

Willow Springs

Hazard Mitigation Plan Point of Contact

Primary Point of Contact	Alternate Point of Contact
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Jurisdiction Profile

The following is a summary of key information about the jurisdiction and its history:

Date of Incorporation: 1892

Current Population: The 2020 U.S. Census population was 5,857. The 2022 U.S. Census estimate indicated the population was 5,745.

Population Growth: The overall population has increased by 1.36% between 2018 and 2022.

Location and Description: The Village is located in the northern-most area of the southwest suburbs and the eastern-most portion of the City of Chicago's western suburbs. The south and west areas of the Village are surrounded by the Cook County Forest Preserves, with Flag Creek, Des Plaines River, Chicago Sanitary and Ship Canal and the Cal-Sag Channel flowing throughout.

Brief History: The Village developed along the waterways by immigrants who located there as they worked to dig out the Cal-Sag Channel. A Civilian Conservation Corps Camp Site remains a marker of work along the Channel and the adjoining Forest Preserves.

Climate: High and low seasonal temperature averages for the Village are the following: Winter: 34 – 18°F; Spring: 56 – 44°F; Summer: 78 – 69°F; and Fall: 59 – 48°F.

Governing Body Format: The Village of Willow Springs has a Mayor-Council form of government. In this form of government, six (6) Trustees are elected at large to serve all areas of the Village. This body will assume responsibility for the adoption of this plan while the Village Administrator will oversee its implementation.

Development Trends: The Village is primarily a residential community with a business district along Archer Avenue.

Capability Assessment

The assessment of the jurisdiction's legal and regulatory capabilities is presented in the *Legal and*

Regulatory Capability Table below. The assessment of the jurisdiction's fiscal capabilities is presented in the *Fiscal Capability Table* below. The assessment of the jurisdiction's administrative and technical capabilities is presented in the *Administrative and Technical Capability Table* below. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in the *National Flood Insurance Program Compliance Table* below. Classifications under various community mitigation programs are presented in the *Community Classifications Table* below.

TABLE: LEGAL AND REGULATORY CAPABILITY					
	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Codes, Ordinances & Requirements					
Building Code	Yes	No	No	Yes	In accordance with Public Act 096-0704, Illinois has adopted the IBC as its state Building Code
Zonings	Yes	No	No	Yes	(65 ILCS 5/) Illinois Municipal Code.
Subdivisions	Yes	No	No	No	
Stormwater Management	No	No	Yes	Yes	State regulates industrial activity from Construction sites 1 acre or larger under section 402 CWA.
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	Yes	Yes	(765 ILCS 77/) Residential Real Property Disclosure Act.
Growth Management	Yes	No	No	No	91-O-10, 98-O-26
Site Plan Review	Yes	No	No	No	Title 9A of Village Code
Public Health and Safety	No	No	Yes	Yes	Cook County Board of Health
Environmental Protection	No	No	No	No	
Planning Documents					
General or Comprehensive Plan	No	No	No	No	
<i>Is the plan equipped to provide integration to this mitigation plan?</i>					N/A

Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	No	No	Yes	No	Regional Stormwater impacts are managed by MWRD. The Village lies within the Cal-Sag Channel watershed planning area of MWRD's comprehensive Stormwater Master Planning Program
Capital Improvement Plan	Yes	No	No	No	99-O-7, 24-O-06
<i>What types of capital facilities does the plan address?</i>					Village owned facilities and infrastructure
<i>How often is the plan revised/updated?</i>					6-year CIP, update/reviewed annually
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	No	No	Yes	Yes	The Economic Development Commission is charged with reviewing all economic development related programs and incentives including tax incentives offered through the Cook County 6b program.
Shoreline Management Plan	No	No	No	No	
Response/Recovery Planning					
Comprehensive Emergency Management Plan	No	No	Yes	Yes	Cook County EMRS

Threat and Hazard Identification and Risk Assessment	No	No	Yes	No	Cook County EMRS Preparing THIRA
Terrorism Plan	No	No	Yes	Yes	Cook County EMRS
Post-Disaster Recovery Plan	No	No	No	No	Cook County EMRS
Continuity of Operations Plan	No	No	Yes	No	Cook County EMRS
Public Health Plans	No	No	Yes	No	Cook County DPH

TABLE: FISCAL CAPABILITY	
Financial Resources	Accessible or Eligible to Use?
Community Development Block Grants	Yes
Capital Improvements Project Funding	Yes
Authority to Levy Taxes for Specific Purposes	Yes
User Fees for Water, Sewer, Gas or Electric Service	Yes-sewer
Incur Debt through General Obligation Bonds	Yes
Incur Debt through Special Tax Bonds	Yes
Incur Debt through Private Activity Bonds	No
Withhold Public Expenditures in Hazard-Prone Areas	No
State Sponsored Grant Programs	Yes
Development Impact Fees for Homebuyers or Developers	Yes
Other	

TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY		
Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Village Engineer
Engineers or professionals trained in building or infrastructure construction practices	Yes	Village Engineer
Planners or engineers with an understanding of natural hazards	Yes	Village Engineer
Staff with training in benefit/cost analysis	Yes	Village Engineer
Surveyors	No	
Personnel skilled or trained in GIS applications	Yes	Village Engineer
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	Cook County EMRS
Grant writers	Yes	Village Engineer

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your jurisdiction?	Building
Who is your jurisdiction's floodplain administrator? (department/position)	Village Engineer
Are any certified floodplain managers on staff in your jurisdiction?	Yes
What is the date of adoption of your flood damage prevention ordinance?	2008. 30-O-2008.
When was the most recent Community Assistance Visit or Community Assistance Contact?	4/9/2008
Does your jurisdiction have any outstanding NFIP compliance violations that need to be addressed? If so, please state what they are.	No
Do your flood hazard maps adequately address the flood risk within your jurisdiction? (If no, please state why)	Yes
Does your floodplain management staff need any assistance or training to support its floodplain management program? If so, what type of assistance/training is needed?	Yes - continuing education
Does your jurisdiction participate in the Community Rating System (CRS)? If so, is your jurisdiction seeking to improve its CRS Classification? If not, is your jurisdiction interested in joining the CRS program?	No; Yes

NFIP Participation Activities

Maintaining compliance under the NFIP is an important component of flood risk reduction. All planning partners that participate in the NFIP have identified actions to maintain their compliance and good standing. Cook County entered the NFIP on April 15, 1981. Structures permitted or built in the County before then are called "pre-FIRM" structures, and structures built afterwards are called "post-FIRM." The insurance rate is different for the two types of structures. The effective date for the current countywide FIRM is August 19, 2008. This map is a DFIRM (digital flood insurance rate map). The communities in Cook County that participate in the NFIP are shown in **Table: NFIP Participating Communities in Cook County** in **Volume I** of the Cook County MJ-HMP.

The NFIP makes federally-backed flood insurance available to homeowners, renters, and business owners in participating communities. The communities in Cook County that participate in the NFIP and their "Policies in Force," "Total Coverage," and "Total Written Premiums" are shown in **Table: Cook County Flood Insurance Policies** in **Volume I** of the Cook County MJ-HMP.

The following are NFIP-related activities completed by our community:

- Our staff provide the following services: permit reviews, GIS, inspections, engineering capability.
- Our community enforces local floodplain regulations and monitors compliance.
- Our floodplain development regulations meet or exceed Federal Emergency Management Agency (FEMA) or State minimum requirements.
- My community teaches property owners or other stakeholders about the importance of flood insurance through public outreach events, workshops, and/or seminars.

