

**COOK COUNTY  
MULTI-JURISDICTIONAL  
HAZARD MITIGATION PLAN  
VOLUME 2 - Municipal Annexes**

**Glenwood Annex**

**FINAL**

July 2019

Prepared for:



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## Hazard Mitigation Point of Contact

Primary Point of Contact	Alternate Point of Contact
Kevin Welsh, Fire Chief One Asselborn Way Glenwood, IL 60425 Telephone: 708-753-2440 Email Address: <a href="mailto:glnwdchief@comcast.net">glnwdchief@comcast.net</a>	ori Boren, Firefighter/EMT One Asselborn Way Glenwood, IL 60425 Telephone: 708-753-2400 Email Address: <a href="mailto:jori.a.boren@gmail.com">jori.a.boren@gmail.com</a>

*Note: Per the jurisdiction's request, the Alternate Point of Contact is different than the contact submitted in the 2019 Letter of Intent.*

## Jurisdiction Profile

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

- **Date of Incorporation:** 1871
- **Current Population:** The US Census 2016 estimate was 8,911.
- **Population Growth:** The population growth rate is lower than the state average rate of 3.31% and is much lower than the national average rate of 9.71%. The Glenwood population density is 2,872.22 people per square mile, which is much higher than the state average density of 221.55 people per square mile and is much higher than the national average density of 81.32 people per square mile. The population change from 2010 to 2016 was -0.88 percent with a decrease of 79 residents.
- **Location and Description:** Glenwood is about 23 miles south of the Chicago Loop, in the County of Cook. Glenwood is conveniently located within close distance to the Midway Airport and Gary-Chicago International Airport. The Village is near the Homewood Metra Rail located at Ridge Rd. at Harwood Ave (Homewood IL 60430), Interstate 394, Interstate 294, Interstate 90-94 and 4 State and County Roads. The Suburban Village of Glenwood is mostly surrounded by Cook County Forest Preserves. The total incorporated area is approximately 3.12 square miles, with one-half of the zoning distribution noted as parks or forest preserves. Adjacent towns are: Thornton to the north, Chicago Heights and Ford Heights to the south, Lansing and Lynwood to the east, and Homewood to the west. The Village consists of affordable single family homes and is considered a place when multigeneration families choose to remain because Glenwood is the product of over 100 years of prosperous growth and development.
- **Brief History:** The Village of Glenwood was originally founded as Hickory Bend. The Village is surrounded by forest preserves, some of which are named for early settlers. Glenwood is a quiet community with tree-lined streets. The Glenwood Shoreline is an ancient one that represented the edge of Lake Chicago. It is named after Glenwood—not the other way around. The Shoreline was formed when the lake, which was higher during the last Ice Age, receded and left behind a sand ridge. This ridge can be seen clearly in Glenwood and along the Glenwood-Dyer Road into Indiana.
- **Climate:** Glenwood gets 37 inches of rain and 29 inches of snow per year. The US average is 37 inches and 25 inches, respectively. The number of days with any measurable precipitation is 110 and, on average, there are 191 sunny days per year in Glenwood. The July high is around 84 degrees and the January low is 14. Glenwood’s comfort index, which is based on humidity during the hot months, is a 47 out of 100, where higher is more comfortable. The US average on the comfort index is 44.
- **Governing Body Format:** The Village of Glenwood operates under the Village President/Trustee form of government. The legislative body consists of the Village President, Board of six Trustees and Village Administrator. The Village President and Board of Trustees serve a term of four years. This body of Government will assume the responsibility for the adoption and implementation of this plan. The Village Administrator is responsible for day-to-day operation of the Village and oversees 8 departments including the Village Administrators Office, Finance

Department, Building Department, Fire Department, Police Department, Public Works Department, Water Department, and Animal Department.

- **Development Trends:** The Village of Glenwood offers a number of attractive incentives that help create healthy businesses. New, as well as established businesses reap the benefits of the Village's economic development program. Our Village offers Tax Increment Finance, real estate and sales tax abatements, low cost finance, job training and other economic development incentives. For more than 100 years, Glenwood has encouraged development and expansion of commercial and industrial enterprise. Today Glenwood is committed to a vibrant economic environment that fosters business growth. The Village of Glenwood has been, and will always continue to be, committed to economic development.

