SHERIDAN	6/18/2010	Hail	1.00 in.	0	0	0.00K	0.00K
SHERIDAN	6/12/2013	Hail	1.00 in.	0	0	0.00K	0.00K
SHERIDAN	9/1/2013	Hail	0.75 in.	0	0	0.00K	0.00K
STREATOR	4/19/1996	Hail	0.75 in.	0	0	0.00K	0.00K
STREATOR	4/10/1999	Hail	1.00 in.	0	0	0.00K	0.00K
STREATOR	5/18/2000	Hail	0.75 in.	0	0	0.00K	0.00K
STREATOR	7/8/2001	Hail	0.88 in.	0	0	0.00K	0.00K
STREATOR	4/4/2003	Hail	0.75 in.	0	0	0.00K	0.00K
STREATOR	5/14/2003	Hail	1.00 in.	0	0	0.00K	0.00K
STREATOR	5/30/2003	Hail	1.00 in.	0	0	0.00K	0.00K
STREATOR	7/11/2003	Hail	0.88 in.	0	0	0.00K	0.00K
STREATOR	7/11/2003	Hail	0.75 in.	0	0	0.00K	0.00K
STREATOR	3/12/2006	Hail	1.75 in.	0	0	0.00K	0.00K
STREATOR	1/7/2008	Hail	0.75 in.	0	0	0.00K	0.00K

STREATOR	5/6/2012	Hail	1.00 in.	0	0	0.00K	0.00K
STREATOR	5/6/2012	Hail	1.00 in.	0	0	0.00K	0.00K
TONICA	4/20/1998	Hail	0.75 in.	0	0	0.00K	0.00K
TONICA	3/12/2006	Hail	1.00 in.	0	0	0.00K	0.00K
TROY GROVE	6/12/2013	Hail	0.75 in.	0	0	0.00K	0.00K
TROY GROVE	7/10/2017	Hail	1.00 in.	0	0	0.00K	0.00K
UTICA	5/18/1997	Hail	1.75 in.	0	0	0.00K	0.00K
UTICA	5/5/1999	Hail	1.75 in.	0	0	0.00K	0.00K
UTICA	7/13/2004	Hail	2.75 in.	0	0	0.00K	0.00K
UTICA	8/2/2006	Hail	0.75 in.	0	0	0.00K	0.00K
UTICA	8/16/2019	Hail	1.00 in.	0	0	0.00K	0.00K
WEDRON	8/9/1995	Hail	1.75 in.	0	0	0.00K	0.00K
Total Weather Events: 145			**Total**	**0**	**14**	**1.00MM**	**0.00K**

LaSalle County Droughts (1/1/1970 - 12/31/19)							
Location	**Date**	**Event**	**Mag.**	**Deaths**	**Injuries**	**PrD**	**CrD**
LA SALLE (Z	6/15/2005	Drought		0	0	0.00K	0.00K
LA SALLE (Z	7/1/2005	Drought		0	0	0.00K	0.00K
LA SALLE (Z	8/1/2005	Drought		0	0	0.00K	0.00K
LA SALLE (Z	9/1/2005	Drought		0	0	0.00K	0.00K
LA SALLE (Z	10/1/2005	Drought		0	0	0.00K	0.00K
LA SALLE (Z	11/1/2005	Drought		0	0	0.00K	0.00K
LA SALLE (Z	12/1/2005	Drought		0	0	0.00K	0.00K
LA SALLE (Z	1/1/2006	Drought		0	0	0.00K	0.00K
LA SALLE (Z	2/1/2006	Drought		0	0	0.00K	0.00K
Total Weather Events: 9			**Total**	**0**	**0**	**0.00K**	**0.00K**

Number of Occurrences								
Communities	Tornadoes & Funnel Clouds	Floods	Winter Storms	Extreme Temps.	Dangerous Winds	Lightning	Drought	Hail
LaSalle County	60	26	51	14	313	2	9	19
Cedar Point	1	1	51	14	1	0	9	3
Earlville	4	2	51	14	8	0	9	4
Grand Ridge	1	0	51	14	2	0	9	0
Kangley	0	1	51	14	0	0	9	0
LaSalle	0	3	51	14	10	2	9	6
Leland	2	0	51	14	4	1	9	0
Leonore	0	0	51	14	2	0	9	4
Lostant	1	3	51	14	8	0	9	5
Marseilles	4	8	51	14	12	0	9	11
Mendota	4	4	51	14	25	1	9	6
Naplate	1	0	51	14	0	0	9	0
North Utica	1	3	51	14	10	0	9	4
Oglesby	0	0	51	14	6	2	9	3
Ottawa	1	7	51	14	41	4	9	17
Peru	2	6	51	14	28	3	9	11
Ransom	0	0	51	14	2	0	9	3
Rutland	3	0	51	14	2	0	9	3
Seneca	0	1	51	14	4	0	9	1
Sheridan	2	0	51	14	9	1	9	3
Streator	0	4	51	14	25	0	9	13
Tonica	0	0	51	14	8	1	9	2

Frequency over 50 Years								
Communities	Tornadoes	Floods	Winter Storms	Extreme Temps.	Dangerous Winds	Lightning	Drought	Hail
LaSalle County	12	12	12	6	18	6	6	12
Cedar Point	6	6	12	6	6	6	6	6
Earlville	6	6	12	6	6	6	6	6
Grand Ridge	6	6	12	6	6	6	6	6
Kangley	6	6	12	6	6	6	6	6
LaSalle	6	6	12	6	6	6	6	6
Leland	6	6	12	6	6	6	6	6
Leonore	6	6	12	6	6	6	6	6
Lostant	6	6	12	6	6	6	6	6
Marseilles	6	6	12	6	12	6	6	6
Mendota	6	6	12	6	12	6	6	6
Naplate	6	6	12	6	6	6	6	6
North Utica	6	6	12	6	6	6	6	6
Oglesby	6	6	12	6	6	6	6	6
Ottawa	6	6	12	6	12	6	6	12
Peru	6	6	12	6	12	6	6	12
Ransom	6	6	12	6	6	6	6	6

Rutland	6	6	12	6	6	6	6	6
Seneca	6	6	12	6	6	6	6	6
Sheridan	6	6	12	6	6	6	6	6
Streator	6	6	12	6	12	6	6	12
Tonica	6	6	12	6	6	6	6	6

Vulnerability								
Communities	Tornadoes	Floods	Winter Storms	Extreme Temps.	Dangerous Winds	Lightning	Drought	Hail
LaSalle County	6	6	18	12	18	6	12	6
Cedar Point	6	6	18	12	18	6	12	6
Earlville	6	6	18	12	18	6	12	6
Grand Ridge	6	6	18	12	18	6	12	6
Kangley	6	6	18	12	18	6	12	6
LaSalle	6	6	18	12	18	6	12	6
Leland	6	6	18	12	18	6	12	6
Leonore	6	6	18	12	18	6	12	6
Lostant	6	6	18	12	18	6	12	6
Marseilles	6	6	18	12	18	6	12	6
Mendota	6	6	18	12	18	6	12	6
Naplate	6	6	18	12	18	6	12	6
North Utica	6	6	18	12	18	6	12	6
Oglesby	6	6	18	12	18	6	12	6
Ottawa	6	6	18	12	18	6	12	6
Peru	6	6	18	12	18	6	12	6
Ransom	6	6	18	12	18	6	12	6
Rutland	6	6	18	12	18	6	12	6
Seneca	6	6	18	12	18	6	12	6
Sheridan	6	6	18	12	18	6	12	6
Streator	6	6	18	12	18	6	12	6
Tonica	6	6	18	12	18	6	12	6

Severity								
Communities	Tornadoes	Floods	Winter Storms	Extreme Temps.	Dangerous Winds	Lightning	Drought	Hail
LaSalle County	6	6	6	6	6	6	6	6
Cedar Point	6	6	6	6	6	6	6	6
Earlville	6	6	6	6	6	6	6	6
Grand Ridge	6	6	6	6	6	6	6	6
Kangley	6	6	6	6	6	6	6	6
LaSalle	6	6	6	6	6	6	6	6
Leland	6	6	6	6	6	6	6	6
Leonore	6	6	6	6	6	6	6	6
Lostant	6	6	6	6	6	6	6	6
Marseilles	6	6	6	6	6	6	6	6
Mendota	6	6	6	6	6	6	6	6
Naplate	6	6	6	6	6	6	6	6

North Utica	6	6	6	6	6	6	6	6
Oglesby	6	6	6	6	6	6	6	6
Ottawa	6	6	6	6	6	6	6	6
Peru	6	6	6	6	6	6	6	6
Ransom	6	6	6	6	6	6	6	6
Rutland	6	6	6	6	6	6	6	6
Seneca	6	6	6	6	6	6	6	6
Sheridan	6	6	6	6	6	6	6	6
Streator	6	6	6	6	6	6	6	6
Tonica	6	6	6	6	6	6	6	6

Population (Actual)								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	1	1	1	1	1	1	1	1
Cedar Point	1	1	1	1	1	1	1	1
Earlville	1	1	1	1	1	1	1	1
Grand Ridge	1	1	1	1	1	1	1	1
Kangley	1	1	1	1	1	1	1	1
LaSalle	1	1	1	1	1	1	1	1
Leland	1	1	1	1	1	1	1	1
Leonore	1	1	1	1	1	1	1	1
Lostant	1	1	1	1	1	1	1	1
Marseilles	1	1	1	1	1	1	1	1
Mendota	1	1	1	1	1	1	1	1
Naplate	1	1	1	1	1	1	1	1
North Utica	1	1	1	1	1	1	1	1
Oglesby	1	1	1	1	1	1	1	1
Ottawa	1	1	1	1	1	1	1	1
Peru	1	1	1	1	1	1	1	1
Ransom	1	1	1	1	1	1	1	1
Rutland	1	1	1	1	1	1	1	1
Seneca	1	1	1	1	1	1	1	1
Sheridan	1	1	1	1	1	1	1	1
Streator	1	1	1	1	1	1	1	1
Tonica	1	1	1	1	1	1	1	1

Population (Projected)								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	1	1	1	1	1	1	1	1
Cedar Point	1	1	1	1	1	1	1	1
Earlville	1	1	1	1	1	1	1	1
Grand Ridge	1	1	1	1	1	1	1	1
Kangley	1	1	1	1	1	1	1	1
LaSalle	1	1	1	1	1	1	1	1
Leland	1	1	1	1	1	1	1	1

Leonore	1	1	1	1	1	1	1	1
Lostant	1	1	1	1	1	1	1	1
Marseilles	1	1	1	1	1	1	1	1
Mendota	1	1	1	1	1	1	1	1
Naplate	1	1	1	1	1	1	1	1
North Utica	1	1	1	1	1	1	1	1
Oglesby	1	1	1	1	1	1	1	1
Ottawa	1	1	1	1	1	1	1	1
Peru	1	1	1	1	1	1	1	1
Ransom	1	1	1	1	1	1	1	1
Rutland	1	1	1	1	1	1	1	1
Seneca	1	1	1	1	1	1	1	1
Sheridan	1	1	1	1	1	1	1	1
Streator	1	1	1	1	1	1	1	1
Tonica	1	1	1	1	1	1	1	1

Totals								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**Dangerous Winds**	**Lightning**	**Drought**	**Hail**
LaSalle County	26	26	38	26	44	20	26	26
Cedar Point	20	20	38	26	32	20	26	20
Earlville	20	20	38	26	32	20	26	20
Grand Ridge	20	20	38	26	32	20	26	20
Kangley	20	20	38	26	32	20	26	20
LaSalle	20	20	38	26	32	20	26	20
Leland	20	20	38	26	32	20	26	20
Leonore	20	20	38	26	32	20	26	20
Lostant	20	20	38	26	32	20	26	20
Marseilles	20	20	38	26	38	20	26	20
Mendota	20	20	38	26	38	20	26	20
Naplate	20	20	38	26	32	20	26	20
North Utica	20	20	38	26	32	20	26	20
Oglesby	20	20	38	26	32	20	26	20
Ottawa	20	20	38	26	38	20	26	26
Peru	20	20	38	26	38	20	26	26
Ransom	20	20	38	26	32	20	26	20
Rutland	20	20	38	26	32	20	26	20
Seneca	20	20	38	26	32	20	26	20
Sheridan	20	20	38	26	32	20	26	20
Streator	20	20	38	26	38	20	26	26
Tonica	20	20	38	26	32	20	26	20

LaSalle County Risk Assessment								
Communities	**Tornadoes**	**Floods**	**Winter Storms**	**Extreme Temps.**	**DangerousWinds**	**Lightning**	**Drought**	**Hail**
LaSalle County	**Medium**	**Medium**	**High**	**Medium**	**High**	**Low**	**Low**	**Medium**
Cedar Point	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Earlville	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Grand Ridge	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Kangley	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
LaSalle	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Leland	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Leonore	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Lostant	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Marseilles	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Low**	**Low**
Mendota	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Low**	**Low**
Naplate	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
North Utica	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Oglesby	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Ottawa	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Low**	**Medium**
Peru	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Low**	**Medium**
Ransom	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Rutland	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Seneca	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Sheridan	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Streator	**Low**	**Low**	**High**	**Medium**	**High**	**Low**	**Low**	**Medium**
Tonica	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Walnut	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**
Wyanet	**Low**	**Low**	**High**	**Medium**	**Medium**	**Low**	**Low**	**Low**

LaSalle County NHMP – 2020 Update

ncicg.org/planning-services/natural-hazard-mitigation-plans/lasalle-county-nhmp-2020-update/

LaSalle County is working with NCICG to update the 2015 LaSalle County Natural Hazard Mitigation Plan. FEMA requires that every 5 years the NHMP be reviewed and updated. The status of the planning process will be updated on this page on a regular basis. Public input on the plan is needed. *All meetings held during this plan update are open to the public.*

The natural hazard mitigation plan outlines hazards that LaSalle County is vulnerable to and addresses measures to help mitigate or lessen the overall burden of those hazards. The current plan was submitted to and approved in 2015 by the Federal Emergency Management Agency and can be accessed at https://lasallecounty.org/natural-hazard-mitigation-plan/ or https://www.ncicg.org/planning-services/natural-hazard-mitigation-plans/

Communities, townships and the county that actively participates in an approved plan process become eligible to apply for federal grant dollars for various pre-disaster or flood mitigation projects.

Following a final public, Zoom, meeting which will be held in May the plan will be submitted to IEMA and FEMA for their review and approval. After approval of the plan the participating communities will adopt the approved plan. The 2020 LaSalle County NHMP will be in place for 5 years.

An online public meeting presenting the plan is being held Monday May 18th at 3:00pm via zoom.
If you want to attend please email info@ncicg.org and request the login information for the LaSalle County NHMP public meeting. Chapters are available below.
Comments should be email to info@ncicg.org before the close of business on May 19th.
Chapters of the 2020 LaSalle County NHMP are posted below.

2020 LaSalle County NHMP Cover

2020 LaSalle County NHMP Inside Cover

2020 LaSalle County NHMP Table of Contents

2020 LaSalle County NHMP Executive Summary

2020 LaSalle County NHMP Chapter 1 Introduction

2020 LaSalle County NHMP Chapter 2 Hazard Profiles

2020 LaSalle County NHMP Chapter 3 Vulnerability Assessment

2020 LaSalle County NHMP Chapter 4 Preventative Measures

2020 LaSalle County NHMP Chapter 5 Property Protection

2020 LaSalle County NHMP Chapter 6 Flood Control

2020 LaSalle County NHMP Chapter 7 Emergency Management

2020 LaSalle County NHMP Chapter 8 Public Info

2020 LaSalle County NHMP Chapter 9 Goals

2020 LaSalle County NHMP Survey & Results

2020 LaSalle County NHMP Plan Presentation 5-18-20

Due to COVID-19 this meeting was canceled. More information to come soon. The next meeting regarding the Bureau County Natural Hazard Mitigation Plan is being held **March 26th at 3:00pm at LaSalle County EMA Building.**

In place of the meeting where IL State Climatologist Trent Ford was going to give a presentation you can see a presentation he gave on **Preparing for Extreme Weather** along with a presentation on flooding by Sally McConkey from the Illinois State Water Survey which was hosted by Illinois Extension**.** A recording of the webinar is available at https://go.illinois.edu/LGEarchives.

Public Survey – Survey is now Closed – Thank you to all who participated

As part of the review and update process, input is needed from the citizens who live and/or work in LaSalle County. LaSalle County Emergency Management has created an online survey to allow for the citizen input. The survey asks the public's opinion on topics such as identified hazards, personal impacts, personal preparedness, etc. The survey can be completed at https://tinyurl.com/20HazardMitigationSurvey and is open to any citizen who lives and/or works in LaSalle County. The survey is also available on LaSalle County Emergency Management Agency's website www.lasallecountyema.org.

A meeting was held February 6th at 3:30pm at the EMA building on Etna Road, Ottawa. Click here for details.Click here for Regional Goals from 2015 NHMP Plan. A subsequent survey for prioritizing the Countywide Regional Goal was sent out to each community. The prioritize that came from that survey will be included in the Goals Chapter of the plan.

Kickoff meeting October 24th. Click here for details.

If you have questions about the 2020 LaSalle County Natural Hazard Mitigation Plan update please contact Austin Taylor at 815/433-5830 or ataylor@ncicg.org

2020 NHMP Risk Assessment LaSalle County

ncicg.org/planning-services/natural-hazard-mitigation-plans/nhmp-risk-assessment-lasalle-county/

Community Risk Assessment

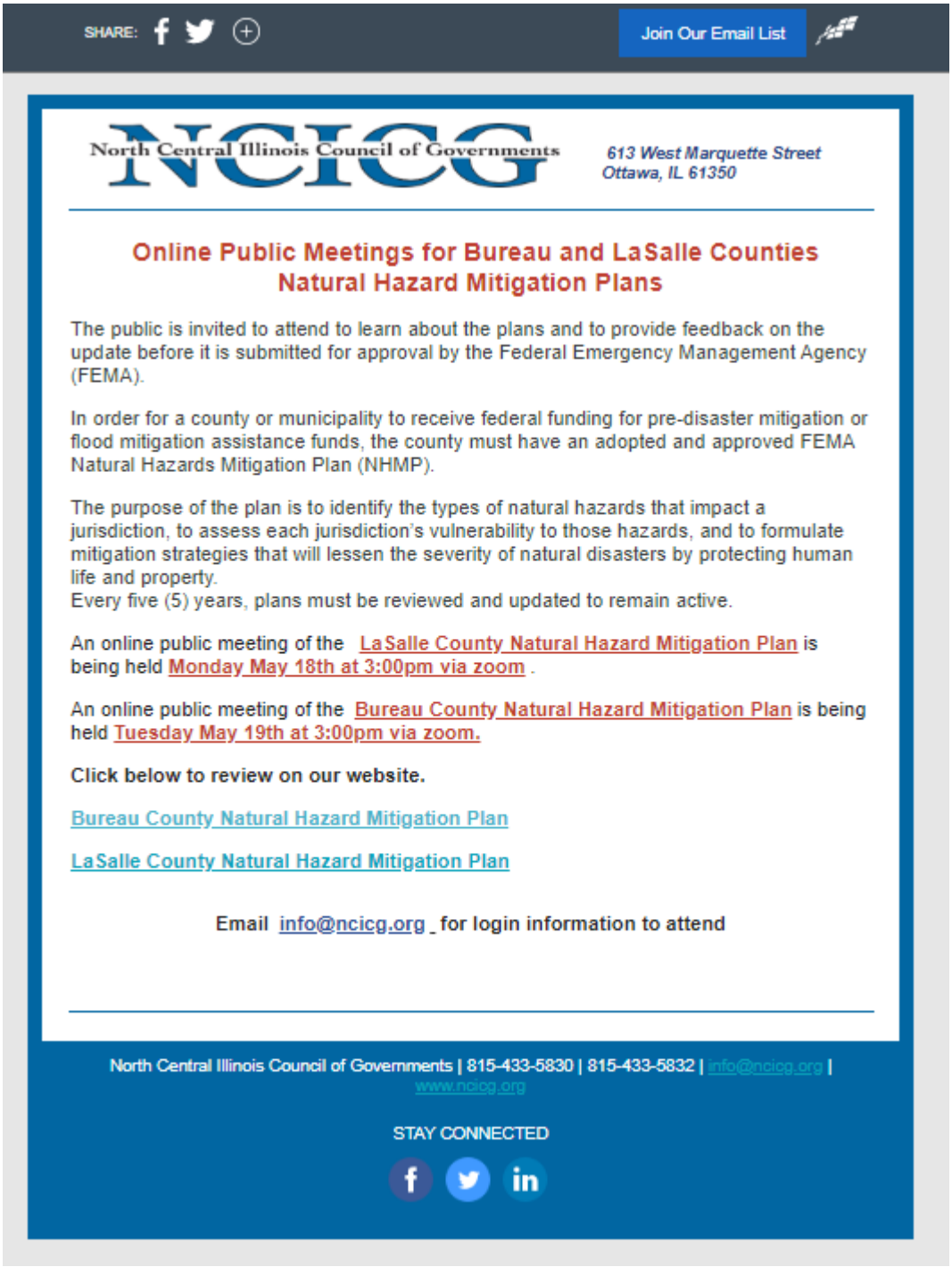
LaSalle County and each community that participated in the 2020 LaSalle County Natural Hazard Mitigation Plan has a Community Risk Assessment report. The Community Risk Assessment identifies the following:

1. The community's location and population.
2. Major storm events that have occurred since February 2008.
3. The community's natural hazard risks.
4. Additional information about the community.
5. Mitigation strategies for the community.

Click on the attachment below to see your community's risk assessment.

- **LaSalle County**
- **City of Earlville**
- **Village of Grand Ridge**
- **Village of Kangley**
- **City of LaSalle**
- **Village of Leland**
- **Village of Lostant**
- **City of Marseilles**
- **City of Mendota**
- **Village of Naplate**
- **Village of North Utica**
- **Northville Township**
- **City of Oglesby**
- **City of Ottawa**
- **Ottawa Township**
- **City of Peru**
- **Village of Ransom**
- **Village of Seneca**
- **Village of Sheridan**
- **City of Streator**

Social media was used during the Planning process including Facebook posts and videos, Constant Contact messages and Twitter. The Next-door app was also used.



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North Central Illinois Council of Governments

613 West Marquette Street
Ottawa, IL 61350

Online Public Meetings for Bureau and LaSalle Counties Natural Hazard Mitigation Plans

The public is invited to attend to learn about the plans and to provide feedback on the update before it is submitted for approval by the Federal Emergency Management Agency (FEMA).

In order for a county or municipality to receive federal funding for pre-disaster mitigation or flood mitigation assistance funds, the county must have an adopted and approved FEMA Natural Hazards Mitigation Plan (NHMP).

The purpose of the plan is to identify the types of natural hazards that impact a jurisdiction, to assess each jurisdiction's vulnerability to those hazards, and to formulate mitigation strategies that will lessen the severity of natural disasters by protecting human life and property.
Every five (5) years, plans must be reviewed and updated to remain active.

An online public meeting of the LaSalle County Natural Hazard Mitigation Plan is being held Monday May 18th at 3:00pm via zoom .

An online public meeting of the Bureau County Natural Hazard Mitigation Plan is being held Tuesday May 19th at 3:00pm via zoom.

Click below to review on our website.

Bureau County Natural Hazard Mitigation Plan

LaSalle County Natural Hazard Mitigation Plan

Email info@ncicg.org for login information to attend

North Central Illinois Council of Governments | 815-433-5830 | 815-433-5832 | info@ncicg.org | www.ncicg.org

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Published by North Central [?] · January 31 ·
LaSalle County Natural Hazard Mitigation Plan meeting is being held February 6th at 3:30 at LaSalle County EMA building on Etna Road in Ottawa.
40th
-1:02

LaSalle County Natural Hazards Mitigation Plan meeting, February 6th

January 27, 2020 Local Headlines

LaSalle County Sign – Studstill Media Photo

OTTAWA – LaSalle County's Emergency Management Association will have a public meeting on the updates of the LaSalle County Natural Hazards Mitigation Plan. On Thursday, February 6th at 3:30 pm in Ottawa, the Illinois Department of Natural Resources will be presenting on floodplain mapping tools online, river gauges, post-flood floodplain inspections and flood mitigation. LaSalle County EMA Director Connie Brooks will discuss when to document damages and expenses following a natural disaster event using FEMA's forms in case the community qualifies to apply for FEMA Public Assistance funding.

North Central Illinois Council of Governments
NCICG
613 W. Marquette, Ottawa, IL 61350 # Phone: (815) 433-5830 # Fax: (815) 433-5832 # www.ncicg.org

FOR IMMEDIATE RELEASE

October 9, 2019

Contact: NCICG

Tel: (815) 433-5830

Email: dtuftie@ncicg.org

LASALLE COUNTY NATURAL HAZARDS MITIGATION PLAN UPDATE KICK OFF MEETING OCTOBER 24th

LaSalle County is working with the North Central Illinois Council of Governments (NCICG), a regional planning agency that provides planning services to local governments, to update the 2015 LaSalle County Natural Hazards Mitigation Plan. A kick-off meeting is being held Thursday, October 24, 2019 at 3:00 p.m. at the LaSalle County Emergency Operations Centre (EOC) on Etna Road in Ottawa to discuss the update and planning process. The public is invited to attend.

The purpose of a NHMP is to identify the types of natural hazards that impact a jurisdiction, to assess each jurisdiction's vulnerability to those hazards, and to formulate mitigation strategies that will lessen the severity of natural disasters by protecting human life and property. Every five (5) years, plans must be reviewed and updated to remain active.

In order for a county or municipality to receive federal pre-disaster mitigation funds, the county and municipality must have an adopted and approved Federal Emergency Management Agency (FEMA) Natural Hazards Mitigation Plan (NHMP).

For more information about the LaSalle County Natural Hazard Mitigation Plan 2020 please contact Austin Taylor at (815) 433-5830 or ataylor@ncicg.org.

LaSalle Co. to update Natural Hazards Mitigation Plan

By: Staff - Updated: 20 hours ago

Posted Oct 15, 2019

Oct. 24 kick-off meeting is open to the public

OTTAWA - LaSalle County is working with the North Central Illinois Council of Governments (NCICG), a regional planning agency that provides planning services to local governments, to update the 2015 LaSalle County Natural Hazards Mitigation Plan.

A kick-off meeting will take place at 3 p.m. on Thursday, Oct. 24 at the LaSalle County Emergency Operations on Etna Road in Ottawa to discuss the update and planning process. The public is invited to attend.

The purpose of a Natural Hazards Mitigation Plan is to identify the types of natural hazards that impact a jurisdiction, to assess each jurisdiction's vulnerability to those hazards, and to formulate mitigation strategies that will lessen the severity of natural disasters by protecting human life and property. Every five years, plans must be reviewed and updated to remain active.

In order for a county or municipality to receive federal pre-disaster mitigation funds, the county and municipality must have an adopted and approved Federal Emergency Management Agency (FEMA) Natural Hazards Mitigation Plan.

For more information about the LaSalle County Natural Hazard Mitigation Plan 2020, please contact Austin Taylor at (815) 433-5830 or ataylor@ncicg.

LaSalle County Natural Hazard Mitigation Plan 2020

North Central Illinois Council of Governments

IEMA

Kick Off Meeting

Ottawa - October 24, 2019

Introductions

- Austin Taylor, Community Planner
- Kevin Lindeman, Economic Development Director
- **Group Introductions**

Outline

- Define mitigation
- The purpose of the Natural Hazard Mitigation Plan (NHMP)
- How is the plan update funded?
- Who is involved in updating the plan
- Questions

What is Mitigation?

Mitigation is an action taken by an individual or a comm... a pre-disaster setting to reduce the potential for damage... future, or an action taken by an individual or community... disaster to break the disaster/recover/disaster ...

Photo source: http://www.layne.com/en/projects/geo-hurricane-katrina-flood-wall-remediation.aspx

Purpose

- Purpose: to establish a national program for pre-disaster mitigation, streamline administration of disaster relief, and require a mitigation plan for Pre-Disaster Mitigation Grant Program (PDM) funds.

Mitigation planning can be…

- A strategy:
  - To reduce future damages
  - Educate about disaster risk and mitigation benefits
  - That meets the need of all jurisdictions
  - That promotes public participation and awareness of natural disasters
  - That increases funding eligibility
  - That guides post-disaster recovery

What is the Natural Hazard Mitigation Plan (NHMP)?

- A planning document that:
  - Identifies the types of natural disaster likely to occur in a jurisdiction; their frequency and severity
  - Discusses best practices for zoning ordinances, building codes, and floodplain management efforts
  - Conducts community risk assessments
  - Includes goals, objectives, and an implementation strategy to reduce the impacts of natural disasters on property and human life

A mitigation plan can…

- Save valuable tax dollars at the federal, state and local level
- Preserve the life, health, and safety of the residents of the community
- Protect the economic health of the community
- Speed up the recovery process after a disaster
- Improve a jurisdiction's Community Rating System (CRS) score

Why does the plan need to be updated?

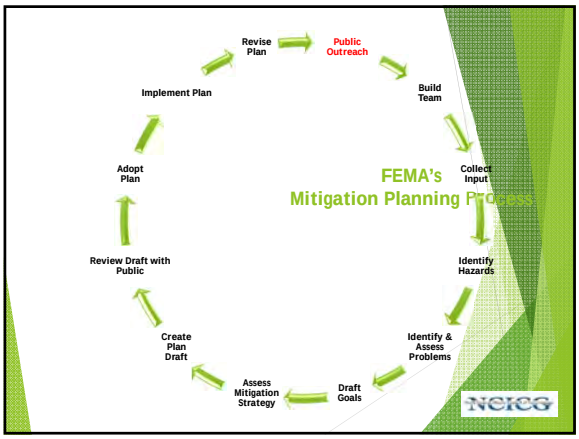
- In order to be eligible for FEMA PDM and FMA funds, the plan must be updated every 5 years.
- An opportunity to measure the effectiveness of the existing plan(s)
  - Review goals and strategies to maintain usefulness
  - Identify completed projects/attained goals
  - Include information on recent natural disasters

How is the plan funded?

- LaSalle County applied for IEMA funding in Spring 2019
- County was notified this summer that it had been selected to receive a grant
- The grant is 75% state funded and 25% locally funded – LaSalle County, Communities $150

How is the plan updated?

- Bringing together local officials, law enforcement personnel, ESDA coordinators, engineers, local organizations, the public, and others to share information
- Examining current and past mitigation efforts and their effectiveness in light of natural disasters since the 2015 plan



Build Team

- Each community/ government entity must have at least one (1) point of contact that will be responsible for receiving planning information and participating in planning process

Build Team (Continued)

- Chief Elected Officials and Members of the City Council, Village Board, or County Board
- Community Planner
- Planning Commission member
- Building official
- Community engineer
- Community health official
- Public works personnel
- Emergency manager
- Business community
- Hazard area residents
- Conservation groups or park groups
- Realtors

Public Outreach

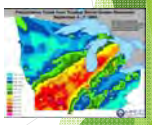
- NCICG will invite public throughout the process to gather input from residents impacted by natural disasters
- Upcoming meeting information will be posted on our website: www.ncicg.org
- Press Releases sent to area media
- Once community risk assessments and mitigation strategies are updated each community will discuss at city council or village board meeting and give public opportunity to comment.

Gather Input

Identified Hazards

- Tornadoes
- Floods
- Winter Storms
- Extreme Temperatures
- Dangerous Winds
- Lightning
- Drought
- Hail

http://bomaelevatorspeech.wordpress.com/2011/01/18/weathering-winter-in-chicagos-cbd/chicago-ice-storm/



Identify and Assess Problems

- Elements of Risk
- Vulnerability Assessment
  - Severity Rating
    - Catastrophic
    - Critical
    - Limited
    - Negligible
  - Compile Risk Profiles
  - Create Scenarios

Identify and Assess Problems (continued)

- Determine Damage Potential
  - Number/type/value of structures
  - Critical facilities
  - Indirect costs
- Identify Repetitive
- Analyze Impacts

Review and update Goals

- Prevention
- Property Protection
- Controlling a Hazard
- Emergency Services
- Public Education & Awareness
- Natural Resources Protection

Assess Mitigation Strategy

- Identify what is already being done
  - Non-structural activities
  - Structural activities
- Evaluate Actions
  - Effective in reducing damages?
  - Hazard reduced if action taken?
  - Compatible with other goals?
  - How soon to be effective?
  - Will it provide quick results?

Assess Mitigation Strategy (continued)

- Technical Feasibility
- Regulatory Compliance
- Ability to Implement
- Compatible w/Community Goals
- Benefits & Economics
- Complete or Partial Soluti

http://www.extension.iastate.edu/CropNews/2008/0607LoriAbendrothRogerElmore.htm

Create Plan Draft & Review Draft with Public

- Once all information has been gathered, NCICG will prepare a draft of the plan
- Meetings will be held to invite public feedback
- If necessary, changes will be made to the document
- Plan will be submitted to IEMA in May 2020

Adoption of Plan

- Once the document is complete, it will be submitted to the Illinois Emergency Management Agency (IEMA) for approval.
- IEMA will submit the plan to FEMA for approval.
- Once approved, the plan will disbursed to the counties and municipalities for adoption.
- The county and each participating community will have up to one year to pass a resolution adopting the plan.
- The plan's 5-year time clock begins once it is approved by FEMA.

Implement the Plan

- Schedule and order of implementation
- Lead agency or person responsible for carrying out tasks

http://www.srh.noaa.gov/hun/

Summary

- A Natural Hazard Mitigation Plan seeks to lessen the severity of natural hazards on property and human life.
- It's a FEMA requirement to receive PDM or FMA funds.
- A final draft will be submitted to IEMA in May 2020.
- Jurisdictions will have one year to adopt the plan. The 5-year time clock begins once FEMA approves the plan.

- Questions?
- Suggestion for Mitigation Committee

North Central Illinois Council of Governments

Austin Taylor – ataylor@ncicg.org
Kevin Lindeman – klindeman@ncicg.org
Phone: (815) 433-5830
www.ncicg.org

North Central Illinois Council of Governments
NCICG
613 W. Marquette, Ottawa, IL 61350 # Phone: (815) 433-5830 # Fax: (815) 433-5832 # www.ncicg.org

FOR IMMEDIATE RELEASE

January 24, 2020

Contact: NCICG
Tel: (815) 433-5830
Email: dtuftie@ncicg.org

LaSalle County Natural Hazards Mitigation Plan meeting - February 6th

On Thursday, February 6, 2020 at 3:30 pm at LaSalle County's EMA building on Etna Road, Ottawa a public meeting regarding the update of the LaSalle County Natural Hazards Mitigation Plan is being held. This meeting as all LaSalle County NHMP meetings are open to the public.

Marilyn Sucoe of the Illinois Department of Natural Resources (IDNR) will be presenting on floodplain mapping tools online (FEMA maps and County GIS), river gages, post-flood floodplain inspections and flood mitigation. She will also be talking through the mitigation techniques and mention a few others ideas for communities and residents to consider when flooding is happening.

LaSalle County EMA Director Connie Brooks will also be presenting in regards to what community officials need to do when to document damages, expenses, hours worked etc. following a natural disaster event using FEMA's forms in case the community qualifies to apply for FEMA Public Assistance funding.

The Regional Goals from the 2015 plan will be reviewed and discussed during the meeting. For more information about the LaSalle County Natural Hazard Mitigation Plan 2020 please contact Austin Taylor at (815) 433-5830 or ataylor@ncicg.org.

North Central Illinois Council of Governments
NCICG
613 W. Marquette, Ottawa, IL 61350 # Phone: (815) 433-5830 # Fax: (815) 433-5832 # www.ncicg.org

FOR IMMEDIATE RELEASE

February 3, 2020
Contact: NCICG
Tel: (815) 433-5830
Email: dtuftie@ncicg.org

LaSalle County NHMP update seeks input – meeting Thursday, February 6th

On Thursday, February 6, 2020 at 3:30 pm at LaSalle County's EMA building on Etna Road, Ottawa a public meeting regarding the update of the LaSalle County Natural Hazards Mitigation Plan (NHMP) is being held. LaSalle County communities, businesses and residents are encouraged to get involved in the LaSalle County NHMP update. This meeting as all LaSalle County NHMP meetings are open to the public.

Marilyn Sucoe of the Illinois Department of Natural Resources (IDNR) will be presenting on floodplain mapping tools online (FEMA maps and County GIS), river gages, post-flood floodplain inspections and flood mitigation. She will also be talking through the mitigation techniques and mention a few others ideas for communities and residents to consider when flooding is happening.

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La Salle County residents encouraged to take hazard survey

Results help officials with emergency planning

By Derek Barichello[Email][Follow]
Feb. 9, 2020

The Times Derek Barichello

Caption

North 3450th Road near the Fox River in Wedron was washed out Saturday morning by flash flood waters.

The La Salle County Emergency Management Agency wants to hear from residents on how to plan for hazards.

The survey is online at lasallecountyema.org and found by clicking on the 2020 mitigation survey in the latest news box on the left-hand side of the screen.

Residents who both live and work in La Salle County are eligible to fill out a survey, said Connie Brooks, director of the county's EMA.

County officials are looking to gather information on how citizens hear about current events or emergencies, if they have access to the internet, how prepared they are for accidents at home or at work, among other questions related to emergency preparedness.

The survey also gathers information for evacuation plans.

Completion of the survey helps officials evaluate concerns and make plans for those concerns.

More flooding likely in the spring

Marilyn Sucoe, of the Illinois Department of Natural Resources, told the county's hazard mitigation planning team Thursday rivers in the county are seeing considerably more runoff water than in years past.

The Fox River sees 65% more runoff, the Illinois 25% and the Vermilion 10% more than average, according to information from Scott Lincoln at the National Oceanic and Atmospheric Administration.

Sucoe said the soil around the Mississippi River also is the wettest it's been in memory, making it prime for a repeat year of flooding.

Brooks said she was told to expect more flooding after spring rains due to the wet soil.

Agenda
LaSalle County NHMP Update
February 6, 2020 @3:30pm
LaSalle County EMA building

1. Introductions

2. Project status and timeline

3. Marilyn Sucoe, IDNR - flooding discussion

4. FEMA Public Assistance process - Connie Brooks

5. Regional Goals review

6. Next meeting – Trent Ford, State Climatologist - Date TBA, end of March/beginning of April

7. Adjournment

LaSalle County EMA Sign-In Sheet

Project:	LaSalle County Natural Hazard Mitigation Plan Community Meeting	**Meeting Date:**	2.06.2020 3:30pm
Facilitator:	North Central Illinois Council of Governments	**Place/Room:**	LaSalle County EOC

Name/Organization	Email	Phone
Connie Brooks LaSalle Co. EMA	cbrooks@lasallecounty.org	815-433-5622
Brian Gift - ESLV	bgift@lasallecounty.org	815434-8666
Marilyn Sucoe IDNR/OWR	marilyn.sucoe@illinois.gov	847-832-0306
Bethanie Albrecht - LaSco Health Dept	balbrecht@lasallecounty.org	815-617-4316
KELLY LINDEMAN	klindeman@ncicg.org	815-433-5830
JEREMY PAM	CE@CI.SPRATOR.IL.US	815-672-2517
JOHN NEVINS	Jnevins3091@yahoo.com	815-883-1282
TOM WALSH	THOMAS WALSH2@YAHOO.COM	815/228-7799
Mathew Stafford	MStafford@cityofottawa.org	815-431-1062 ext. 230
Jamie Turczyn	director@utica-il.gov	815-791-0129
JOE TONOZZI		815-488-0531

LaSalle County EMA Sign-In Sheet

Project:	LaSalle County Natural Hazard Mitigation Plan Community Meeting	**Meeting Date:**	2.06.2020 3:30pm
Facilitator:	North Central Illinois Council of Governments	**Place/Room:**	LaSalle County EOC

Name/Organization	Email	Cell Phone
Austin Taylor / NCICG	ataylor@ncicg.org	815.433.5830
Rick Koshko - WCMY News	news@ottawaradio.net	815-488-1430
JOHN L. MIDDLETON NORTHVILLE TWP	roadcommissioner@indianvalley.com	815-823-2164
Tim Aussem OTTAWA TWP	AUSSEMHIGHWAY@GMAIL.COM	815-252-5208
Derek Barichello TU Times	dbarichello@shawmedia.com	815-431-4073

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FOR IMMEDIATE RELEASE

May 09, 2020

Contact: Kevin Lindeman, North Central Illinois Council of Governments

Tel: (815) 303-6144

Email: info@ncicg.org

LaSalle County 2020 Natural Hazards Mitigation Plan Being Presented in an Online Public Meeting

The 2020 LaSalle County Natural Hazard Mitigation Plan (NHMP) will be presented to the public by the North Central Illinois Council of Governments (NCICG) on Monday, May 18th at 3:00pm. This will be an online presentation. For details on how to participate email info@ncicg.org. The plan is an update to the 2015 LaSalle County NHMP. The public is invited to attend to learn about the plan and to provide feedback on the update before it is submitted for approval by the Federal Emergency Management Agency (FEMA).