Substantial Improvement Rule and the Substantial Damage Rule

The IDNR/OWR has developed a model ordinance for floodplain management, which has been adopted by most communities in Illinois. The ordinance includes the minimum requirements an NFIP participating jurisdiction must adopt and enforce, as well as additional higher regulatory requirements. The optional, higher regulatory standards include a minimum one foot of freeboard

above the base flood elevation and cumulative tracking of damage repairs and improvements to establish substantial damage and substantial improvement compliance. Some jurisdictions have chosen to exceed the requirements of the model ordinance and have adopted more restrictive ordinances. This is most common in the communities in northeastern Illinois.

Existing Municipal Code:

9C-1-2 Definitions

SUBSTANTIAL DAMAGE: A building is considered substantially damaged when it sustains damage from any cause (fire, flood, earthquake, etc.), whereby the cost of fully restoring the structure would equal or exceed fifty percent (50%) of the predamage market value of the structure, regardless of the actual repair work performed.

SUBSTANTIAL IMPROVEMENT: Any repair, reconstruction, rehabilitation, addition or improvement of a structure, the cost of which equals or exceeds fifty percent (50%) of the market value of the structure either: a) before the improvement or repair is started; or b) if the structure has been damaged from any source, and is being restored, before the damage occurred. The term includes structures which were damaged whereby the cost of restoring the structure to its predamaged condition would equal or exceed fifty percent (50%) of the market value before the damage occurred, regardless of the actual repair work performed. For the purposes of this definition "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor or other structural parts of a building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include either: a) any project for improvement of a structure to comply with any existing state or local health, sanitary or safety code specifications which are solely necessary to assure safe living conditions; or b) any alteration of an "Historic Structure"; provided that the alteration will not preclude the structure's continued designation as an "Historic Structure".

9C-1-4 Duties of the Enforcement Officials

The building commissioner, in all cases, consulting with and working in conjunction with the village engineer, shall be responsible for the general administration and enforcement of this chapter which shall include the following:

1. **Determining The Flood Plain Designation:** Check all new development sites to determine whether they are in a special flood hazard area (SFHA). If they are in an SFHA, determine whether they are in a floodway, flood fringe or a flood plain on which a detailed study has not been conducted which drains more than one square mile. Check whether the development is potentially within an extended SFHA (with a drainage area less than 1 square mile), indicating that the development would have adverse impacts regarding storage, conveyance, or inundation which would be the basis for the applicant being required to delineate the flood plain and floodway and be subject to the remaining sections of this chapter.
2. **Professional Engineer Review:** If the development site is within a floodway or in a flood plain for which a detailed study has not been conducted which drains more than one square mile, then the permit shall be referred to a registered professional engineer under the employ or contract of the village for review to ensure that the development meets the requirements of

section 9C-1-7 of this chapter. In the case of an appropriate use, the PE shall state in writing that the development meets the requirements of section 9C-1-7 of this chapter.

9C-1-9 Permitting Requirements Applicable to all Floodplain Areas

In addition to the requirements found in sections 9C-1-7 and 9C-1-8 of this chapter for development in flood fringes, designated floodways and SFHA or flood plains where no floodways have been identified (zones A, AO, AH, AE, A1-A30, A99, VO, V1-30, VE, V, M, D or X), the following requirements shall be met

C. Protecting Buildings: All buildings located within a 100-year flood plain also known as an SFHA, shall be protected from flood damage below the flood protection elevation. However, existing buildings located within a designated floodway shall also meet the more restrictive appropriate use standards included in section 9C-1-7 of this chapter. This building protection criteria applies to the following situations:

1. Construction or placement of a new building or alteration or addition to an existing building valued at more than one thousand dollars (\$1,000) or seventy (70) square feet.
2. A structural alteration to an existing building that either increases the first floor area by more than twenty percent (20%) or the building's market value by more than fifty percent (50%). This alteration shall be figured cumulatively, beginning with any alteration which has taken place subsequent to April 1, 1990;
3. Installing a manufactured home on a new site or a new manufactured home on an existing site. This building protection requirement does not apply to returning a mobile home to the same site it lawfully occupied before it was removed to avoid flood damage; and
4. Installing a travel trailer on a site for more than one hundred eighty (180) days.
5. This building protection requirement may be met by one (1) of the following methods.

E. A residential or nonresidential building may be elevated in accordance with the following:

1. The building or improvements shall be elevated on crawlspace, stilts, piles, walls or other foundation that is permanently open to flood waters and not subject to damage by hydrostatic pressures of the base flood or 100-year frequency flood. The permanent openings shall be no more than one foot (1') above grade, and consist of a minimum of two (2) openings. The openings must have a total net area of not less than one (1) square inch for every one (1) square foot of enclosed area subject to flooding below the base flood elevation;
2. The foundation and supporting members shall be anchored and aligned in relation to flood flows and adjoining structures so as to minimize exposure to known hydrodynamic forces such as current, waves, ice and floating debris;
3. All areas below the flood protection elevation shall be constructed of materials resistant to flood damage. The lowest floor (including basement) and all electrical, heating, ventilating, plumbing and air-conditioning equipment and utility meters shall be located at or above the flood protection elevation. Water and sewer pipes, electrical and telephone lines, submersible pumps and other waterproofed service facilities may be located below the flood protection elevation;
4. The areas below the flood protection elevation may only be used for the parking of vehicles, building access or storage in an area other than a basement;

5. Manufactured homes shall be anchored to resist flotation, collapse or lateral movement by being tied down in accordance with the rules and regulations for the Illinois Mobile Home Tie-Down Act issued pursuant to 77 Illinois Administrative Code part 870. In addition, all manufactured homes shall meet the following elevation requirements:

1. In the case of manufactured homes placed or substantially improved: 1) outside of a manufactured home park or subdivision, 2) in a new manufactured home park or subdivision, 3) in an expansion to an existing manufactured home park or subdivision, or 4) in an existing manufactured home park or subdivision on which a manufactured home has incurred substantial damage from a flood, the top of the lowest floor shall be elevated to or above the flood protection elevation;

In the case of manufactured homes placed or substantially improved in an existing manufactured home park or subdivision, the manufactured home shall be elevated so that either the top of the lowest floor is above the base flood elevation or the chassis is at least thirty six inches (36") in height above grade and supported by reinforced piers or other foundations of equivalent strength, whichever is less.

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	4	2009
Public Protection/ISO	Unknown	N/A	N/A
StormReady	Yes	Gold (Countywide)	2014
Tree City USA	No	N/A	N/A

Opportunities to Expand and Improve Capabilities

At this time, the Village of Willow Springs has not identified opportunities to expand or improve our current capabilities. Should such opportunities be identified in the future, this Capability Assessment will be updated accordingly.

Plan Integration

The capability assessment describes opportunities to "link" or integrate the mitigation plan into other planning mechanisms. The process and mechanism to identify opportunities to integrate the Cook County MJ-HMP into other planning mechanisms will occur during the Annual Update Process and be reflected in the Jurisdictional Annual Report each year. Specific plan integration opportunities will include:

- The goals and actions of the Hazard Mitigation Plan will be considered in the next capital improvement planning process.
- The hazards, goals, and actions of the Hazard Mitigation Plan will be considered in the next update of the jurisdiction's land use plans, zoning, and subdivision codes.

Emergency Plan Integration:

Cook County EMRS is supporting communities to develop and update their respective Emergency Operations Plans, Continuity of Operations Plan/Continuity of Government Plan, and Recovery Plan in 2024. This is an ongoing countywide initiative and is being implemented in all municipalities.

Emergency Operations Plan (EOP)

An EOP template was created for all municipalities. The 2019 Cook County MJ-HMP and the hazards in the mitigation plan have been integrated into the Situation and Assumptions section of the EOP. Within that section, the natural hazards based on the 2019 MJ-HMP were added in the Initial Analysis and Assessment and Identification of Hazards section of the EOP. The hazards in the 2019 plan and the 2024 MJ-HMP did not change apart from adding wildfires for the Forest Preserve and unincorporated areas of the County. Future updates of the EOP will take into consideration any additional new natural hazards that are added to subsequent updates to the MJ-HMP.