## 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.

<b>TABLE: LEGAL AND REGULATORY CAPABILITY</b>					
	<b>Local Authority</b>	<b>State or Federal Prohibitions</b>	<b>Other Jurisdictional Authority</b>	<b>State Mandated</b>	<b>Comments</b>
<b>Codes, Ordinances &amp; Requirements</b>					
Building Code	Yes	No	No	Yes	Ordinances Chap. 22 “Buildings and Building Regulations” Original Code 1972. Last updated Ord. No. 2011-56, § 2, 12-20-2011
Zonings	Yes	No	No	Yes	Appendix A “Zoning Ordinance” Original Ordinance No. 1977-6, May 17, 1977. Last updated Ord. No. 2007-30, § 2, 9-18-2007
Subdivisions	Yes	No	No	No	Ordinances Chap. 90 “Subdivisions” Original Code 1972. Last updated Ord. No. 2013-13, § 2, 8-20-2013

Stormwater Management	Yes	No	Yes	Yes	Ordinances Chap. 46 "Floods" Ord. No. 2008-35, § 7-15-2008. And Chap. 38 "Environment" articles III and IV Ord. No. 200728, § 1, 9-18-200
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	No	No	(765 ILCS 77/) Residential Real Property Disclosure Act.
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	Chap. 38 "Environment" Sec. 3865 and Sec. 38-80. Ord. No. 2007-28, § 1, 9-18-2007 And Ordinances Chap. 22 "Buildings and Building Regulations" Original Code 1972. Last updated Ord. No. 2011-56, § 2, 12-20-2011 And Ordinances Chap. 90 "Subdivisions" Original Code 1972. Last updated Ord. No. 2013-13, § 2, 8-20-2013
Public Health and Safety	No	No	Yes	Yes	Cook County Board of Health
Environmental Protection	Yes	No	No	No	Chap. 38 "Environment" articles III and IV Ord. No. 2007-28, § 1, 9-18-2007

<b>Planning Documents</b>					
General or Comprehensive Plan	Yes	No	No	No	Glenwood Comprehensive Plan 2011
<i>Is the plan equipped to provide linkage 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 Little Calumet River watershed planning area of MWRD's comprehensive Stormwater Master Planning Program
Capital Improvement Plan	No	No	No	No	
<i>What types of capital facilities does the plan address?</i>					N/A
<i>How often is the plan revised/updated?</i>					N/A
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	Yes	No	Yes	Yes	Village Comprehensive Plan 2011
Shoreline Management Plan	No	No	No	No	
<b>Response/Recovery Planning</b>					
Comprehensive Emergency Management Plan	No	No	Yes	Yes	Cook County DHSEM
Threat and Hazard Identification and Risk Assessment	No	No	Yes	No	Cook County DHSEM Preparing THIRA
Terrorism Plan	No	No	Yes	Yes	Cook County DHSEM



Post-Disaster Recovery Plan	No	No	No	No	
Continuity of Operations Plan	No	No	Yes	No	Cook County DHSEM
Public Health Plans	No	No	Yes	No	Cook County DPH

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

<b>TABLE: ADMINISTRATIVE AND TECHNICAL CAPABILITY</b>		
<b>Staff/Personnel Resources</b>	<b>Available?</b>	<b>Department/Agency/Position</b>
Planners or engineers with knowledge of land development and land management practices	Yes	Department/Agency/Position
Engineers or professionals trained in building or infrastructure construction practices	Yes	Engineering Consultant acting as Village Engineer, Economic Development and Public Works Dept.
Planners or engineers with an understanding of natural hazards	Yes	Engineering Consultant acting as Village Engineer, Economic Development and Public Works Dept.

Staff with training in benefit/cost analysis	Yes	Finance Department
Surveyors	Yes	Engineering Consultant acting as Village Engineer
Personnel skilled or trained in GIS applications	Yes	Cook County GIS Consortium
Scientist familiar with natural hazards in local area	Yes	Engineering Consultant acting as Village Engineer
Emergency manager	Yes	Village Fire Chief
Grant writers	Yes	Engineering Consultant acting as Village Engineer

<b>TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE</b>	
What department is responsible for floodplain management in your jurisdiction?	Public Works Department
Who is your jurisdiction’s floodplain administrator? (department/position)	Public Works Department
Are any certified floodplain managers on staff in your jurisdiction?	Engineering Consultant acting as Village Engineer
What is the date of adoption of your flood damage prevention ordinance?	Ordinances Chap. 46 “Floods” Ord. No. 2008-35, § 7-152008.
When was the most recent Community Assistance Visit or Community Assistance Contact?	02/23-2007
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. We are also in the process of updating the flood hazard maps
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
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

**TABLE: COMMUNITY CLASSIFICATIONS**

	<b>Participating?</b>	<b>Classification</b>	<b>Date Classified</b>
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	Unknown	Unknown
Public Protection/ISO	Unknown	Unknown	Unknown
StormReady	Yes	Gold (Countywide)	2014
Tree City USA	No	N/A	N/A

## Jurisdiction-Specific Natural Hazard Event

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: 3
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0

TABLE: NATURAL HAZARD EVENTS			
Type of Event	FEMA Disaster Number (if applicable)	Date	Preliminary Damage Assessment
Severe Weather	-	6/30/2014	-
Hail	-	5/20/2014	-
Severe Storms, Straight-Line Winds, Flooding	DR-4116	4/26/2013	-
Severe Winter Snowstorm	DR-1960	1/31/2011	-
Severe Storms and Flooding	DR-1935	7/19/2010	-
Severe Storms and Flooding	DR-1800	9/13/2008	-
Severe Storms and Flooding	DR-1729	8/20/2007	-
Illinois Flooding	DR-1188	8/16/1997	-
Illinois Flooding	DR-1129	7/17/1996	-

### Jurisdiction-Specific Hazards and Impacts

Hazards that represent a county-wide risk are addressed in the Risk Assessment section of the 2019 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.