In order for a county or municipality to receive federal funding for pre-disaster mitigation or flood mitigation assistance funds, the county must have an adopted and approved FEMA Natural Hazards Mitigation Plan. The purpose of the plan is to identify the types of natural hazards that impact a jurisdiction, to assess each jurisdiction's vulnerability to those hazards, and to formulate mitigation strategies that will lessen the severity of natural disasters by protecting human life and property. Every five (5) years, plans must be reviewed and updated to remain active.

NCICG is a not-for-profit regional planning agency that provides administrative assistance to local governments. The plan is available on www.ncicg.org. Comments will be taken until May 19th. To submit questions or comments about the 2020 LaSalle County Natural Hazard Mitigation Plan please email info@ncicg.org with subject title: LaSalle County NHMP.

###

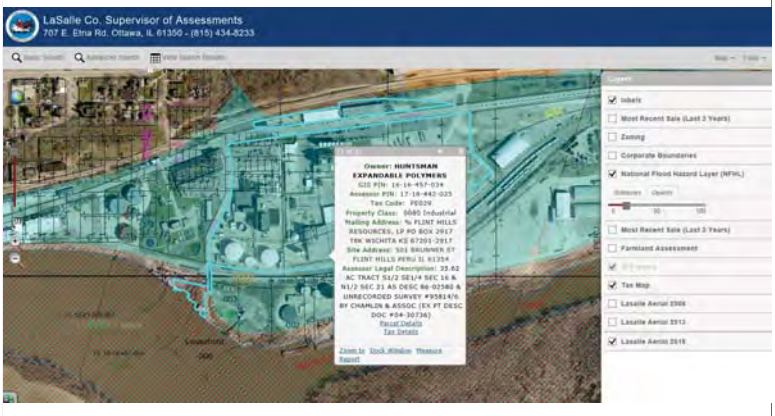
LaSalle County Natural Hazard Mitigation Planning - Floods

ILLINOIS DEPARTMENT OF NATURAL RESOURCES

What we will cover

1. Risk Assessment Tools
2. State Mitigation Goals and Actions
3. Mitigation ideas
4. Grant funds
5. Substantial Damage

Floodplain Maps- LaSalle County GIS

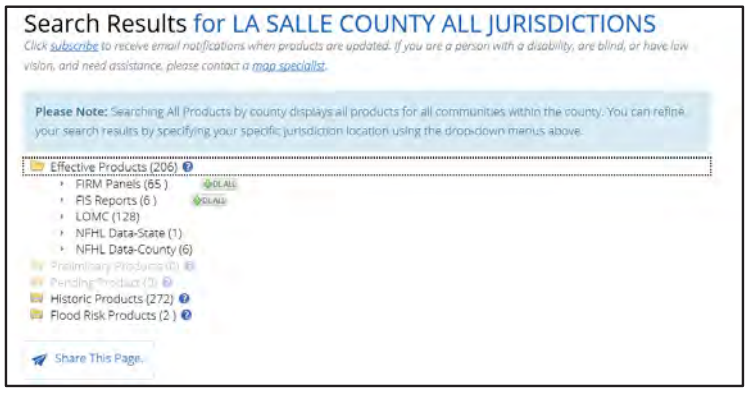


Floodplain Maps- LaSalle County GIS

Floodplain Maps- National Flood Hazard Layer

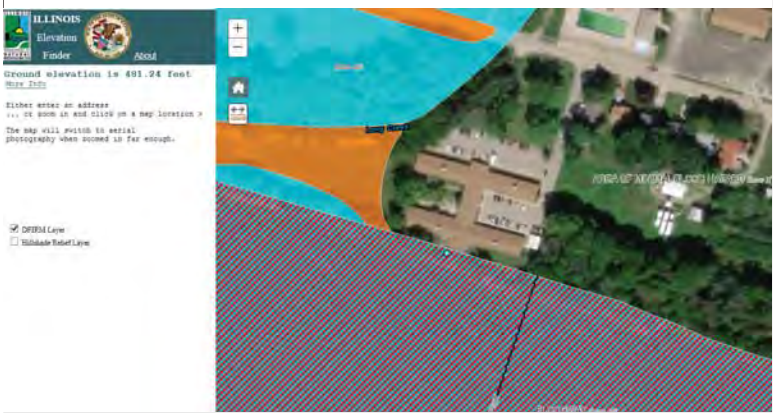
Floodplain Maps- FEMA Map Service Center

Floodplain Maps- FEMA Map Service Center



State of Illinois Elevation Finder

http://geoserver.dnr.illinois.gov/elev/



Vulnerability Assessment - Repetitive Loss - 2015

- 53 un-mitigated as of 06/2015
- High Priority is State Hazard Plan
- Eligible for IDNR Acquisition funds competitive

Community Name	Community Number	Building Payments	Contents Payments	Total Payments	Average Payment	Losses	Properties
La Salle County *	170400	1,880,954.14	288,457.20	2,169,411.34	31,903.11	68	24
Mendota, City Of	170403	38,943.62	0	38,943.62	4,867.95	8	3
North Utica, Village Of	170822	525,785.62	12,429.99	538,215.61	29,900.87	18	7
Ottawa, City Of	170405	534,236.70	199,825.89	734,062.59	21,590.08	34	10
Peru, City Of	170406	314,100.74	55,832.11	369,932.85	14,228.19	26	6
Sheridan, Village Of	170802	112,500.68	11,348.24	123,848.92	30,962.23	4	2
Streator, City Of	170408	7,908.47	0	7,908.47	1,977.12	4	1

Vulnerability Assessment – All Floodplain Structures

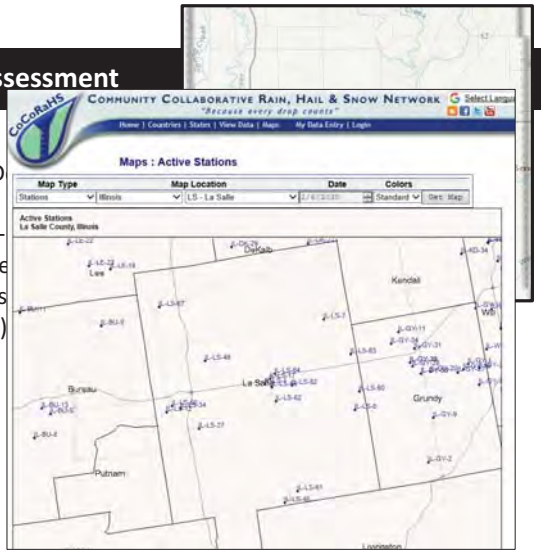
- Repetitive loss structures do not provide a complete assessment of flood risk
- Seneca – Zero Rep Loss
- Seneca has 20+ structures in the mapped floodplain

Vulnerability Assessment

- Locations of roadway flooding
  (Approximately six inches of running water was reported a mile east of Route 251 on North 2nd Road, making the road impassable.)
- USGS Gages – Do you have enough?
- Rainfall Gages – Does the NWS need more to improve forecasts?

Capability Assessment

- USGS Gages – D
  enough?
- Rainfall Gages –
  NWS need more
  improve forecas
  (CoCoRAHS.org)



State Mitigation Goals

Goal 1: Maintain and enhance the State of Illinois capacity to continuously protect the lives, health, and safety of the public in Illinois from the impact and effects of natural hazards.

Goal 2: Build and support local capacity and commitment to continuously become less vulnerable to natural hazards with a focus on Repetitive and Severe Repetitive Loss Properties.

Goal 3: Improve coordination and communication with other relevant entities.

Goal 4: Increase public understanding, support, education and demand for hazard mitigation planning and projects to protect public services, utilities and critical facilities from potential damage from natural hazard events

State Mitigation Actions

1) Enforcement of State planning and regulatory efforts
2) **Acquisition of substantially damaged structures.**
3) **Acquisition of repetitive loss properties**
4) Small Structural Projects
5) Construction and Retrofitting
6) Education and Public Outreach

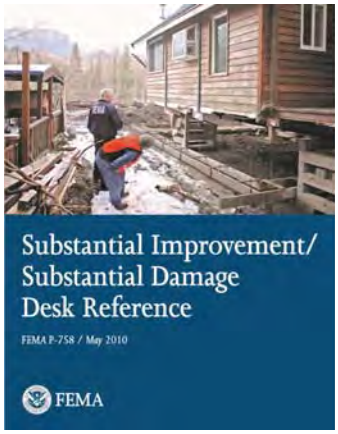
Substantial Damage

Damage of any origin sustained by a building in a floodplain whereby the cumulative percentage of damage during a 5 year period equals or exceeds 50 percent of the market value of the building before the damage occurred, regardless of actual repair work performed. The market value of volunteer labor and materials must be included in this determination.

How do I estimate damages?

- **Detailed vs. Rough screening**
- **Use an inspection form: create your own, or use state or FEMA SDE**
- **Visit each property**
- **Record the flood depth outside of the home and take photograph of home and any debris line**
- **Document size of home, type of construction, exterior covering, foundation type, etc.**
- **Estimate flood depth on each level of the home, i.e. 1 ft. on first floor or six feet in basement**
- **Enter home if possible**
- **Look for any cracks in the foundation or lateral movement**
- **Estimate all work required to restore the building to pre-damaged condition**

Is there any help?



SI/SD Desk Reference

Your Essential Guide to Making SI/SD Determinations

- Tables of Costs to be Included and Excluded
- Explanation for Market Value Determinations
- Phased Improvements
- Work required to address Code compliance
- Historic Structures
- Damage Assessments
- Sample Notices to property owners
- Sample Affidavits

Guidance

Template Permit Packet

Tracking Spreadsheet

In 2017 2002 and 2005 work is past 10 years – Percentage is zeroed out

Damage Estimate carried through – replace with actual permit if repairs made with permit

Future Permits Accumulating – Original scope and any additional work found on final inspection

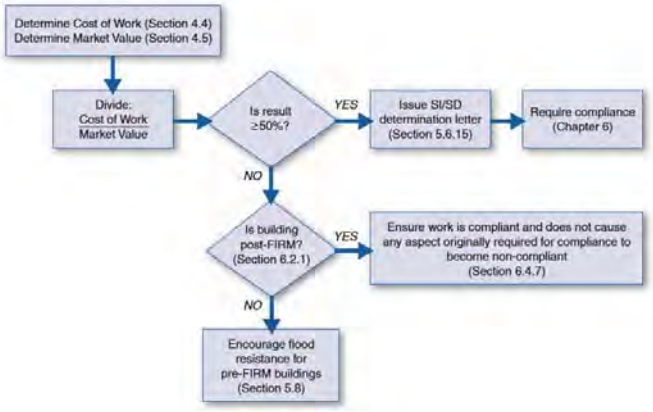
PIN:

Property Address:

Buildings on Property:

Fair Market Value of Building (FMV) Source (select one):
_____ Township Assessor
_____ Homeowner Provided Appraisal

			Improvements			
Building Permit # or SDE	Date	Work Done	FMV ** at Time of Permit/ Damage Assessment	Value of Work	Percentage	Percentage to Date
Cumulative tracking for rolling 10 year						
02070001		Remodel		$41,800.00	past 10 years	0.00%
05050078		Electric Upgrade		$800.00	past 10 years	0.00%
	4/16/2013	SDE/ April 2013 flood	$112,320.00	$5,520.00	4.91%	4.91%
17010060	1/19/2017	Kitchen and bathroom	$114,540.00	$22,280.00	19.45%	24.37%
17010060		Deck and Front Porch repairs, not reflected in initial scope of work	$114,540.00	$7,500.00	6.55%	30.91%



Where do I begin?

How many structures? Severity of Flooding?

Catastrophic flooding or other damages

- **Do a quick initial screening for any dangerous structures to be red tagged, i.e. collapsed foundations**
- **Call County or IAFSM/RAFT Team (Rapid Assessment Flood Team) for help**

Numerous structures, including first floor

- **Create a team for inspections**
- **Initially get out to record high water marks and tag any clear substantial damage (culling the herd)**
- **Set up FEMA SDE software**
- **Contact Assessor for assistance**

Few structures, minor damage

- **Document structures touched by surface flooding**
- **Create property files and spreadsheets**
- **Estimate repairs; basement finishes, furnace, water heater, etc.**

NOTICE

Because this building is located in a floodplain and was damaged by flooding, a damage assessment must be conducted by the (village or county).

Before occupying this building or doing any repair work you must call the (Name of Community) Department of (_____) at (_____) to schedule and inspection.

Failure to obtain reconstruction approval may result in a penalty.

Inspection Forms


SDE DAMAGE FIELD INSPECTION WORKSHEET
Single/Multi-Family Site Built Residences


ELEMENT PERCENTAGE Tab

Item	% Damaged	Element %	Item Cost	Damage Values
Foundation (not required for MH)				
Superstructure				
Roof Covering				
Exterior Finish				
Interior Finish				
Doors and Windows				
Cabinets and Countertops				
Flood Finish				
Plumbing				
Electrical				
Appliances				
HVAC				
Skirting / Forms Piers (MH only)				

SDE OUTPUT SUMMARY Tab – Optional User Entered Data

Damage % Cheat Sheet

ILLINOIS DAMAGE ASSESSMENT CHEAT SHEET

The SDE requires the inspector to estimate the percent of damage for various building components. The information compiled below can be used with the SDE worksheet for quickly calculating substantial damage. It is intended to be used as a screening tool so that the property owner is notified as soon as possible as to the potential status of his property. Often a more detailed assessment is warranted, and more detailed damage percentages should be determined on an as-needed basis.

	Super-structure	Exterior Finish	Doors and Windows	Cabinets and Counters	Flooring	Plumbing	Electrical	Built in Appliances	Interior Finish	HVAC
DEPTH										
1 – 3 Inches	10	0	0	0	100	0	0	0	0	0
0.5 feet	10	5	10	20	100	0	0	0	5	0
1 foot	10	10	15	50	100	20	0	50	10	80
2 foot	10	30	40	50	100	30	20	100	30	80
3 foot	25	40	40	50	100	30	30	100	40	80
4 foot	25	50	75	70	100	30	60	100	50	80
>5 foot	50	50	100	100	100	50	80	100	100	80
Two story =	*	*	*		*	**	**			

*** = Reduce by 40 – 50% for two story home**
**** = Reduce by 25% for two story home**

Foundation

Basement or crawlspace:
10% minor clean up, re-seal, paint, etc.
50% if cracked bowed or fractured on one or more walls
100% if structural damage such as blow out or caved in walls

Slab on Grade
10% damage unless the foundation is undermined
30% if foundation is undermined
75% if foundation is broken or bowed or uplift

Substantial Damage Regs Work!

Flooded 2008

Red Tagged!

Not Flooded 2013

Other Mitigation Ideas

- Adoption of Model County Floodplain Ordinance with Higher Regulatory Standards
- Model County Stormwater Ordinance (using State Model)
- Install signage at flooded underpasses or roadways with overtopping
- Sanitary sewer structure floodproofing
- Sanitary sewer infiltration/inflow – sewer lining
- Substantial Damage Estimator training
- Overhead Sewer/Backflow Preventer Rebate
- Include projects from Capital Improvement Plans for culverts and bridges

Mitigation Grant Programs

FEMA currently has 3 mitigation grant programs:

- **Hazards Mitigation Grant Program (HMGP)** - Tied to Federal Disaster Declarations
- **Flood Mitigation Assistance (FMA)** – Tied to Flood Insurance majority of funding for acquisition and elevations
- **Pre-Disaster Mitigation (PDM)** – Greater variety of projects but very competitive

Other sources:

- IDNR/OWR
- DCEO (HUD funds)

Grant – HMA Eligible Activities

Eligible Activities	HMGP HAZARD MITIGATION GRANT PROGRAM	PDM PRE-DISASTER MITIGATION	FMA FLOOD MITIGATION ASSISTANCE
1. Mitigation Projects	✓	✓	✓
Property Acquisition & Structure Demolition	✓	✓	✓
Property Acquisition & Structure Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction	✓	✓	✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing of Non-Residential Structures	✓	✓	✓
Minor Localized Flood Reduction Projects	✓	✓	✓
Structural Retrofitting of Existing Buildings	✓	✓	✓
Non-Structural Retrofitting of Existing Bld. & Facilities	✓	✓	✓

Grant – HMA Eligible Activities

Eligible Activities	HMGP HAZARD MITIGATION GRANT PROGRAM	PDM PRE-DISASTER MITIGATION	FMA FLOOD MITIGATION ASSISTANCE
1. Mitigation Projects	✓	✓	✓
Safe Room Construction	✓	✓	✗
Infrastructure Retrofit	✓	✓	✓
Soil Stabilization	✓	✓	✓
Wildfire Mitigation	✓	✓	✗
Post-Disaster Code Enforcement	✓	✗	✗
5% Initiative Projects	✓	✗	✗
2. Hazard Mitigation Planning	✓	✓	✓
3. Management Costs	✓	✓	✓

Grant – FMA Eligible Activities

Eligible activities must benefit NFIP-insured properties and include, but are not limited to:

- Infrastructure protective measures
- Localized flood control
- Floodwater storage and diversion
- Floodplain and stream restoration
- Water and sanitary sewer system protective measures
- Utility protective measures
- Stormwater management
- Aquifer storage and recovery
- Wetland restoration/creation

FMA Scoring 2019

4. Competitive funding for property flood mitigation projects.
   FEMA will select eligible flood mitigation project subapplications on a competitive basis as follows:
   a. Projects that will mitigate flood damage to at least 50 percent of structures included in the subapplication that meet definition 42 U.S.C. 4104c(h)(3)(B)(ii) of a severe repetitive loss (SRL) property: At least two separate NFIP claim payments have been made with the cumulative amount of such claims exceeding the market value of the insured structure.
   b. Projects that will mitigate flood damage to at least 50 percent of structures included in the subapplication that meet the definition of a repetitive loss (RL) property: Have incurred flood-related damage on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event.
   c. Projects that will mitigate flood damage to at least 50 percent of structures included in the subapplication that meet definition 42 U.S.C. 4104c(h)(3)(B)(i) of a severe repetitive loss (SRL) property: four or more separate NFIP claims payments have been made with the amount of each claim exceeding $5,000, and with the cumulative amount of claims payments exceeding $20,000.

FMA Scoring 2019

Final Priority Scoring Criteria for Community Flood Mitigation Projects & Advance Assistance		
Priority	**Description**	**Total Points**
NFIP Policy Holder	Points will be assessed for every NFIP policy that is verified within the benefiting area of the project (5 per NFIP Policy)	5 x Each NFIP Policy
Severe Repetitive Loss (SRL) and Repetitive Loss (RL) Properties	Points will be assessed for project that contains SRL or RL properties as defined in priority 4 below (10 per RL and 15 per SRL property)	10 x each RL 15 x each SRL
Private-Partnership Cost Share	Cost share taken on by private organizations/businesses emphasizing community participation, collaboration, and investment. Points will be assigned based on percentage of private cost share invested.	150
Building Code Effectiveness Grading Schedule (BCEGS) rating	BCEGS rating assesses effectiveness of enforcement and adequacy of building codes with emphasis on mitigation. Classes weighted based on national class grouping ratings. Highest weight will be assigned to class 1 and descending through lower classes. (Graded Scale: 1 = 100, 2 = 90, 3 = 80, 4 = 70, 5 = 60, 5 = 50, 6 = 40, 7 = 30, 8 = 20, 9+ = 10)	10-100

FMA Scoring 2019

Community Rating System (CRS) Participation	The CRS recognizes and encourages community floodplain-management activities that exceed the minimum National Flood Insurance Program standards. Depending on the level of participation, flood insurance premium rates for policyholders can be reduced up to 45%. Highest weight will be assigned to class 1 and descending through lower classes. (Graded Scale: 1 = 100, 2 = 90, 3 = 80, 4 = 70, 5 = 60, 5 = 50, 6 = 40, 7 = 30, 8 = 20, 9 = 10)	10-100
Cooperating Technical Partners Program (CTP) Participation	The CTP is a qualified partnership program in which communities commit to collaborate in maintaining up-to-date flood hazard maps and other flood hazard information. Points will be assigned to CTP participating communities.	100
International Building Codes (IBC) Adopted (2009 or newer)	IBC adoption epitomizes community commitment to responsible building regulations. Points will be assigned to IBC participating communities as follows: 2012 version or lower adopted = 25 and 2015 version or higher adopted = 50.	25-50
	Total Points Available	**500+***

Questions?

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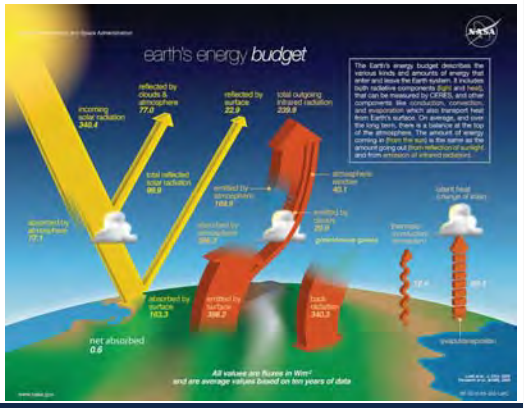
Climate Change & Impacts in Illinois

TRENT FORD
ILLINOIS STATE CLIMATOLOGIST
ILLINOIS STATE WATER SURVEY/PRAIRIE RESEARCH INSTITUTE
UNIVERSITY OF ILLINOIS, URBANA-CHAMPAIGN

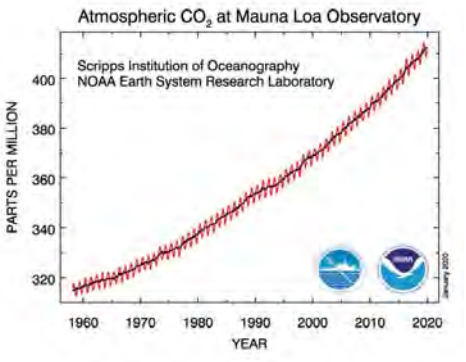
ILLINOIS
Illinois State Water Survey
PRAIRIE RESEARCH INSTITUTE

- CO_2, CH_4, H_2O (among others) permit solar radiation to enter the Earth system, but absorb outgoing terrestrial radiation
- Their concentration of these gases, namely CO_2, CH_4, H_2O, varies in time due to natural and anthropogenic causes

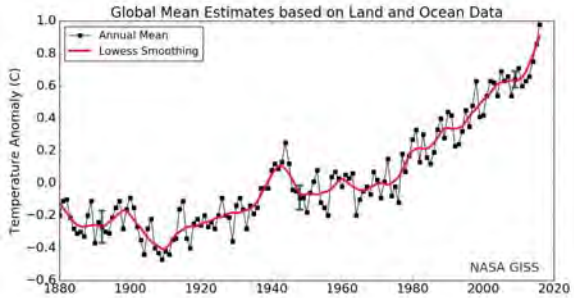


The Earth's greenhouse effect

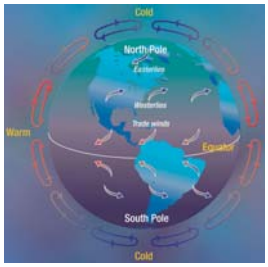
- We have observed a consistent increase in CO_2 concentrations over the last 60 years
- January 2020: 413 ppm



Global Warming

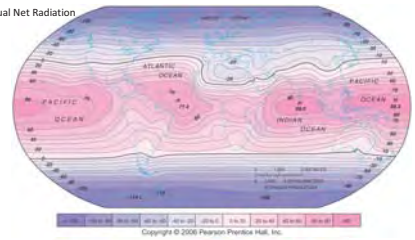


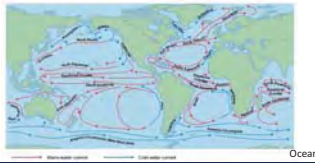
Climate Change



Atmospheric Circulation

Annual Net Radiation

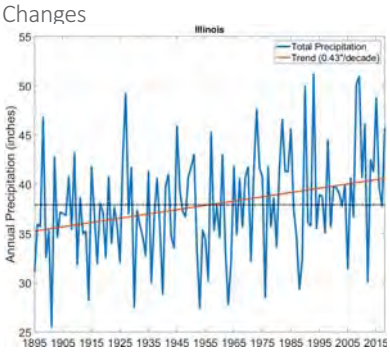



Ocean Circulation

Precipitation – Observed Recent Changes

- Statewide annual total precipitation has increased 0.47" per decade between 1895 and 2019
- Spring & summer wetting trends are much larger than winter and fall
- 5 of the top 10 wettest springs on record in Rock Island, Aurora, and Mundelein have occurred since 2009
- Belleville has experienced only 10 drier than average springs since 1989

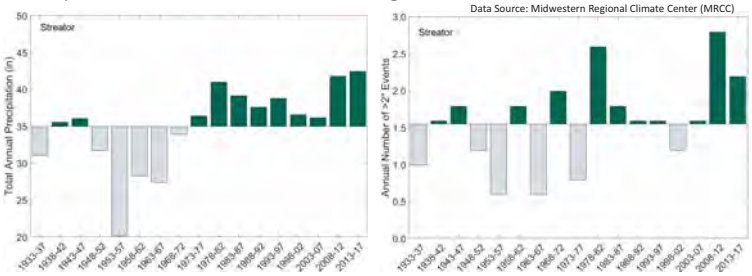
Trends (1895 – 2018)	Winter	Spring	Summer	Fall
Precipitation (in dec^{-1})	+0.05	+0.14	+0.16	+0.11



Source: NOAA NCEI

Precipitation – Observed Recent Changes

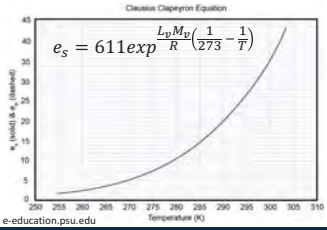
Data Source: Midwestern Regional Climate Center (MRCC)



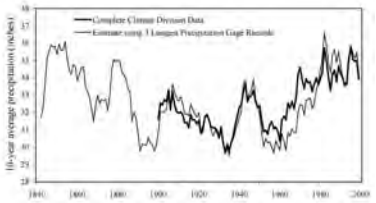
- Significant increase in extreme precipitation events (> 2") across Illinois since 1895

Causes: Disentangling Variability & Change

- Warmer air = higher saturation vapor pressure and more atmospheric water vapor
- Long-term record shows precedent for wet period
- Current climate function of both climate change and long-term variability



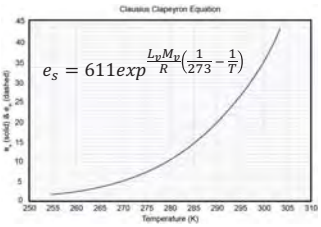
e-education.psu.edu

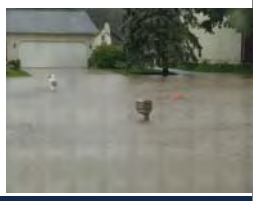


Estimated 10-year moving average precipitation for the Upper MS River Basin, 1840-2000 (Knapp, 2005; taken from Kelly *et al.* 2018)

Changes in Precipitation Intensity

- September 27th, 9.09" fell in < 24 hour period in Minonk (Woodford County)
- Probability of this type of event has increased 4x since the late 1980s





Changes in Precipitation Intensity

- September 3rd: 2.6" in 90 minutes in Morris (Grundy County)
- Morris High School flooded, flooding in fields
- Probability of this type of event has doubled since the late 1980s

Changes in Precipitation Intensity

- January 10th – 12th: 5.6" in 3 days in Charleston
- Flooded fields, Kaskaskia River breached Vandalia levee
- Probability of this type of event has increased 4x since the late 1980s

Changes in Precipitation Intensity

- More intense precipitation increases runoff ratio, nutrient runoff
- More precipitation partitioned to streamflow in Vermilion River
- Less precipitation "yielded" for surface storage, could increase likelihood of drought later on

Annual average precipitation, streamflow, and evapotranspiration for the Vermilion River Watershed (inches yr^{-1}) .

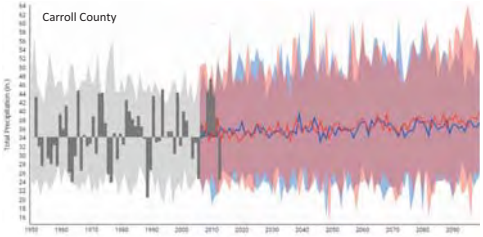
Periods	Precipitation	Streamflow	Estimated Evapotranspiration
1932-2016	37.1	9.9	27.2
1932-1964	35.0	7.7	27.3
1970-2016	38.5	11.6	26.9

Kelly *et al.* (2018)

Observed trends in flooding across the Midwest
Mallakpour & Villarini (2015)

Precipitation – Projected Future Changes

- Total annual precipitation is projected to continue to increase, as is the frequency of extreme precipitation events
- Projection certainty is lower than for temperature
- Projections show wetter springs, drier summers



Projected change in annual total precipitation in Carroll County.
(Source: U.S. Climate Resilience Toolkit)

Precipitation – Projected Future Changes

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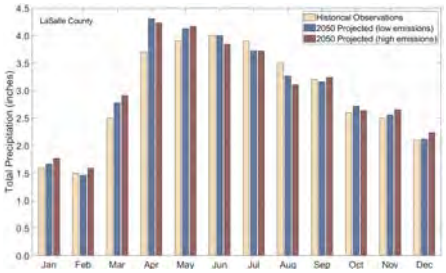
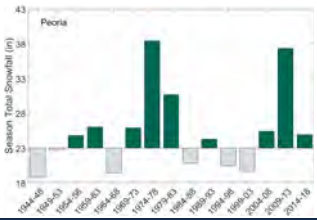


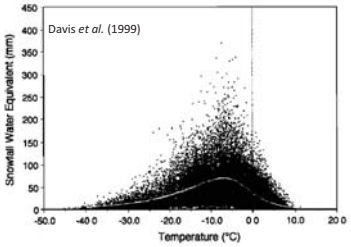
Historical observations and future projections of monthly precipitation totals from LaSalle County.
(Source: U.S. Climate Resilience Toolkit)

Changes in Snowfall

- Winter warming has caused a decrease in seasonal snowfall across the southern Midwest
- Snowfall changes in this region are more complicated, dominated by variability



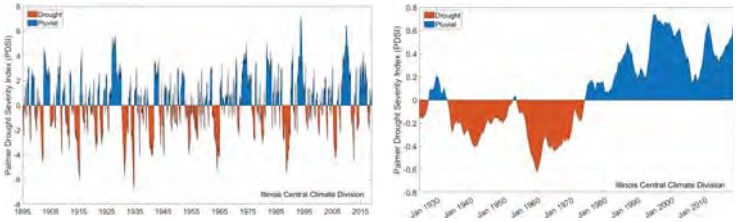
Total season snowfall (in) at Peoria airport. Data: MRCC



- Projections show decrease in snowfall across Illinois

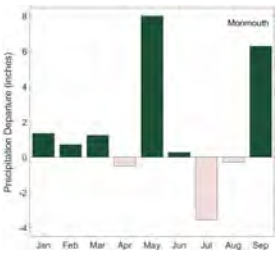
Drought – Observed Recent Changes

- The complexity of drought also complicates its measure and projection
- Using the Palmer Drought Severity Index, "extreme drought" reached in Illinois only 7 times since 1895… only twice since 1965
- The last 30 years are wetter than any 30-year period on record, back to the late 1800s
- Large, multi-year droughts are not happening as frequently

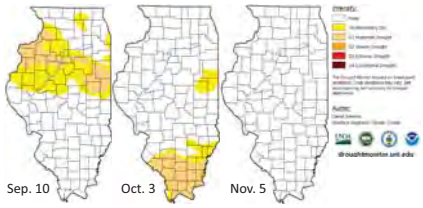


Drought – Observed/Projected Recent Changes

- Projections show more frequent "swings" from wet to dry extremes, particularly moving from wet spring to dry summer/fall
- Obvious negative impact on soil moisture levels, but also on soil health



2019 monthly precipitation, as a departure from normal, at Monmouth



U.S. Drought Monitor weekly maps from 2019

Precipitation – Soil & Water Impacts

- More precipitation, more extreme precipitation increases runoff, erosion
  - All seasons getting wetter, largest trends in spring
  - Recurrence intervals of heavy precipitation events are shortening = more runoff
  - Projections indicate these trends should continue in future decades, especially in winter & spring
- Winter precipitation will change as temperatures continue to warm
  - More winter rainfall will increase erosion, runoff and potential for winter flooding
- "Swings" from pluvial to drought (to pluvial)
  - Apparent increasing trend in southern Illinois
  - Cutting edge of research, causes still not clear

Summary

- Climate change – present and future – poses a significant issue for soil and water management in Illinois
- Over the past 30 years...
  - Increased precipitation – and precipitation intensity have caused considerable drainage, soil erosion, runoff issues
  - Increased evaporation driven by higher temperatures has been more than offset by additional precipitation, but enhanced evaporation *during* dry spell could intensify dryness
- Future climate projections show **very high confidence** that temperatures will continue to increase in Illinois, impacting:
  - Evaporation – exacerbating dry conditions during drought
  - Winter precipitation – decreased snowfall, lower snow:rain ratio in winter months
  - Soil temperature – increased soil temperature
- It is **highly likely** that as temperatures increase, precipitation will continue to increase in the spring
  - Continued, worsening flooding issues
  - Soil erosion and nutrient runoff

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ILLINOIS

Illinois State Water Survey

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ISWS- CHAMP

The staff of the Coordinated Hazard Assessment and Mapping Program
which includes 18 Certified Floodplain Managers (CFM),
seven Professional Engineers (PE), and
seven Geographic Information Sytems Professionals (GISP)

www.illinoisfloodmaps.org

Know your community's flood hazards

Sally McConkey, P.E., CFM

Take a ways from this presentation

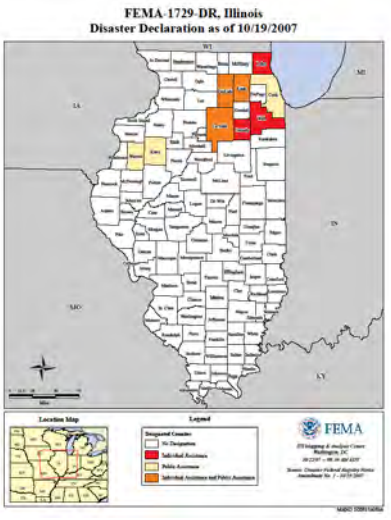
- How to locate and understand your community's floodplain maps
- Why your community should participate in the National Flood Insurance Program
- How to determine if your community participates in the National Flood Insurance Program
- Other community actions to mitigate flooding impacts

Floods in Illinois

Illinois has the largest inland system of rivers, lakes, and streams of any state in the entire nation!

26,940 total miles of streams

Fall 2007 flooding and Federal Disaster Declaration



Images of Illinois 2008 Flood

bing.com/images

See more images of Illinois 2008 Flood

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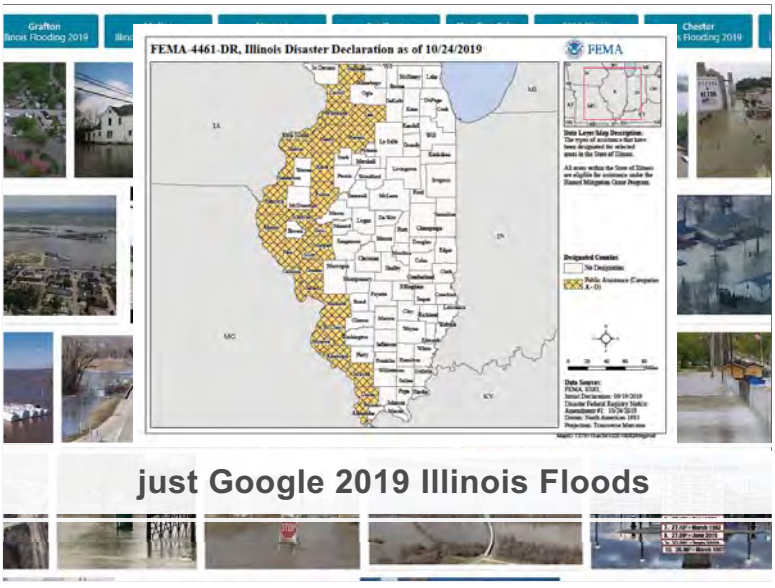
2011 – MIDWEST FLOODS



just Google 2019 Illinois Floods

It is not just big rivers that flood.

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Illinois is a VERY Wet State!

Flooding Contributed to 37 of 52 Federal Major Disaster Declarations 1965 – 2020

Every Illinois County has had at lease one Disaster Declaration involving flooding

Floods are BY FAR the most common and the most costly disaster in Illinois.

Flooding happens every year in Illinois, the key is to avoid or mitigate flood damages.

Where might it flood in your community?