Continuity of Operations Plan (COOP)

The Continuity of Operations Plan (COOP) for the municipality includes a Situation section that is based on the 2019 Cook County MJ-HMP jurisdictional annex, and specifically the hazards identified in the annex. The COOP-specific risk assessment is hazard-specific and based on likelihood of occurrence and severity of impact.

Recovery Plan

The goals of the Recovery Plan were developed to align with the 2019 Cook County MJ-HMP, and specifically prioritizes the responsibility of officials under this plan to save lives, protect property, relieve human suffering, sustain survivors, repair essential facilities, restore services, and protect the environment. The plan acknowledges that hazard mitigation is an important priority and consideration during the rebuilding process.

Jurisdiction-Specific Natural Hazard Event History

The information provided below was solicited from the jurisdiction and supported by NOAA and other relevant data sources.

The *Natural Hazard Events Table* lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 0
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0

Federal Disasters Declared

Disaster Declaration Number	Date Declared	Event
DR-227	4/25/1967	Tornado
DR-351	9/4/1972	Flood
DR-373	4/26/1973	Flood
DR-509	6/18/1976	Severe Storm(s)
DR-643	6/30/1981	Severe Storm(s)
DR-776	10/7/1986	Flood
DR-798	8/21/1987	Flood
DR-997	7/9/1993	Flood
DR-1129	7/25/1996	Severe Storm(s)

DR-1188	9/17/1997	Severe Storm(s)
DR-1729	9/25/2007	Severe Storm(s)
DR-1800	10/3/2008	Severe Storm(s)
DR-1935	8/19/2010	Severe Storm(s)
DR-1960	3/17/2011	Snow
EM-3068	1/16/1979	Snow
EM-3134	1/8/1999	Snow
EM-3161	1/17/2001	Snow
EM-3230	9/7/2005	Hurricane – Katrina Evacuation
EM-3435	3/13/2020	Biological
DR-4116	5/10/2013	Flood
DR-4489	3/26/2020	Biological
DR-4728	8/15/2023	Severe Storm(s)
DR-4749	11/20/2023	Flood

State Disaster Declarations

Date Declared	Event
7/26/2010	Severe Storms, High Winds, Torrential Rain
1/31/2011	Winter Weather
4/25/2011 5/25/2011	High Wind, Tornadoes, Torrential Rain
4/18/2013 4/20/2013 4/21/2013 4/25/2013 4/30/2013	Severe Storms, Heavy Rainfall, Flooding, Straight-line Winds
1/6/2014	Heavy Snowfall, Frigid Temperatures
7/12/2017 7/14/2017	Thunderstorms, Heavy Rainfall, Flooding
1/29/2019	Winter Storm
2/6/2020	Severe Storms
3/12/2020 – present (reissued monthly)	COVID-19
2/16/2021	Winter Storms
2/1/2022	Winter Storms
8/1/2022 (reissued monthly through 10/28/2022)	Monkeypox

TABLE: NATURAL HAZARD EVENTS			
Type of Event	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment/ Event Narrative
Severe Storms	DR-4116	2013	-
Severe Winter Storms	DR-1960	2011	-
Severe Storms/Flooding	DR-1935	2010	-
Severe Storms/Flooding	DR-1800	2008	-

Severe Storms/Flooding	DR-1729	2007	-
Severe Winter Storm	EM-3161	2000	-
Winter Snow Storm	EM-3134	1999	-
Flooding	DR-1188	1997	-
Flooding	DR-1129	1996	-
Severe Storms/Flooding	DR-997	1993	-
Severe Storms/Flooding	DR-798	1987	-
Severe Storms/Flooding	DR-776	1986	-

Jurisdiction-Specific Hazards: Vulnerabilities and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2024 Cook County Multi-Jurisdictional Hazard Mitigation Plan Update. This section only addresses the hazards and their associated impacts that are **relevant** and **unique** to the municipality.

Dam and Levee Failure: Areas in an inundation area of dam and levee failure include Flagg Creek, the Des Plaines River, and the I&M Canal. Adjacent structures and roadways experience flooding, particularly during times of heavy rainfall. Specific roadways at risk for dam and levee failure include Wolf Road, Willow Springs Road, 91st Street, Orchard, and School Street.

Earthquake: Willow Springs would be negatively impacted by an earthquake mainly because of the significant number of aging structures, both residential and commercial. Also, Willow Springs has two significant railways and three bridges that would be at risk in an earthquake. If bridges and railways were unusable, that would be detrimental to residents.

Flooding: Flooding is a substantial risk in Willow Springs. Areas that experience flooding are primarily those adjacent to waterways like Flagg Creek, Des Plaines River, and I&M Canal. One property on Rust Trail, near Illinois Tollway, was a repeated flood risk. In 2019, as part of its Mile Long Bridge project and to mitigate flood loss, Illinois Tollway purchased the property and demolished the home. Similarly, a property on Wolf Road near Flagg Creek was a repeated flood risk. In 2023, as part of the MWRD Flood Purchase Program, the home was purchased and demolished, and it will be maintained as open space. Specific roadways at risk for flooding include Wolf Road, Willow Springs Road, 91st Street, Orchard, and School Street.

Severe Weather: Willow Springs is uniquely vulnerable to severe weather given its concentration of senior citizens, with over twenty percent of the population being over sixty-five. In addition, Willow Springs is home to two chemical treatment facilities, three filling stations, two schools, and two major railways. There is also an abundance of mature trees and power lines in Willow Springs.

Severe Thunderstorms: Severe thunderstorms pose a relevant and unique risk to Willow Springs, given the significant number of mature trees and powerlines in the area. Downed trees, powerlines, and power outages create damage and risk to our residents and businesses. In addition, such events can compromise critical facilities and structures. In July 2023, severe thunderstorms impacted the region, and power outages and property damage negatively impacted Willow Springs. In February 2024, severe thunderstorms with hail caused significant property damage for residents and businesses.

Tornado: TORNADOS pose a unique and relevant risk in Willow Springs. The resulting property damage and power outages are disastrous for residents, particularly the vulnerable senior population that makes up twenty percent of the population. Additionally, the substantial presence of mature trees,

power lines, and aging buildings heightens the risk of damage and loss. In June 2021, a tornado touched down in Willow Springs. Residents and businesses suffered damage and loss of property; our senior population, especially, required assistance with cleanup. Critical facilities lost power.

Severe Winter Weather: Severe Winter Weather causes a relevant and unique risk in Willow Springs. First, there is a large population of vulnerable senior citizens. Also, many aging structures are prone to damage with heavy snowfall and freezing temperatures. For example, in 2020, heavy snowfall caused a sizeable commercial building roof collapse. Some areas of Willow Springs are very hilly, so ice accumulation can create particularly hazardous road conditions.

Wildfire (Wildfire Smoke): While wildfire is not especially relevant in Willow Springs, Willow Springs is near vast forest preserves. The forest preserves conduct controlled burns. The smoke from controlled burns has impacted the Village substantially on numerous occasions. The smoke creates health concerns for our vulnerable populations, particularly children and seniors. The smoke also creates property damage.

Indicator	Number	Percent
Families in poverty	547	6.9%
People with disabilities	3,652	12%
People over 65 years	6,729	22%
People under 5 years	1,642	5.4%
People of color	8,126	26.6%
Black	1,262	4.1%
Native American	100	0.3%
Hispanic	5,214	17.1%
Difficulty with English	1,219	4.2%
Households with no car	694	5.8%
Mobile homes	1,190	9.9%

Data are from the U.S. Census Bureau, American Community Survey. See methods for more information.