**Flood:** There are a group of homes on Park Drive in the Manor subdivision that are at risk of repetitive damage from flooding of the Thorn Creek.

**Fog:** Low lying land between Cottage Grove and 394 experiences fog that affects commuters.

**High Winds:** Commuters driving through forest preserve property on Main St. from 187th to State Street and Bluewood Dyer Rd to Cottage Grove are at risk for injury and property damage due to falling branches/trees.

**Severe Weather:** 2014 - Scattered severe thunderstorms developed across northern Illinois producing mainly large hail with a few sporadic areas of wind damage. One storm in particular became quite intense as a right-moving supercell that tracked across the western and southern suburbs of Chicago.

**Severe Winter Weather / Tornado:** May 27th 2019 - a severe thunderstorm capable of producing a tornado was located over Steger, moving northeast at 25 mph. Tornado warning with hazards of ping pong sized hail advisories to neighboring areas including Glenwood.

## 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.

<b>TABLE: HAZARD RISK RANKING</b>		
<b>Rank</b>	<b>Hazard Type</b>	<b>Risk Rating Score (Probability x Impact)</b>
1	Severe Weather	54
2	Severe Winter Weather	54
3	Tornado	45
4	Flood	18
5	Earthquake	16
6	Drought	2
7	Dam Failure	0

## Mitigation Strategies and Actions

The heart of the mitigation plan is the mitigation strategy, which serves as the long-term blueprint for reducing the potential losses identified in the risk assessment. The mitigation strategy describes how the community will accomplish the overall purpose, or mission, of the planning process. In this section, mitigation actions/projects were updated/amended, identified, evaluated, and prioritized. This section is organized as follows:

- New Mitigation Actions - New actions identified during this 2019 update process
- Ongoing Mitigation Actions - Ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.
- Completed Mitigation Actions - An archive of all identified and completed projects, including completed actions since 2014.

The *Hazard Mitigation Action Plan Matrix Table* below lists the actions that make up the jurisdiction’s hazard mitigation plan. The *Mitigation Strategy Priority Schedule Table* identifies the priority for each action.

TABLE: HAZARD MITIGATION ACTION PLAN MATRIX						
Status	Hazards Mitigated	Objectives Met	Lead Agencies	Estimated Cost	Sources of Funding	Timeline/Projected Completion Date (a)
<b>Action G4.1</b> —Increase drainage/absorption capabilities on the west sides of the Village by constructing detention and retention basins.						
Completed	Flood, Severe Weather	1, 2, 3, 9, 12, 13	Village	High	General revenue, Grant	Completed
<b>Action G4.2</b> —The televising and repairing of all sanitary sewer lines and the rehabilitation / sealing of all sanitary structures through-out the Village to eliminate infiltration and stop sewer backups.						
Ongoing	Flood, Severe Weather	1, 2, 9	Village	High	General revenue, Grant	Ongoing
<b>Action G4.3</b> —Develop a community warming/cooling center that can also serve as a safe-room for Tornado events.						
Ongoing	Severe Weather, Severe Winter	5, 8	Village	Medium	General Revenue, FEMA Grants	Short-term

	Weather, Tornado					
<b>Action G4.4</b> —Participate in the Community Rating System.						
Ongoing	Flood	3, 4, 5, 6, 7, 9, 10, 11, 13	Village	Low	General Revenue	Short-term
<b>Action G4.5</b> —Developing and maintaining a GIS database to track community vulnerability and exposure in known hazard areas.						
Ongoing	Multi-hazard	1, 2, 5, 6	Village	High	General Revenue	Short-term
<b>Action G4.6</b> —Develop and implement a multi-hazard public awareness program.						
Ongoing	Multi-hazard	6, 8	Village	Low	Grant, General Revenue	Short-term
<b>Action G4.7</b> —Develop plan to protect infrastructure and critical facilities from natural hazards.						
Ongoing	Multi-hazard	1, 2, 5	Village	Low	Grant	Short-term
<b>Action G4.8</b> —Complete a stormwater drainage study for known problem areas in the community.						
Ongoing	Flood, Severe Weather	3, 13	Village	Medium	Grant	Short-term
<b>Action G4.9</b> —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.						
Completed	All	7, 13	Village	High	FEMA Hazard Mitigation Grants	Completed
<b>Action G4.10</b> —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.						
Ongoing	Flooding	4, 6, 9	Village	Low	General Fund	Short-term and ongoing
<b>Action G4.11</b> —Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.						
Ongoing	All	3, 4, 6, 10, 13	Village	Low	General Fund	Short-term