Federal Emergency Management Agency Flood Insurance Rate Maps (FIRMs)

Floodplain Mapping

Old paper maps and studies

Digital Data

FIRMs in Illinois

- Green = digital FIRM
- Red = Preliminary digital FIRM
- Yellow = mapping project on hold, paper effective maps
- Peach = new studies in progress, paper effective maps

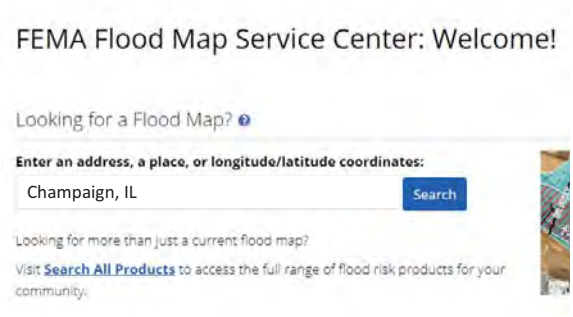
White = 11 not yet funded for update, paper effective maps

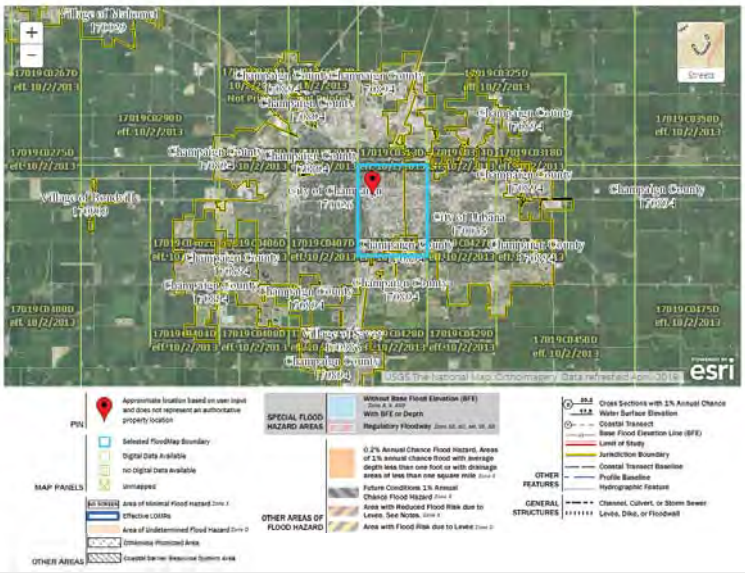
Accessing Floodplain Maps

- FEMA Map Services Center – www.msc.fema.gov

- Effective Maps
- Historic Maps
- Flood Insurance Studies (FIS)
- Letters of Map Change (LOMCs)
- DFIRM Database

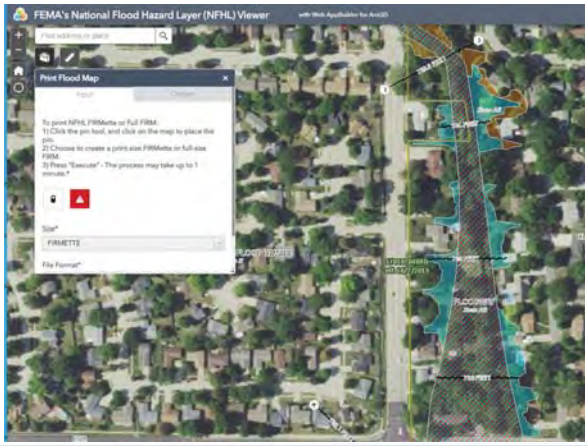
Accessing Floodplain Maps



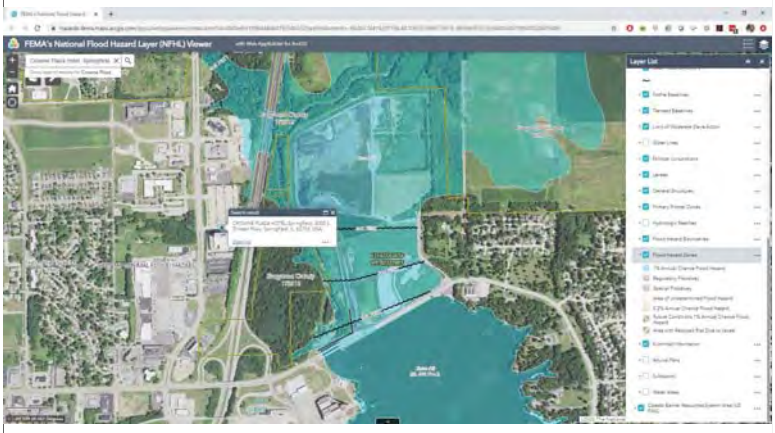


Zoom & Pan

FEMA National Flood Hazard Layer (Viewer)



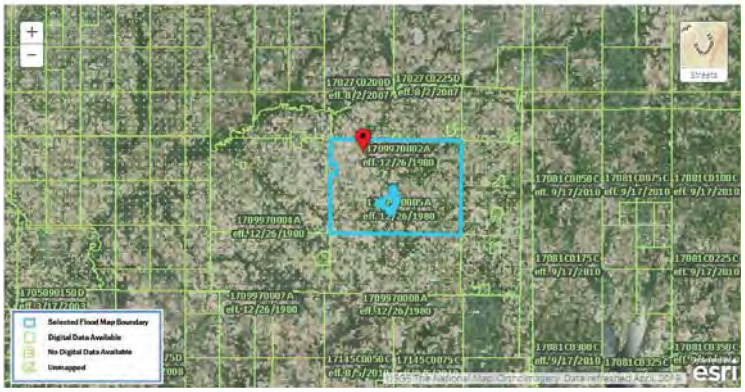
National Flood Hazard Layer



Accessing Digital Floodplain Maps and Data

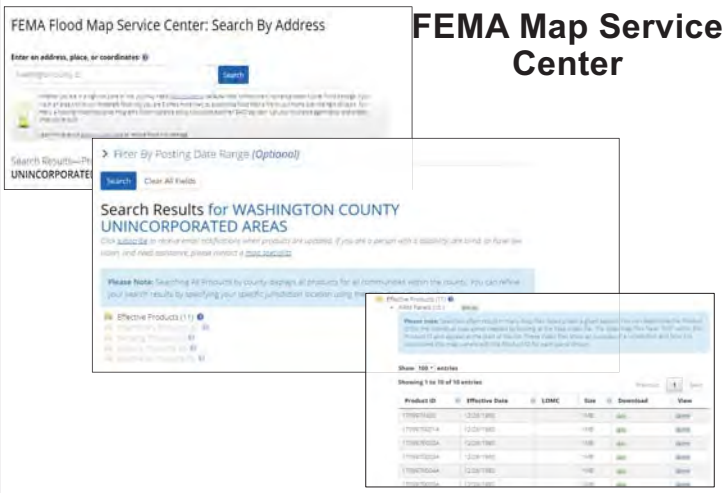
- National Flood Hazard Layer (NFHL) - https://www.fema.gov/national-flood-hazard-layer-nfhl
- Online Interactive Map of All DFIRM data
- Can be loaded into Google Earth
- Download data for use in GIS software

What if no digital data is available?



Washington County IL

FEMA Map Service Center



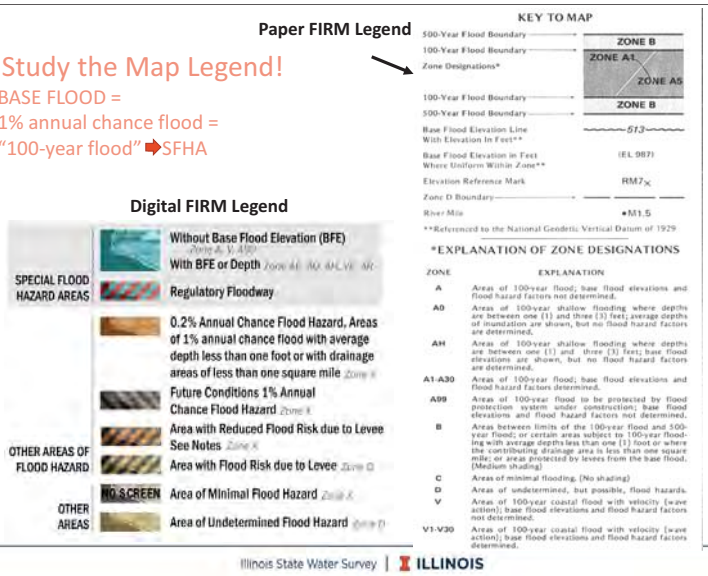
National Flood Insurance Program and Floodplain Mapping Basics

- **BASE FLOOD** = 1% annual chance flood = "100-year flood"
- **Base Flood Elevations** (BFE = 1% chance flood elevation)
- Some studies are approximate = no **Base Flood Elevation**
- Floodplain maps identify **Base Floodplain = Special Flood Hazard Areas (SFHA)** = land areas that have a 1% chance of being inundated each year = 100-year floodplain
- Floodplain Management regulations apply to areas located in Base Floodplain
- Flood Insurance is required for structures in the Base Floodplain with federally backed loans (mandatory purchase)

Paper FIRM Legend

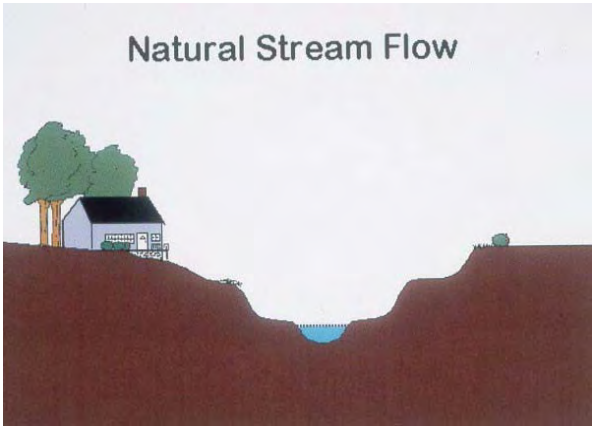
Study the Map Legend!

BASE FLOOD =
1% annual chance flood =
"100-year flood" ➡ SFHA

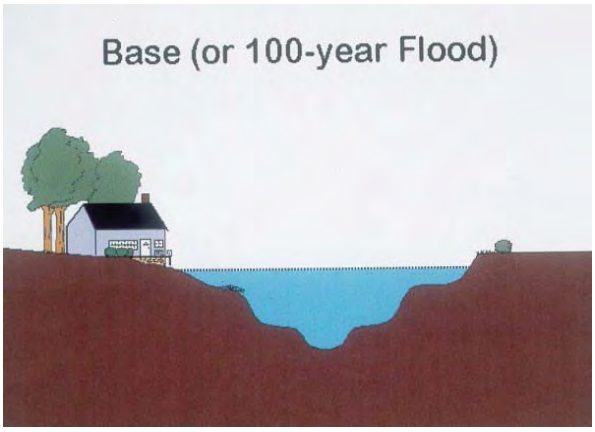


Digital FIRM Legend

Understanding the Floodplain

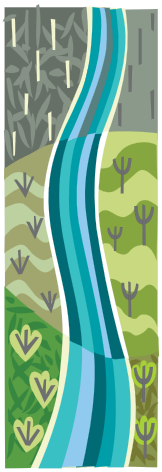


Understanding the Floodplain

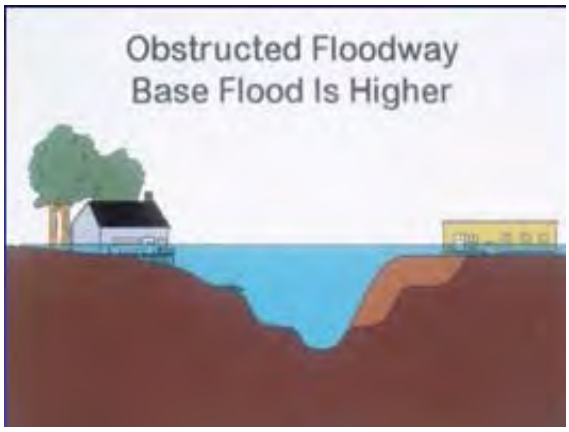


"Floodway"

A 'Regulatory Floodway' means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without increasing the water surface elevation more than a designated height (IL = 0.1').



Understanding the Floodway



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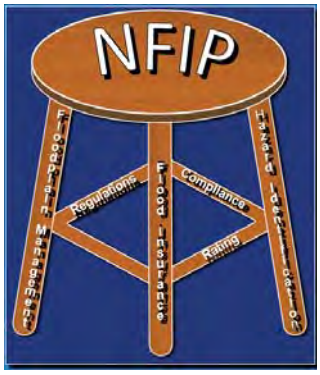
Why should your community participate in the National Flood Insurance Program? (NFIP)

National Flood Insurance Program

- NFIP is a voluntary program
- Communities agree to adopt floodplain maps and floodplain management ordinance
- FEMA makes flood insurance available along with disaster assistance and grants/loans
- 89 of Illinois' 102 Counties are in the NFIP and 801 communities

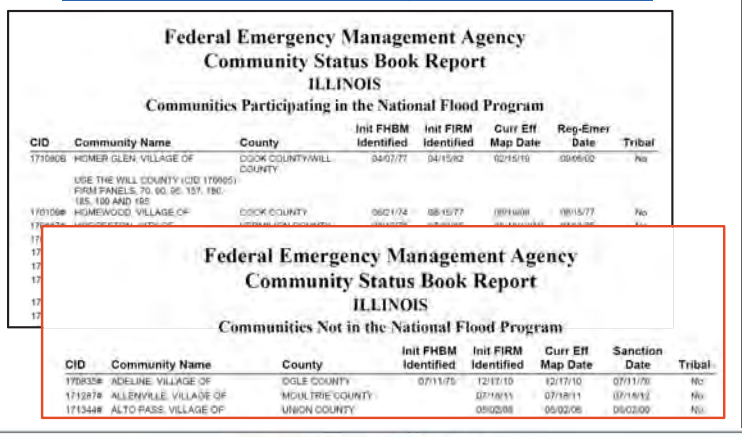
National Flood Insurance Program

- Goal of the NFIP is to reduce flood losses
- Program supported by 3 legs
  - Floodplain Mapping
  - Floodplain Management
  - Flood Insurance



FEMA Community Status Book

https://www.fema.gov/cis/IL.pdf



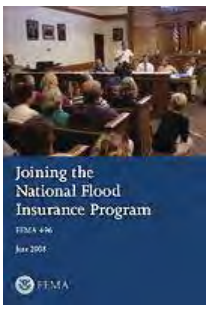
Federal Emergency Management Agency
Community Status Book Report
ILLINOIS
Communities Participating in the National Flood Program

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Reg-Emer Date	Tribal
1710808	HOMER GLEN, VILLAGE OF	COOK COUNTY/WILL COUNTY	04/07/77	04/15/82	02/15/19	09/05/02	No
	USE THE WILL COUNTY (CID 170695) FIRM PANELS: 70, 90, 95, 157, 180, 185, 190 AND 195						
170106	HOMEWOOD, VILLAGE OF	COOK COUNTY	06/21/74	08/15/77	[illegible]	08/15/77	No

Federal Emergency Management Agency
Community Status Book Report
ILLINOIS
Communities Not in the National Flood Program

CID	Community Name	County	Init FHBM Identified	Init FIRM Identified	Curr Eff Map Date	Sanction Date	Tribal
170835	ADELINE, VILLAGE OF	OGLE COUNTY	07/11/75	12/17/10	12/17/10	07/11/75	No
171287	ALLENVILLE, VILLAGE OF	MOULTRIE COUNTY		07/19/11	07/19/11	07/19/12	No
171344	ALTO PASS, VILLAGE OF	UNION COUNTY		05/02/06	05/02/06	05/02/00	No

Join the NFIP



- https://www.fema.gov/media-library/assets/documents/13610

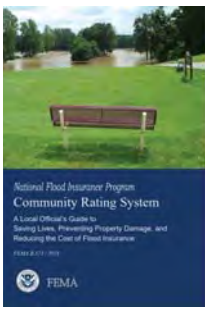
- Contact Paul Osman
NFIP Coordinator at IDNR/OWR
Paul.Osman@Illinois.gov

https://www.floodsciencecenter.org/products/elected-officials-flood-risk-guide/

Illinois State Water Survey | ILLINOIS

What other measures can a community take to reduce the impact of flooding?

Communities can…



- Join the Community Rating System (CRS) https://www.fema.gov/media-library-data/1535126505943-439b296e7778b037d05f698f65c7891b/2018NFIP_CRS_Brochure_June_2018_508OK.pdf

Communities can…

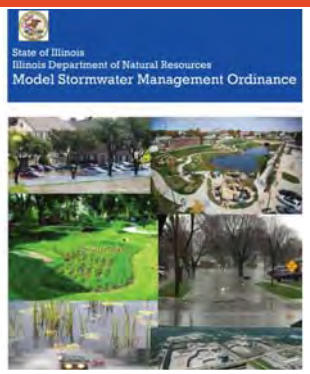
- Participate in developing FEMA approved Hazard Mitigation Plan
- https://www.fema.gov/hazard-mitigation-planning
- Apply for FEMA mitigation grants

Communities can…

- Ensure your local floodplain manager has access to training to become a Certified Floodplain Manager
- https://www.floods.org/index.asp?menuid=426

Communities can…

- Adopt a stormwater management ordinance
- https://www2.illinois.gov/dnr/WaterResources/Documents/IL_Model_Stormwater_Ordinance.pdf



Illinois Association for Floodplain and Stormwater Management (IAFSM)

Take a ways from this presentation

- How to locate and understand your community's floodplain maps
- Why your community should participate in the National Flood Insurance Program
- How to determine if your community participates in the National Flood Insurance Program
- Other community actions to mitigate flooding impacts

Thank you

Public comments sought on natural hazards plan

NCICG plans online meeting

May 9, 2020

Shaw Media file photo

Caption

The Illinois River and its flood are just one of the many natural hazards in La Salle County.

The 2020 La Salle County Natural Hazard Mitigation Plan will be presented to the public by the North Central Illinois Council of Governments att 3 p.m. Monday, May 18. This will be an online presentation.

For details on how to participate or how to submit questions, email info@ncicg.org. The public can "attend" to learn about the plan and to provide feedback on the update before it is submitted for approval by the Federal Emergency Management Agency.

In order for a county or municipality to receive federal funding for pre-disaster mitigation or flood mitigation assistance funds, the county must have an adopted and approved FEMA Natural Hazards Mitigation Plan.

The plan is available on www.ncicg.org. Comments will be taken until May 19.

PREMIUM

May 10, 2020

The 2020 Bureau County Natural Hazard Mitigation Plan (NHMP) will be presented to the public by the North Central Illinois Council of Governments at 3 p.m. Tuesday, May 19.This will be an online presentation. For details on how to participate email info@ncicg.org. The plan is an update to the 2015 Bureau County NHMP. The public is invited to attend to learn about the plan and to provide feedback on the update before it is submitted for approval by the Federal Emergency Management Agency (FEMA).

The plan is available on www.ncicg.org.Comments will be taken until May 20.To submit

Attendance Sheet
LaSaslle County NHMP Public Meeting
Plan Presentation
May 18, 2020 online via Zoom (due to COVID19) at 3:00pm

Connie Brooks, Director LaSalle County EMA

Fred Moore, LaSalle County EMA

Vicki Heath, Director LaSalle County Soil and Water Conservation District

Jim Swanson, Supervisor Northville Township

Brian Gift, LaSalle County Environmental Services and Land Use

Kathy Haralson, Village of Seneca EMA Coordinator

Andy Bacidore, Fire Chief City of LaSalle

Matt Stafford, Ottawa Building Official

Shug Grosenbach, North Central Illinois Council of Governments

Austin Taylor, North Central Illinois Council of Governments

Kevin Lindeman, North Central Illinois Council of Governments

2020 LaSalle County Natural Hazard Mitigation Plan

Public Meeting to Present Plan Update May 18, 2020 @ 3:00pm online via Zoom

Introductions

- Kevin Lindeman, Executive Director
- Austin Taylor, Community Planner

2020 LaSalle County Natural Hazard Mitigation Plan update

Not much changed in plan from 2015 to 2020

Plan Participants

LaSalle County
19 Communities
5 that did not participate in 2015 plan

- Earlville
- Grand Ridge
- Kangley
- LaSalle, City
- Leland
- Lostant
- Marseilles
- Mendota
- Naplate
- North Utica
- Oglesby
- Ottawa
- Peru
- Ransom
- Seneca
- Sheridan
- Streator
- Northville Township
- Ottawa Township

Meeting Outline

- What is a NHMP
- Update Process
- Public input
- Chapter Recommendations
- Risk Assessments
- Implemented Projects

What is Mitigation?

Mitigation is an action taken by an individual or a community in a pre-disaster setting to reduce the potential for damage in the future, or an action taken by an individual or community post-disaster to break the disaster/recover/disaster cycle.

Photo source: http://www.layne.com/en/projects/geo-hurricane-katrina-flood-wall-remediation.aspx

NHMP is

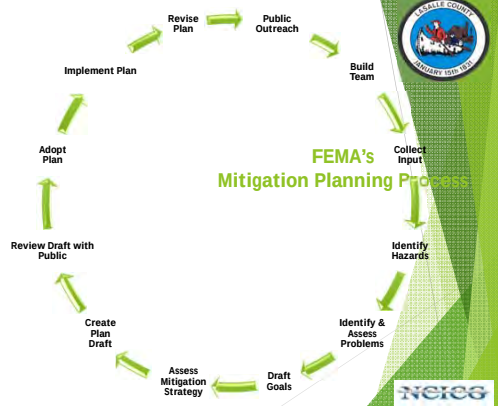
- A strategy:
  - To reduce future damages
  - Educate about disaster risk and mitigation benefits
  - That meets the need of all jurisdictions
  - That promotes public participation and awareness of natural disasters
  - That increases funding eligibility
  - That guides post-disaster recovery

A mitigation plan can…

- Save valuable tax dollars at the federal, state and local level
- Preserve the life, health, and safety of the residents of the community
- Protect the economic health of the community
- Speed up the recovery process after a disaster

How is the plan funded?

- LaSalle County applied for IEMA funding hired NCICG to update the 2015 plan
- The grant is 75% state funded and 25% locally funded – LaSalle County asked participating communities to provide $150 to help provide a portion of the match



Public Involvement

- Meeting information and document posted on NCICG website: www.ncicg.org
- Kick-off meeting October
- February meeting – Countywide Goals
- Online Resident Survey
- March meeting canceled – COVID-19
  - Alternative online presentation State Climatologist, Trent Ford
  - Marilyn Sucoe – IDNR floodplain maps and mitigation techniques
- Risk assessment discussed at city council or village board meeting
- Plan Presentation, May 18th – comments

Table of Contents

Identify and Assess Problems

- Elements of Risk
- Vulnerability Assessment
  - Compile Risk Profiles

Identify and Assess Problems (continued)

- Determine Damage Potential
  - Number/type/value of structures
  - Critical facilities
- Identify Repetitive Loss Structures
- Analyze Impacts

Assess Mitigation Strategy

- Identify what is already being done
  - Non-structural activities
  - Structural activities
- Evaluate Actions
  - Effective in reducing damages?
  - Hazard reduced if action taken?
  - Compatible with other goals?
  - How soon to be effective?
  - Will it provide quick results?

Assess Mitigation Strategy (continued)

- Technical Feasibility
- Regulatory Compliance
- Ability to Implement
- Compatible w/Community Goals
- Benefits & Economics
- Complete or Partial Solution

http://www.extension.iastate.edu/CropNews/2008/0607LoriAbendrothRogerElmore.htm

Preventative Measures

Recommendations

- Adopt and enforce a building code to ensure that new structures are built with safety in mind.
- Develop a building inspector training program and develop a process to allow communities, particularly, smaller communities, to share building inspectors.
- Prohibit the construction of all structures including homes, businesses, and critical facilities in a floodplain.
- Regulate location and installation of manufactured housing

Preventative Measures (cont.)

Recommendations

- Use plans, zoning ordinances, and land-use measures to preserve existing open space and designate new open space.
- Adopt a comprehensive land use plan or update the community's existing plan and include natural hazard mitigation in the plan.
- Encourage residents to discuss their insurance coverage with their agents to ensure they are adequately protected.

Property Protection

Recommendations

- Inform owners of properties in floodplains of the requirements for renovating, repairing, or rebuilding.
- Consult with a licensed engineer and appropriate state agencies when implementing mitigation activities in a floodplain.
- Encourage the installation of backwater valves and overhead sewers to eliminate basement backups.
- Communities should consider becoming a Tree City USA.
- Evaluate critical facilities and identify which property protection measures are most feasible.
- Encourage communities to apply for funding through such programs as FEMA PDM for property protection projects especially for community's critical facilities.

Flood Control

Recommendations

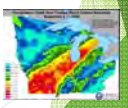
- Work with the U.S. Army Corps of Engineers on ongoing projects within the jurisdictions.
- Maintain drainage systems to ensure proper function.
- Identify problem areas where ice jams may form and know available options.
- Monitor existing dams, levees, and floodwalls.
- Use best management practices for erosion control.
- Use zoning to maintain or increase the amount of open space in the region.

Identify Hazards-Same as 2015

Risk Assessment								
Communities	Tornadoes	Floods	Winter Storms	Extreme Temps.	Dangerous Winds	Lightning	Drought	Hail
Bureau County	Medium	Low	High	Medium	Severe	Low	Medium	Medium

- Types of hazards
- Frequency of hazard
- Severity of the hazard
- Potential location of hazard extent of area
- How long will the hazard last?
- Is there a warning time?
- Will more than one hazard occur simultaneously?

http://bomaelevatorspeech.wordpress.com/2012/01/19/weathering-winter-in-chicagos-cbd/chicago-ice-storm/



Next Steps

- Plan submitted to IEMA and FEMA for review
- After approved County and participating communities will pass a resolution adopt the Plan
- The county and each participating community will have up to one year to pass a resolution adopting the plan.
- Plan is good for 5 years

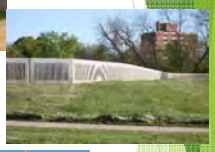
Implement the Plan

- Community Mitigation Activities
  - Priority
  - Timeline
  - Funding
- Yearly review of status of mitigation activities
- 5 Year Update

Implemented Projects

- Marseilles WWTP Flood Wall

- Ottawa Township High School Flood Wall



- Peru WWTP Flood Wall

Implemented Projects

- Ottawa Pump House Wall

Questions or comments?

North Central Illinois Council of Governments

Email comments to info@ncicg.org

Subject: LaSalle County NHMP

Phone: (815) 303-6144

www.ncicg.org

Urban Flooding Awareness Act Report Recommendations

Illinois General Assembly

1. The authority to generate revenue from fees, to plan, implement and maintain stormwater management/drainage programs/facilities should be granted to all County Stormwater Planning and Management Agencies (55 ILCS 5/5-1062), counties (55 ILCS 5/Div. 5-15) and municipalities regardless of home rule status. (Chapters 4 and 9)
2. Stormwater Planning and Management authority should be granted to all Illinois counties to adopt countywide stormwater ordinances, projects and programs. (Chapters 4 and 9)
3. The Illinois General Assembly should allow the Illinois Department of Insurance to mandate continuing education specific to flood insurance for insurance agents. (Chapters 1 and 7)
4. The State should fund the Illinois State Water Survey to update the existing rainfall frequency distribution information using the additional rainfall gauge data that are available with routine updates every 15 years. Future precipitation projections and also future land use should be included where it is available. When planning stormwater infrastructure modifications and enhancements, local governments should take into consideration these future precipitation trends and land use information. (Chapters 2 and 5)
5. Data collection is vital to all flood studies, project design and project operation; therefore, the Illinois General Assembly should continue to provide cost share funding to allow for the following:
    a. maintenance and expansion of the USGS stream and rain gage network by the Illinois Department of Natural Resources;
    b. continued monitoring of climate and flood data by the Illinois State Water Survey to better validate and fine tune the present climate projections and their effects on urban flooding; and
    c. continued monitoring of progress in climate model developments and new scientific approaches to account for climate and other uncertainties. (Chapters 2 and 5)
6. The Illinois General Assembly should fund a state agency to develop an awareness campaign about the risks associated with urban flooding and options available for flood reduction and recovery. An educational flyer should be developed to provide to home buyers at closing. This flyer should provide basic information and resources on flood insurance, sewer backup insurance, flood mitigation, and available programs. Another flyer should be developed to inform renters of insurance coverages available to them. Education and outreach could also include a Flood Awareness week in conjunction with the National Flood Awareness Week. (Chapter 7)

7. The State should provide an annual funding stream for Illinois Department of Natural Resources to buy out both floodplain and urban flood prone repetitive flood loss properties statewide to reduce flood damages and create open space parcels, with deed restriction in perpetuity. (Chapter 9)
8. The Illinois General Assembly should continue (and increase) its funding of flood hazard mitigation programs to allow state agencies to better leverage federal mitigation funds. (Chapter 6)
9. The State should provide grants or revolving loan opportunities to communities to support implementation of local cost sharing mitigation programs for residents impacted by urban flooding, to evaluate stormwater system capacity and flood risk, and to encourage stormwater management planning. (Chapters 6 and 9)
10. Local and county governments should be required to participate in the NFIP as a prerequisite for state funding and grant assistance for flood damage reduction-related activities. (Chapter 6)
11. The State of Illinois should provide funding to the Illinois State Water Survey to study and further develop the topographic wetness indices used for the identification of areas likely prone to urban flooding. This would afford communities the ability to identify areas requiring special consideration for below-ground construction. (Chapter 3)
12. The authorities for justification of state capital projects are currently inconsistent making it more difficult to seek funding from one state agency versus another for similar flood damage reduction purposes. Funding criteria should be made consistent across all state agencies. (Chapter 6)
13. Insurance companies only retain claims data for eight years. The General Assembly should fund a program at the Illinois Department of Insurance to archive basement flood damage claims data from private insurers to maintain a long-term census block database of flooding claims for future analysis. (Chapter 1)
14. The Illinois General Assembly should fund research to determine if lower income households have adequate private basement backup and flood insurance as they appear to have fewer private insurance claims than higher income households. If affordability is an issue with private basement coverage or flood insurance, incentive programs and insurance pools used by other states should be investigated. (Chapter 1 and 7)
15. The Illinois General Assembly should direct research on a state Urban Flood Mitigation Pool funded from a very minimal surcharge on all homeowner's policies in Illinois. This mitigation funding stream could be granted to local governments to identify, study, and mitigate the most egregious urban flood areas in the state. (Chapter 1)

Illinois Congressional Delegation

16. Illinois' congressional delegation should encourage FEMA to allow Community Rating System (CRS) points for state flood damage reduction programs. (Chapter 8)
17. Illinois' congressional delegation should encourage FEMA to consider state-based flood insurance underwriting to more accurately reflect flood loss history in Illinois and establish actuarial premiums within Illinois. (Chapter 7)
18. Illinois' congressional delegation should request that FEMA modify and expand their national CRS training to include Illinois-specific training. (Chapter 8)

Local Government

19. To better utilize funding that is available through Illinois Emergency Management Agency for mitigation projects, communities are encouraged to complete pre-disaster planning. (Chapter 6)
20. Communities should establish overland stormwater conveyance areas in all new development areas, and these flow paths should be maintained and regulated. (Chapter 5)
21. Communities should investigate existing property evaluation programs to help homeowners analyze their homes for urban flooding potential and to identify flood damage reduction actions. (Chapter 9)
22. Communities should improve stormwater management in redeveloping areas by adopting stormwater ordinances that incentivize reduction of imperviousness and updating storm water systems, especially in known flood problem areas. (Chapter 5)
23. Communities should consider real-time monitoring of combined storm sewer systems. When technology allows, they should update the monitoring with a reverse 911 system to alert property owners of imminent flooding. (Chapter 3)
24. Within a reasonable timeframe, communities should update their storm sewer atlas with storm sewer location, infrastructure sizes and design data to allow for evaluation of the effect of changing rainfall patterns on system capacity to more accurately identify areas at risk for urban flooding, and to better inform stormwater management planning. (Chapter 3)
25. Communities should consider adoption of ordinances to address drainage for below-grade construction, such as requiring sewers to exit structures within 2 to 3 feet of the finished exterior grade of buildings. Adoption of International Building Code Sections R405 and R406 for foundation drainage and waterproofing should also be considered. (Chapters 3, 5, and 9)
26. Communities and counties participating in CRS should participate in the Illinois Association of Floodplain Managers (IAFSM) CRS users group. (Chapter 8)
27. Non-CRS municipalities should consider using CRS principles in stormwater management to make their communities more resilient. (Chapter 8)

State Government

28. The Illinois Department of Natural Resources and Illinois State Water Survey should develop a state model local stormwater ordinance based on concepts in the report which can be used as a template by counties and local communities. The following should be included along with other actions to address urban drainage issues:
    d. Incorporate green infrastructure into municipal and county development regulations by modifying regulations that restrict use of green infrastructure and add regulations to encourage use of green infrastructure in capital improvement projects when possible.
    e. Stormwater infiltration, evapotranspiration and storage should be incorporated into new development and redevelopment wherever possible.
    f. Developers and property owners should be incentivized to dedicate property for increased open space in developing areas, and current open space should be protected to allow for evapotranspiration, infiltration and stormwater storage.
    g. Require a licensed plumber to inspect for sump pump and downspout connections to sanitary sewers when houses are sold. (Chapters 4 and 9)
29. The Illinois Department of Natural Resources and Illinois Environmental Protection Agency should collaborate to appropriately expend portions of the state revolving fund for implementation of stormwater management measures. (Chapters 7 and 9)
30. The Illinois Mitigation Advisory Group should expand their mission with representatives from various state agencies to coordinate grant programs and projects to ensure consistent funding requirements, leverage state funding efficiencies, promote resiliency, and avoid project overlap. This group should identify and prioritize urban drainage flood mitigation planning in Illinois so existing mitigation actions can occur quickly and efficiently as funds become available. (Chapter 6)
31. The Illinois Department of Insurance should encourage outreach and education efforts at the local level to ensure that citizens understand the differences between flood insurance and sewer backup coverage. (Chapter 1)
32. The Illinois Department of Natural Resources should expand CRS resources to improve CRS outreach to communities as funding from FEMA is available. (Chapter 8)
33. The State of Illinois should incorporate green infrastructure options in state funded capital improvement projects when practical. (Chapter 9)

LaSalle County		
Community	**Contact**	**Position**
LaSalle County	Brian Gift	Director of ESLUD
Village of Earlville	Martha Dankenbring	Deputy Clerk
Village of Grand Ridge	Joyce Miller	Village Clerk
Village of Kangley	John Sullivan	Village President
City of LaSalle	Andy Bacidore	Fire Chief
Village of Leland	Brandy Mason	Village Clerk
Village of Lostant	Jack Immel	Village President
City of Marseilles	Mike Etscheid	Village Engineer
City of Mendota	Dennis Ratishauser	Fire Chief
Village of Naplate	John Nevin	Fire Chief
Village of North Utica	Jamie Turczen	Director of Village Affairs
Northville Township	Jim Swanson	Supervisor
City of Oglesby	Amy Eititus	City Clerk
City of Ottawa	Matt Stafford	Building Official
Ottawa Township	Tim Aussem	Highway Commissioner
City of Peru	Eric Carls	City Engineer
Village of Ransom	Jack Novotney	Village Engineer
Village of Seneca	Grant Hacker	ESDA
Village of Sheridan	Shelly Figgins	Village President
City of Streator	Jeremy Palm	City Engineer

LaSalle County, Illinois
Resolution of Adoption
of the
LaSalle County Natural Hazards Mitigation Plan

Participating communities will adopt the 2020 NHMP once the plan is approved by FEMA. This resolution is a template for communities to use.

WHEREAS, LaSalle County is subject to natural hazards including floods, tornadoes, severe winter storms, severe thunderstorms, and drought among others, that pose risks to public health and property; and

WHEREAS, the County of LaSalle desires to prepare and mitigate for such natural hazards; and

WHEREAS, under the Disaster Mitigation Act of 2000, the United States Federal Emergency Management Agency (FEMA) requires that local jurisdictions have in place a FEMA-approved Hazard Mitigation Plan as a condition of receipt of certain future Federal mitigation funding after November 1, 2004; and

WHEREAS, the LaSalle County Natural Hazards Mitigation Plan was developed in accordance with the regulations of the Disaster Mitigation Act of 2000 and the guidance provided by FEMA; and

WHEREAS, LaSalle County has participated in developing the LaSalle County Natural Hazards Mitigation Plan covering member jurisdictions of LaSalle County:

NOW THERFORE, be it resolved that the County of LaSalle hereby:

1. Adopts the LaSalle County Natural Hazards Mitigation Plan as the official Hazard Mitigation Plan of LaSalle County and
2. Agrees to participate in the annual and 5-year updates to this Plan.

CERTIFIED by _____
County Board Chairman

ATTESTED by _____
County Clerk (SEAL)

ADOPTED on _____
Date

Potential Funding Programs for Local Governments

This summary provides information about funding or other incentives for local or regional projects that could assist communities in implementing projects identified in their risk assessments. Funding is always subject to change. If a community is interested in pursuing funds from any of the following programs contact the identified agency or NCICG office at (815) 433-5830 or contact via e-mail at info@ncicg.org for more information.

PUBLIC INFRASTRUCTURE PROJECTS

Illinois Department of Commerce and Economic Opportunity (DCEO)
Illinois Community Development Block Grant Program (CDBG)

- **Public Infrastructure Construction**
  Local governments that need to improve public infrastructure and eliminate conditions detrimental to public health, safety, and public welfare may request a maximum of $550,000.00 to undertake projects designed to alleviate these conditions, with an emphasis on helping communities with substantial low to moderate-income populations. The application deadline varies yearly.

- **Disaster Response Program**
  Communities may apply for a maximum of $500,000.00 in funding for interim assistance following a disaster as declared by the Governor. Applications are accepted on a rolling basis.

  For more information on the above programs visit
  https://www2.illinois.gov/dceo/CommunityServices/CommunityInfrastructure/Pages/default.aspx

Illinois Environmental Protection Agency (IEPA)
Wastewater/Stormwater and Drinking Water

- **The Water Pollution Control Loan Program (WPCLP**) provides low-interest loans to units of local government for the construction of wastewater and stormwater facilities.

- **The Public Water Supply Loan Program (PWSLP)** provides low-interest loans to units of local government for the construction of community water supply facilities.
  These programs are offered yearly.

  For more information on the above programs, visit
  https://www2.illinois.gov/epa/topics/grants-loans/state-revolving-fund/Pages/default.aspx

United States Department of Agriculture (USDA) - Rural Development (RD)

- **Community Facilities Grant and Loan Program** (also have Guaranteed Loan Program). Funds are used to construct, enlarge, extend, or otherwise improve essential

community facilities. Funds are granted to both public entities and not-for-profits (e.g. health care, fire and rescue, assisted living projects, day care etc.). Program awards are based on a point-based system that considers population and median household income.

- **Water & Waste Disposal Loans and Grants** (also have Guaranteed Loan Program). Eligibility for this program is based on community median household income. Loans and grants are available for community water and sewer projects (includes solid waste and storm drainage) in rural towns with populations less than 10,000. Grants may supplement loans to keep user rates affordable.

  For more information on the above programs visit https://www.rd.usda.gov/programs-services

Illinois Department of Transportation (IDOT)

- **Safe Routes to Schools Program (SRTS)**
  SRTS uses a multidisciplinary approach to improve conditions for students who walk or bike to school. SRTS funds infrastructure and non-infrastructure improvements. Projects are funded at 80 percent with a 20 percent local match required.

  For more information visit http://www.idot.illinois.gov/transportation-system/local-transportation-partners/county-engineers-and-local-public-agencies/safe-routes-to-school/index

EMERGENCY SERVICES

Illinois Criminal Justice Information Authority - Law Enforcement Personnel Training

- **Justice Assistance Grant Program (JAG)**
  The JAG program was designed to streamline justice funding and grant administration. The program blends funding for Edward Byrne Memorial State and Local Law Enforcement Assistance and Local Law Enforcement Block Grant (LLEBG) programs to provide agencies with the flexibility to prioritize and place justice funds where they are needed most.
  Deadlines vary from year-to-year.

  For more information visit http://www.icjia.state.il.us/grants/overview#tab_grant-opportunities

Federal Emergency Management Agency (FEMA)
Assistance for Firefighters Grants Programs

- **Fire Prevention and Safety (FP&S) Grants**
  This grant supports projects that enhance the safety of the public and firefighters from fire and related hazards. The primary goal is to reduce injury and prevent death among high-risk populations.

- **Assistance to Firefighters Grant Program (AFG)**
  The primary goal is to enhance the safety of the public and firefighters with respect to fire-related hazards by providing direct financial assistance to eligible fire departments, nonaffiliated Emergency Medical Services organizations, and State Fire Training Academies. This funding is for critically needed resources to equip and train emergency personnel to recognized standards, enhance operations efficiencies, foster interoperability, and support community resilience.