The community evaluated whether vulnerability, and subsequently the potential impacts, in hazard-prone areas had increased, decreased, or remained the same for each natural hazard identified in this Hazard Mitigation Plan. Climate change, infrastructure expansion, and economic shifts that can affect vulnerability were considered. For example, if planned development is in an identified hazard area or is not built to the updated building codes, it may increase the community's vulnerability to future hazards and disasters. On the other hand, if development occurred with mitigation practices in place, the vulnerability may have remained the same or decreased. Additionally, shifting demographics were taken into consideration when assessing development trends.

Jurisdiction-Specific Climate Change Vulnerability and Impacts

The table below outlines if climate change, as assessed by the local planning team, has increased or decreased the municipality's vulnerability/exposure, and thereby the potential impacts, to each natural hazard over the past five (5) years (**Current Vulnerability**), and the effect of climate change in the future probability of occurrence and impacts (**Future Vulnerability**) from each natural hazard.

Future studies are needed to better understand the impact of climate change on the community's assets.

Hazard	Vulnerability
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Current Vulnerability	
Dam and Levee Failure	Remained the Same
Drought	Remained the Same
Earthquake	Remained the Same
Flood (Riverine, Urban, Shoreline)	Remained the Same
Severe Weather (Extreme Heat, Lightning, Hail, Fog, High Winds)	Remained the Same
Severe Winter Weather (Ice Storms, Heavy Snow, Blizzards, Extreme Cold)	Remained the Same
Tornado	Remained the Same
Wildfire (Wildfire Smoke)	Remained the Same

Hazard	Vulnerability
Future Vulnerability	
Dam and Levee Failure	No Change is Anticipated
Drought	No Change is Anticipated
Earthquake	No Change is Anticipated
Flood (Riverine, Urban, Shoreline)	No Change is Anticipated
Severe Weather (Extreme Heat, Lightning, Hail, Fog, High Winds)	No Change is Anticipated
Severe Winter Weather (Ice Storms, Heavy Snow, Blizzards, Extreme Cold)	No Change is Anticipated
Tornado	No Change is Anticipated
Wildfire (Wildfire Smoke)	No Change is Anticipated

Jurisdiction-Specific Changes (or Expected Changes) in Development Trends in Hazard-Prone Areas

The table below outlines if development, as assessed by the local planning team, over the past five (5) years (**Current Vulnerability**) has increased or decreased the jurisdiction's vulnerability / exposure, and thereby the potential impacts, to these natural hazards, and the anticipated effects changes in development may have on the future probability of occurrence and impacts (**Future Vulnerability**) from these natural hazards.

Hazard	Vulnerability
Current Vulnerability	
Dam and Levee Failure	Increased
Drought	Increased
Earthquake	Increased
Flood (Riverine, Urban, Shoreline)	Increased
Severe Weather (Extreme Heat, Lightning, Hail, Fog, High Winds)	Increased
Severe Winter Weather (Ice Storms, Heavy Snow, Blizzards, Extreme Cold)	Increased
Tornado	Increased
Wildfire (Wildfire Smoke)	Increased

Hazard	Vulnerability
Future Vulnerability	
Dam and Levee Failure	Increase
Drought	Increase

Earthquake	Increase
Flood (Riverine, Urban, Shoreline)	Increase
Severe Weather (Extreme Heat, Lightning, Hail, Fog, High Winds)	Increase
Severe Winter Weather (Ice Storms, Heavy Snow, Blizzards, Extreme Cold)	Increase
Tornado	Increase
Wildfire (Wildfire Smoke)	Increase

Over the past five years, development in Willow Springs has increased the population and structures vulnerable to natural hazards.

Hazard Risk Ranking

The *Hazard Risk Ranking Table* below presents the ranking of the hazards of concern. Hazard area extent and location maps are included at the end of this chapter. These maps are based on the best available data at the time of the preparation of this plan, and are considered to be adequate for planning purposes.

TABLE: HAZARD RISK RANKING	
Rank	Hazard Type
1	Severe Weather
2	Severe Winter Weather
3	Tornado
4	Earthquake
5	Flood
6	Drought
7	Dam Failure

New Mitigation Actions

The following are new mitigation actions created during the 2024 update.

Action W-4.11

Mitigation Action #11: Create a database for at risk or vulnerable populations					
Lead Agency/Department Organization: Administration	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Ongoing	Hazard(s) Mitigated: All
Year Initiated		2024			
Applicable Jurisdiction		Village of Willow Springs			
Applicable Goal		2			
Applicable Objective		5,12			
Cost Analysis (Low, Medium, High)		Low			
Priority and Level of Importance (Low, Medium, High)		Medium			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Medium			
Action/Implementation Plan and Project Description:		Create a database for at risk or vulnerable populations			
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		N			

Action W-4.12

Mitigation Action #12: When possible, implement green infrastructures and permeable surfaces to reduce stormwater runoff and mitigate flood					
Lead Agency/Department Organization: Administration	Supporting Agencies/ Organizations:	Estimated Cost: High	Potential Funding Source: General Fund Hazard Mitigation Grant Program (HMGP) Flood Mitigation Assistance (FMA) Program Community Development Block Grant (CDBG) FEMA Public Assistance (PA) MWRD	Estimated Projected Completion Date: Long-term	Hazard(s) Mitigated: Flood (Riverine, Urban, Coastal/Shoreline)
Year Initiated		2025			
Applicable Jurisdiction		Village of Willow Springs			
Applicable Goal		1,2,3,5			
Applicable Objective		1,2,3,4,7,8,9,10			
Cost Analysis (Low, Medium, High)		High			
Priority and Level of Importance (Low, Medium, High)		High			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		High			
Action/Implementation Plan and Project Description:		When possible, implement green infrastructures and permeable surfaces to reduce stormwater runoff and mitigate flood			

Actual Completion Date or Ongoing Indefinite	
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	N

Action W-4.13

Mitigation Action #13: Improve heating and cooling at the community center to continue to serve as heating and cooling center for vulnerable population when needed					
Lead Agency/Department Organization: Administration	Supporting Agencies/ Organizations:	Estimated Cost: Medium	Potential Funding Source: General Fund	Estimated Projected Completion Date: Short-term	Hazard(s) Mitigated: All
Year Initiated	2024				
Applicable Jurisdiction	Village of Willow Springs				
Applicable Goal	1,2,3,4				
Applicable Objective	1,2,12				
Cost Analysis (Low, Medium, High)	Medium				
Priority and Level of Importance (Low, Medium, High)	High				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	High				
Action/Implementation Plan and Project Description:	Improve heating and cooling at the community center to continue to serve as heating and cooling center for vulnerable population when needed				
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed;	N				

R = Want Removed from Annex; X = No Action Taken/Delayed	
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Action W-4.14

Mitigation Action #14: Focus on green infrastructure to replace impervious surfaces with permeable surfaces, thereby reducing stormwater runoff.					
Lead Agency/Department Organization: Administration	Supporting Agencies/ Organizations: MWRD	Estimated Cost: High	Potential Funding Source: General Fund MWRD Grant Funding	Estimated Projected Completion Date: Short-term	Hazard(s) Mitigated: Dam and Levee Failure Flood (Riverine, Urban, Coastal/Shoreline)
Year Initiated		2025			
Applicable Jurisdiction		Village of Willow Springs			
Applicable Goal		1,2,3,4,5,6			
Applicable Objective		2,3,4,8,9,12,13			
Cost Analysis (Low, Medium, High)		High			
Priority and Level of Importance (Low, Medium, High)		High			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		High			
Action/Implementation Plan and Project Description:		Focus on green infrastructure to replace impervious surfaces with permeable surfaces, thereby reducing stormwater runoff.			
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		N			

Action W-4.15

Mitigation Action #15: Update local development plan to account for natural hazard mitigation and green infrastructure.					
Lead Agency/Department Organization: Administration	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Short-term	Hazard(s) Mitigated: Dam and Levee Failure Flood (Riverine, Urban, Coastal/Shoreline)
Year Initiated		2025			
Applicable Jurisdiction		Village of Willow Springs			
Applicable Goal		1,2,3,4,5,6			
Applicable Objective		2,3,4,9,10			
Cost Analysis (Low, Medium, High)		Low			
Priority and Level of Importance (Low, Medium, High)		Medium			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Medium			
Action/Implementation Plan and Project Description:		Update local development plan to account for natural hazard mitigation and green infrastructure.			
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		N			

Ongoing Mitigation Actions

The following are ongoing actions with no definitive end or that are still in progress. During the 2024 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.