<b>Action G4.12</b> —Consider the development and implementation of a Capital Improvements Program (CIP) to increase the Village’s regulatory, financial and technical capability to implement mitigation actions.						
Ongoing	All	1, 2, 7	Village	High	CIP component of general fund (if implemented)	Long-term
<b>Action G4.13</b> —Continue to support the countywide actions identified in this plan.						
Ongoing	All	All	Village	Low	General Fund	Short- and long-term
<b>Action G4.14</b> —Actively participate in the plan maintenance strategy identified in this plan.						
Ongoing	All	3, 4, 6	DHSEM, Village	Low	General Fund	Short-term
<b>Action G4.15</b> —Completion of acquisition of homes in the flood plain on park drive, construction of flood wall, bridge replacement on Main Street.						
New	Flood	7, 9	Village of Glenwood	\$4,300,000; High	FEMA	2021
<b>Action G4.16</b> —Levee along Thorn Creek at Arquilla Park.						
New	Flood	9	MWRD	\$5,770,000	MWRD	TBD
(a) Ongoing indicates continuation of an action that is already in place. Short-term indicates implementation within five years. Long-term indicates implementation after five years.						

TABLE: MITIGATION STRATEGY PRIORITY SCHEDULE								
Action Number	Number of Objectives Met	Benefits	Costs	Do Benefits Equal or Exceed Costs?	Is Project Grant-Eligible?	Can Project Be Funded Under Existing Programs/Budgets?	Priority (a)	
1	6	High	High	Yes	Yes	No	High	
2	3	High	High	Yes	Yes	No	High	
3	2	High	Medium	Yes	Yes	No	Medium	
4	1	High	Low	Yes	No	Yes	Medium	
5	4	Medium	Medium	Yes	Yes	No	Medium	

6	1	High	Low	Yes	Yes	Yes	Medium	
7	3	Medium	Medium	Yes	Yes	No	Medium	
8	2	Medium	Medium	Yes	Yes	No	Medium	
9	2	High	High	Yes	Yes	No	Medium	
10	3	Medium	Low	Yes	No	Yes	High	
11	5	Medium	Low	Yes	No	Yes	High	
12	3	High	High	Yes	No	No	Medium	
13	13	Medium	Low	Yes	No	Yes	High	
14	3	Low	Low	Yes	Yes	Yes	High	
15	2	High	High	Yes	Yes	No	High	
16	1	TBD	High	TBD	TBD	TBD	TBD	

(a) See Chapter 1 for explanation of priorities.

## New Mitigation Actions

The following are new mitigation actions created during the 2019 update.

**Action G - 4.15**

<b>Mitigation Action</b>	Completion of acquisition of homes in the flood plain on park drive, construction of flood wall, bridge replacement on Main Street
<b>Year Initiated</b>	2019
<b>Applicable Jurisdiction</b>	Village of Glenwood
<b>Lead Agency/Organization</b>	Village of Glenwood
<b>Supporting Agencies/Organizations</b>	FEMA/IEMA/MWRD
<b>Applicable Goal</b>	<ul style="list-style-type: none"> <li>• Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects.</li> <li>• Protect the lives, health, safety, and property of the citizens of Cook County from the impacts of natural hazards.</li> <li>• Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events.</li> <li>• Develop, promote, and integrate mitigation action plans.</li> </ul>
<b>Applicable Objective</b>	<ul style="list-style-type: none"> <li>• Retrofit, purchase, or relocate structures in high hazard areas, including those known to be repetitively damaged.</li> <li>• Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.</li> </ul>
<b>Potential Funding Source</b>	FEMA
<b>Estimated Cost</b>	\$4,300,000
<b>Benefits (loss avoided)</b>	Decreasing structural damage to residents of Glenwood, decreasing manpower usage for sandbagging during heavy rains
<b>Projected Completion Date</b>	2021
<b>Priority and Level of Importance (Low, Medium, High)</b>	High Priority
<b>Benefit Analysis (Low, Medium, High)</b>	High—Project will provide an immediate reduction of risk exposure for life and property.
<b>Cost Analysis (Low, Medium, High)</b>	High—Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
<b>Actual Completion Date</b>	

**Recommended Mitigation Action/Implementation Plan and Project Description**

<b>Action/Implementation Plan and Project Description:</b>	
--	--

Mitigation Action and Project Maintenance		
Year	Status	Comments
2019	New	
2020		
2021		
2022		
2023		