- **Staffing for Adequate Fire and Emergency Response Grants (SAFER)**
  The SAFER Grants was created to provide funding directly to fire departments and volunteer firefighter interest organizations to help them increase the number of trained, "front line" firefighters available in their communities.

  For more information on the above programs visit https://www.fema.gov/welcome-assistance-firefighters-grant-program

Hazard Mitigation Assistance Grants (HMA)

- **Hazard Mitigation Grant Program (HMGP)**: makes grants available to state and local governments as well as eligible private, non-profit organizations to implement cost-effective and long-term mitigation measures following a major disaster declaration.

- **Pre-Disaster Mitigation Grant Program (PDM)**: makes funding available to local governments to implement cost-effective hazard mitigation activities that complement a comprehensive mitigation program.

- **Flood Mitigation Assistance Program (FMA)**: is a cost-share program (75% federal, 25% local match) through which communities can receive grants for the development of a comprehensive flood mitigation plan and the implementation of flood mitigation projects.

  For more information on the above programs visit
  https://www2.illinois.gov/iema/Mitigation/Pages/MitigationPrograms.aspx

RECREATION/CONSERVATION

Illinois Department of Natural Resources (IDNR)
Outdoor Recreation Grant-In-Aid Programs

- **Open Space Lands Acquisition and Development Program (OSLAD) & Federal Land and Water Conservation Fund (LWCF)**

  The OSLAD and LWCF Programs are a state-financed grant program that provides funding assistance to local government agencies for acquisition and/or development of land for public parks and open space.
  Notice of Funding Opportunity (NOFO) for 2020 has not yet been released.

- **Boat Access Area Development Program (BAAD)**
  Provides funding assistance to local units of government for the acquisition and/or construction/renovation of approved public boat, including canoe, access areas in Illinois.

  For more information on the above programs visit
  https://www.dnr.illinois.gov/grants/Pages/default.aspx and use the search bar.

Illinois Trails Grant Programs

- **Illinois Bicycle Path Program**
  This program was created in 1990 to financially assist eligible units of government acquire, construct, and rehabilitate public, non-motorized bicycle paths and directly related support facilities.
  NOFO 1/1/2020, application deadline 3/1/2020.

- **Snowmobile Grant Program**
  This program is available to any unit of local government located in a region of Illinois with sufficient snow cover and having statutory authority to acquire and develop lands for public park and recreation purposes.
  NOFO 3/1/2020, application deadline 4/30/2020.

- **Off-Highway Vehicle (OHV) Grant Program**
  Provides financial aid to government agencies, not-for-profit organizations, and other eligible groups or individuals to develop, operate, maintain, and acquire land for off-highway vehicle parks and trails. These facilities must be open and accessible to the public. The program can also help restore areas damaged by unauthorized OHV use.
  NOFO 1/1/2020, application deadline 3/1/2020.

- **Recreational Trails Grant Program (RTP)**
  This program provides funding assistance for acquisition, development, rehabilitation and maintenance of both motorized and non-motorized recreation trails.

  Applications for the above programs must be received by IDNR no later than March 1 of each calendar year. Awards are generally announced within 180 days following the application deadline date.

  For more information on the above programs, visit https://www.dnr.illinois.gov/grants/ and use the search bar.

AFFORDABLE HOUSING/HOUSING REHABILITATION

Illinois Department of Commerce and Economic Opportunity (DCEO)

- **Housing Rehabilitation Program** – Low-to-moderate income communities can apply for grants to improve housing and rehabilitate and retrofit properties. A maximum of $500,000 in grant funds or $50,000 per household is available to improve the homes of low-to-moderate income residents of owner-occupied single-family housing units.

For more information visit
https://www2.illinois.gov/dceo/CommunityServices/CommunityInfrastructure/Pages/default.aspx

United States Department of Housing and Urban Development (HUD)

- **Section 202 - Supportive Housing for the Elderly**
  Provides capital advances to finance the construction, rehabilitation or acquisition with or without rehabilitation of structures that will serve as supportive housing for very low-income elderly persons, including the frail elderly, and provides rent subsidies for the projects to help make them affordable.

  This program helps expand the supply of affordable housing with supportive services for the elderly with options that allow them to live independently but in an environment that provides support activities such as cleaning, cooking, transportation, etc.

- **Section 811 - Supportive Housing for Persons with Disabilities**
  Provides funding to develop and subsidize rental housing with the availability of supportive services for very low- and extremely low-income adults with disabilities.

  The program allows persons with disabilities to live as independently as possible in the community by subsidizing rental housing opportunities which provide access to appropriate supportive services.

  For more information on the above programs visit www.hud.gov and use the search bar.

TOURISM/HISTORIC PRESERVATION

Illinois Office of Tourism

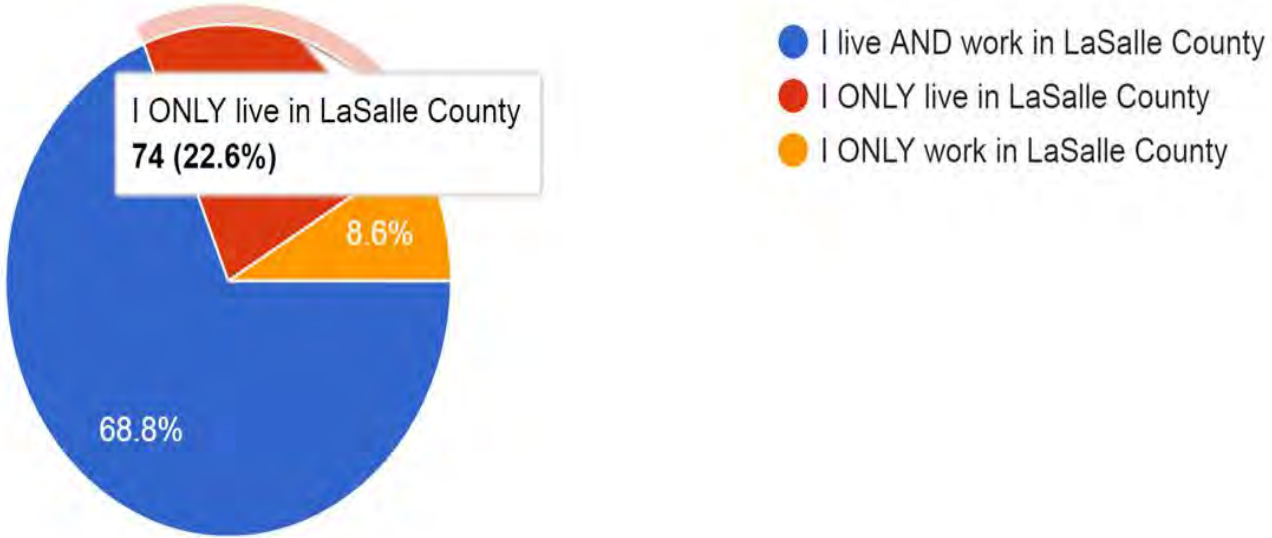
- **Tourism Attraction Development Grant Program (TAP)**
  This program is administered by the Illinois Department of Commerce and Economic Opportunity Grant to develop and/or enhance Illinois tourism attractions.

  This program intends to target Illinois based not-for-profit corporations or organizations; municipal, township or county unit of government; or for-profit business developing a new attraction in Illinois.

2020 LaSalle County NHMP Resident Survey

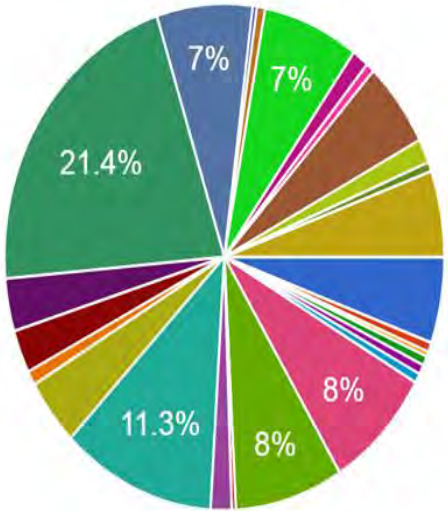
Residency - Do you live and/or work in LaSalle County?

327 responses



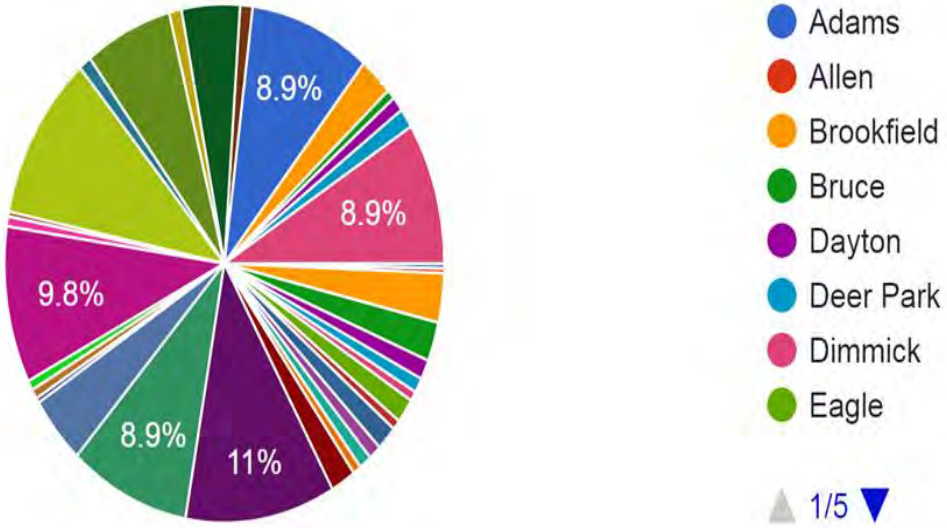
Residency Location - What city or town do you live in?

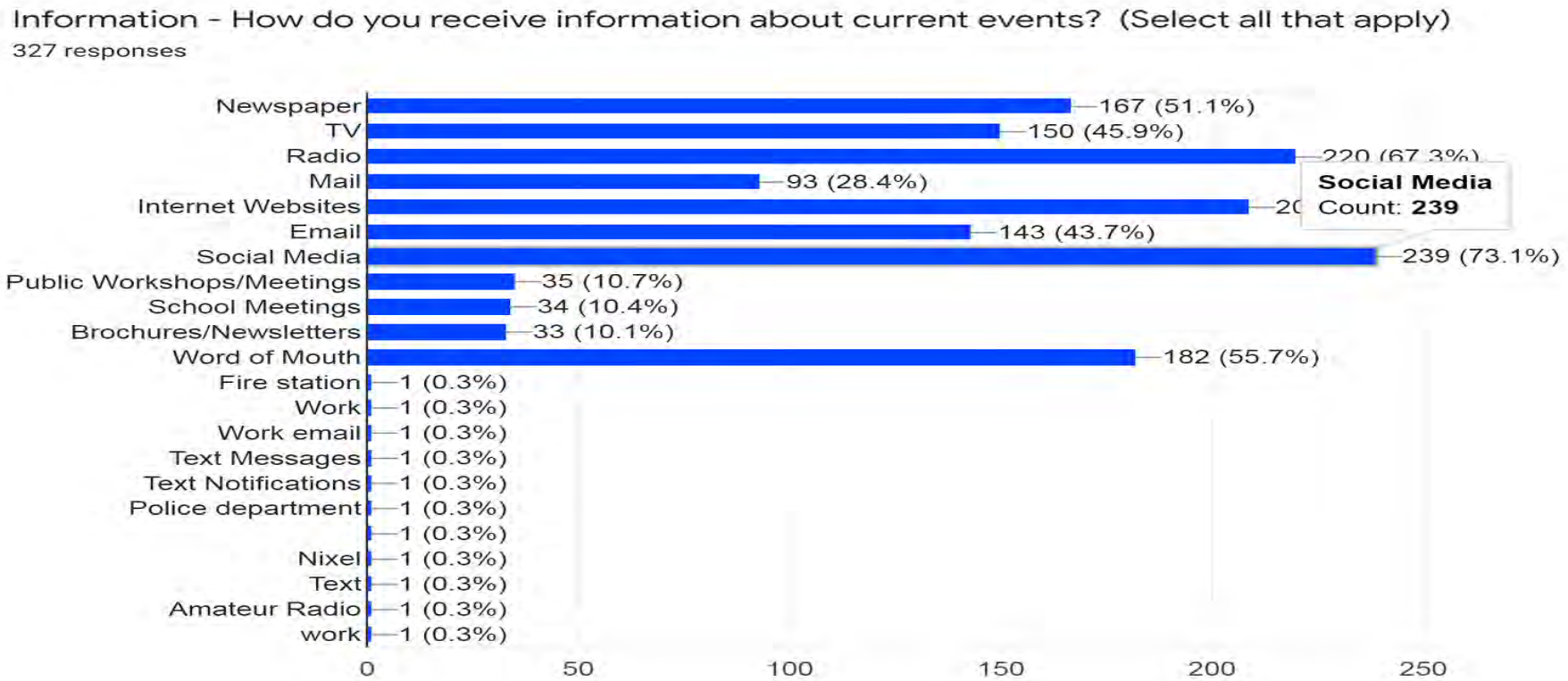
327 responses

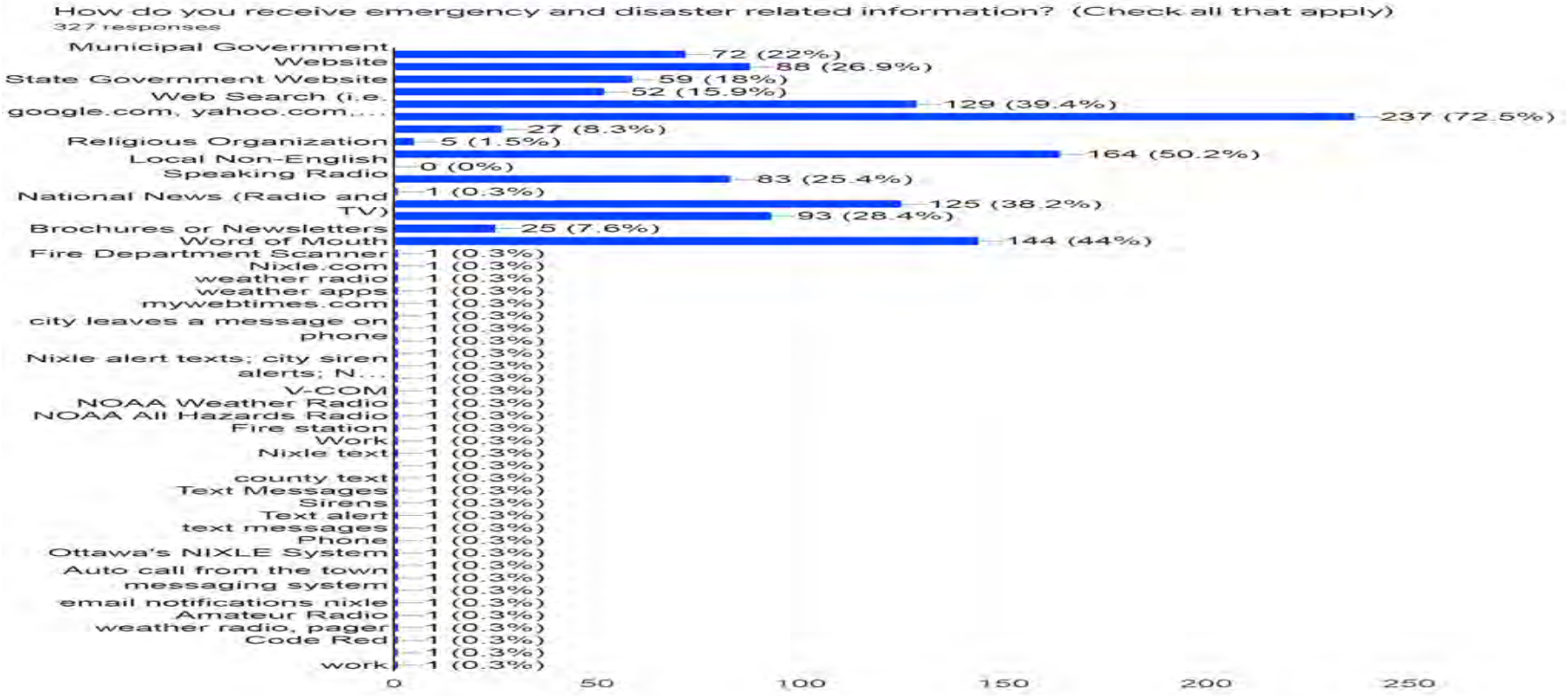


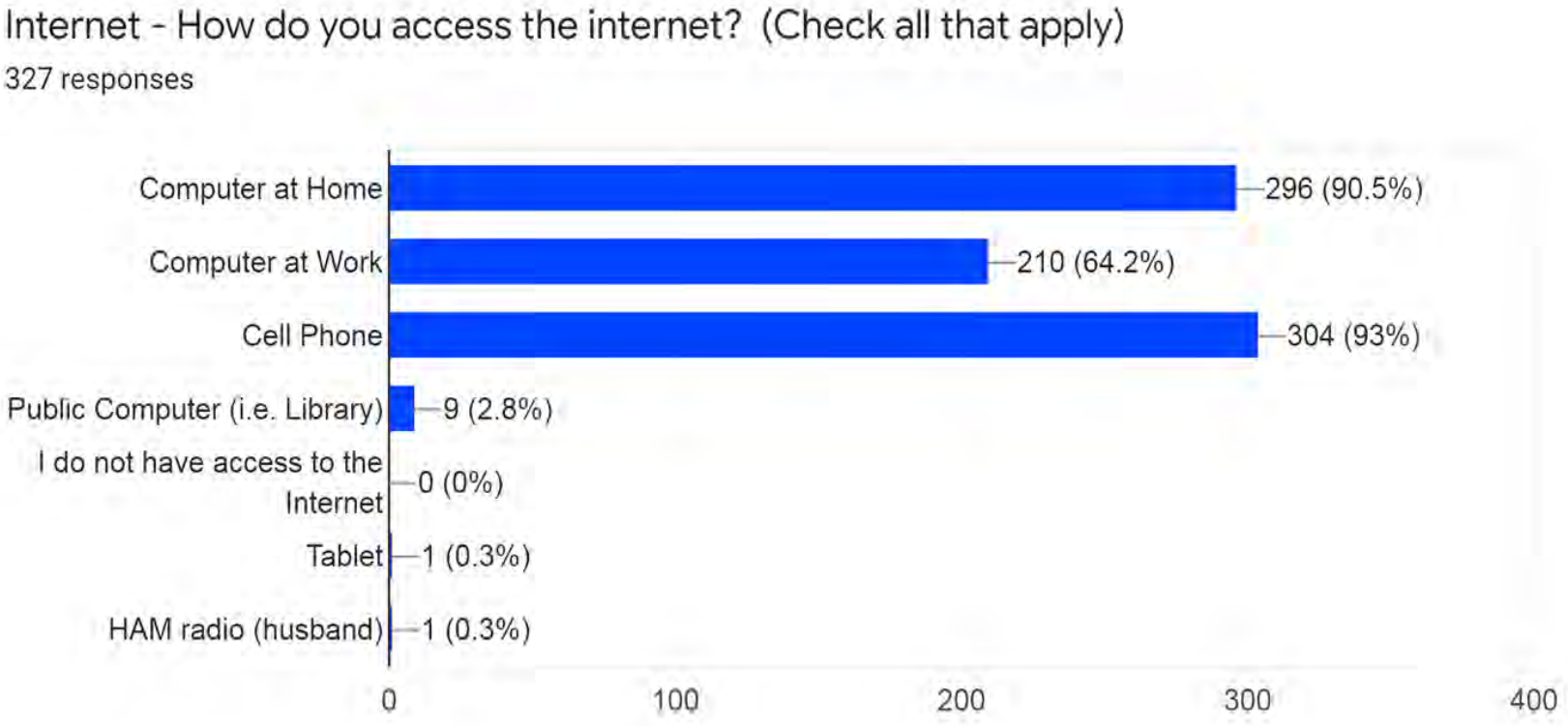
Residency - Which township do you live in? If unknown, select not applicable from list.

327 responses



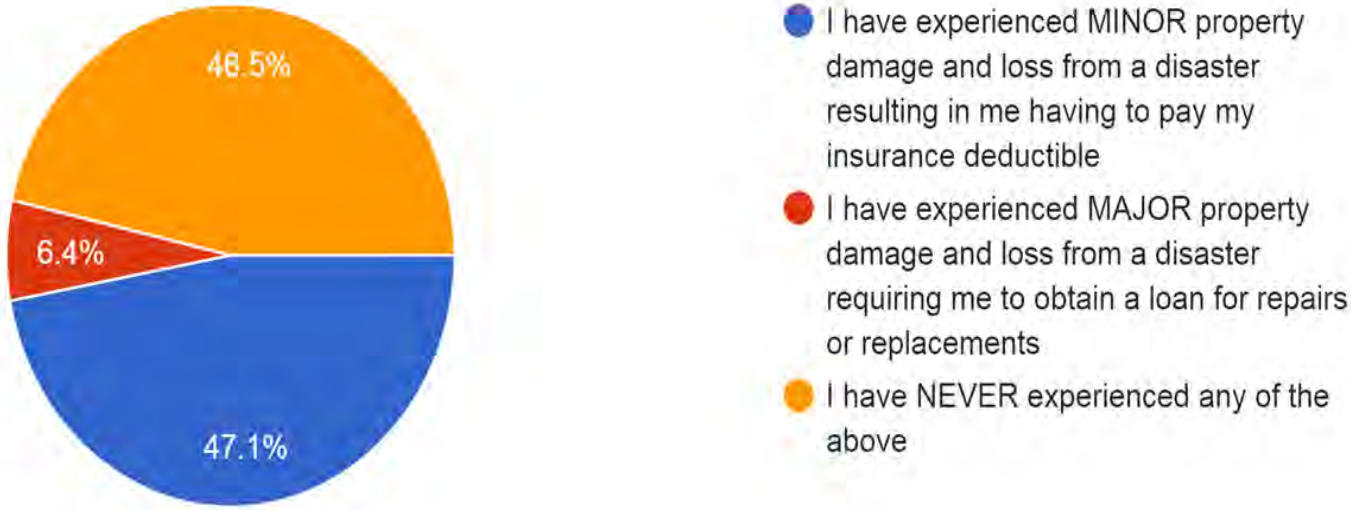

Information - How do you receive information about current events? (Select all that apply)
327 responses
Newspaper
TV
Radio
Mail
Internet Websites
Email
Social Media
Public Workshops/Meetings
School Meetings
Brochures/Newsletters
Word of Mouth
Fire station
Work
Work email
Text Messages
Text Notifications
Police department
Nixel
Text
Amateur Radio
work
167 (51.1%)
150 (45.9%)
93 (28.4%)
143 (43.7%)
239 (73.1%)
35 (10.7%)
34 (10.4%)
33 (10.1%)
182 (55.7%)
1 (0.3%)
Social Media
Count: 239
0
50
100
150
200
250


How do you receive emergency and disaster related information? (Check all that apply)
327 responses
Municipal Government Website
72 (22%)
State Government Website
88 (26.9%)
Web Search (i.e. google.com, yahoo.com,...
59 (18%)
52 (15.9%)
129 (39.4%)
237 (72.5%)
27 (8.3%)
Religious Organization
5 (1.5%)
Local Non-English Speaking Radio
164 (50.2%)
0 (0%)
83 (25.4%)
National News (Radio and TV)
1 (0.3%)
125 (38.2%)
93 (28.4%)
Brochures or Newsletters
25 (7.6%)
Word of Mouth
144 (44%)
Fire Department Scanner
Nixle.com
weather radio
weather apps
mywebtimes.com
city leaves a message on phone
Nixle alert texts; city siren alerts; N...
V-COM
NOAA Weather Radio
NOAA All Hazards Radio
Fire station
Work
Nixle text
county text
Text Messages
Sirens
Text alert
text messages
Phone
Ottawa's NIXLE System
Auto call from the town
messaging system
email notifications nixle
Amateur Radio
weather radio, pager
Code Red
work
1 (0.3%)
0
50
100
150
200
250


Internet - How do you access the internet? (Check all that apply)
327 responses
Computer at Home
296 (90.5%)
Computer at Work
210 (64.2%)
Cell Phone
304 (93%)
Public Computer (i.e. Library)
9 (2.8%)
I do not have access to the Internet
0 (0%)
Tablet
1 (0.3%)
HAM radio (husband)
1 (0.3%)
0
100
200
300
400

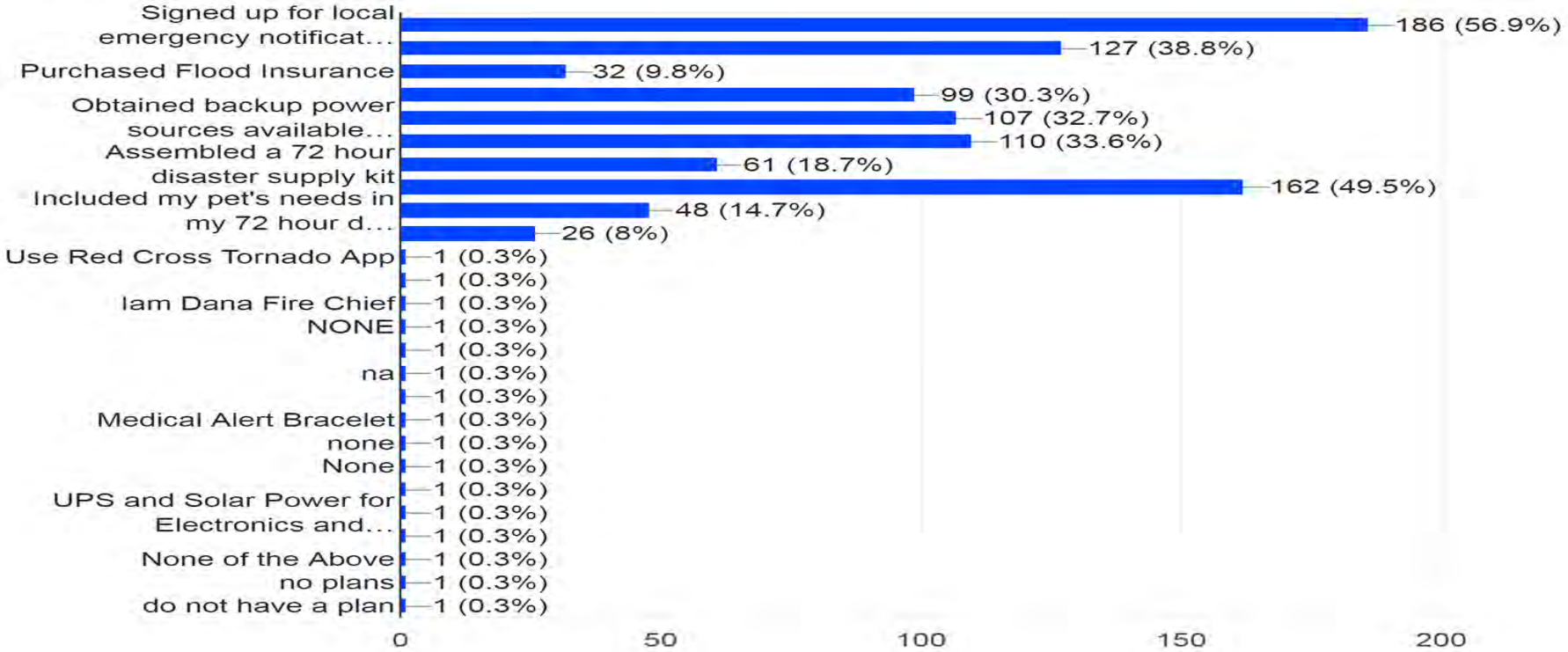
Disaster Impact - Have you ever experienced or been impacted by a disaster (i.e. tornado, flood, severe winter storm, etc.)?

327 responses



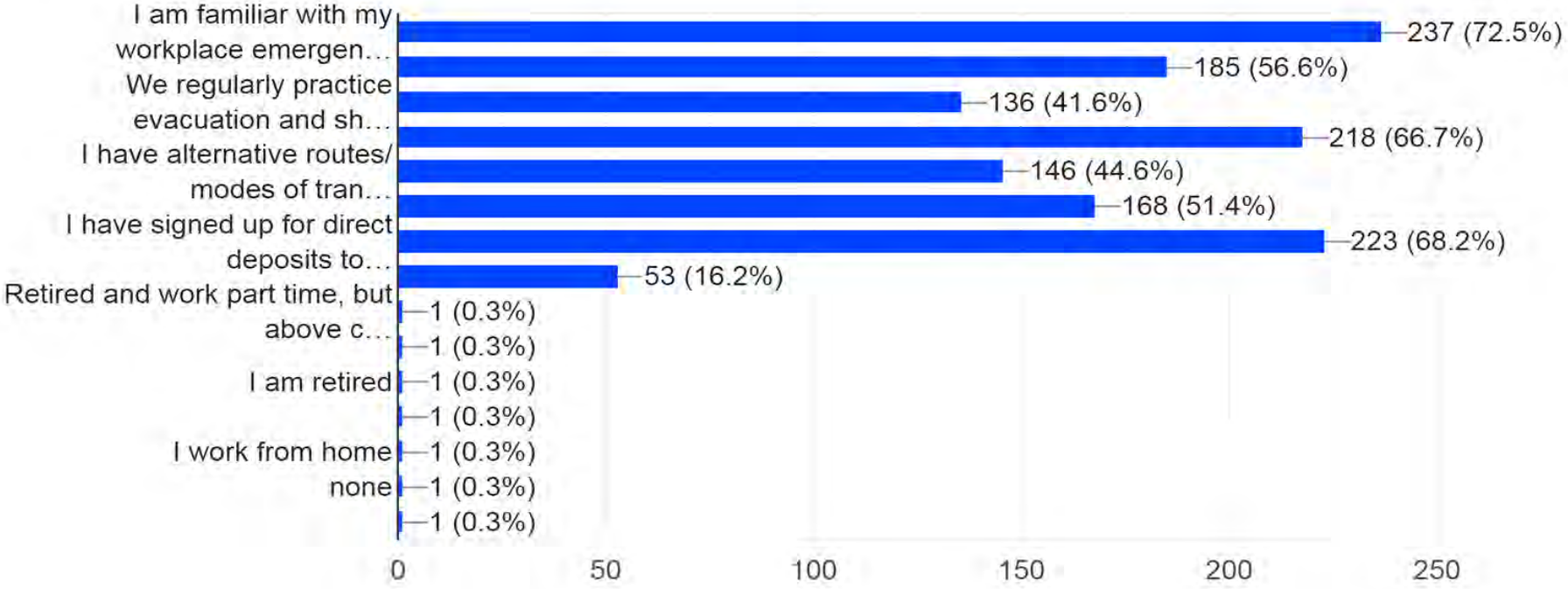
Personal Preparedness - Which of the following have you done to become better prepared at home? (Check all that apply)

327 responses



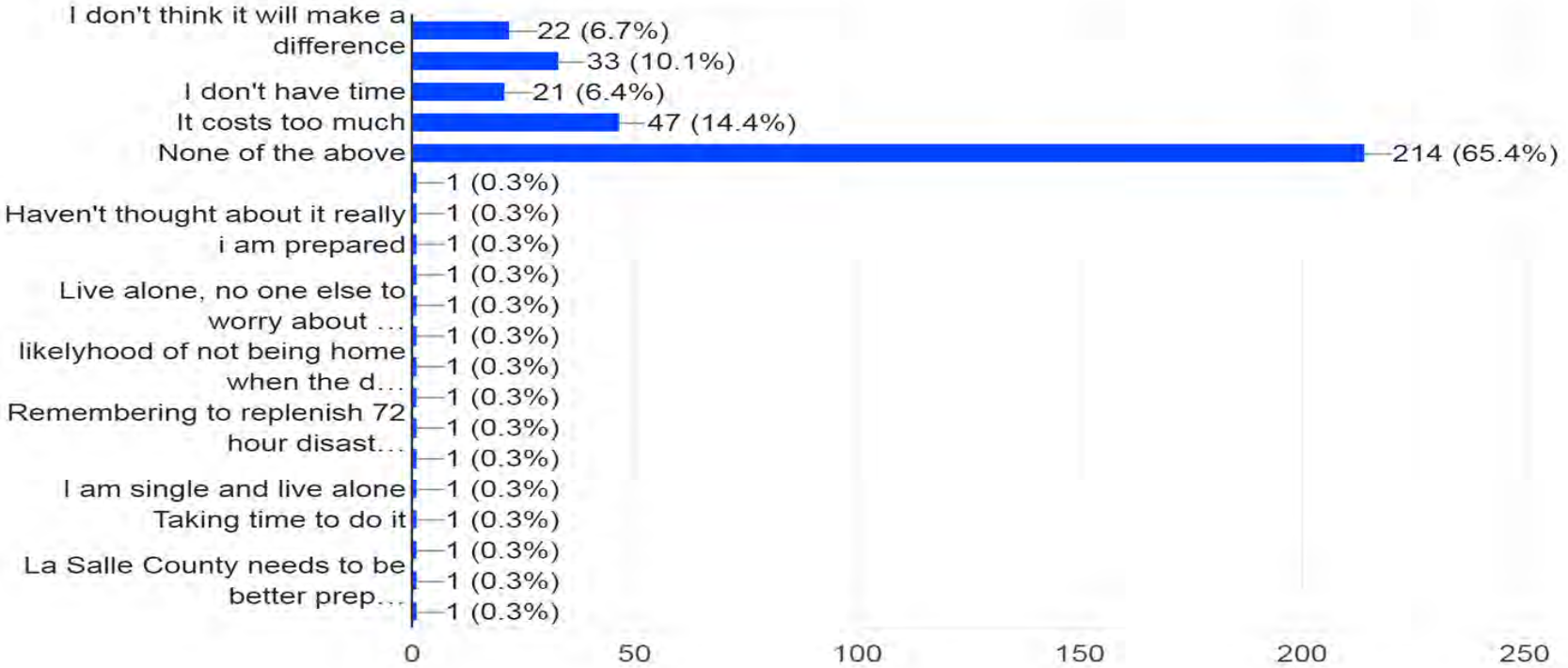
Workplace Preparedness - Which of the following have you done to become better prepared at work? (Check all that apply)

327 responses



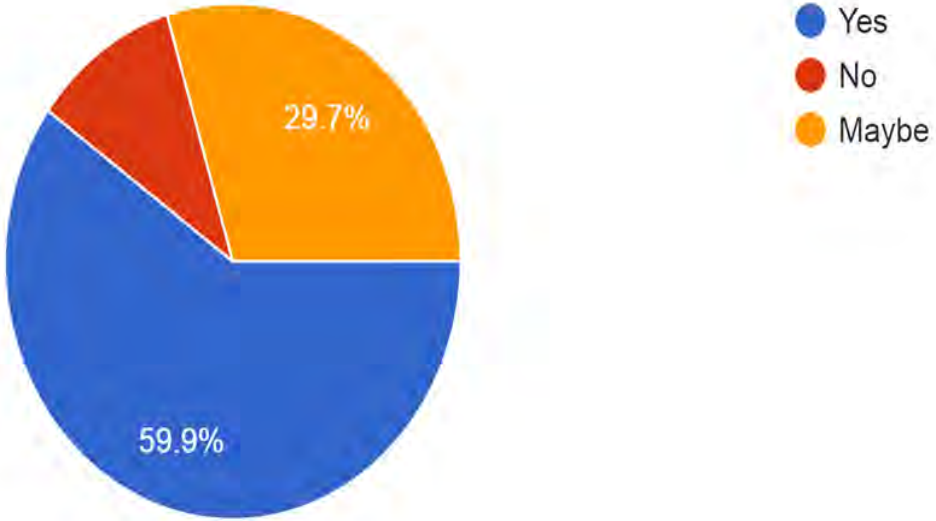
Being Prepared - What are some challenges to preparing your family for emergencies or disasters? (Check all that apply)

327 responses



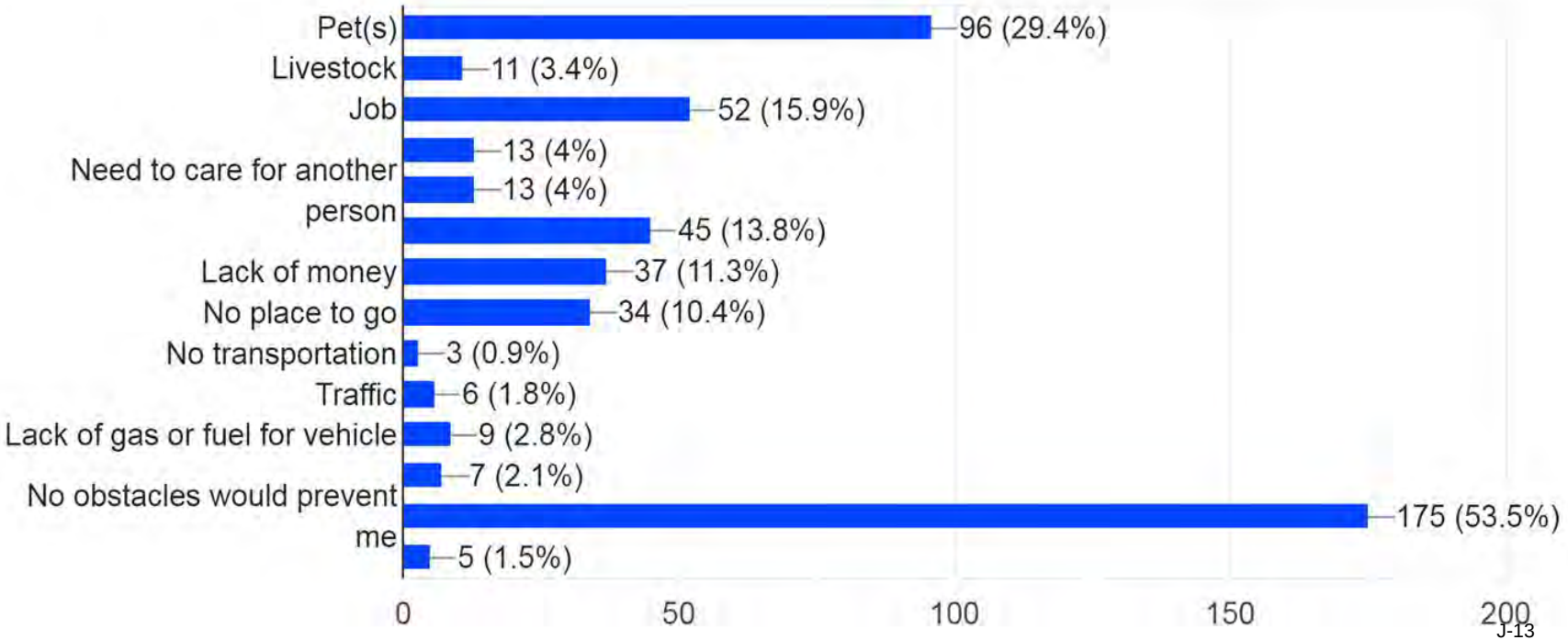
Evacuation - If a disaster impacted your community knocking out electricity and running water, would your household be able to manage on its own for 3 days?