Action W-4.2

Mitigation Action #2: Continue to support the countywide actions identified in this plan.					
Lead Agency/Department Organization: Village Administration	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Short- and Long-term	Hazard(s) Mitigated: All
Year Initiated		2014			
Applicable Jurisdiction		Village of Willow Springs			
Applicable Goal		1,5			
Applicable Objective		All			
Cost Analysis (Low, Medium, High)		Low			
Priority and Level of Importance (Low, Medium, High)		High			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Medium			
Action/Implementation Plan and Project Description:		The Village will work closely with Tri-State Fire Protection District to identifying resources and strategies for risk reduction and continue its support to county-wide actions.			
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		O			

Action W-4.3

Mitigation Action #3: Actively participate in the plan maintenance strategy identified in this plan.					
Lead Agency/Department Organization: EMRS, Village Administration	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Short-term	Hazard(s) Mitigated: All
Year Initiated		2014			
Applicable Jurisdiction		Village of Willow Springs			
Applicable Goal		1,5			
Applicable Objective		3,4,6			
Cost Analysis (Low, Medium, High)		Low			
Priority and Level of Importance (Low, Medium, High)		High			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Medium			
Action/Implementation Plan and Project Description:		The Village will continue to work and support the Cook County EMRS and Steering Committee			
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		O			

Action W-4.5

Mitigation Action #5: Maintain good standing under the National Flood Insurance Program by implementing programs that meet or exceed the minimum NFIP requirements. Such programs include enforcing an adopted flood damage prevention ordinance, participating in floodplain mapping updates, and providing public assistance and information on floodplain requirements and impacts.

Lead Agency/Department Organization: Village Administration	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Short-term and Ongoing	Hazard(s) Mitigated: Flooding
Year Initiated		2014			
Applicable Jurisdiction		Village of Willow Springs			
Applicable Goal		1,2,5			
Applicable Objective		4,6,9			
Cost Analysis (Low, Medium, High)		Low			
Priority and Level of Importance (Low, Medium, High)		High			
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)		Medium			
Action/Implementation Plan and Project Description:		The Village is actively providing public awareness and information on floodplain requirements and impacts through the Village newsletter and website.			
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed		O			

Action W-4.6

Mitigation Action #6: Where feasible, implement a program to record high water marks following high-water events.					
Lead Agency/Department Organization: Village Administration	Supporting Agencies/ Organizations:	Estimated Cost: Medium	Potential Funding Source:	Estimated Projected Completion Date:	Hazard(s) Mitigated:

			General Fund, FEMA Public Assistance (PA)	Long Term	Flooding; Severe Weather
Year Initiated	2014				
Applicable Jurisdiction	Village of Willow Springs				
Applicable Goal	1,2,5				
Applicable Objective	3,6,9				
Cost Analysis (Low, Medium, High)	Medium				
Priority and Level of Importance (Low, Medium, High)	Medium				
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	Medium				
Action/Implementation Plan and Project Description:	Public Works and the Village Engineer have been implementing a recording high water marks following high-water events in designated locations to better track areas of concern.				
Actual Completion Date or Ongoing Indefinite					
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	O				

Action W-4.7

Mitigation Action #7: Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.					
Lead Agency/Department Organization: Building Consultant	Supporting Agencies/ Organizations:	Estimated Cost: Low	Potential Funding Source: General Fund	Estimated Projected Completion Date: Short-term and ongoing	Hazard(s) Mitigated: All

Year Initiated	2014
Applicable Jurisdiction	Village of Willow Springs
Applicable Goal	1,5
Applicable Objective	3,4,6,10,13
Cost Analysis (Low, Medium, High)	Low
Priority and Level of Importance (Low, Medium, High)	High
Benefits of the Mitigation Project (Loss Avoided or Issue Being Mitigated)	Medium
Action/Implementation Plan and Project Description:	The Village is implementing the hazard mitigation plan into all plans for development in the village.
Actual Completion Date or Ongoing Indefinite	
Project Status & Changes in Priority Completion status legend: N = New; I = In Progress Toward Completion; O = Ongoing Indefinitely; C = Project Completed; R = Want Removed from Annex; X = No Action Taken/Delayed	O

Completed Actions

Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

Completed Action Items
Where appropriate, support retrofitting, purchase, or relocation of structures in hazard-prone areas to prevent future structure damage. Give priority to properties with exposure to repetitive losses.
Reduce/Eliminate flooding in residential neighborhood located on and around Prospect/Cliff & Beech
Reduce flooding in residential neighborhood (Rosmere Court area)
Reduce/eliminate flooding in residential and school area (School Street)

Reduce Flooding Along Flaqq Creek

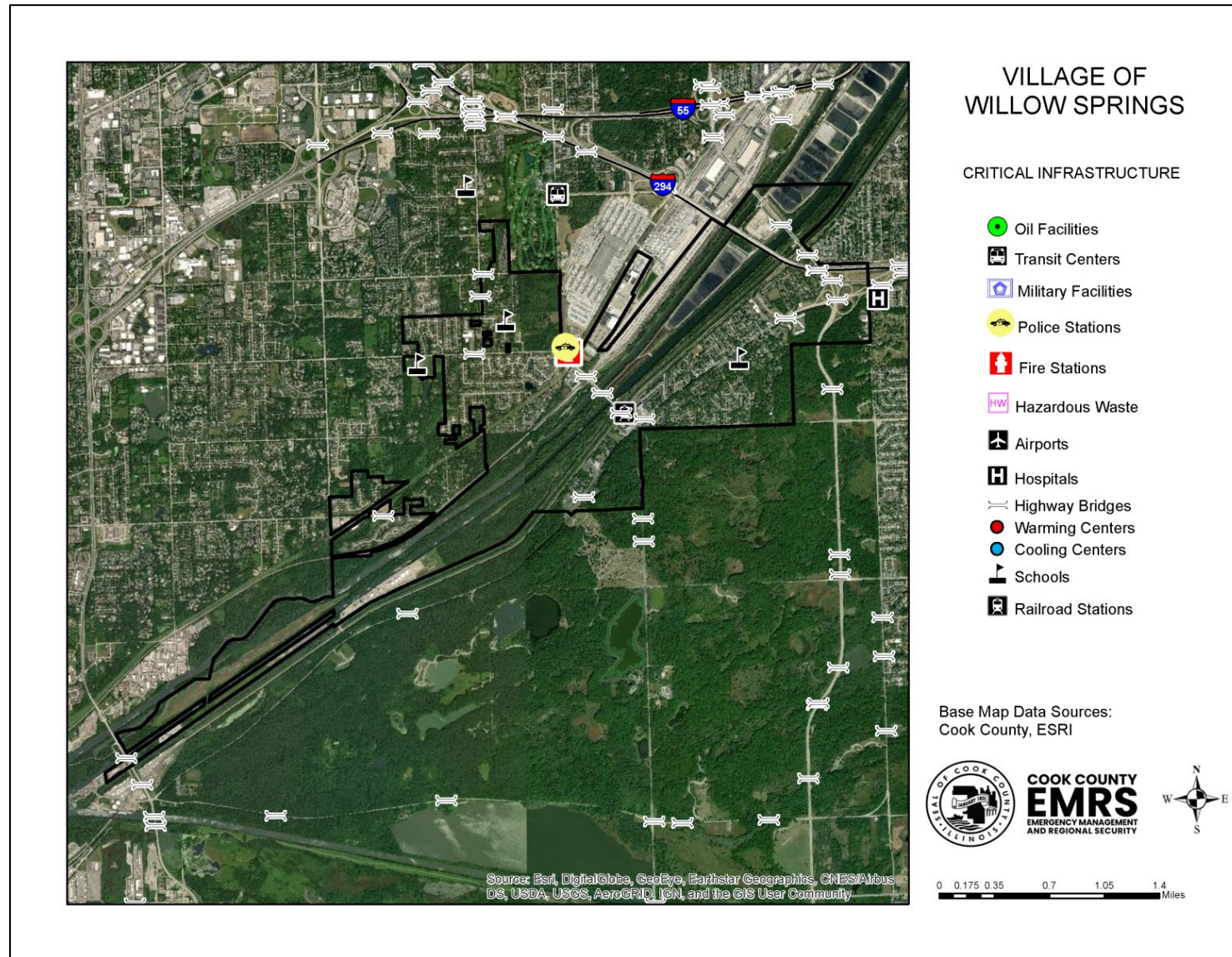
Future Needs to Better Understand Risk/Vulnerability