Mitigated Hazards	
	All Hazards
	Dam/Levee Failure
	Drought
	Earthquake
X	Flood
	Extreme Heat
	Lightning
	Hail
	Fog
	High Wind
	Snow
	Blizzard
	Extreme Cold
	Ice Storms
	Tornado
	Epidemic or pandemic
	Nuclear Power Plant Incident
	Widespread Power Outage
	Coastal Erosion
	Secondary Impacts from Mass Influx of Evacuees
	Hazardous Materials Incident

**Action G - 4.16**

<b>Mitigation Action</b>	Levee along Thorn Creek at Arquilla Park
<b>Year Initiated</b>	2019
<b>Applicable Jurisdiction</b>	City of Chicago
<b>Lead Agency/Organization</b>	MWRD
<b>Supporting Agencies/Organizations</b>	City of Chicago
<b>Applicable Goal</b>	<ul style="list-style-type: none"> <li>Protect the lives, health, safety, and property of the citizens of Cook County from the impacts of natural hazards.</li> </ul>
<b>Applicable Objective</b>	<ul style="list-style-type: none"> <li>Provide or improve flood protection on a watershed basis with flood control structures and drainage maintenance plans.</li> </ul>
<b>Potential Funding Source</b>	MWRD (\$3,870,000)
<b>Estimated Cost</b>	\$5,770,000
<b>Benefits (loss avoided)</b>	TBD
<b>Projected Completion Date</b>	TBD
<b>Priority and Level of Importance (Low, Medium, High)</b>	TBD
<b>Benefit Analysis (Low, Medium, High)</b>	TBD
<b>Cost Analysis (Low, Medium, High)</b>	TBD
<b>Actual Completion Date</b>	TBD

Recommended Mitigation Action/Implementation Plan and Project Description	
<b>Action/Implementation Plan and Project Description:</b>	ID: THCR-G1 Contract: 15-IGA-14 Watershed: Little Cal River Location: Glenwood, IL Description: A cost-sharing agreement with the Village of Glenwood to provide a levee at Arquilla Park to protect residential structures from overbank flooding.

Mitigation Action and Project Maintenance			
Year	Status	Comments	
2019	New	Village working to acquire remaining properties needed for levee.	
2020			
2021			
2022			
2023			

Mitigated Hazards	
	<b>All Hazards</b>
	Dam/Levee Failure
	Drought
	Earthquake
X	Flood
	Extreme Heat
	Lightning
	Hail
	Fog
	High Wind
	Snow
	Blizzard
	Extreme Cold
	Ice Storms
	Tornado
	Epidemic or pandemic
	Nuclear Power Plant Incident
	Widespread Power Outage
	Coastal Erosion
	Secondary Impacts from Mass Influx of Evacuees
	Hazardous Materials Incident

### Ongoing Mitigation Actions

The following are ongoing actions with no definitive end or that are still in progress. During the 2019 update, these "ongoing" mitigation actions and projects were modified and/or amended, as needed.



**Action G - 4.2**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.2	The televising and repairing of all sanitary sewer lines and the rehabilitation / sealing of all sanitary structures through-out the Village to eliminate infiltration and stop sewer backups.	
Status Description: Yes	Certain sections were repaired, more are planned.	O
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.3**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.3	Develop a community warming/cooling center that can also serve as a safe-room for Tornado events.	
Status Description: No		X
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.4**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.4	Participate in the Community Rating System.	
Status Description: No		X
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.5**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.5	Developing and maintaining a GIS database to track community vulnerability and exposure in known hazard areas.	
Status Description: Yes	Atlases converted for infiltration and inflow reduction plan.	O
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.6**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.6	Develop and implement a multi-hazard public awareness program.	
Status Description: Yes		O
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.7**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.7	Develop plan to protect infrastructure and critical facilities from natural hazards.	
Status Description: No		X
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.8**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.8	Complete a stormwater drainage study for known problem areas in the community.	
Status Description: Yes	Halsted plaza area drainage study completed. Clark and Pickens intersection drainage study ongoing.	O
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.10**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.10	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.	
Status Description: Yes	Uploading flood maps	O
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.11**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.11	Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.	
Status Description: Yes	Planning continues, particularly in the 100 year flood zone areas.	O
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.12**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.12	Consider the development and implementation of a Capital Improvements Program (CIP) to increase the Village’s regulatory, financial and technical capability to implement mitigation actions.	
Status Description: Yes	Capital Improvements Program	O
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.13**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.13	Continue to support the countywide actions identified in this plan.	
Status Description: No		X
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.14**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.14	Actively participate in the plan maintenance strategy identified in this plan.	
Status Description: No		X
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

### Completed Mitigation Actions

The following section represents completed mitigation actions, and serves as an archive of identified and completed projects.