327 responses



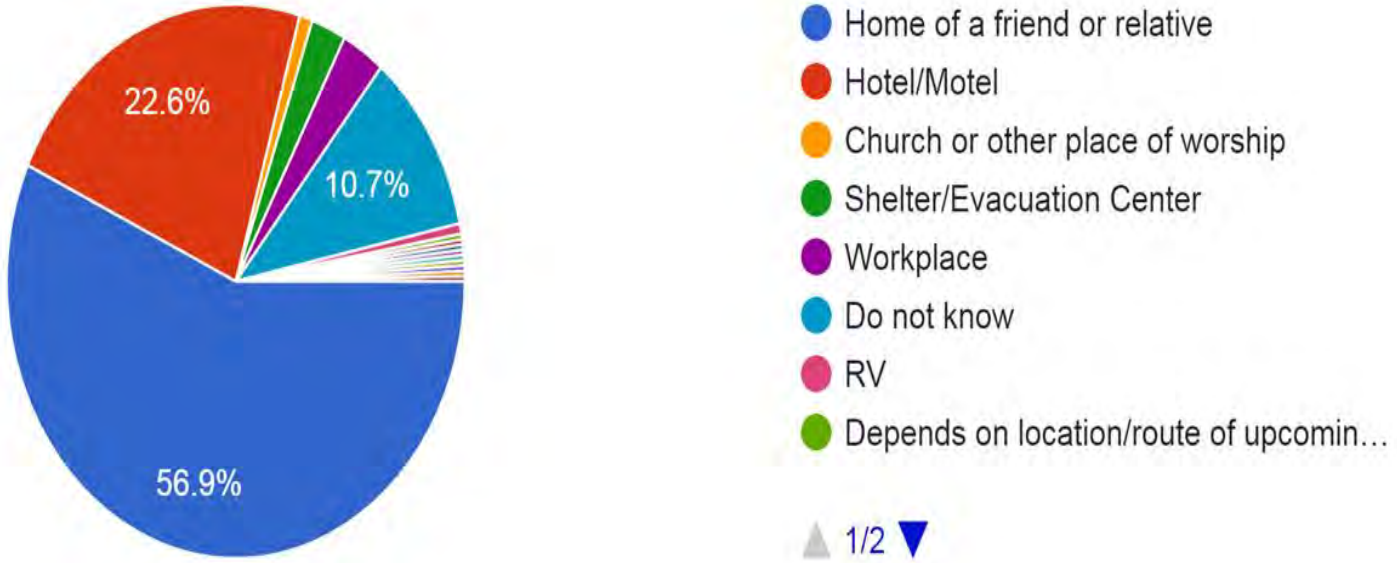
Evacuation - What challenges would prevent you from leaving your home if an evacuation was recommended? (Check all that apply)

327 responses



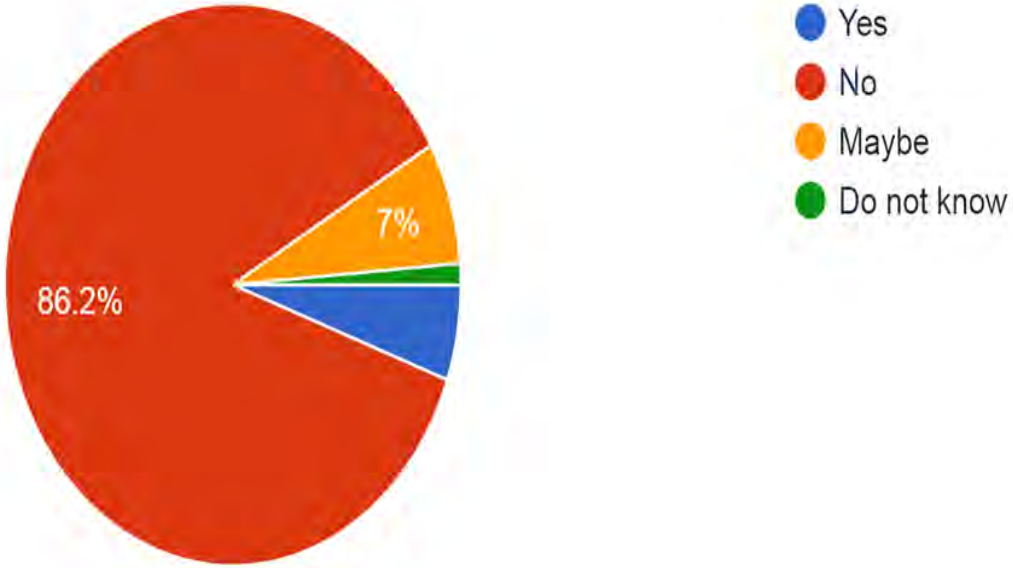
Evacuation - If you were able to evacuate because of a disaster, where would you most likely stay?

327 responses



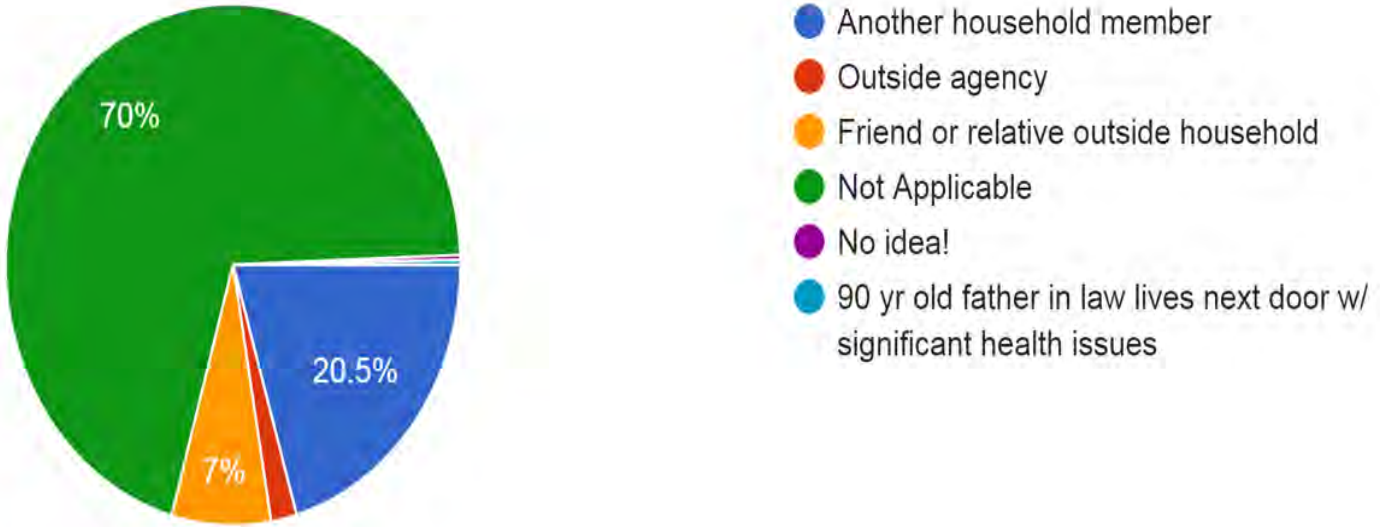
Evacuation - In an evacuation, would you or anyone in your household require special assistance?

327 responses



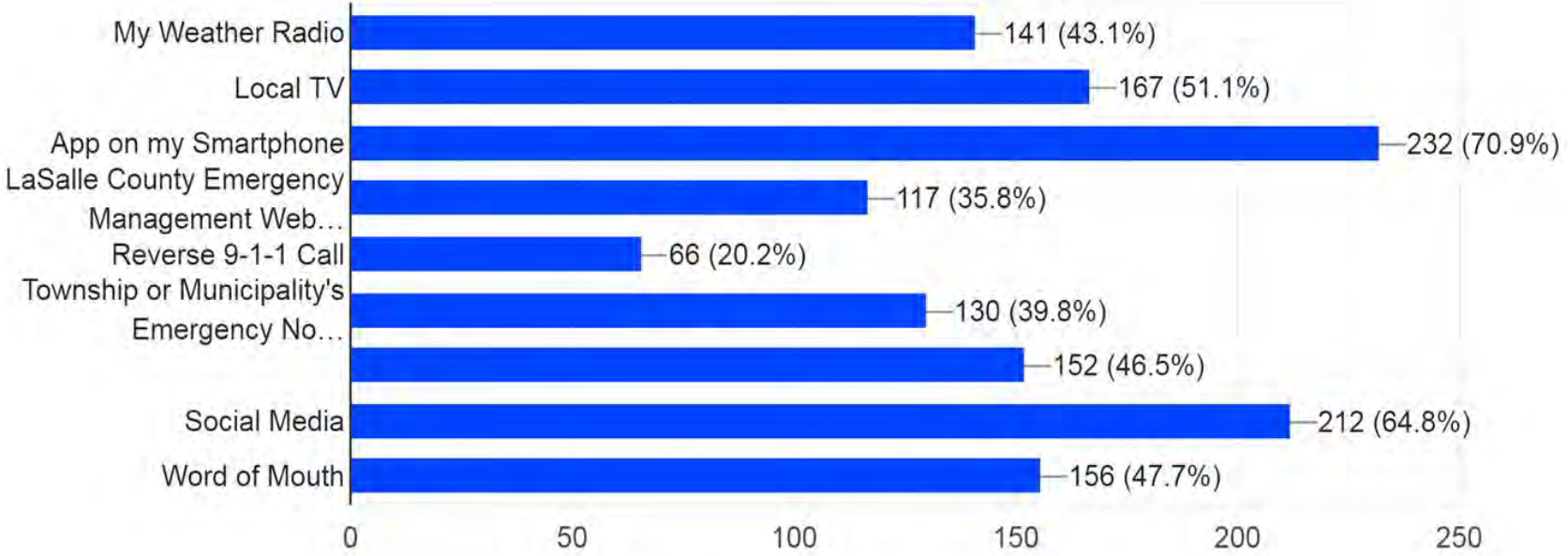
Evacuation - If a household member needs special assistance during an evacuation, who would provide that assistance?

327 responses

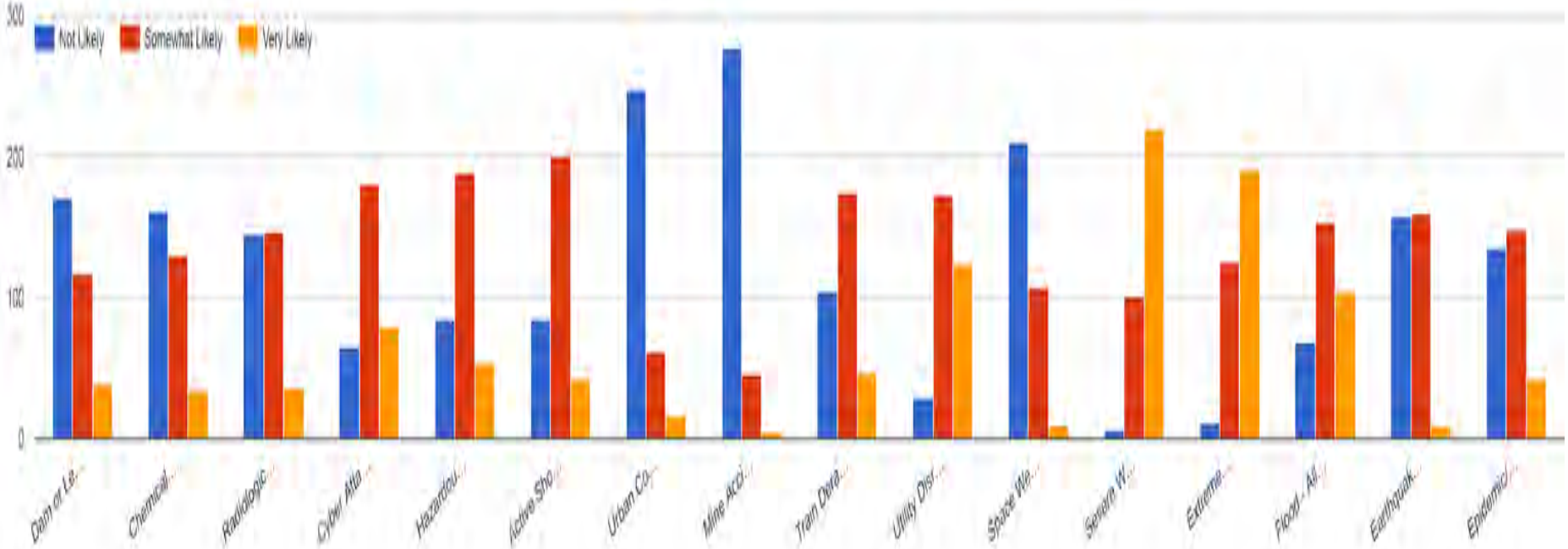


Emergency Alerts - How do you expect to receive alerts and information during an emergency? (Check all that apply)

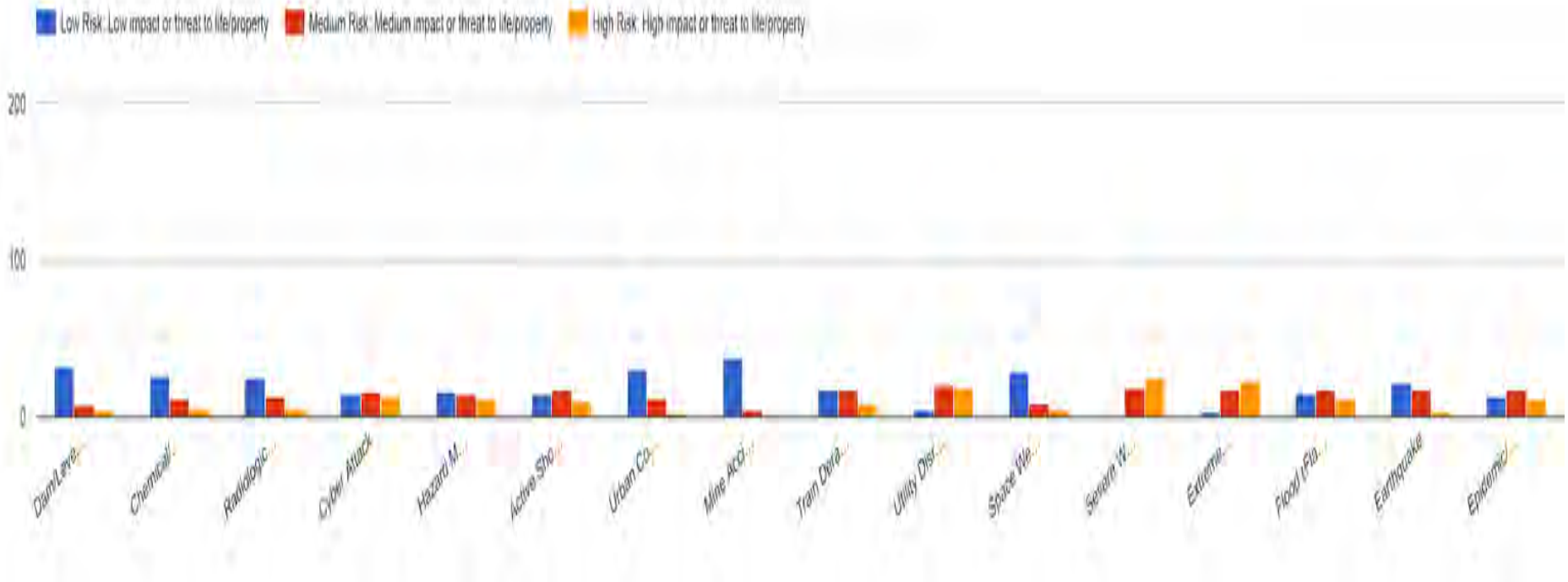
327 responses



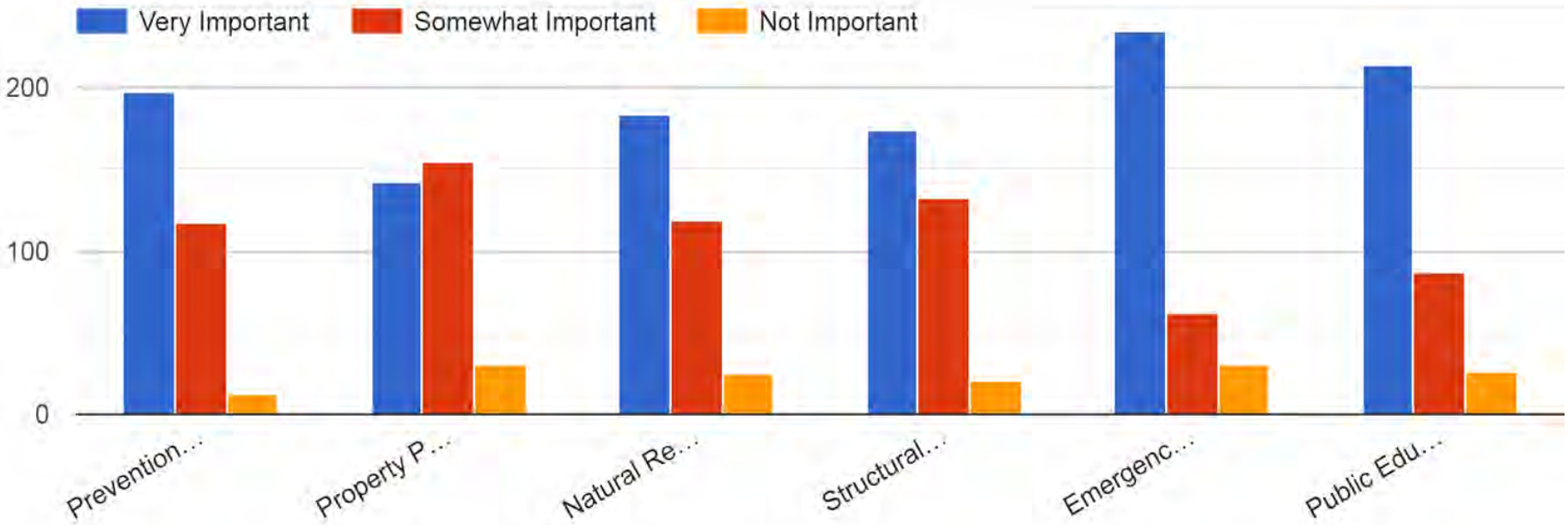
Likelihood of Hazard - The hazards addressed in the LaSalle County All Hazard Mitigation Plan are listed below. Indicate your opinion on the likelihood of the hazard occurring in your community. Please rate each of the following hazards:



Risk to you - Indicate your opinion of the amount of risk to you on the hazards addressed in the LaSalle County All Hazard Mitigation Plan listed below.



Hazard Mitigation Activities - a number of community wide activities can reduce our risk from hazards. In general, these categories fall into on...ach one is for your community to consider pursuing.



2018 Illinois Natural Hazard Mitigation Plan

Bruce Rauner
GOVERNOR

October 2018

https://www2.illinois.gov/iema/Mitigation/Documents/Plan_IllMitigationPlan.pdf

Natural Hazard Resource Links

The following is a list of natural hazard resources for communities to utilize on their website to educate and provide resources to their residents. While some of these resources are from other states the do provide good information while there maybe differences in implementation and regulations in Illinois.

Website Resources

Bureau County EMA

Ready Bureau – Bureau County EMA App

Ready.gov

Federal Emergency Management Agency (FEMA)

IL Emergency Management Agency (IEMA)

Ready Illinois

Salvation Army

American Red Cross

Department of Insurance

Environmental Protection Agency (EPA)

IL Dept. of Public Health

Resource Documents

Prepare for Emergencies NOW: Information to get Ready - FEMA

Emergency Supply List - FEMA

Be Prepared for a Power Outage - FEMA May 2018.

Every Second Counts – Plan 2 Ways Out - FEMA

Illinois Preparedness Tips for Individuals with Functional & Access Needs - IEMA

Fire Safety Checklist for Homeowners and Renters - FEMA

Illinois Disaster Declaration Process - IEMA

2019 Illinois Winter Preparedness Guide

Illinois Winter Storm Preparedness Guide IEMA

Be Prepared for a Winter Storm – FEMA June 2018.

Winter Storms – The Deceptive Killers National Weather Service

2020 Illinois Severe Weather Preparedness Guide

Be Prepared for a Tornado - FEMA March 2018.

After The Flood – Illinois Department of Public Health

Illinois Lightning Safety Awareness Guide

Illinois Fact Sheet: Storm, Flood Debris and Disaster Areas - IEPA

Be Prepared for a Flood - FEMA March 2018.

Be Prepared for a Thunderstorm, Lightning, or Hail - FEMA May 2018.

Be Prepared for Extreme Heat - FEMA June 2018.

Before and During a Drought - Rhode Island EMA

Drought - Dept of Homeland Security

Help Your Trees Survive the Drought - USDA Forest Service

Fire Safety - Office of the Illinois State Fire Marshall

Be Prepared for an Earthquake - FEMA May 2018.

Be Prepared for a Landslide - FEMA May 2018.

Be Prepared for a Wildfire - FEMA May 2018.

The City of Ottawa, Illinois Program for Public Information

2020

Prepared by
The City of Ottawa's
Flood Planning Commission

Table of Contents

Background

The City of Ottawa has been referred to as Louis Joliet's panoramic campground. Most often the city is called the "Friendly City" or the "Town of Two Rivers". Situated at the confluence of the Fox and the Illinois Rivers Ottawa has witnessed riverfront land use changes for more than one hundred years. This area at the confluence is the watershed for almost 12,000 square miles. The current development fosters a keen awareness of the "natural functions of the floodplain" with lessons learned from previous development and a forward proactive stance on sustainability.

The demolition of the flood-ravaged Central School and subsequent purchase of the property by the City has left Ottawa owning 21 acres of Illinois riverfront. Consequently, the City has included a master waterfront development project in its updated Comprehensive Plan. The waterfront plan includes a small harbor, a significant entertainment venue, much greenspace and beautiful botanical gardens, space for commercial retail and residential development and an area set aside for civic facility development. Implementation of this plan during the next few years will be the catalyst for dramatic economic growth and new job creation in downtown Ottawa.

The Fox River Buy-out Program and the resulting demolition and removal of dozens of houses and buildings gave the City of Ottawa the opportunity to develop a beautiful new, 15 acre park along the scenic Fox River. The greenspace nature of Fox River Park has been further enhanced by the removal of the asphalt and concrete which formed the now unneeded streets in this former residential neighborhood. The Fox River now flows naturally through this area during its frequent flood stages. A river walk for biking and walking now connects this new park with downtown Ottawa and the I&M canal tow path.

Ottawa has participated in the Community Rating System (CRS) since 2009. The CRS is part of the National Flood Insurance Program (NFIP) which Ottawa joined in 1974. Ottawa is currently a Class 2 CRS community. As a class 2 community our residents in the Special Flood Hazard Area (SFHA) enjoy a 40% discount on flood insurance. All other residents with flood insurance receive a 10% discount.

The Program for Public Information (PPI) is one element of the CRS program. However, it is a very important element, as this program has a far reaching and broad spectrum of information services that continues to evolve and be implemented.

An important part of the City of Ottawa's greatly strengthened flood management program has been the successful education of its citizens – especially those, of course, most likely to be impacted by frequent flooding episodes. The enhanced Ottawa flood management program has also reduced personal safety concerns along with the likelihood of property damage due to major flooding episodes.

Flood Management Commission

Since 2009 the City of Ottawa has formally had a Floodplain Management Commission. By order of the City Council the first Floodplain Commission was approved and created on September 15, 2009.

Careful consideration was given as volunteers were recruited to form this Commission. The membership represents residents, commercial stakeholders, lenders, insurance industry, emergency management, real estate and the City Floodplain Management. To date this commission is most noted for the development of the City's Flood Threat Recognition & Response plan. This plan scored 190 points out of a possible 255 and is the highest scoring plan among all CRS communities in the state.

The Commission has established a Program for Public Information and continues to meet at least twice per year to evaluate and discuss implementation status and strategies.

Arnie Bandstra	Resident, Engineer
Bill Cairns	River Rescue
Bill Vogel	1st National Bank of Ottawa
Dave Erwin	Ottawa Public Works-Sewer and Water Superintendent
Jeff Hettrick	Chamber of Commerce
Brent Roalson	Ottawa Police Department
Connie Brooks	LaSalle County-Emergency Management Agency
Tom Duttlinger	City of Ottawa, City Engineer
Maggi Thomas	OSF-Saint Elizabeth Medical Center
Judie McConville	Coldwell Banker-The Real Estate Group
Steve Swett	American Red Cross
Mathew Stafford, CFM	City of Ottawa, Building Official, Floodplain Manager
Michelle Fernandez	Flood Insurance Agent
Tom Walsh	Resident
Scott Clinch	Ottawa Township High School
Andy Borkowski	Ottawa Fire Department
Jeremy Fowler	Heritage Harbor, Ottawa
Robert Rick	Resident
Troy Callaway	YMCA
Kevin Bressendorf	Computer Spa
Dave Noble, CFM	City of Ottawa, Economic Development Director

Members of Ottawa's Flood Commission are a group of professionals who are well trained and educated in their respective fields. All share a common vision of wanting to make Ottawa a better place. They have a clear understanding of the success of sharing solutions, the value of lessons learned and the benefit to the community of established best practices for floodplain management.

For the past 10 years this commission has helped establish higher regulatory standards, promoted resilient floodplain management and has set a leading example for sister communities up and downstream.

Community's Public Information Needs

A Brief History of Ottawa:

The founding and establishment of Ottawa as a town evolved between 1823 and 1837. The confluence of the Fox and Illinois Rivers and the vision of Louis Joliet to develop a water connection between the Illinois River and Lake Michigan were important factors in establishing what is now the City of Ottawa. Ottawa is an Indian name derived from the Algonquin word "adawe", which meant "to trade". Although the community of Ottawa had been a county seat of government since 1831, the village apparently did not have any formal government. The construction of the Illinois Michigan Canal in 1836 and increased population must have caused the Ottawa residents on May 21, 1837 to file for a village charter which was approved by the state of Illinois on July 2, 1837. The early town records were burned in a fire in the office of Julius Avery, who was city clerk in 1858. It is not certain who was among the early town fathers. Ottawa was incorporated as a city in 1853.

The Ottawa Constitution, later the Ottawa Republican, started publication in Ottawa during 1844. It is now the lineal ancestor of The Times newspaper.

On February 14, 1853 the first Chicago, Rock Island and Pacific Railroad Company passenger train from Chicago arrived at Ottawa. Passenger service was continued twice a day to Chicago until about 1975.

On August 21, 1858, the first of seven debates between Abraham Lincoln and Stephen Douglas for U.S. Senate, was held in Washington Park before more than 10,000 people.

On September 24, 1881 the great fire of Ottawa occurred. Nearly all five blocks bounded by Jackson Street on the north, Clinton Street on the east, Main Street on the south, and the lateral canal on the west were destroyed. Damages were more than $200,000. The Ottawa City Hall was destroyed as were all the records and the city jail.

The first electric railway system in Illinois started service in Ottawa on August 9, 1889. This was two years after the first such system in the United States began to operate in Richmond, Virginia. Ottawa became one of the pioneer cities to use the popular "street car". By the turn of the century, Ottawa was an active industrial center of Illinois.

1933 marked the completion of the Illinois Waterway linking the Great Lakes to the Gulf of Mexico. The waterway was developed by the U.S. Army Corps of Engineers as a commercial navigation link between Lake Michigan and the Mississippi River. The Chicago Sanitary and Ship Canal linked Lake Michigan, the Des Plaines River and the Illinois River to the Mississippi River in an unbroken waterway of 327 miles.

Community's Public Information Needs

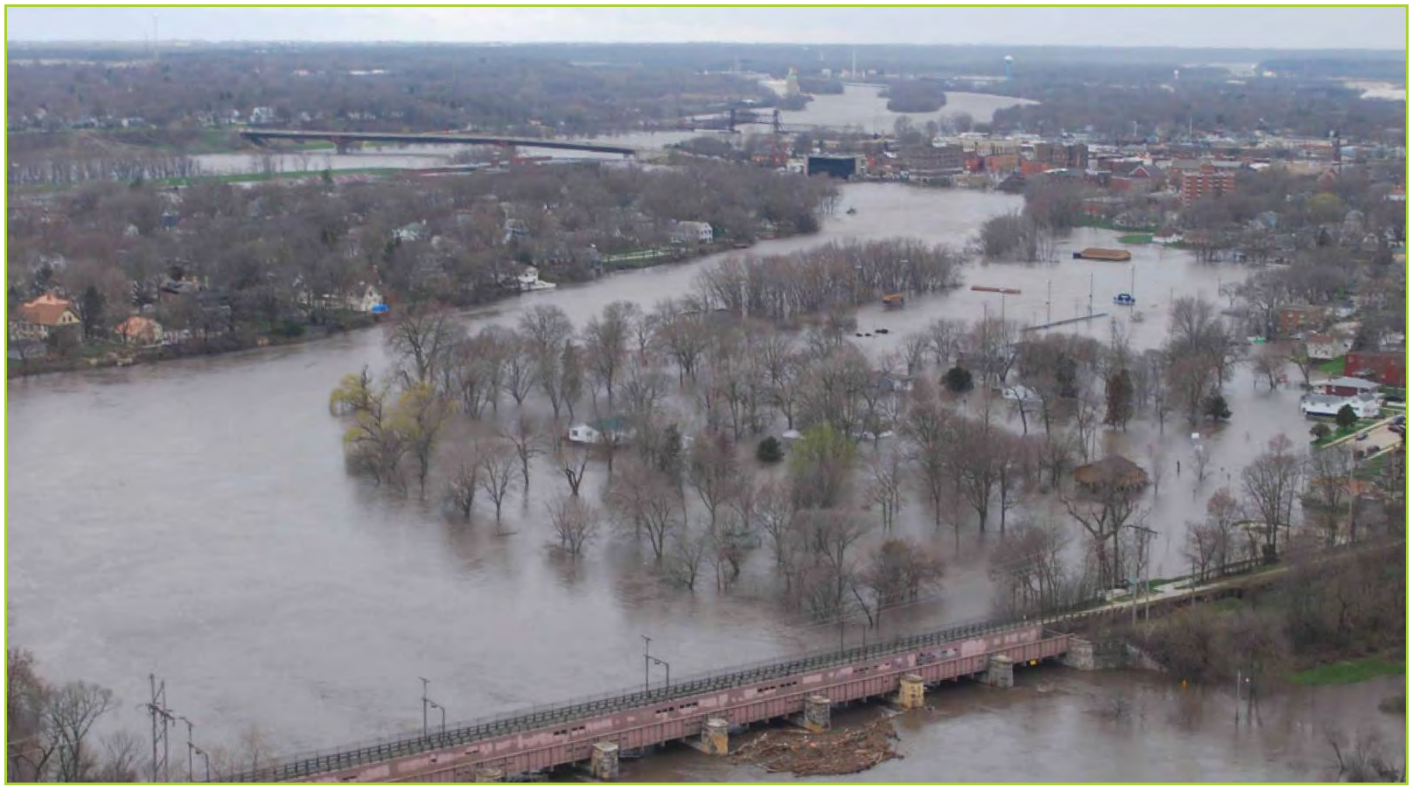
In January 1916 record flooding caused the not yet complete high school to flood. December 4 & 5 of 1982 the Main Street bridge was flooded and could not be used. The east side of the city was an island for 300 residents. Twenty-six homes were under water in the flats area where St. George St., St Clair St, Calumet, Ontario, Superior and Hudson Streets were all flooded. Fifty-six families were evacuated. Volunteers helped to build sandbag dikes to protect critical areas near Ottawa Township High School and the National Guard Armory. The sand bag dikes failed and the Armory was flooded with fourteen feet of water as was the high school cafeteria.

Today Ottawa has a population of 18,500 with land area of 15.6 square miles. There are 101 miles of streets. There are 7008 residential/multi-family buildings and 859 commercial facilities for a total of 7867 buildings.

Flood Hazards

The City of Ottawa is located in North Central LaSalle County, approximately 45 miles West of Joliet and 90 miles South of Rockford. The primary water course and sources of flooding are the Fox River and the Illinois River. A secondary and relatively inconsequential source of flooding is from the Goose Creek watershed which is only 6.58 square miles. The total fall for the Fox River from its source to Ottawa is 471 feet. The Fox River flows Southwest from its source, just North of Waukesha, Wisconsin, 187 miles to the mouth at the Illinois River in downtown Ottawa. There is a total of 2657 square miles of watershed in this basin. The water level of the Fox River is influenced more by the rainfall and runoff of Northeastern Illinois and Southern Wisconsin than by local rain events.

The Illinois River is influenced by Northeast Illinois, and Northwestern Indiana. The Kankakee, Iroquois, Des Plaines and Chicago Rivers are tributaries of the Illinois River upstream of Ottawa. **A critical component of our flood hazard in Ottawa is that the watershed of the Fox and Illinois Rivers upstream of Ottawa is almost 11,000 square miles.** As a result, the City could receive a minimal amount of rain, yet experience a severe flood event caused by runoff from the watershed.



The Illinois River flows West from its source at the confluence of the Kankakee and Des Plaines Rivers, through Ottawa from (mile mark 242.6) the Eastern boundaries to the Western city limits (mile mark 238.3).

Flood Hazards

Flood discharges during a 100 year flood event for the Goose Creek is 1,700 cubic feet per second (cfs), for the Fox River is 42,600 cfs and for the Illinois is 114,000 cfs.

The Illinois and Fox River flood characteristics have been studied by the Rock Island, U.S. Army Corps of Engineers. A Flood Damage Reduction Project for the Illinois and Fox Rivers was completed by the USACE in February 2001. A levee was constructed by the USACE pursuant to this study on the Illinois and Fox Rivers. This levee lost its accreditation in March of 2010. The preliminary Digital Flood Insurance Rate Maps, published in March 2010, increased the Base Flood Elevation on the Illinois and Fox Rivers approximately 1.5 feet. The levee provides protection for Ottawa High School, considered a critical facility, and a small section of the Fox River levee does not have the Flood Protection Elevation required for critical facilities. In 2019, the flood wall height was increased by 3.5 feet. The Federal Emergency Management Agency (FEMA) has published a preliminary Flood Insurance Study for Ottawa dated October 10, 2012. A Hydrologic and Hydraulic analyses was performed for the City of Ottawa for the Goose Creek in 1999.

Record floods have occurred in 1974, 1982, 1983, 1996, 1997, 2007, 2008, 2009, 2013, 2015, 2017, 2018 and 2019. In April 2013 the all time record flood occurred approximately 1.5 feet higher than any recorded. The 1974, 1983, 1996, 2007, 2008 and 2013 floods all resulted in Federal Disaster declarations. In 2008 Central School was flooded and subsequently declared substantially damaged. This was perhaps the largest single flood loss recorded in the City of Ottawa with FEMA providing over 12 million dollars in relief.

During a flood event Green Street, a secondary means of egress for the East side of Ottawa, becomes impassible. The only other access to the East side is the Main Street bridge. During record flood events this bridge could become unusable, effectively isolating the East side.

During record flood events residential flooding occurs on the East side (Illinois River) and an area known as the “Flats” (Fox River) at approximately cross section “D” as noted on FIRM panel #530 dated July 18, 2011. During these events the hospital can be threatened, however, they have recently constructed a flood protection wall which protects above the 500 year event. Ottawa High School is also threatened. The high school has a very good flood fighting plan which has been extremely effective, even preventing damage from the all time record flood of April 2013. The City of Ottawa’s Waste Water Treatment Facility can also be threatened, but a new flood wall was completed around the facility in 2016. The YMCA is the only other commercial facility affected during major flood events.

During the winter months ice jams on the Fox River cause localized flooding from the mouth upstream to the OSF St. Elizabeth Medical Center.

During the flood of 2013 more than 500 basements received water from either overland flooding, sewer backup or sump pump failure. The Department of Community Development has recently completed a watershed study. The City also developed and adopted a Stormwater Ordinance in 2017.

Flood Insurance Assessment

The City of Ottawa has a total of 51 flood insurance policies in place. Six policies are commercial and 45 are residential. Total premiums are $37,412 and in place coverage totals $15,890,000. Since completion of the buyout program there are three repetitive loss property on record.

The commission concluded that the City of Ottawa as a whole is grossly underinsured against flooding. After careful examination and discussion it was apparent to the commission that previous to this assessment, very few understood what was covered by homeowners insurance, flood insurance and sewer water backup insurance. The design and implementation of an aggressive outreach program to alert the community of the lack of flood insurance coverage is planned as part of this program. In that the community has dramatically reduced flood losses from riverine flooding, it is likely that the focus will be on urban/basement flooding which caused significant losses in the 2013 flood and June of 2015. Most commission members did not know that the City of Ottawa has a cost share program for homeowners for an overhead sewer system.

	Policies in Force	Premium	Insurance in Force
Single Family	42	$19,026	$10,918,000
2-4 Family	1	$480	$210,000
All Other Residential	1	$478	$510,000
Non Residential	5	$17,859	$4,204,000
Total	49	$37,843	$15,842,000
Condo	0	0	0
Non Condo	49	$37,843	$15,842,000
Total	49	$37,843	$15,842,000

Information on the above table was received from the Community Information System from the CRS specialist, dated December 6, 2019.

In that there are 27 residential buildings and 10 commercial facilities inside the Special Flood Hazard Area, it would appear that these properties are adequately insured.

Repetitive Loss Properties

There are three structures that are designated by FEMA as a Repetitive Loss Properties because they have had two or more flood insurance claims of more than $1,000 during a rolling 10 year period. These properties are in the Illinois River Floodplain. In 2014, 9 properties, all considered repetitive loss properties were purchased and demolished. The land is deed restricted to green space.
One more property that was considered repetitive loss was elevated in 2014 with Increased Cost of Compliance (ICC) funding.

Target Areas

Ottawa is somewhat divided into four sections. The North side has some relatively recent housing and subdivision development, none of which is inside the Special Flood Hazard Area (SFHA). The North side is subject to some flash flooding and basement flooding. There is also significant commercial development such as Pet Smart distribution and Kohl's distribution. The South side is an older section of town which the northern most boundaries are the Illinois River. The City's Waste Water Treatment Plant is located on the South side and is also in the SFHA. The West side is a long established, mostly residential neighborhood. The downtown is at the eastern most boundary of the West side. Many homes overlook the Illinois River from a bluff that is about 30 feet above the Illinois River. The River Rescue relocated their station out of the SFHA in 2019. There is one other residential dwelling inside the SFHA on the West Side. The East side is a mix of older homes and some business. The high school, the hospital and the boat club are on the east side. Most of the flood prone properties in the city are located on the east side which is nearly encircled by the Fox and Illinois Rivers. During a high water event the East side can become isolated when the water level reaches the Main Street Bridge. At that time, Green Street (the only other exit from the East side) is impassable. Most single family dwellings inside the SFHA are located on the East Side.

Target Audiences

Residents living in the SFHA	**Residents living behind levee system**
Real Estate, Insurance and Lending Agents	**Residents subject to Urban Flooding**
Builders and Developers	**Tourists and Recreationalists**
All residents inside the City limits	**School age children**

- One obvious audience is the residents inside the Special Flood Hazard Area. Yearly mailings along with frequent on site visits during flood events by the City's floodplain management currently target this audience.

- Another target audience identified by the Flood Commission are those residents living behind the High School levee. Most have never been told of the risk. The commission has developed literature aimed directly at those residents and sends out annually to property owners.

- Perhaps the least informed about floodplain regulations are the Real Estate agents and Insurance agents. Most lending institutions are aware of the NFIP insurance requirements but know little about actual floodplain regulations. Hence these three targets will be the focus of an outreach and education programs designed specifically for them.

The entire community is the focus of urban flood awareness and will be the focus of public outreach and education through open public meetings with follow up literature. The city has a yearly contractor meeting designed to update builders on current code requirements and significant changes. The meeting will be used to educate builders on the floodplain requirements along with literature prepared for other target audiences.

Ottawa is fast becoming a tourist destination and the commission has identified this audience as a target, especially for river safety. Historically, flooding has been responsible for a number of drownings, including several along the Fox and Illinois Rivers.