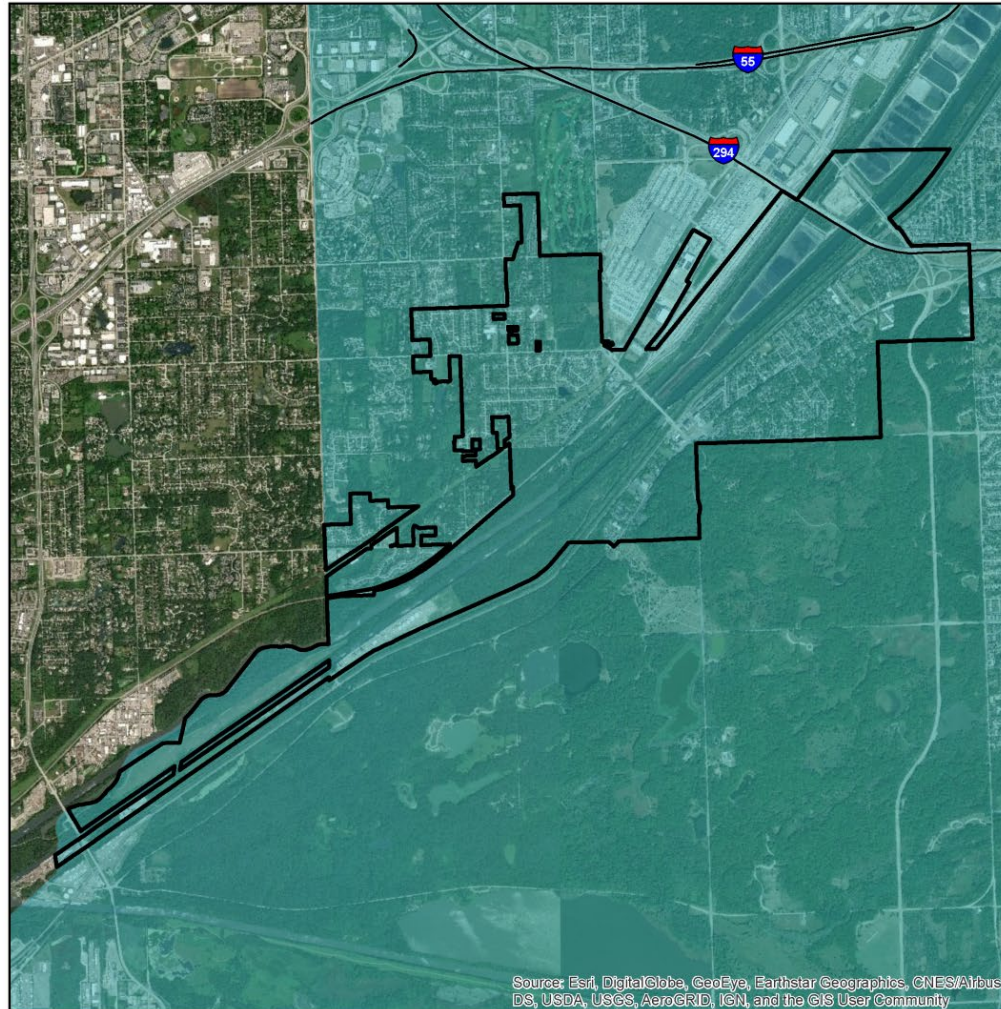
No needs have been identified at this time.

Additional Comments

No additional comments at this time.

Hazard Mapping





VILLAGE OF WILLOW SPRINGS

PEAK GROUND ACCELERATION FOR A 100 YEAR EARTHQUAKE EVENT

Mercalli Scale, Potential Shaking

II-III Weak

Data provided by the USGS Earthquake Hazards Program and Cook County.

Probabilistic seismic-hazard maps were prepared for the conterminous United States for 2014 portraying peak horizontal acceleration and horizontal spectral response acceleration for 0.2- and 1.0-second periods with probabilities of exceedance of 10 percent in 50 years and 2 percent in 50 years. All of the maps were prepared by combining the hazard derived from spatially smoothed historical seismicity with the hazard from fault-specific sources. The acceleration values contoured are the random horizontal component. The reference site condition is firm rock, defined as having an average shear-wave velocity of 760 m/s in the top 30 meters corresponding to the boundary between NEHRP (National Earthquake Hazards Reduction program) site classes B and C.

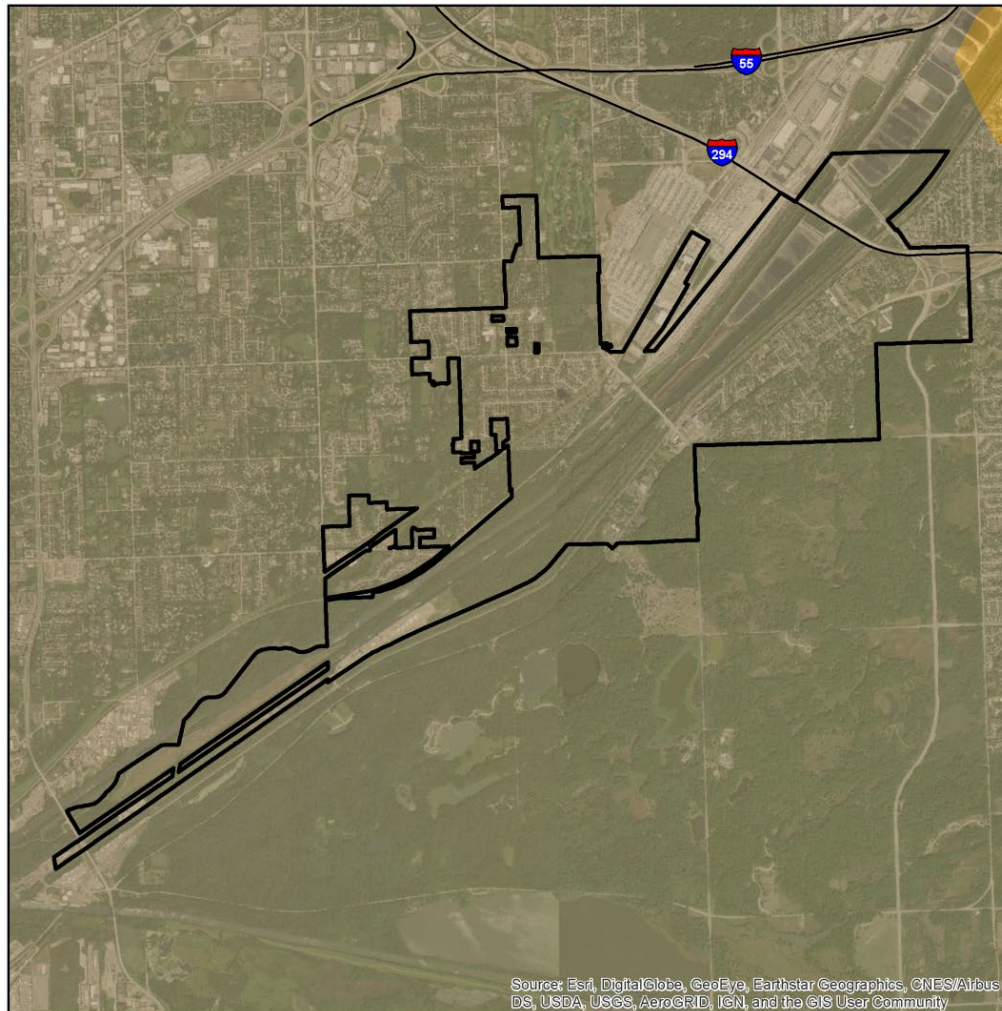
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COOK COUNTY
EMRS
EMERGENCY MANAGEMENT
AND REGIONAL SECURITY