**Action G - 4.1**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.1	Increase drainage/absorption capabilities on the west sides of the Village by constructing detention and retention basins.	
Status Description: Yes	Added Retention pond	C
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		

**Action G - 4.9**

<b>TABLE: ACTION PLAN MATRIX</b>		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# G—4.9	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.	
Status Description: Yes	Jane Street Lift Station	C
Completion status legend: <b>N</b> = New <b>O</b> = Action Ongoing toward Completion <b>C</b> = Project Completed <b>R</b> = Want Removed from Annex <b>X</b> = No Action Taken		



## Future Needs to Better Understand Risk/Vulnerability

No needs have been identified at this time.

## Additional Comments

No additional comments at this time

## HAZUS-MH Risk Assessment Results

GLENWOOD EXISTING CONDITIONS	
2010 Population	8,969
Total Assessed Value of Structures and Contents	\$1,488,399,211
Area in 100-Year Floodplain	274.86 acres
Area in 500-Year Floodplain	329.95 acres
Number of Critical Facilities	28

HAZARD EXPOSURE IN GLENWOOD						
	Number Exposed		Value Exposed to Hazard		Total	% of Total Assessed Value Exposed
	Population	Buildings	Structure	Contents		
<b>Dam Failure</b>						
Buffalo Creek	0	0	\$0	\$0	\$0	0.00%
U. Salt Cr. #2	0	0	\$0	\$0	\$0	0.00%
Touhy	0	0	\$0	\$0	\$0	0.00%
U. Salt Cr. #3	0	0	\$0	\$0	\$0	0.00%
U. Salt Cr. #4	0	0	\$0	\$0	\$0	0.00%
<b>Flood</b>						
100-Year	20	6	\$1,389,060	\$694,530	\$2,083,590	0.14%

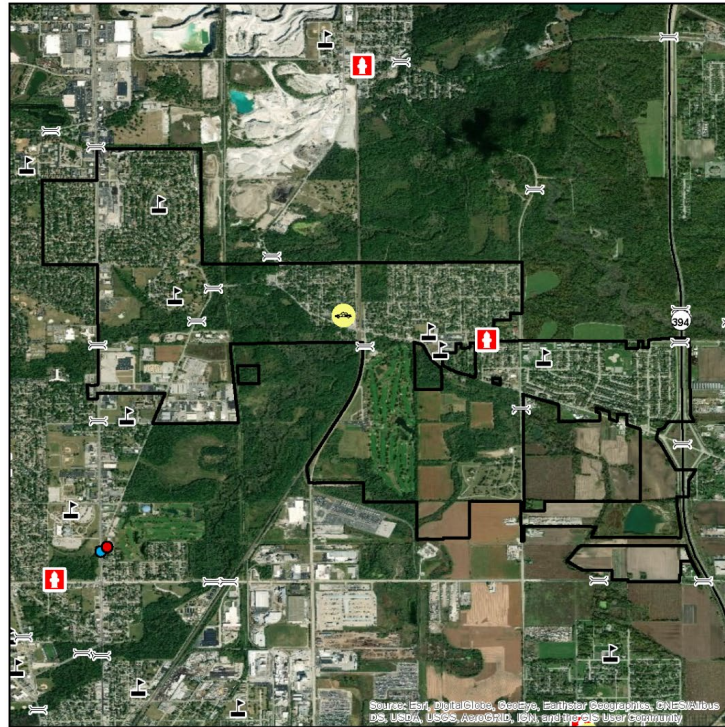
500-Year	94	29	\$6,448,692	\$3,224,346	<b>\$9,673,038</b>	0.65%
<b>Tornado</b>						
100-Year	—	—	\$134,285,669	\$74,830,005	<b>\$209,115,674</b>	14.05%
500-Year	—	—	\$1,087,151,706	\$735,532,265	<b>\$1,822,683,970</b>	122.46%

**ESTIMATED PROPERTY DAMAGE VALUES IN GLENWOOD**

	Estimated Damage Associated with Hazard			% of Total Assessed Value Damaged
	Building	Contents	Total	
<b>Dam Failure</b>				
Buffalo Creek	\$0	\$0	<b>\$0</b>	0.00%
U. Salt Cr. #2	\$0	\$0	<b>\$0</b>	0.00%
Touhy	\$0	\$0	<b>\$0</b>	0.00%
U. Salt Cr. #3	\$0	\$0	<b>\$0</b>	0.00%
U. Salt Cr. #4	\$0	\$0	<b>\$0</b>	0.00%
<b>Earthquake</b>				
1909 Historical Event	\$3,782,747	\$1,026,325	<b>\$4,809,072</b>	0.32%
<b>Flood</b>				
10-Year	\$58,570	\$27,821	<b>\$86,391</b>	0.01%
100-Year	\$172,200	\$71,589	<b>\$243,790</b>	0.02%
500-Year	\$685,345	\$305,370	<b>\$990,715</b>	0.07%