Children have been identified as a target market. Through discussion of current public information efforts it was noted that sending home a message with the children's school work would very likely be read and discussed by parents. Ottawa's River Rescue sends a yearly safety message to schools.

Priority Messages

1. Know your flood hazard
2. Insure your property for your flood hazard
3. Protect people from the hazard
4. Protect your property from the hazard
5. Build responsibly
6. Protect natural floodplain functions
7. Practice river safety

Past Public Information Efforts

The City of Ottawa has adhered to CRS requirements for public outreach since 2009. The messages and printed material were shared with the Flood Commission to give context and reference for moving forward so that new ideas and approaches could be developed. Members participated in workshop exercises to identify what each entity was already doing for outreach and risk communication.

WHAT WE ARE DOING NOW TO INFORM AND OTHER PUBLIC INFORMATION EFFORTS

Organization	Project	Subject
City of Ottawa	Water Bill Inserts	Flood Information
City of Ottawa	Target Mailings	Flood Hazards
City of Ottawa	Websites/Social Media	Flood Resources
City of Ottawa	Cable TV	General Info
City of Ottawa	Websites/Social Media	General Info
Fire Department	Fire Safety	Digital Sign
Police Department	D.A.R.E.	Digital Sign
Police Department	NIXLE	Emergency Info
Police Department	Websites/Social Media	Community Info
River Rescue	Letter to Grade Schools	Water/Ice Safety
Illinois Valley Community College	Text Alerts	Weather/Road
Red Cross	Text Alerts/Radio	General Info
Chamber of Commerce	E-Blasts	General Interest info
Realtors	Newsletter	General Info
Banks	Bank Statement Insert	General Info
Hospital	Newsletter	General Info
NCICG	Email	All Hazard/Grants Info
High School	Website	General Info
High School	Digital Sign	General Info
Insurance	Webinar	General Info

Program for Public Information Tables

Target Audience	Message	Outcome	Proposed Project	Assignment	Schedule	Stakeholder
Residents & Businesses inside the SFHA	"Flood prone? Get Known!" Notify floodplain residents of the emergency notification services available to them with the City. Topic 1, Know your Flood Hazard	Have citizens sign up with Ottawa's Nixle system	Use the in place Nixle notification system and ottawafloods.org to keep citizens informed before, during & after a flood event. Solicit citizens to sign up for the service	Ottawa PD and Ottawa IT	Fall 2020-effort to advise residents of service and site. Water Bill/Media	City of Ottawa and Residents
Residents & Businesses inside the SFHA	"Ottawa residents receive up to a 25% discount on flood insurance premiums" Topic 2	Increase number of flood insurance Policies	Direct Mail to floodplain residents. Place information on ottawafloods.org	CRS Coordinator	Fall 2020	City of Ottawa and Residents
Residents subject to urban flooding	Standard Insurance does not cover sewer/water backup or river flooding. "Are you insured?" Topic 2	Increase number of flood insurance policies	Water bill insert to citizens Chamber of Commerce "e-blasts" to all businesses	CRS Coordinator Chamber of Commerce	2020-Minimally once per year. Inserts dependent on water department	Chamber of Commerce
Businesses and Residents who have reported basement flooding (567)	Sewer Ejector Program. Ottawa offers to reimburse 50% up to $2000 for overhead sewer installs. "Don't sump it, pump it" Topic 4 Protect your property	Protect more homes from sewer backup and basement flooding	Water bill inserts. Website informational series	CRS Coordinator	2020-Minimally once per year. Inserts dependent on water department	City of Ottawa and Residents
All Residents	"Find Your River" Every property has its own river during a rain event Topic 4 Protect your property from the flood hazard	Identify and correct property conditions to lessen flood impacts	Public campaign showing how every property has its own river when it rains, i.e., downspouts, sidewalks, driveways, landscaping. Expanded flood information services.	City Engineer	Summer 2020	City of Ottawa and Residents
All property owners inside the corporate limits	If you control runoff, you can control basement seepage. Topic 4 Protect your property from the flood hazard	Lessen the impact of runoff. Improve water runoff quality	Rain Barrel Program. City sponsored rain barrel program	NCICG and City of Ottawa	Summer 2020	River Rescue
Property owners behind OTHS levee system	Levees do not eliminate flood risk Topic 3 Protect people from the flood hazard	Increase awareness of risk to homeowners behind levee	Target mailing to properties located behind the High School levee system	CRS Coordinator	Winter 2020	Ottawa Township High School and property owners behind levee
Real Estate Agents, Lending Institutions, Insurance Agencies	The property you just listed, mortgaged or insured is in the floodplain—do you know the rules? Topic 2 and Topic 3	Increase code compliance, lessen the number of floodplain violations	Open public meeting targeting real estate agents, lenders and insurance professionals	Building Official and City Engineer	Spring 2020-Every other year	Real Estate Agents, Lenders and Insurance Agencies
Real Estate Agents, Lending Institutions, Insurance Agencies	Do you know the real hazards of the floodplain?	Increase risk awareness	Mail Real Estate Agents, Lenders and Insurance Agents "Flood Information" document	CRS Coordinator	Fall 2020 Yearly thereafter	Real Estate Agents, Lenders and Insurance Agencies
Builders and Developers	Any remodel in the SFHA requires a permit. Know the regulations, sub-damage, improvement & ICC Topic 5 Build Responsibly	Decrease floodplain violations. Improve building safety	Contractors open public meeting	Building Official and City Engineer	Spring 2020	Area Contractors
All target audiences	Varies (All 6 Topics)	Draw people to consume the new website and enhanced floodplain data	Launch a multi-media campaign informing all target audiences of the available data such as flood inundation mapping, early flood warnings, and flood response	Floodplain Management	Ogoing	City of Ottawa, Residents, Visitors of the Area
Builders and Developers	Do You Know Ottawa's Compensatory Storage Regulations? Topic 5 and Topic 6	Stop/Prevent any fill in the floodplain. Restore natural functions of FP	Annual Contractors open meetings	CRS Coordinator and Building Official	Spring 2020 Every other year	City of Ottawa, owners of floodplain property, contractors
All residents and tourists in the city limits	Know your flood hazard. This mark is the all-time record flood of 2013 Topic 1	Communicate Risk to all residents on riverine flooding	Ottawa's High Water Mark Initiative	CRS coordinator	Complete. Monitor Signs. Add as needed	City Public works
All target audiences	When the flood waters are coming, go to www.ottawafloods.org for a link to our special inundation maps Topic 1	Inform people where the flooding will occur	Inundation maps created by the Illinois State Water Survey	City Engineer	Before a flood Disseminate info in media outlets.	

Program for Public Information Tables

Target Audience	Message	Outcome	Proposed Project	Assignment	Schedule	Stakeholder
Tourists & Recreationalists	"When the water is this high—Don't even try" Topic 1 Topic 7	Curtail recreational boating during a flood event	Informational signage in parks and near boat launches with water marks indicating flood base flood elevation and historic flood levels	Public Works	Complete-Monitor Signs	Tourists & Recreational Boaters
Flooded property owners and residents	Topic 3: Protect people from the flood hazard	Maintain health throughout the clean-up period	Packet of flood information placed on doors in flooded neighborhoods. Place information on ottawafloods.org	Floodplain Management	After a flood	City and flooded residents

Annual Evaluation

The City of Ottawa's Flood Commission will meet at least twice a year, to evaluate the Plan and incorporate any needed revisions. The evaluation will cover:

- A review of the projects that were completed
- Progress towards the desired outcomes
- Recommendations regarding projects not completed
- Changes in the target audiences. Staff will draft an update as changes are made by the committee.

The revisions will be submitted to City Council for review and as part of Ottawa's annual recertification package to the Community Rating System.

ILLINOIS

Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

Estimating the Return on Investment of Buyouts: Loss Avoidance Study for the City of Ottawa, Illinois

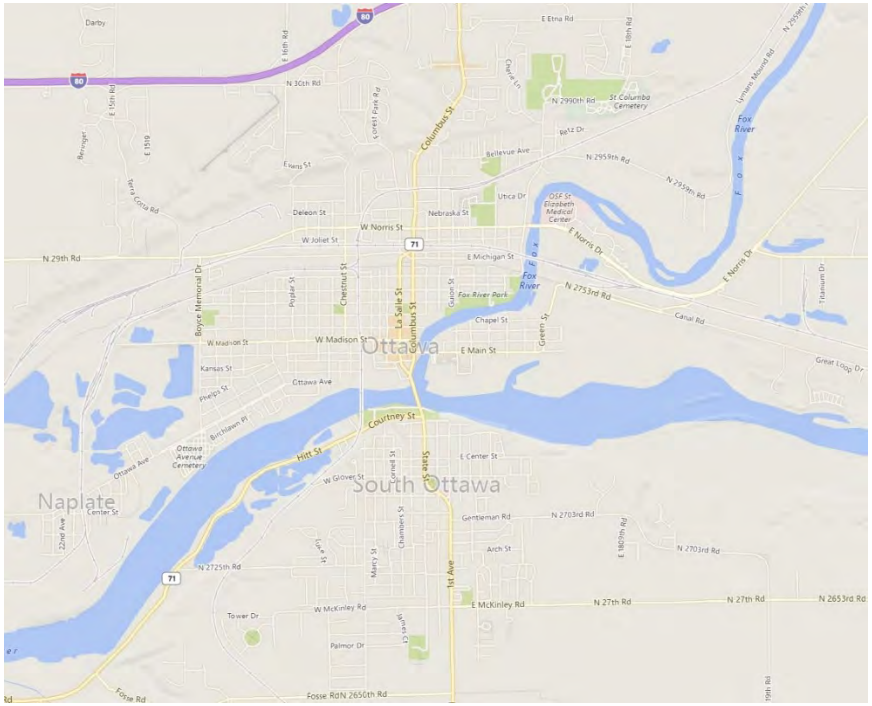
Brad McVay, GISP, CFM

Chris Hanstad, P.E., CFM

Sally McConkey, P.E., CFM, D. WRE.

Overview

- City of Ottawa, IL
  - Population: 18,768 (2016 Estimate. U.S. Census)
  - Confluence of Illinois River and Fox River
- Major Flood in 1996
- Over the past 20 years Ottawa has been working to remove at-risk structures from the floodplain
- Case study
  - Estimate the Return on Investment (ROI) for these buyouts
  - State of Illinois Hazard Mitigation Plan



BCA versus Loss Avoidance

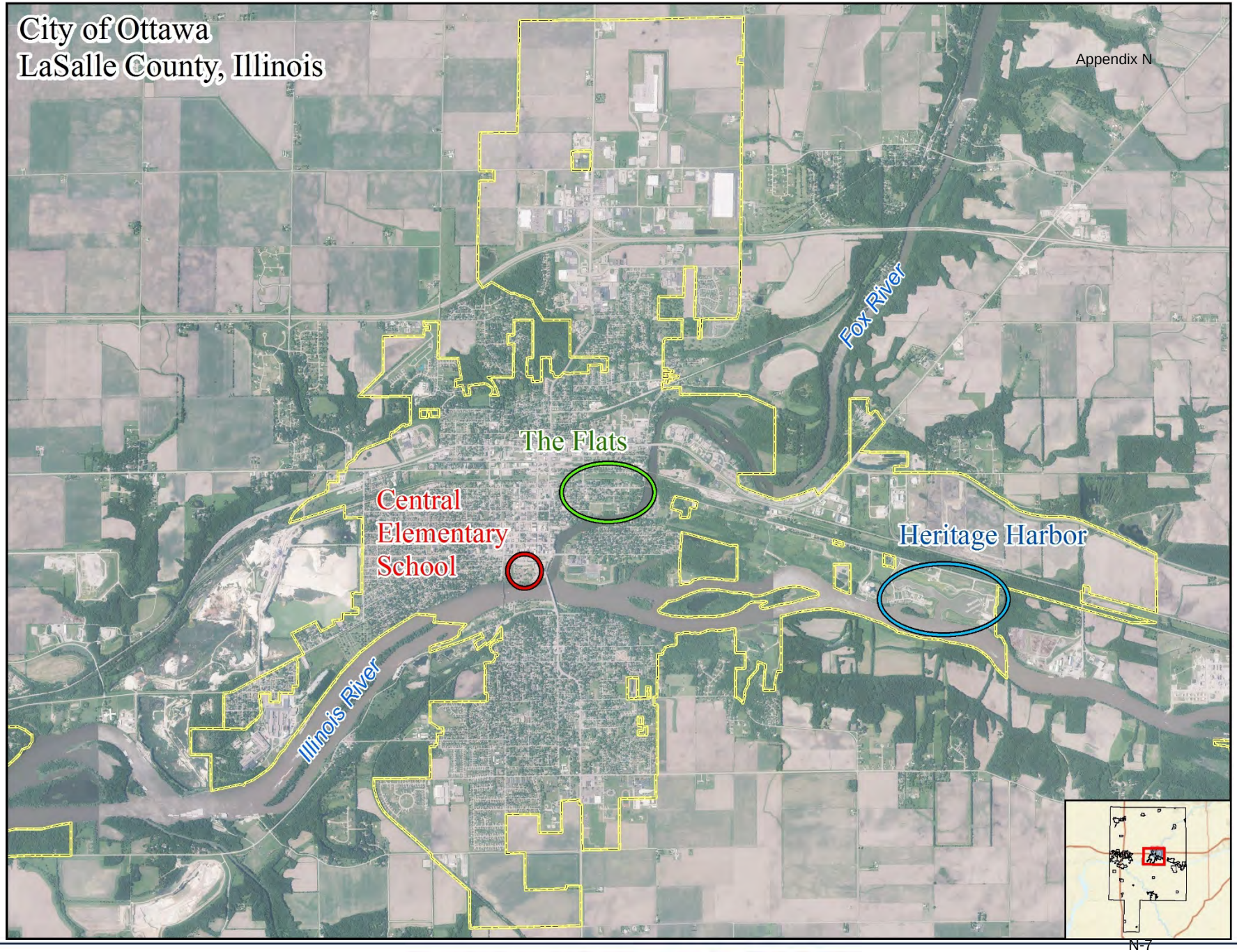
- Benefit-Cost Analysis (BCA) vs. Loss Avoidance
  - BCA
    - Estimate of future benefits of a mitigation project
    - Benefit Cost Ratio (BCR)
    - Total Benefits / Total Cost
  - Loss Avoidance Analysis
    - Estimate of the return on investment from real flood events that have occurred in the past
    - Return on Investment
    - Losses Avoided / Project Investment * 100
- Looking at what could happen vs. what has happened

Project Partners

- Illinois State Water Survey (ISWS)
- Critical Infrastructure Resilience Institute (CIRI)
- Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR)
- Illinois Emergency Management Agency (IEMA)
- City of Ottawa
- LaSalle County

Summary

- **Description of Project Area (City of Ottawa)**
- **History**
  - Flooding
  - Funding
- Gathering and Developing Data for Analysis
- Hazus Analysis
- Timeline of Buyouts and Results
- Central Elementary School and Heritage Harbor
- Obstacles
- Drone Flight


City of Ottawa
LaSalle County, Illinois
Fox River
The Flats
Central
Elementary
School
Heritage Harbor
Illinois River

Recent History of Flooding

- Fox River at Dayton
  - Flood Stage: 12’
  - Moderate: 14’
  - Major: 24’
- Peaks
  - Peak of Record: 24.63’ (Oct. 1954)
  - 7/19/1996: 24.47’
  - 2/22/1997: 21.46’
  - 1/17/2005: 17.53’
  - 8/24/2007: 16.86’
  - 9/14/2008: 21.48’
  - 4/19/2013: 20.74’
  - 2/21/2018: 15.94’

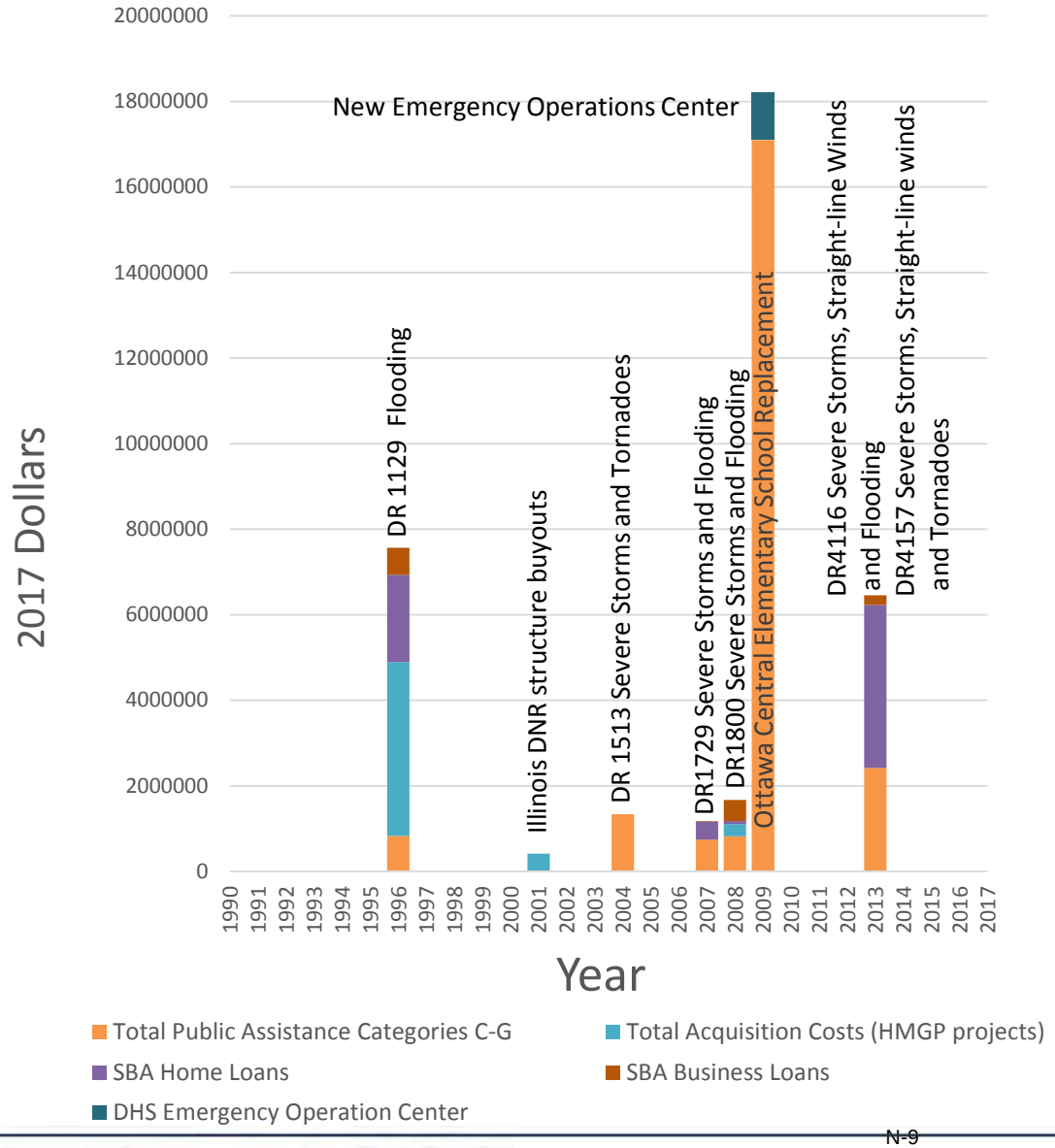
Source: LaSalle Co. FIS, NWS Advanced Hydrologic Prediction Service

- Illinois River at Ottawa
  - Flood Stage: 463’
  - Moderate: 466’
  - Major: 469’
- Peaks
  - Started Recording 2008
  - 9/16/2008: 472.21’
  - 3/11/2009: 470.23’
  - 4/19/2013: 473.72’
  - 2/22/2018: 471.49’

Source: NWS Advanced Hydrologic Prediction Service

Buyout Funding

- Buyout Funding
  - FEMA – Mitigation Programs & Public Assistance
  - IDNR
    - Provided funds for 5 structures in 2001
  - Department of Commerce and Economic Opportunity (DCEO)
  - City of Ottawa



Summary

- Description of City of Ottawa
- History
  - Flooding
  - Buyouts
- **Gathering and Developing Data for Analysis**
- Hazus Analysis
- Timeline of Buyouts and Results
- Central Elementary School and Heritage Harbor
- Obstacles
- Drone Flight

Data for Analysis

- Building Inventory
  - Points representing each buyout structure used in analysis
- Flood Depth Grids
  - Generated from 15 modeled historical flood events between 1996 and 2017
  - Will include Feb. 2018 flood event

Data Sources

- Parcel GIS Shapefile
  - Provided by LaSalle County
- Multiple spreadsheets of buyouts provided by Ron Davis (SHMO)
  - Addresses and valuation data
- Buyout files from IDNR/OWR
- City of Ottawa
  - Mike Sutfin
  - Nancy Stisser

Building Inventory

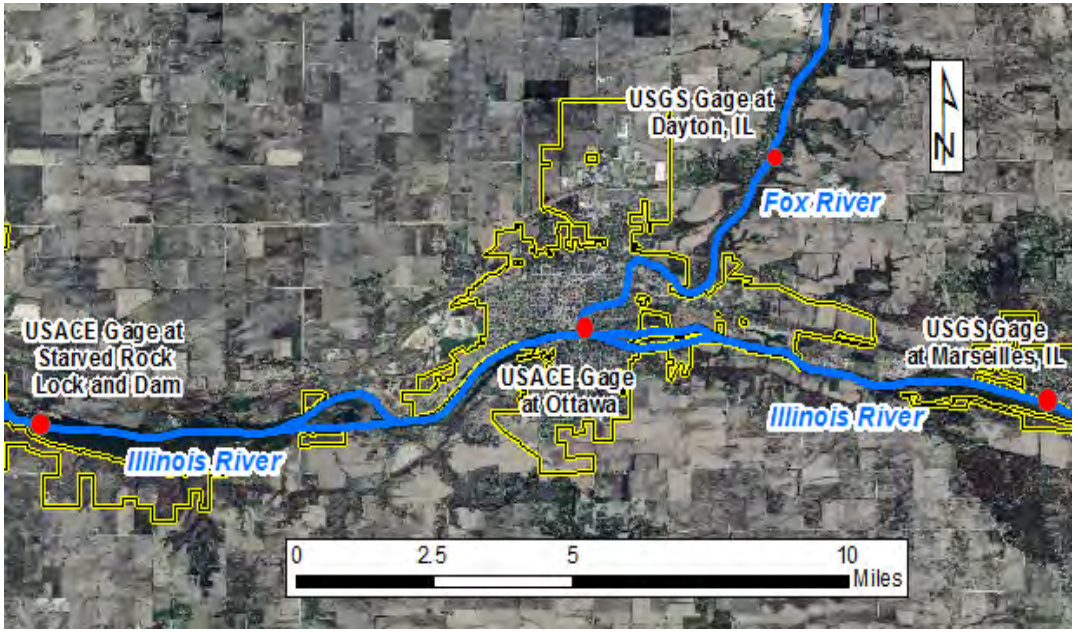
- Converted parcel polygons into points
- Used historical orthophotos to place points where structures used to exist
- Worked with the City of Ottawa to confirm information about the structures
  - Appraisals for each structure
  - Characteristics
- Year of buyouts
  - Assessor’s Website
  - Match Last Sale Price to Acquisition Cost

Building Inventory

- 64 structures identified in this analysis
  - Some are multiple structures on same parcel
- Occupancy
  - 57 Residential
    - 43 Single Family Dwelling
    - 7 Duplexes
    - 1 6-Unit Apartment Building
  - 5 Commercial
  - 1 Industrial
  - Central Elementary School

Ottawa Depth Grids

- Depth grids were created for annual maximum flood events using HEC-RAS models for the Illinois River and Fox River
- USGS gages at Dayton and Marseilles provided peak flows
- USACE gages at Starved Rock and Ottawa provided stage



Ottawa Depth Grids

- The Illinois River HEC-RAS model used the combined flows from the Dayton gage and Marseilles gage along with the Starved Rock stage as a starting elevation.
- The Fox River HEC-RAS model used the Dayton gage flows along with the Ottawa stage as a starting elevation
- The USACE Ottawa gage has only been recording stage since 2008
- For flood events prior to 2008 the Illinois River HEC-RAS model served as an estimate of the Fox River starting elevation at Ottawa.

Summary

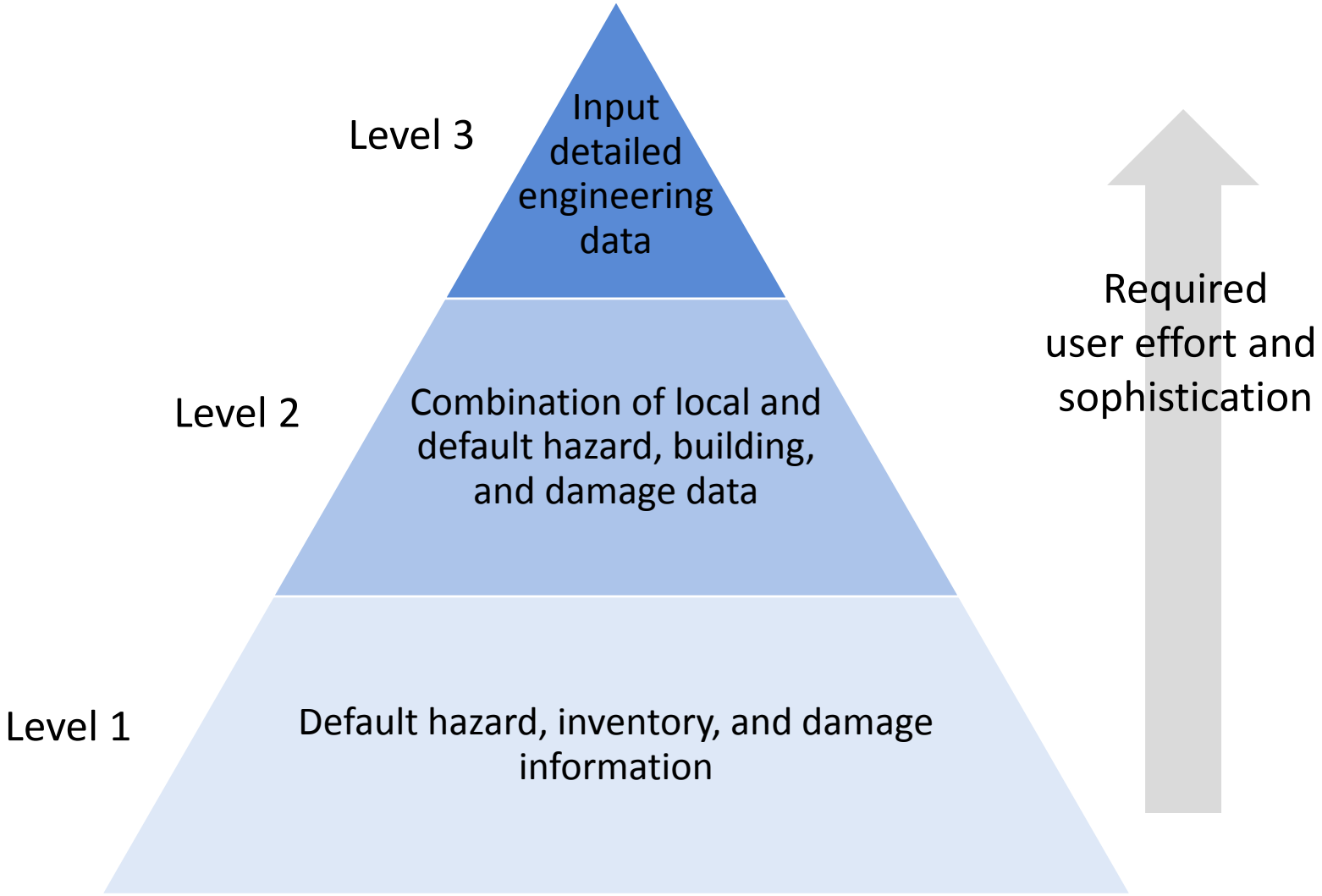
- Description of City of Ottawa
- History
  - Flooding
  - Funding
- Gathering and Developing Data for Analysis
- **Hazus Analysis**
- Timeline of Buyouts and Results
- Central Elementary School and Heritage Harbor
- Obstacles
- Drone Flight

Hazus Loss Estimation Tool

- Loss estimation software designed by FEMA
- Works with ESRI's ArcGIS software
- Purpose is to provide the means to identify and reduce risk from natural hazards
- Four Models:
  - Flood
  - Earthquake
  - Hurricane
  - Tsunami
- Hazus 4.0

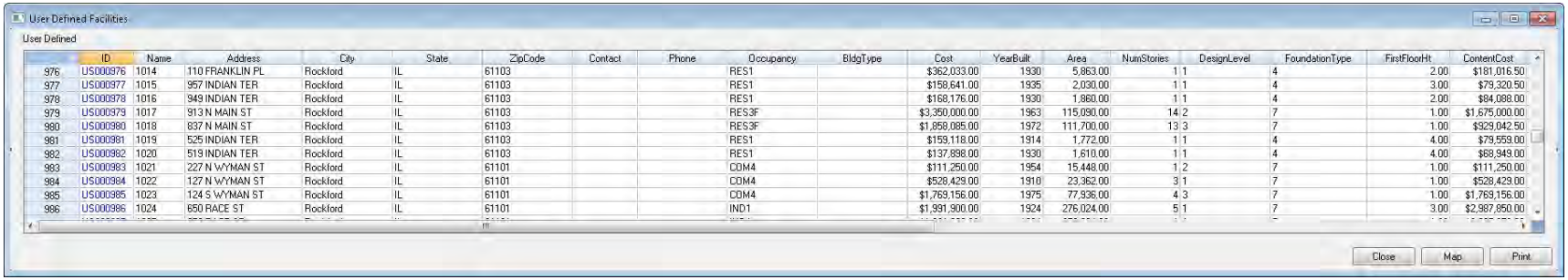
HAZUS
MULTI-HAZARD LOSS ESTIMATION

Levels of analysis



Input for Level 2 Analysis

- Building Inventory
  - Point feature class in a personal gdb
  - Contains the attributes for each buyout structure
  - Lat Long values to represent location
- Flood Depth Grids
  - ESRI Grid format



	ID	Name	Address	City	State	ZipCode	Contact	Phone	Occupancy	BldgType	Cost	YearBuilt	Area	NumStories	DesignLevel	FoundationType	FirstFloorHt	ContentCost
976	US000976	1014	110 FRANKLIN PL	Rockford	IL	61103			RES1		$362,033.00	1930	5,863.00	1	1	4	2.00	$181,016.50
977	US000977	1015	957 INDIAN TER	Rockford	IL	61103			RES1		$158,641.00	1935	2,030.00	1	1	4	3.00	$79,320.50
978	US000978	1016	949 INDIAN TER	Rockford	IL	61103			RES1		$168,176.00	1930	1,860.00	1	1	4	2.00	$84,088.00
979	US000979	1017	913 N MAIN ST	Rockford	IL	61103			RES3F		$3,350,000.00	1963	115,090.00	14	2	7	1.00	$1,675,000.00
980	US000980	1018	837 N MAIN ST	Rockford	IL	61103			RES3F		$1,858,085.00	1972	111,700.00	13	3	7	1.00	$929,042.50
981	US000981	1019	525 INDIAN TER	Rockford	IL	61103			RES1		$159,118.00	1914	1,772.00	1	1	4	4.00	$79,559.00
982	US000982	1020	519 INDIAN TER	Rockford	IL	61103			RES1		$137,898.00	1930	1,610.00	1	1	4	4.00	$68,949.00
983	US000983	1021	227 N WYMAN ST	Rockford	IL	61101			COM4		$111,250.00	1954	15,448.00	1	2	7	1.00	$111,250.00
984	US000984	1022	127 N WYMAN ST	Rockford	IL	61101			COM4		$528,429.00	1910	23,362.00	3	1	7	1.00	$528,429.00
985	US000985	1023	124 S WYMAN ST	Rockford	IL	61101			COM4		$1,769,156.00	1975	77,936.00	4	3	7	1.00	$1,769,156.00
986	US000986	1024	650 RACE ST	Rockford	IL	61101			IND1		$1,991,900.00	1924	276,024.00	5	1	7	3.00	$2,987,850.00

Attributes for Hazus

Appendix N

- Occupancy Class

Residential
Commercial
Industrial
Agricultural
Government
Religious

Hazus Label	Occupancy Class	
		Residential
RES1	Single Family Dwelling	
RES2	Mobile Home	
RES3A	Multi Family Dwelling - Duplex	
RES3B	Multi Family Dwelling – 3-4 Units	
RES3C	Multi Family Dwelling – 5-9 Units	
RES3D	Multi Family Dwelling – 10-19 Units	
RES3E	Multi Family Dwelling – 20-49 Units	
RES3F	Multi Family Dwelling – 50+ Units	
RES4	Temporary Lodging	70
RES5	Institutional Dormitory	
RES6	Nursing Home	8051, 80
		Commercial
COM1	Retail Trade	52, 53, 5
COM2	Wholesale Trade	42, 50, 5
COM3	Personal and Repair Services	72, 75, 7
COM4	Business/Professional/Technical Services	40, 41, 4 78 (excep
COM5	Depository Institutions	60
COM6	Hospital	8062, 80
COM7	Medical Office/Clinic	80 (excep
COM8	Entertainment & Recreation	48, 58, 7
COM9	Theaters	7832, 79
COM10	Parking	
		Industrial
IND1	Heavy	22, 24, 2
IND2	Light	23, 25, 2 39
IND3	Food/Drugs/Chemicals	20, 21, 2
IND4	Metals/Minerals Processing	10, 12, 1
IND5	High Technology	3571, 35
IND6	Construction	15, 16, 1
		Agriculture
AGR1	Agriculture	01, 02, 0

Attributes for Hazus

- Building Cost
  - Appraised Value
- Content Cost
  - Contents of the Structure
  - Couch, Refrigerator, etc…
  - Multiplier based of Occupancy Class of the Structure
- Converted to 2017 U.S. Dollars
  - Bureau of Labor Statistics-Consumer Price Index

Attributes for Hazus

- Provided by City of Ottawa
  - Square Footage
  - Number of Stories
  - Year Built
  - Design Level
    - Based off of Year built
  - Foundation Type

Table 6.2 DesignLevel Field Description

YearBuilt	Design Level
Prior – 1950	1
1950 – 1970	2
Post 1970	3
0 (set to Null)	0

Table 6.3 FoundationType Field Description

Real Foundation Type	FoundationType	Basement
Pile	1	0
Pier	2	0
Solid Wall	3	0
Basement /Yard	4	1
Crawl Space	5	0
Fill	6	0
Slab on Grade	7	0

Attributes for Hazus

- First Floor Height
  - The height of the first floor, in feet, above ground elevation.

ID	Foundation Type	Pre-FIRM	Post-FIRM
1	Pile	7 ft	8 ft
2	Pier (or post and beam)	5 ft	6 ft
3	Solid Wall	7 ft	8 ft
4	Basement (or Garden Level)	4ft	4 ft[1]
5	Crawlspace	3 ft	4 ft
6	Fill	2 ft	2 ft
7	Slab	1 ft	1 ft[1]

Ganiere Appraisal Service
SUBJECT PHOTO ADDENDUM
File No. 801ESUPERIORST
Case No.