0 0.175 0.35 0.7 1.05 1.4 Miles



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

VILLAGE OF WILLOW SPRINGS

NATIONAL EARTHQUAKE HAZARD REDUCTION PROGRAM (NEHRP) SOIL CLASSIFICATION

TYPE

- C - Very Dense Soil, Soft Rock
- D - Stiff Soil
- F - Site Specific Evaluation

Data provided by the Illinois State Geological Survey and Cook County.

The Central United States Earthquake Consortium (CUSEC) State Geologists produced a regional Soil Site Class map (NEHRP Soil Profile Type Map), a Liquefaction Susceptibility Map and a Soil Response Map for the 8 states to be used in the FEMA New Madrid Catastrophic Planning Initiative Phase II work. The USGS Geologic Investigation Series I-2789 Map of Surficial Deposits and Materials in the Eastern and Central United State (East of 102 degrees West Longitude) by David S. Fullerton, Charles A. Bush and Jean N. Pennell (2003) was the base map used for this work. Each State Geological Survey produced its own state map version of the Soil Site Class and Liquefaction Susceptibility maps. The procedures outlined in the NEHRP provisions (Building Seismic Safety Council, 2004) and the 2003 International Building Codes (International Code Council, 2002) were followed to produce the soil site class maps. CUSEC State Geologists used the entire column of soils material down to bedrock and did not include any bedrock in the calculation of the average shear wave velocity for the column, since it is the soil column and the difference in shear wave velocity of the soils in comparison to the bedrock which influences much of the amplification.

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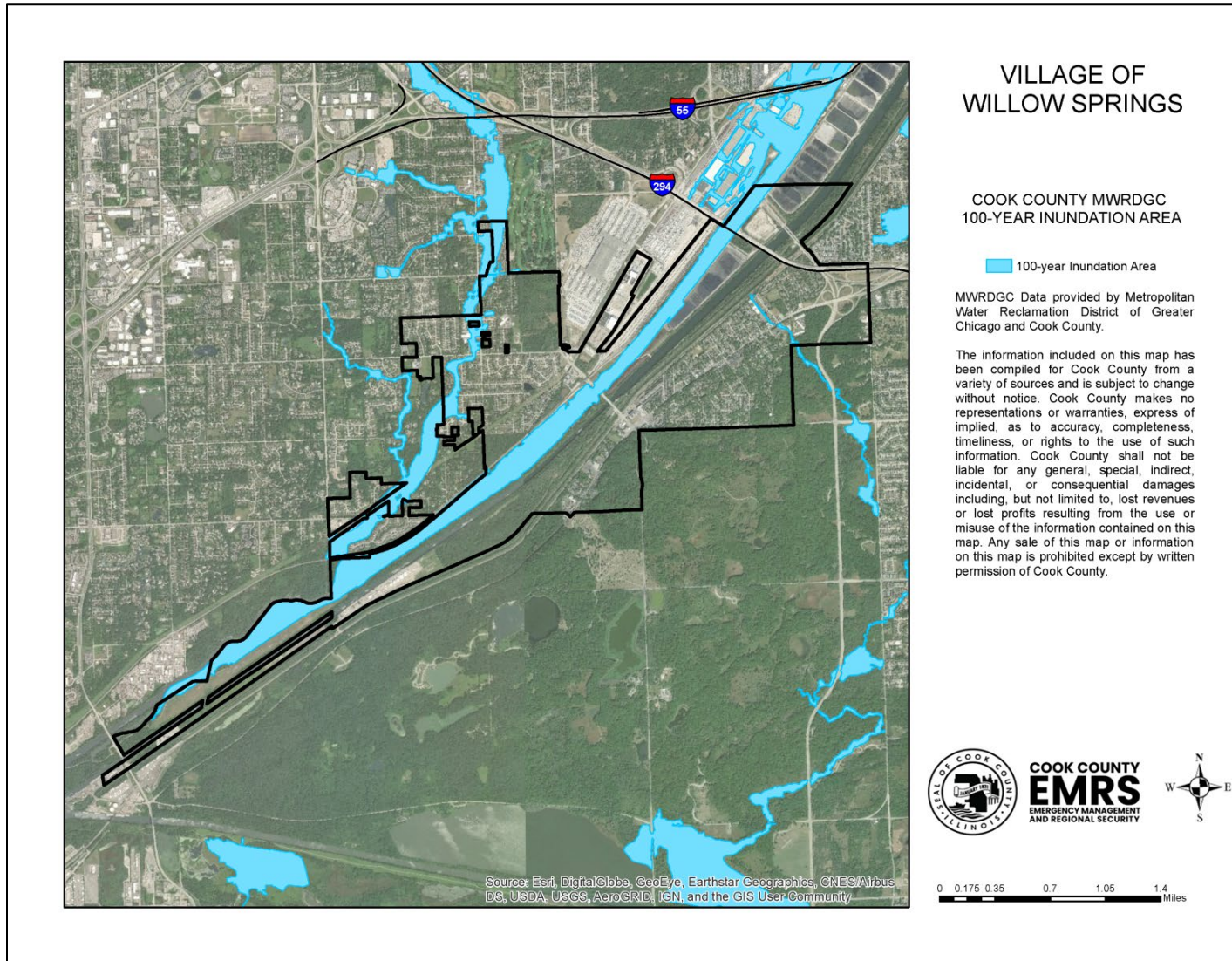