<b>Tornado</b>				
100-Year	\$13,428,567	\$7,483,000	<b>\$20,911,567</b>	1.40%
500-Year	\$158,724,149	\$107,387,711	<b>\$266,111,860</b>	17.88%

# Hazard Mapping

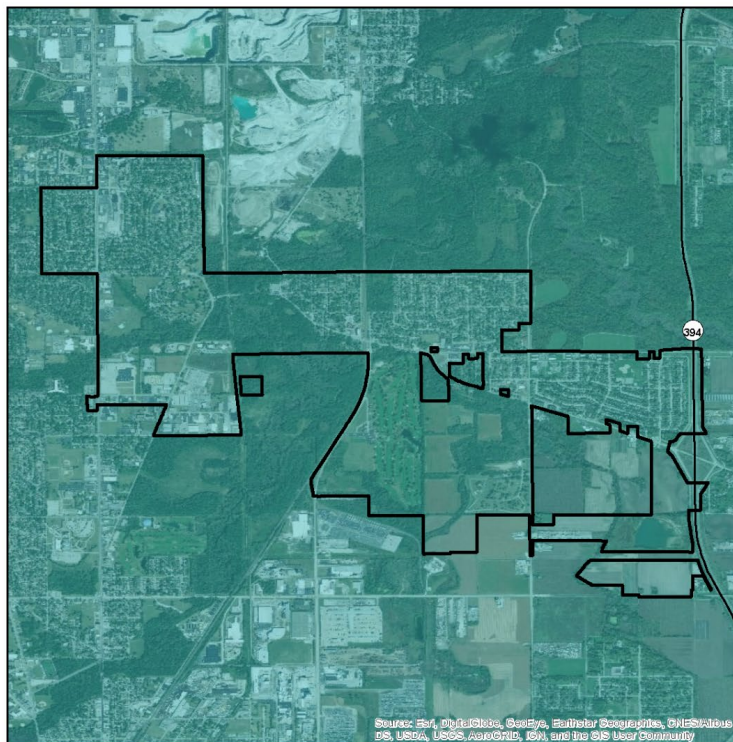


**VILLAGE OF GLENWOOD**

**CRITICAL INFRASTRUCTURE**

- Oil Facilities
- Transit Centers
- Military Facilities
- Police Stations
- Fire Stations
- Hazardous Waste
- Airports
- Hospitals
- Highway Bridges
- Warming Centers
- Cooling Centers
- Schools
- Railroad Stations

Base Map Data Sources:  
Cook County, ESRI



**VILLAGE OF GLENWOOD**

**PEAK GROUND ACCELERATION FOR A 100 YEAR EARTHQUAKE EVENT**

**Mercalli Scale, Potential Shaking**

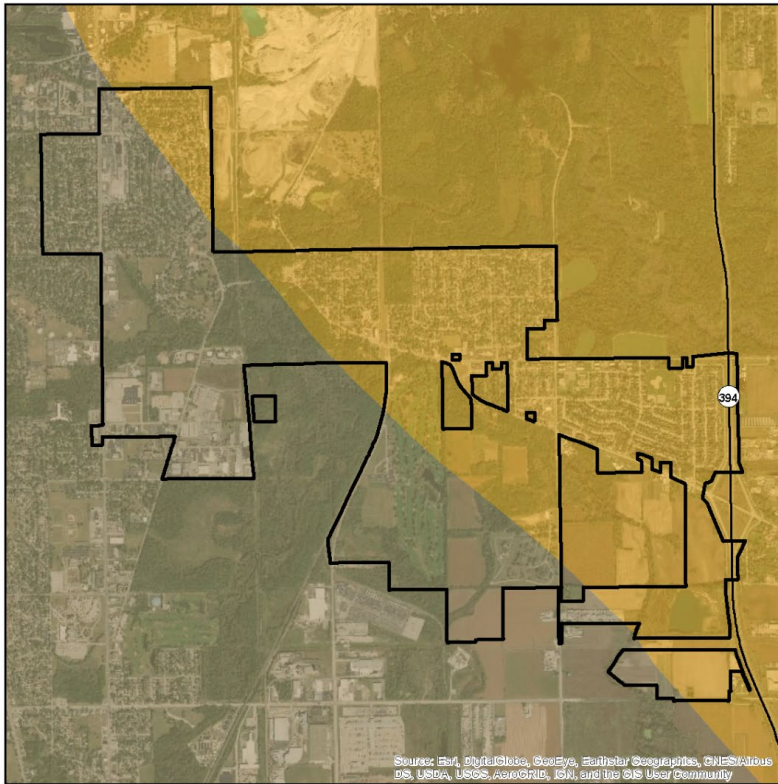
- II-III Weak

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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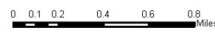
**VILLAGE OF GLENWOOD**  
**NATIONAL EARTHQUAKE HAZARD REDUCTION PROGRAM (NEHRP) SOIL CLASSIFICATION**