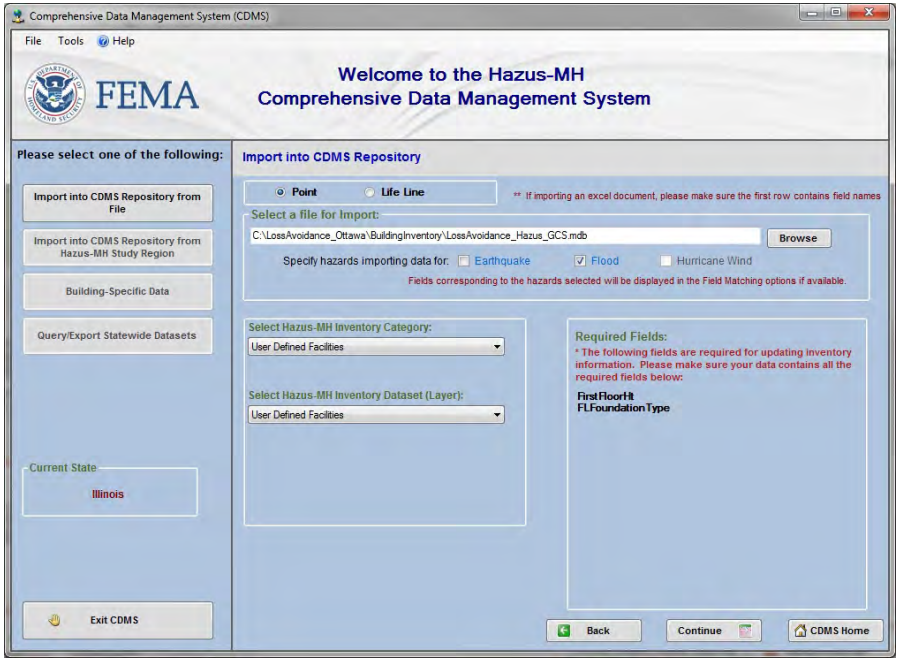
Borrower
Property Address 801 E. Superior St. – RUGER
City Ottawa County LaSalle State IL Zip Code 61350-2435
Lender/Client City of Ottawa Address 301 W. Madison St., Ottawa Il., 61350

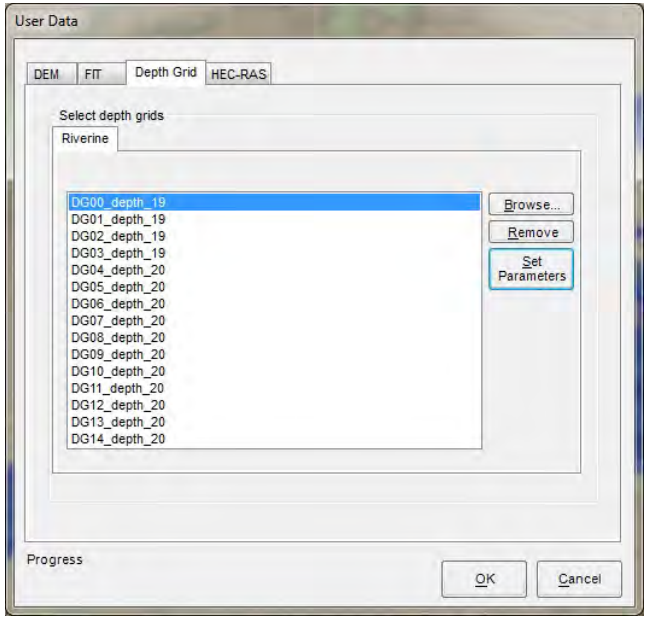
FRONT OF SUBJECT PROPERTY
801 E. Superior St.
Ottawa, IL 61350-2435

REAR OF SUBJECT PROPERTY

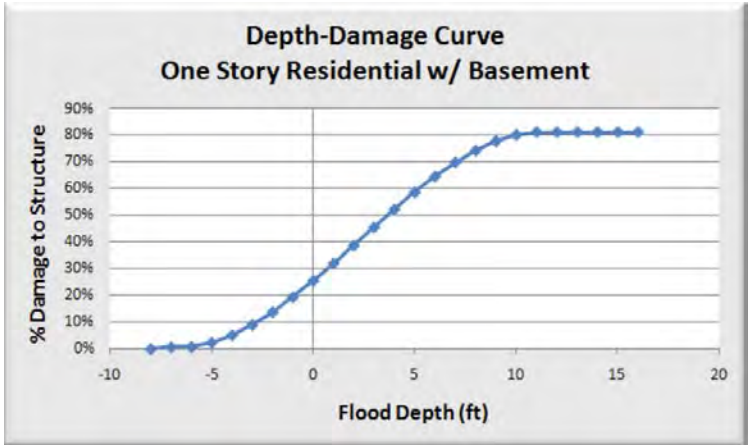
Hazus Analysis

- Import user data into Hazus
  - Building Inventory
    - Import into CDMS
  - Depth Grids

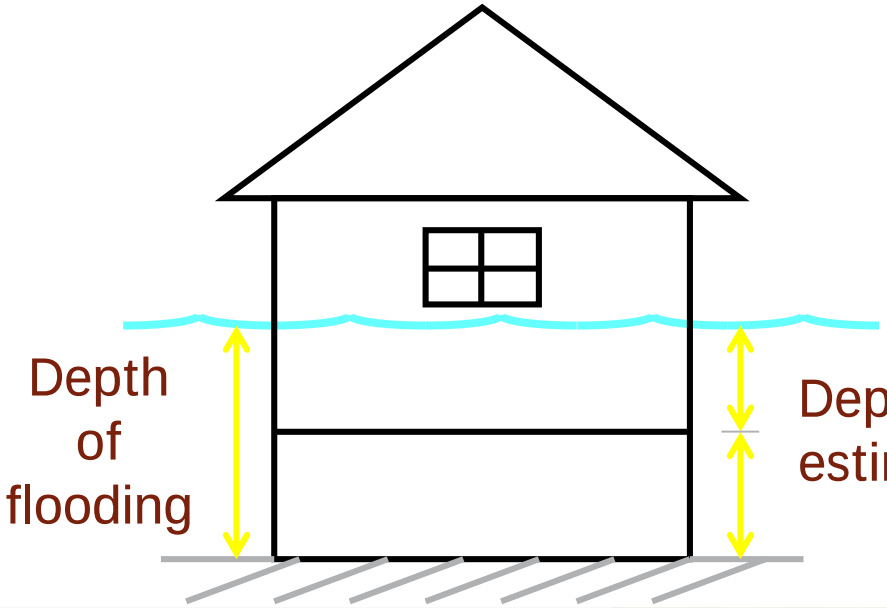




Depth-Damage Curves



- Percentage of damage is calculated for each structure based on the depth of flooding.
  - Based on Attributes of the structures
  - For buildings, first floor height
  - For equipment, height above first floor
- Damage percentage is used to determine loss in USD



Analysis Output

- Building Loss
- Content Loss
- Business Inventory Loss
- Percent Damaged for Structures

Table

UDF_Results_100yr

FacilityName *	UserDefinedFltyId	ControllingHazard	OccupancyClass	BldgCost	BldgDmgPct	BldgLossUSD	ContentCost	ContDmgPct	ContentLossUSD	InventoryLossUSD	NumStories	RETURN_PER	FoundationType	Blc
1238	US000638	R	RES1	88556	33.357424	29540.000397	44278	37.357424	16541.120199	0	1	01pct	7	<Nu
689	US000651	R	RES1	115088	7.923766	9119.303814	57544	5.615844	3231.581271	0	1	01pct	4	<Nu
728	US000690	R	RES3A	179030	4.379396	7840.432659	89515	7.094849	6350.954082	0	1	01pct	4	<Nu
773	US000735	R	RES3F	859940	0	0	429970	0	0	0	2	01pct	7	<Nu
785	US000747	R	RES3B	258589	0	0	129294.5	0	0	0	1	01pct	4	<Nu
815	US000777	R	COM1	320276	3.252928	10418.347681	320276	8.758784	28052.283044	37163.648424	1	01pct	7	<Nu
821	US000783	R	RES1	212262	7	14858.34	106131	0	0	0	1	01pct	4	<Nu
869	US000831	R	RES1	124047	18.355224	22769.104715	62023.5	16.69403	10354.221697	0	1	01pct	4	<Nu
870	US000832	R	RES1	313649	15.709472	49272.601833	156824.5	11.988768	18801.325472	0	1	01pct	4	<Nu
912	US000874	R	RES3D	2610570	0	0	1305285	0	0	0	4	01pct	7	<Nu
915	US000877	R	IND1	2020057	0	0	3030085.5	0	0	0	1	01pct	7	<Nu
923	US000885	R	RES1	86529	7	6057.03	43264.5	0	0	0	1	01pct	4	<Nu

0 (0 out of 838 Selected)

UDF_Results_100yr

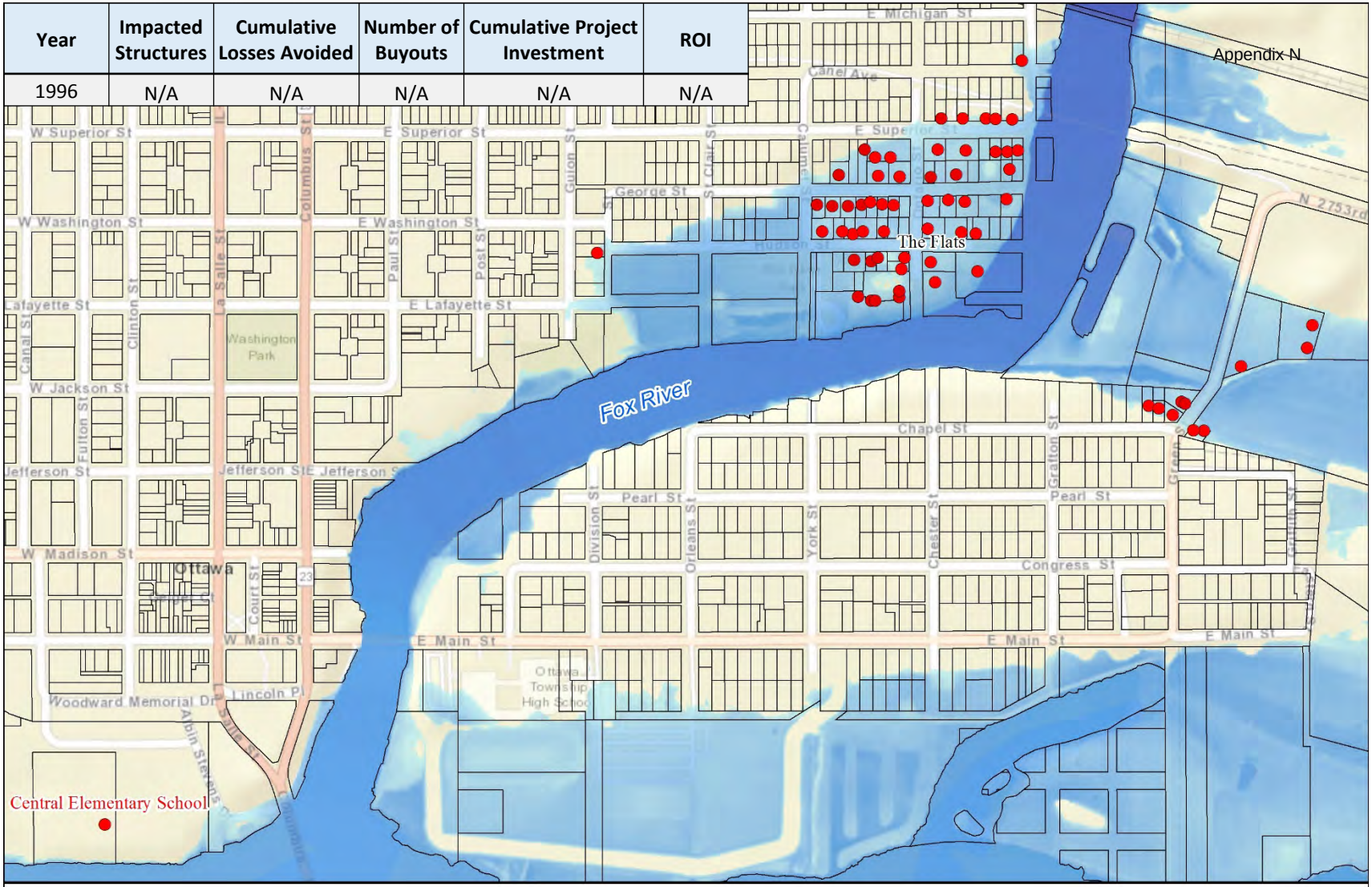
Summary

- Description of City of Ottawa
- History
  - Flooding
  - Funding
- Gathering and Developing Data for Analysis
- Hazus Analysis
- **Timeline of Buyouts and Results**
- Central Elementary School and Heritage Harbor
- Obstacles
- Drone Flight

Disclaimer

- Results are preliminary and are subject to change as the data is refined

Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
1996	N/A	N/A	N/A	N/A	N/A



Buyout Structures 1996

City of Ottawa
LaSalle County, Illinois

- Removed Structure
- Buyout Structure
- Existing Structure
- Parcel

Depth Grid

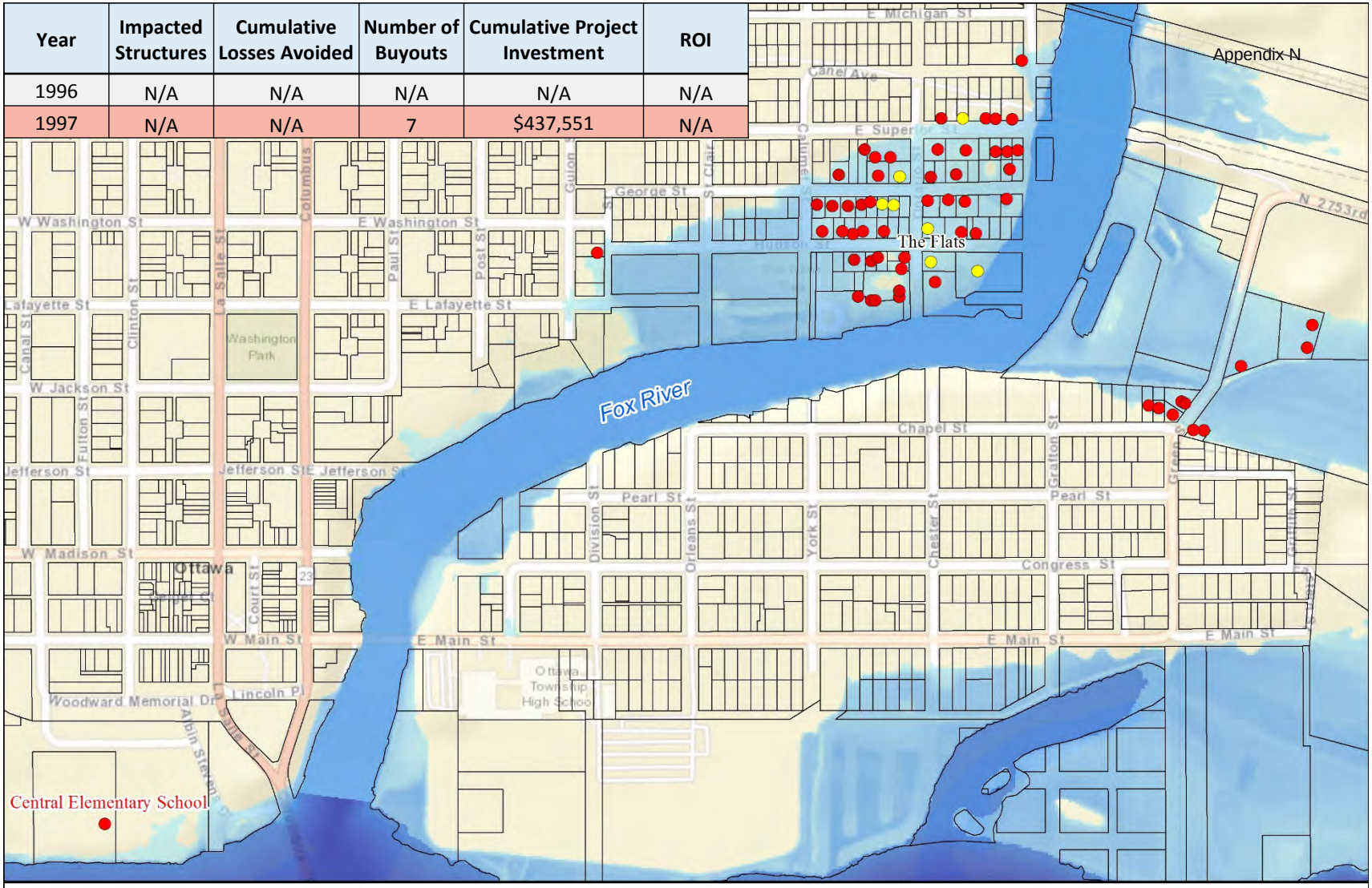
Greater Depth

Lessor Depth

0 250 500 1,000
Feet

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
1996	N/A	N/A	N/A	N/A	N/A
1997	N/A	N/A	7	$437,551	N/A



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Depth Grid

Greater Depth

Lessor Depth

0 250 500 1,000
Feet

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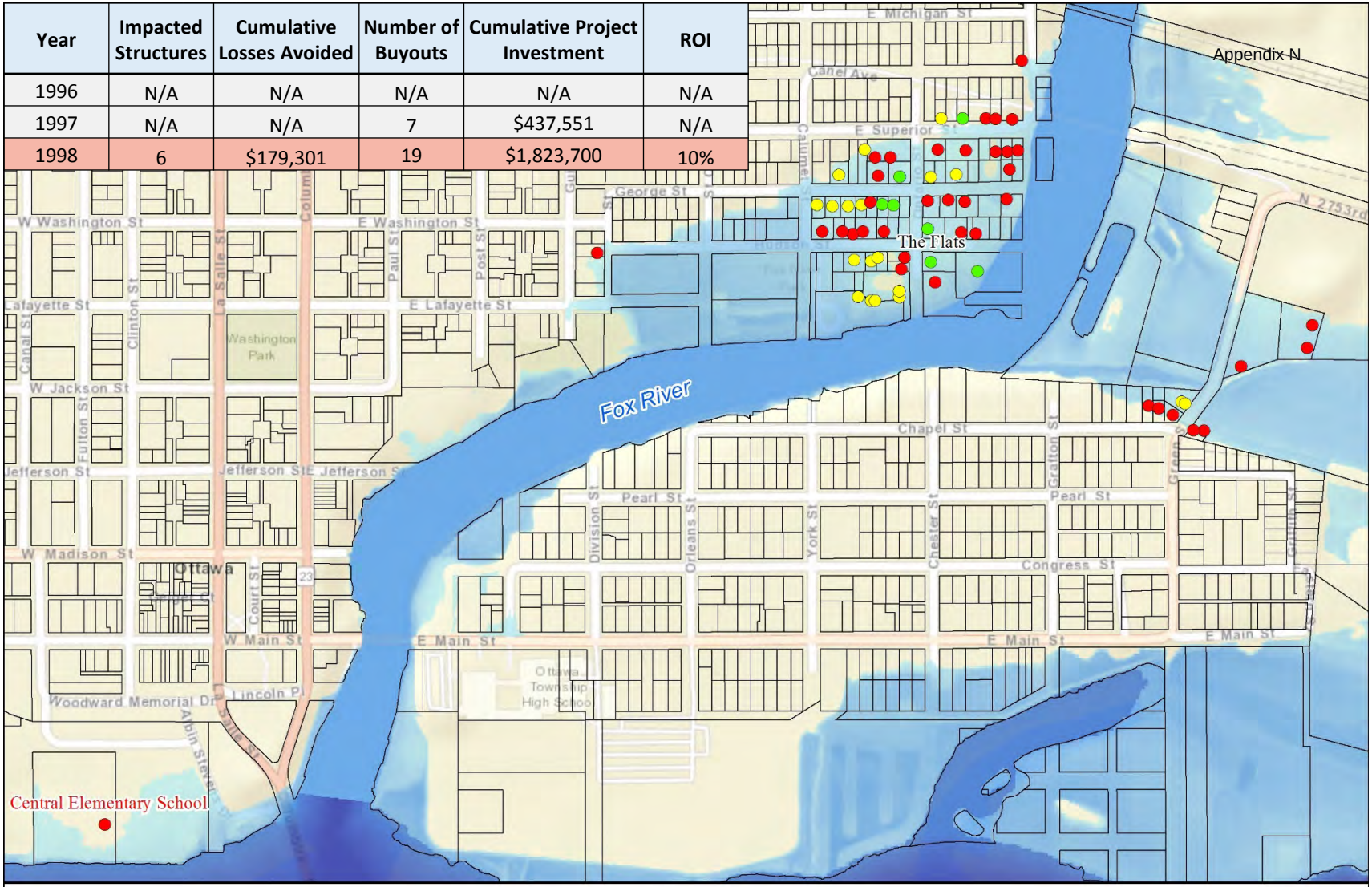
Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
1996	N/A	N/A	N/A	N/A	N/A
1997	N/A	N/A	7	$437,551	N/A
1998	6	$179,301	19	$1,823,700	10%



Buyout Structures
1998

City of Ottawa
LaSalle County, Illinois

- Removed Structure
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Depth Grid

Greater Depth

Lessor Depth

0 250 500 1,000
Feet

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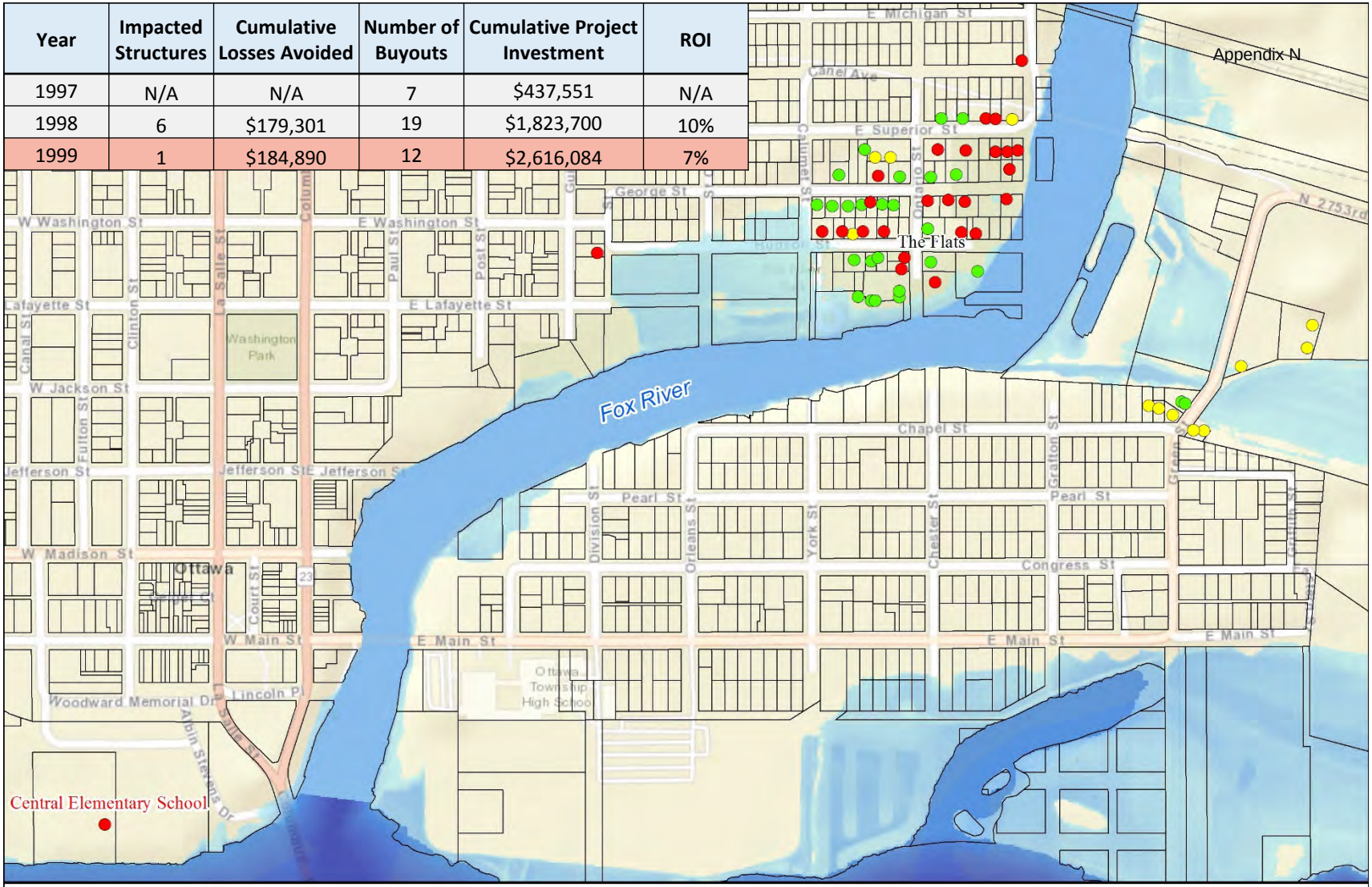
Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
1997	N/A	N/A	7	$437,551	N/A
1998	6	$179,301	19	$1,823,700	10%
1999	1	$184,890	12	$2,616,084	7%



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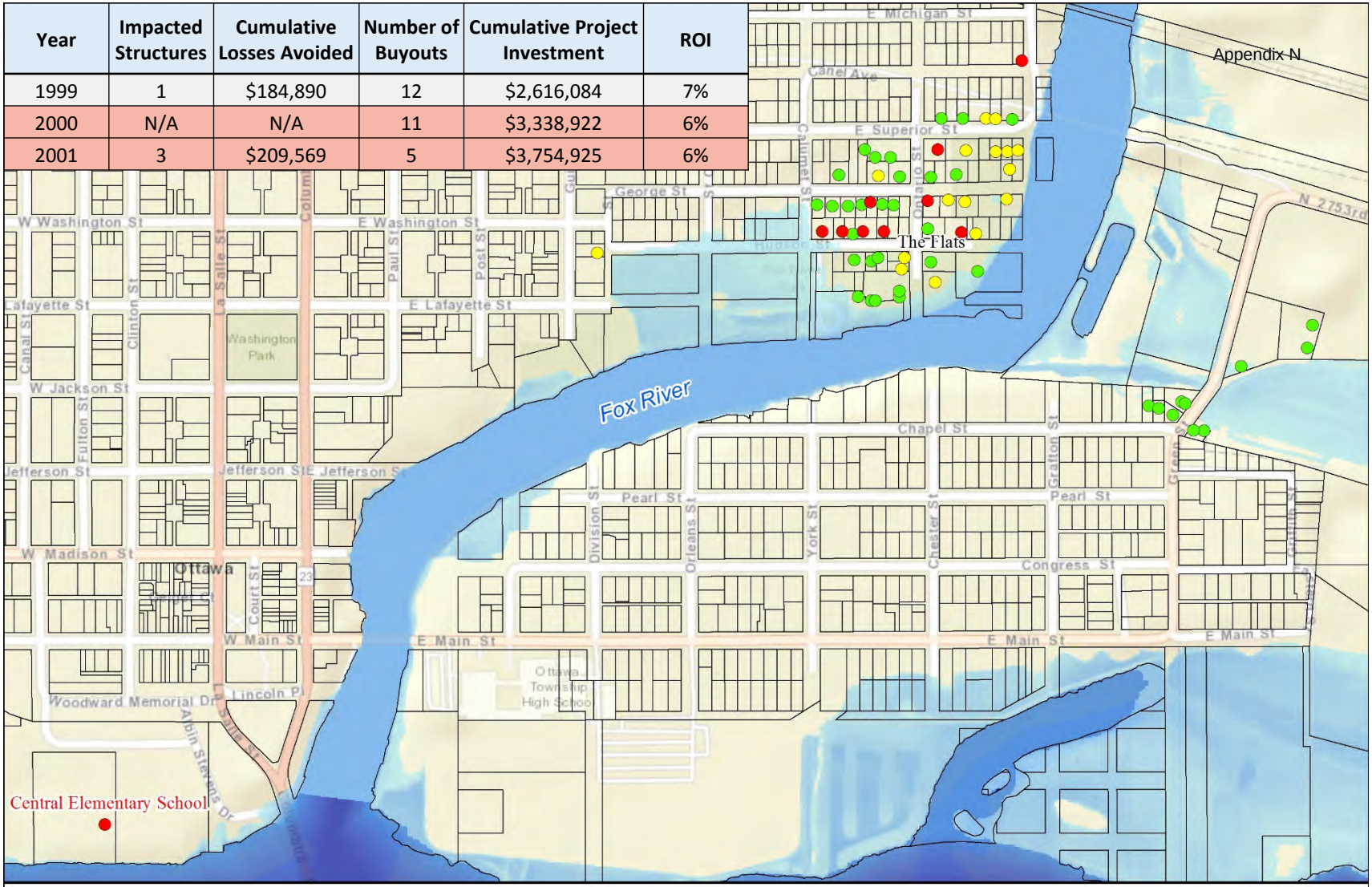
Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
1999	1	$184,890	12	$2,616,084	7%
2000	N/A	N/A	11	$3,338,922	6%
2001	3	$209,569	5	$3,754,925	6%



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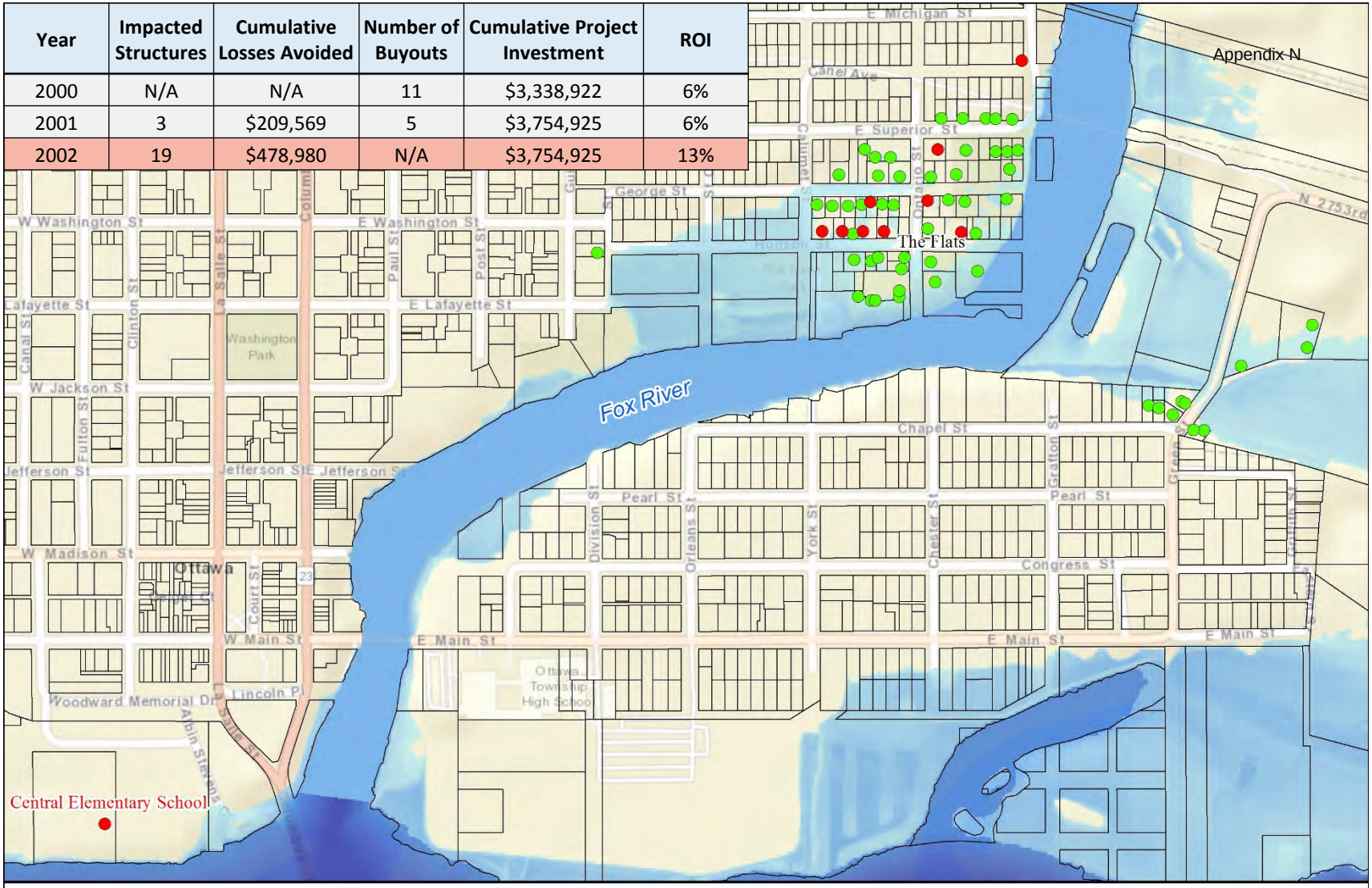
2000	N/A	N/A	11	$3,338,922	6%
2001	3	$209,569	5	$3,754,925	6%
2002	19	$478,980	N/A	$3,754,925	13%



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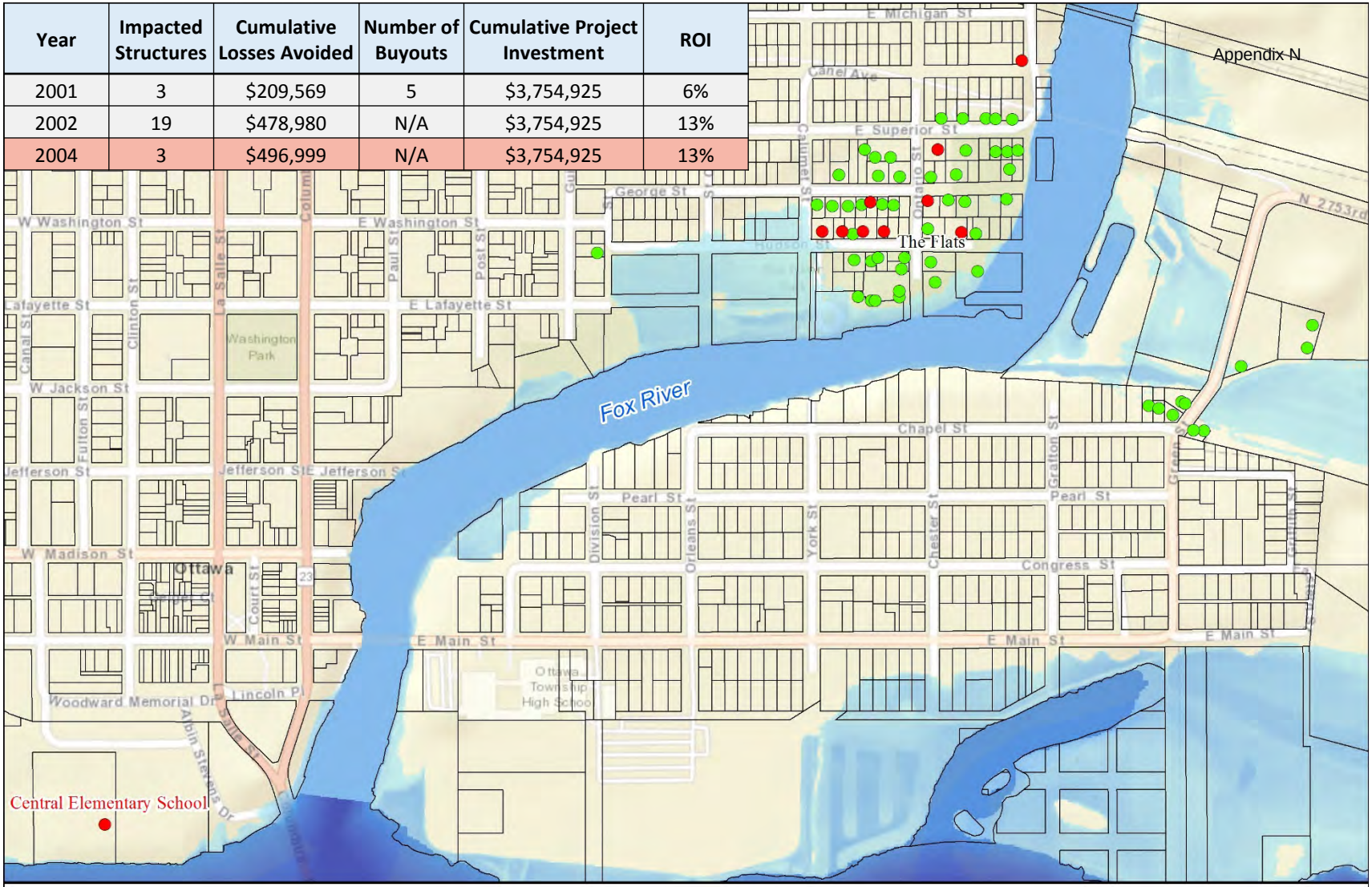
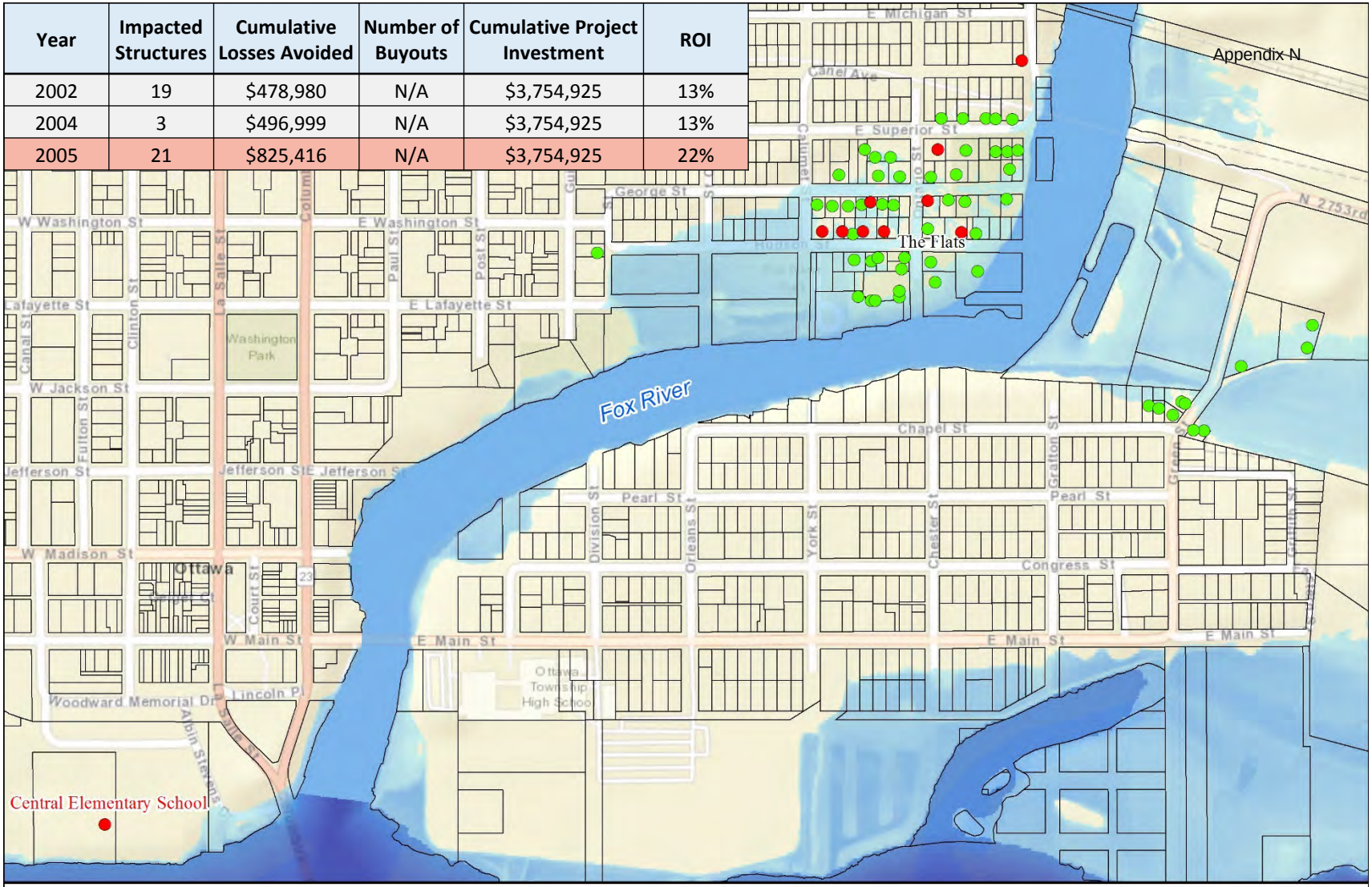
2004	3	$496,999	N/A	$3,754,925	13%



Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
2002	19	$478,980	N/A	$3,754,925	13%
2004	3	$496,999	N/A	$3,754,925	13%
2005	21	$825,416	N/A	$3,754,925	22%



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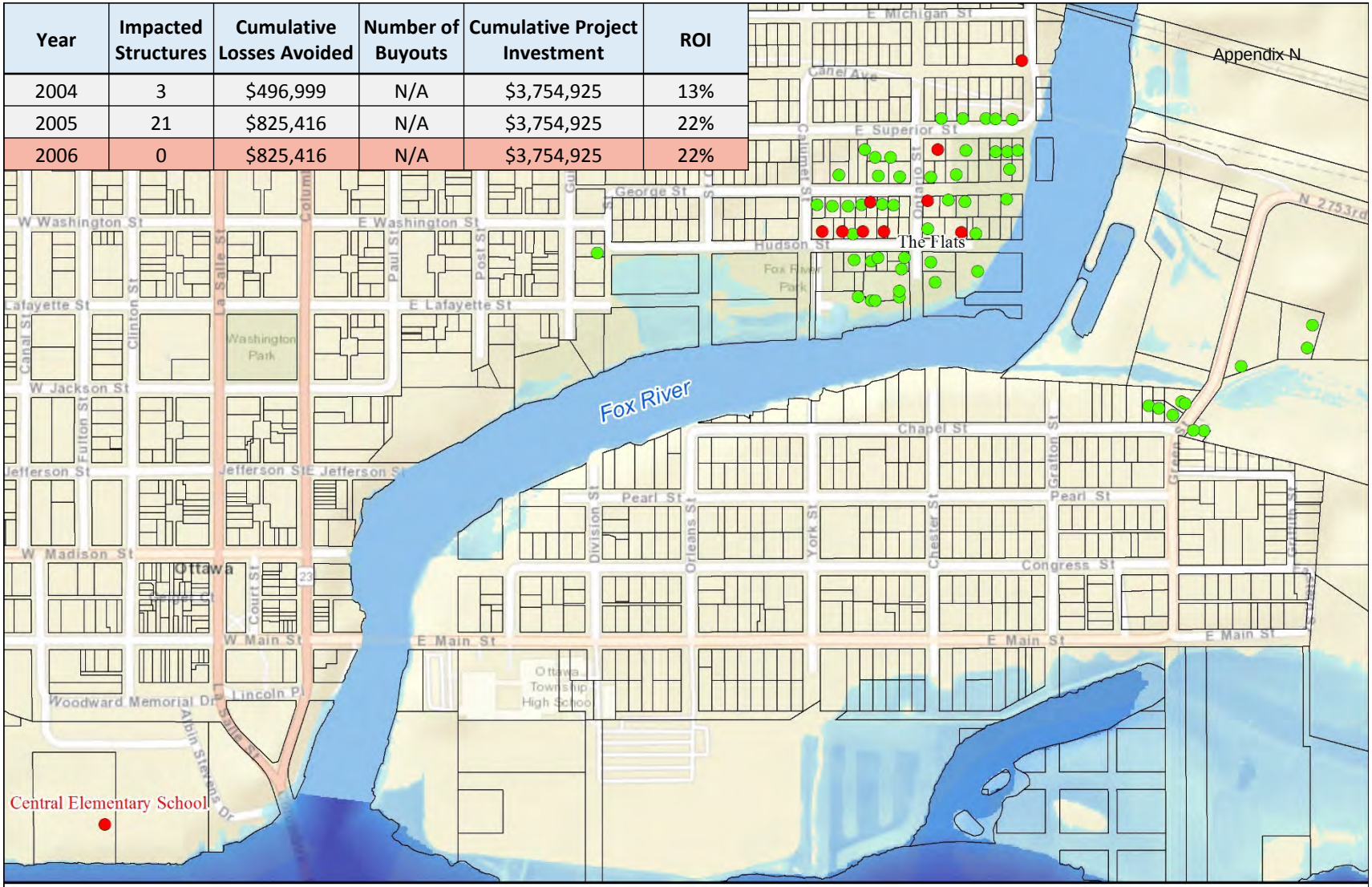