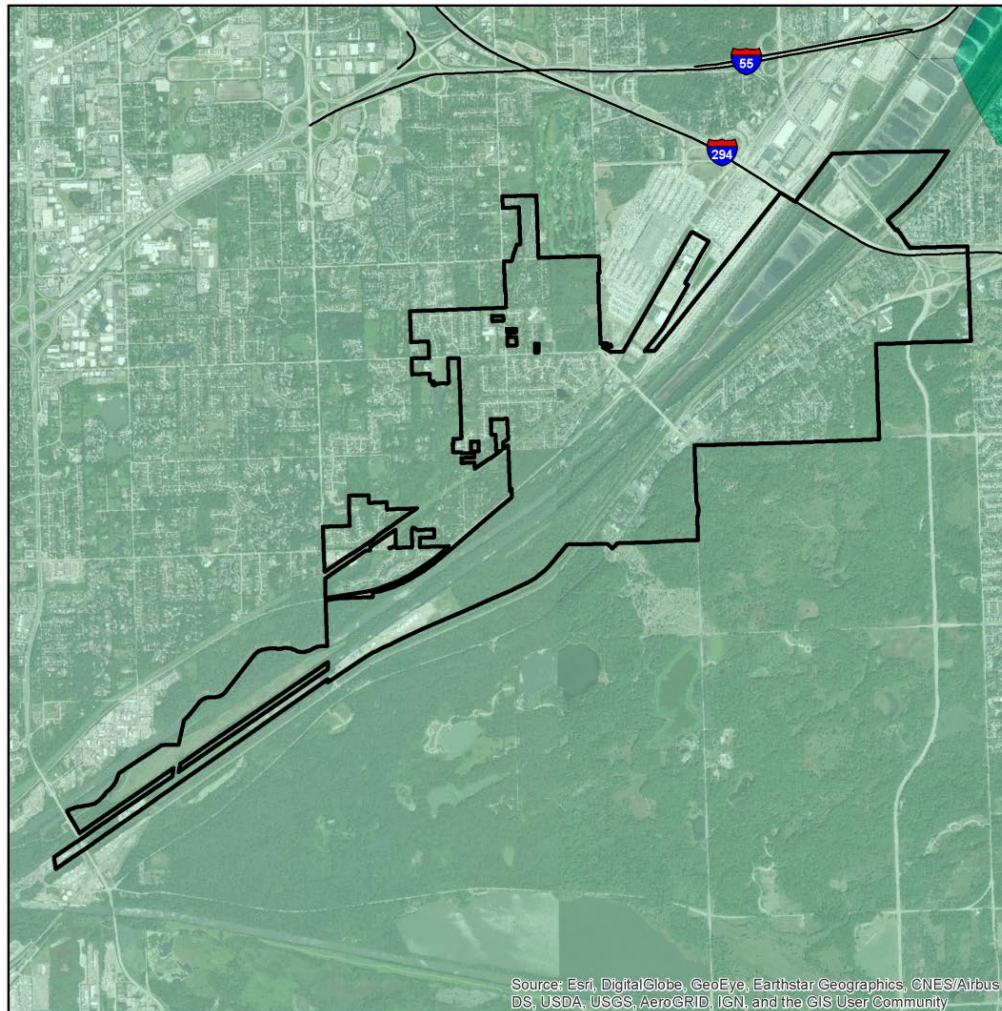
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0 0.175 0.35 0.7 1.05 1.4
Miles

DISCLAIMER: The Cook County MWRDGC 100-year Inundation Map is provided to show general flood risk information regarding floodplains and inundation areas. This map is not regulatory. Official FEMA Flood Insurance Study information and regulatory maps can be obtained from <http://www.fema.gov>.





VILLAGE OF WILLOW SPRINGS

LIQUEFACTION SUSCEPTIBILITY

LIQUEFACTION SUSCEPTIBILITY

- high
- low
- very low

Data provided by the Illinois State Geological Survey and Cook County.

The Central United States Earthquake Consortium (CUSEC) State Geologists produced a regional Soil Site Class map (NEHRP Soil Profile Type Map), a Liquefaction Susceptibility Map and a Soil Response Map for the 8 states to be used in the FEMA New Madrid Catastrophic Planning Initiative Phase II work. The USGS Geologic Investigation Series I-2769 Map of Surficial Deposits and Materials in the Eastern and Central United State (East of 102 degrees West Longitude) by David S. Fullerton, Charles A. Bush and Jean N. Pennell (2003) was the base map used for this work. Each State Geological Survey produced its own state map version of the Soil Site Class and Liquefaction Susceptibility maps. The procedures outlined in the NEHRP provisions (Building Seismic Safety Council, 2004) and the 2003 International Building Codes (International Code Council, 2002) were followed to produce the soil site class maps. CUSEC State Geologists used the entire column of soils material down to bedrock and did not include any bedrock in the calculation of the average shear wave velocity for the column, since it is the soil column and the difference in shear wave velocity of the soils in comparison to the bedrock which influences much of the amplification.

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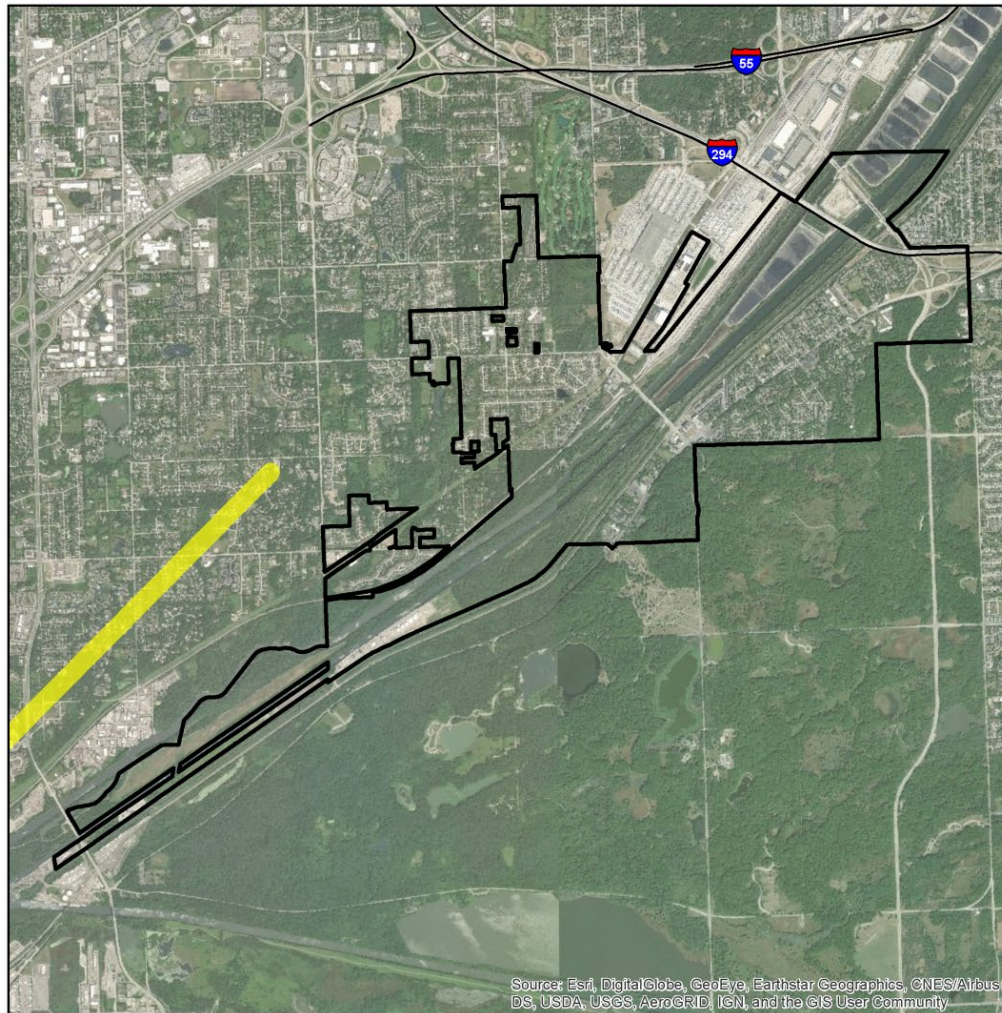


COOK COUNTY
EMRS
EMERGENCY MANAGEMENT
AND REGIONAL SECURITY



0 0.175 0.35 0.7 1.05 1.4 Miles

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



VILLAGE OF WILLOW SPRINGS

100- AND 500- YEAR
TORNADO EVENTS

Magnitude

- 4 (100 year event)
- 5 (500 year event)

Historic tornado data provided by NOAA/NWS showing the initial points and paths of all F4 and F5 events observed from 1950 to 2017.



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0 0.175 0.35 0.7 1.05 1.4 Miles