Buyout Structures 2006

City of Ottawa
LaSalle County, Illinois

- Removed Structure
- Buyout Structure
- Existing Structure
- Parcel

Depth Grid

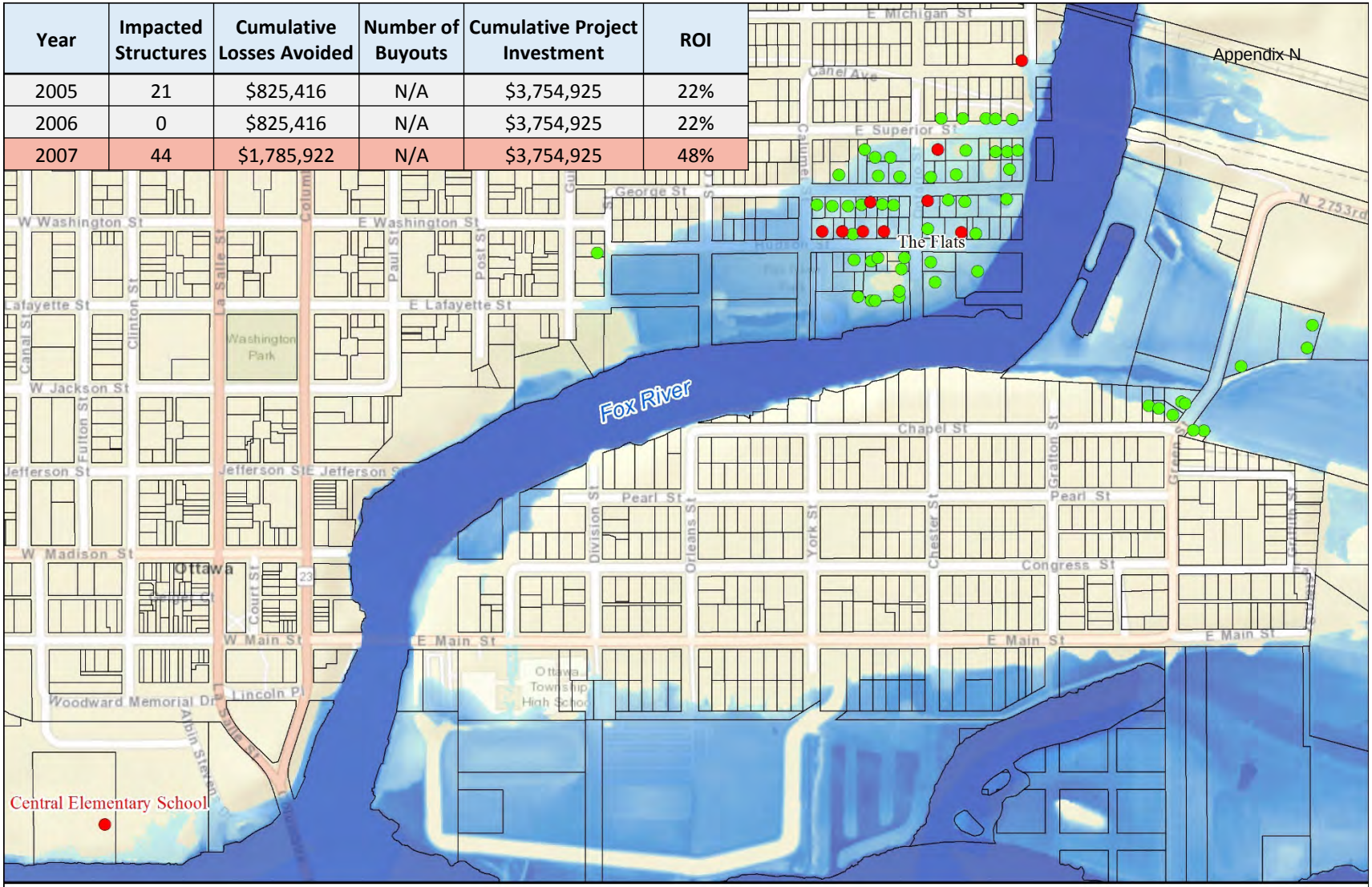
Greater Depth

Lessor Depth

0 250 500 1,000
Feet

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
2005	21	$825,416	N/A	$3,754,925	22%
2006	0	$825,416	N/A	$3,754,925	22%
2007	44	$1,785,922	N/A	$3,754,925	48%



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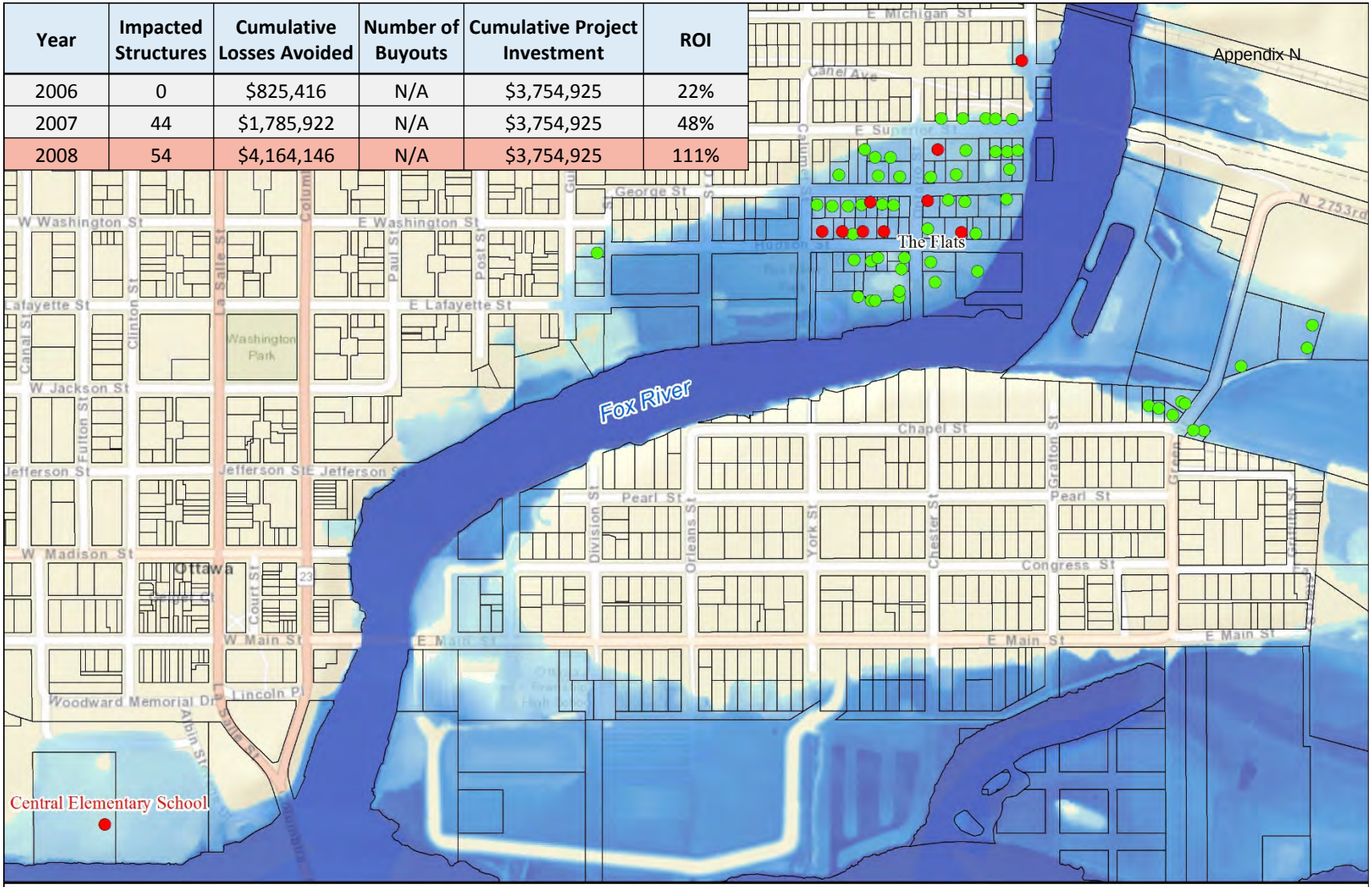
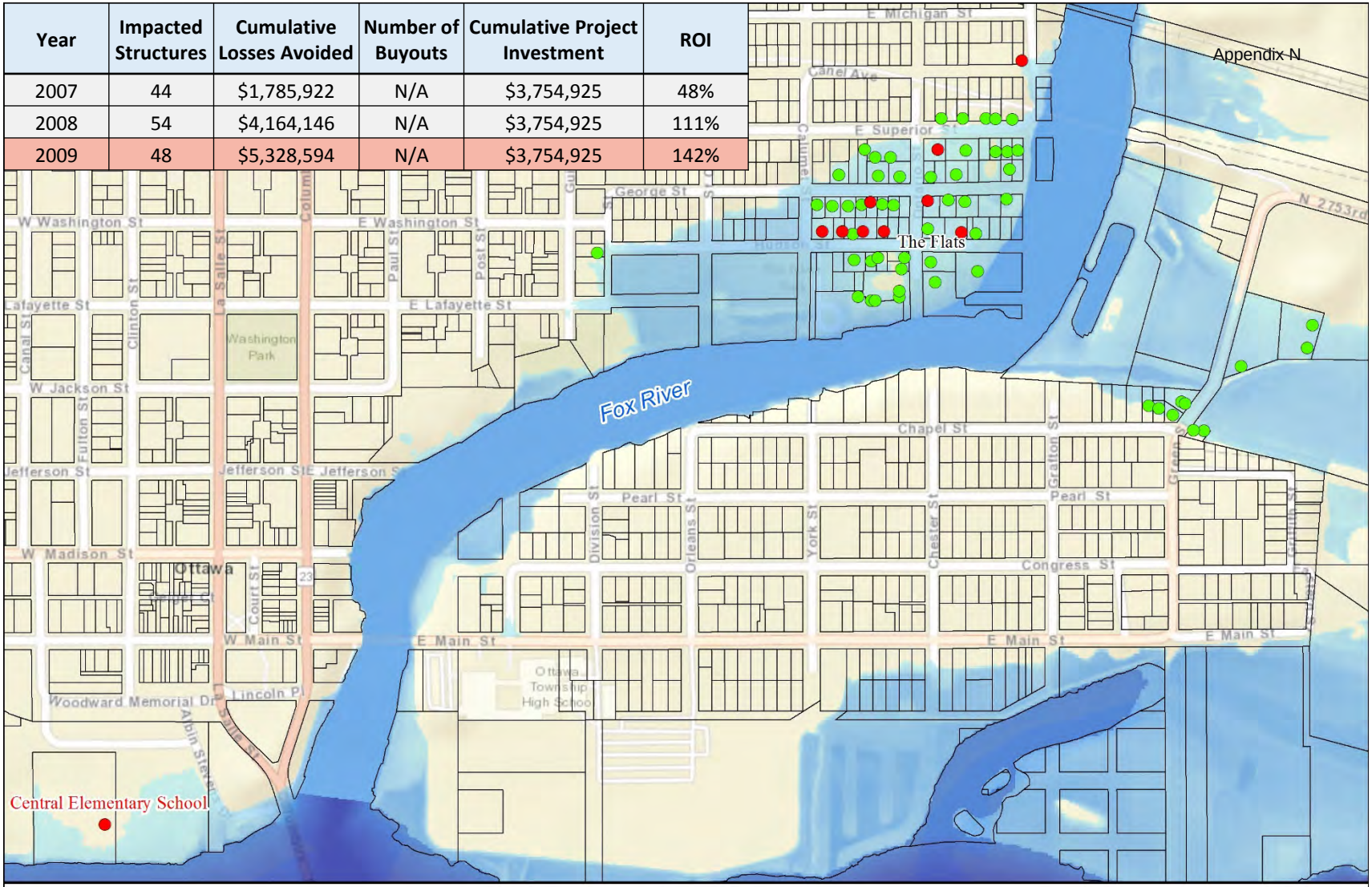
Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
2006	0	$825,416	N/A	$3,754,925	22%
2007	44	$1,785,922	N/A	$3,754,925	48%
2008	54	$4,164,146	N/A	$3,754,925	111%



Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
2007	44	$1,785,922	N/A	$3,754,925	48%
2008	54	$4,164,146	N/A	$3,754,925	111%
2009	48	$5,328,594	N/A	$3,754,925	142%



Buyout Structures 2009

City of Ottawa
LaSalle County, Illinois

- Removed Structure
- Buyout Structure
- Existing Structure
- Parcel

Depth Grid

Greater Depth

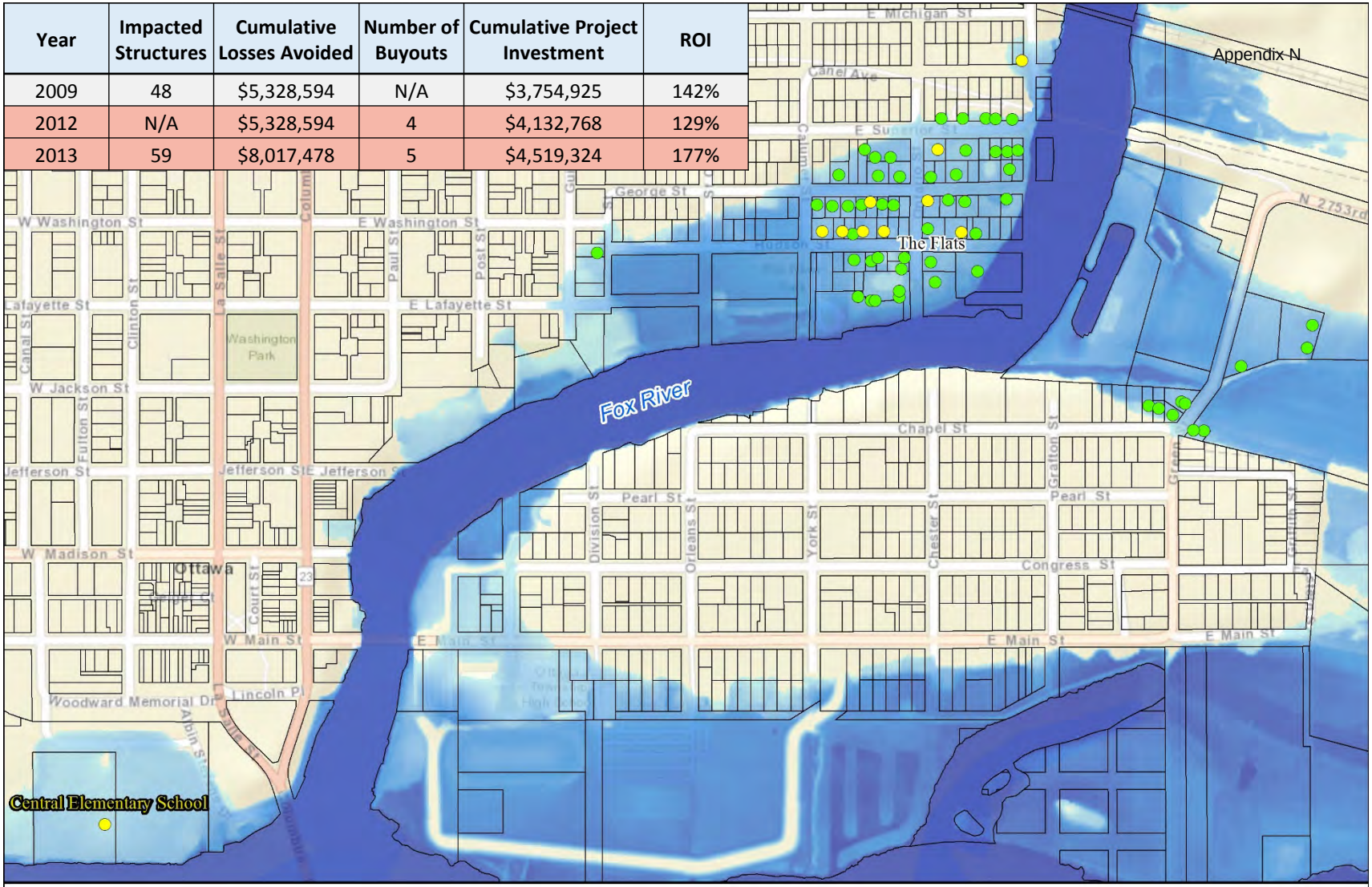
Lessor Depth

N
W E
S

0 250 500 1,000
Feet

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
2009	48	$5,328,594	N/A	$3,754,925	142%
2012	N/A	$5,328,594	4	$4,132,768	129%
2013	59	$8,017,478	5	$4,519,324	177%



Buyout Structures
2013

City of Ottawa
LaSalle County, Illinois

- Removed Structure
- Buyout Structure
- Existing Structure
- Parcel

Depth Grid

Greater Depth

Lessor Depth

0 250 500 1,000
Feet

N
W E
S

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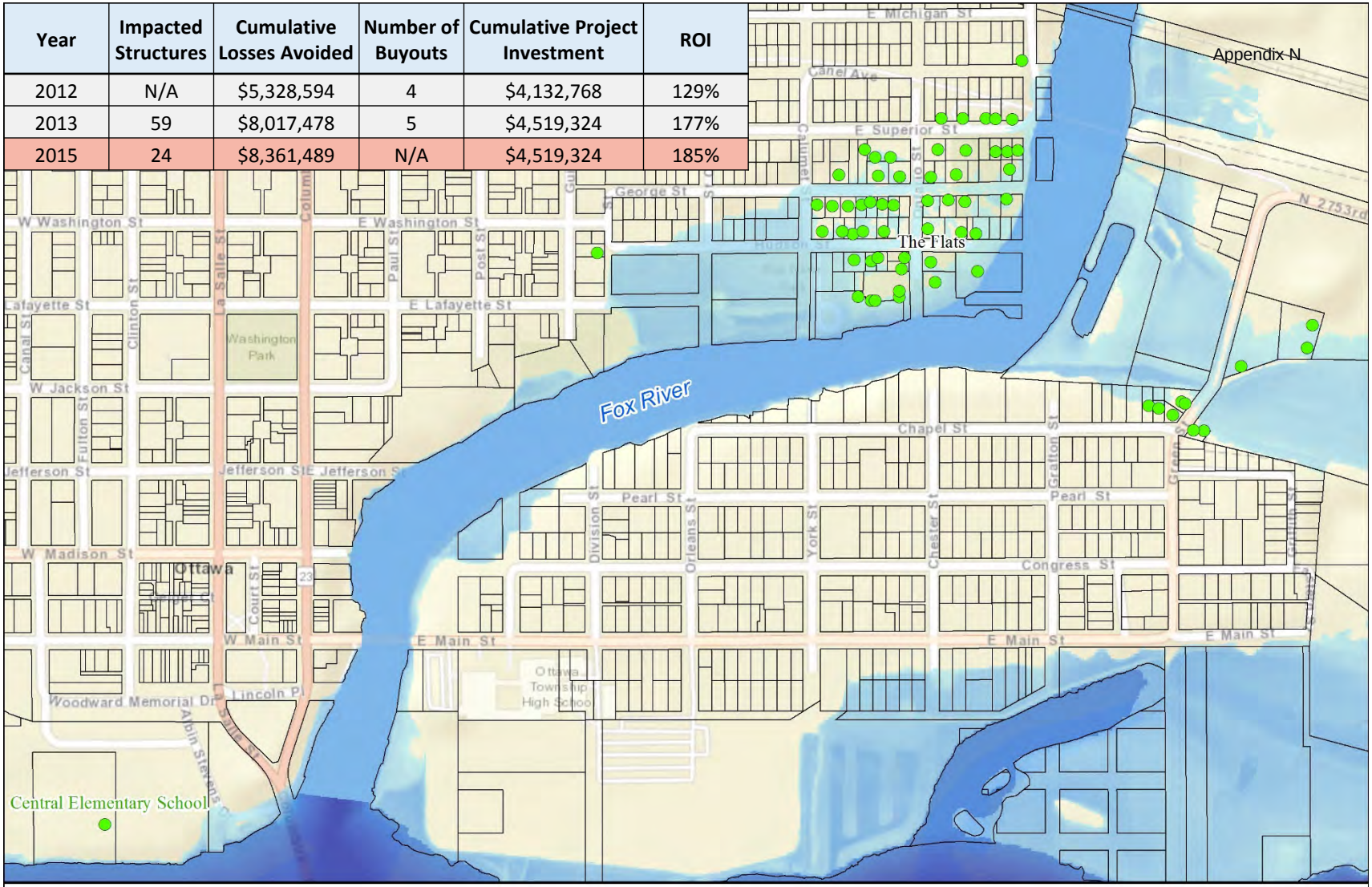
2012	N/A	$5,328,594	4	$4,132,768	129%
2013	59	$8,017,478	5	$4,519,324	177%
2015	24	$8,361,489	N/A	$4,519,324	185%



Buyout Structures 2015

City of Ottawa
LaSalle County, Illinois

- Removed Structure
- Buyout Structure
- Existing Structure
- Parcel

Depth Grid

Greater Depth

Lessor Depth

0 250 500 1,000
Feet

N
W E
S

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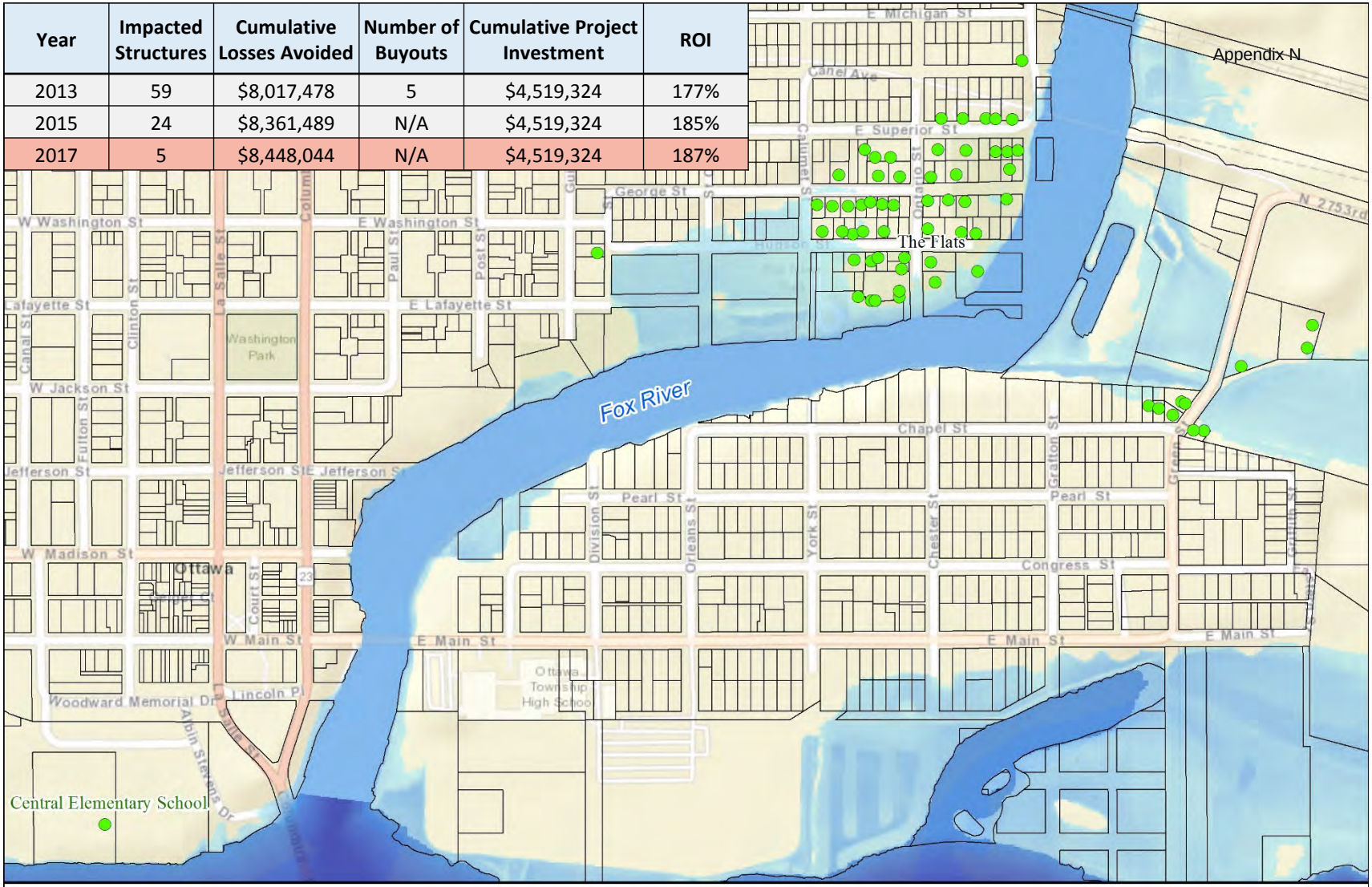
2017	5	$8,448,044	N/A	$4,519,324	187%



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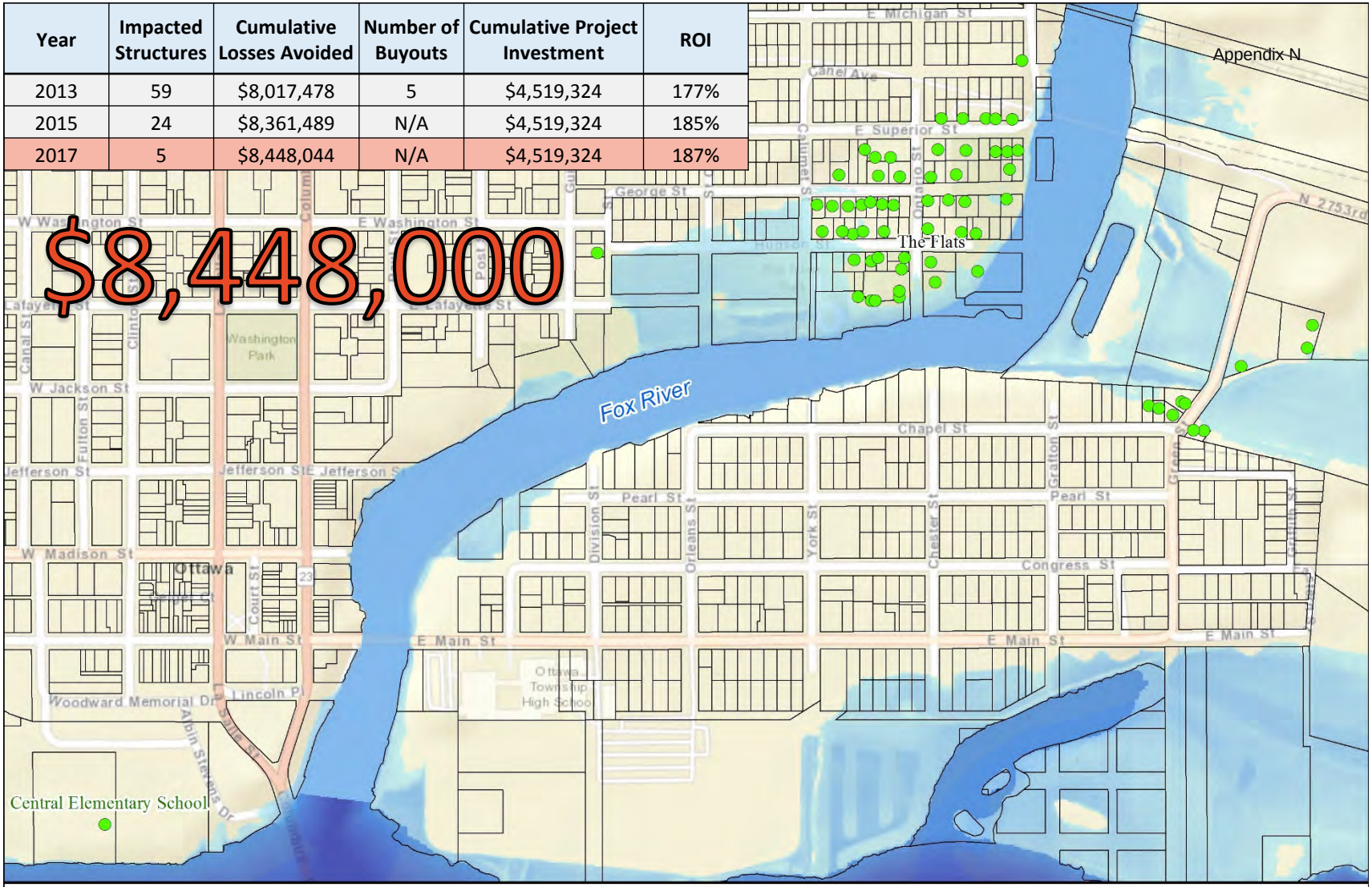
$8,448,000



Buyout Structures 2017

City of Ottawa
LaSalle County, Illinois

- Removed Structure
- Buyout Structure
- Existing Structure
- Parcel

Depth Grid

Greater Depth

Lessor Depth

0 250 500 1,000
Feet

N
W E
S

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Year	Impacted Structures	Cumulative Losses Avoided	Number of Buyouts	Cumulative Project Investment	ROI
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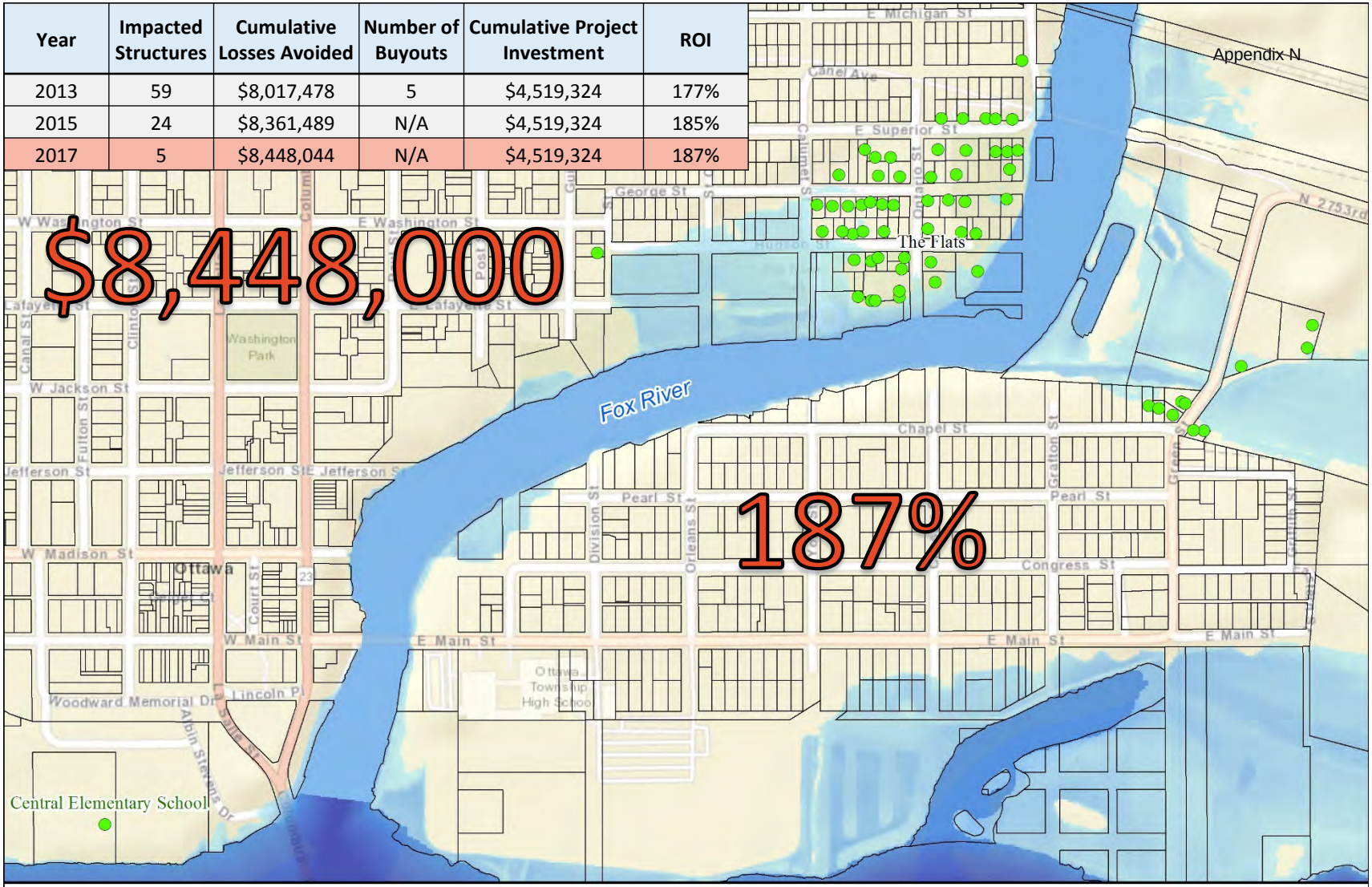

Current Conditions

- Fox River Park
- Playground
- Green Space

March 25th, 1998

September 20th, 2015

Summary

- Description of City of Ottawa
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- Obstacles
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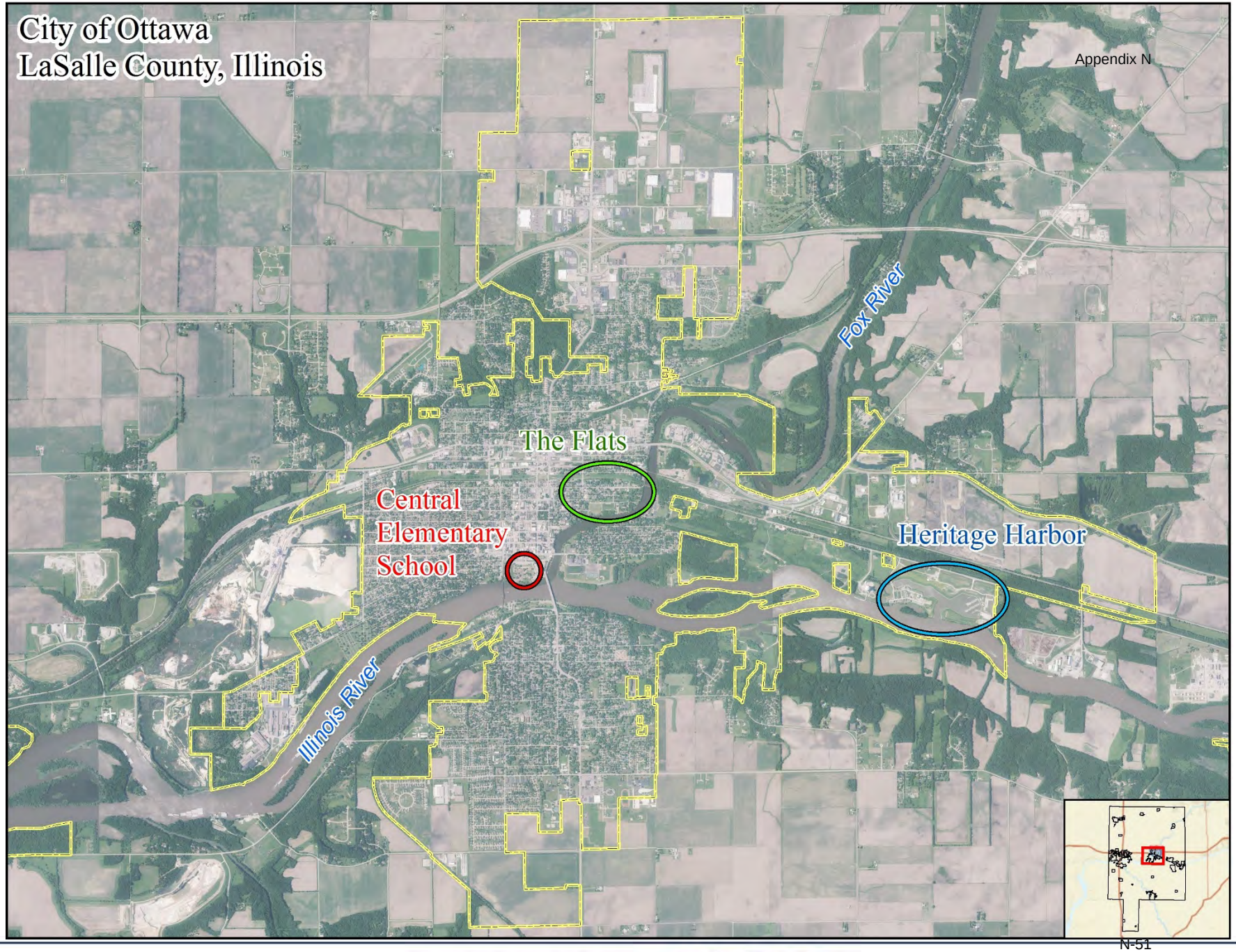
City of Ottawa
LaSalle County, Illinois
Fox River
The Flats
Central
Elementary
School
Heritage Harbor
Illinois River

Central Elementary School

- Flooded Sept. 2008
- Demolished in August, 2013
- New School Built
- What if the new school was built in the location of the original?
- Modeled flood event is April, 2013
- Replacement cost of $22 million adjusted to 2017 dollars
- Funds awarded
  - FEMA $12 million
  - Illinois $10 million

Year of Flood Event	Structure	Losses Avoided	Project Investment
2013	Central Elementary School	**$7,914,420**	**$23,132,010**

Heritage Harbor

- High value Condos
- New construction required to be 2 feet above the 1% annual chance base flood elevation.
- Building Value
  - Estimated Fair Market Value using 2017 assessor's data.
  - Assessed Building Value multiplied by 3

Heritage Harbor

- Hazus Analysis
  - Depth Grids
    - 1% Annual Chance Flood event
  - Ran analysis with two versions of each structure
    - With current elevation
    - With simulated elevation 2’ below current conditions

Event Type	Projected Structures impacted without 2' Higher Elevation Requirement	Total Loss without 2' Higher Elevation Requirement	Total Loss with Current Construction	Total Losses Avoided
1% Annual Chance Flood (100 year)	23	$2,124,200	$0	**$2,124,200**

Summary

- Description of City of Ottawa
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- Hazus Analysis
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- **Obstacles**
- **Drone Flight**

Obstacles and Limitations

- Results are preliminary and are subject to change as the data is refined
- Structures no longer exist
- Combining data from a variety of different sources in one building inventory
- The USACE Ottawa gage has only been recording stage since 2008
- Representing structures as points instead of polygons
- Accounting for all of the associated costs
  - Buyouts
    - Taxes, asbestos removal, etc.
  - Flood Losses
    - Displaced population, loss of service, etc.
- Results are Estimates

Thanks!

Questions?

Brad McVay

bmcvay@Illinois.edu