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

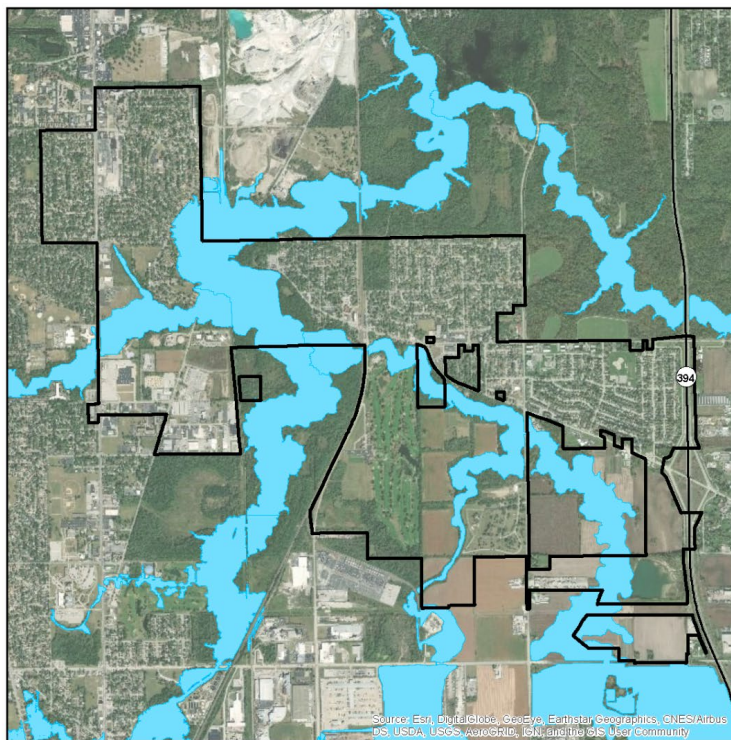
Data provided by the Illinois State Geological Survey and Cook County.

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-2759 Map of Surficial Deposits and Materials in the Eastern and Central United States (East of 102 degrees West Longitude) by David S. Fulkton, Charles A. Bush and Jean H. 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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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



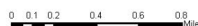
**VILLAGE OF GLENWOOD**  
**COOK COUNTY MWRDGC 100-YEAR INUNDATION AREA**

**100-year Inundation Area**

100-year Inundation Area

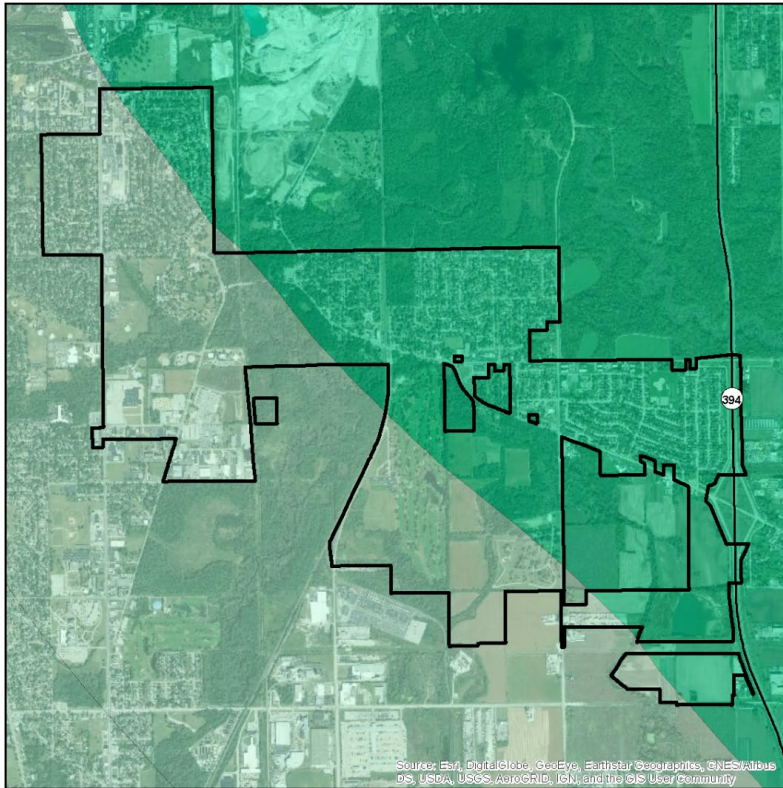
MWRDGC Data provided by Metropolitan Water Reclamation District of Greater Chicago and Cook County.

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**VILLAGE OF GLENWOOD**

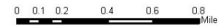
**LIQUEFACTION SUSCEPTIBILITY**

- LIQUEFACTION SUSCEPTIBILITY**
- high
  - low
  - very low

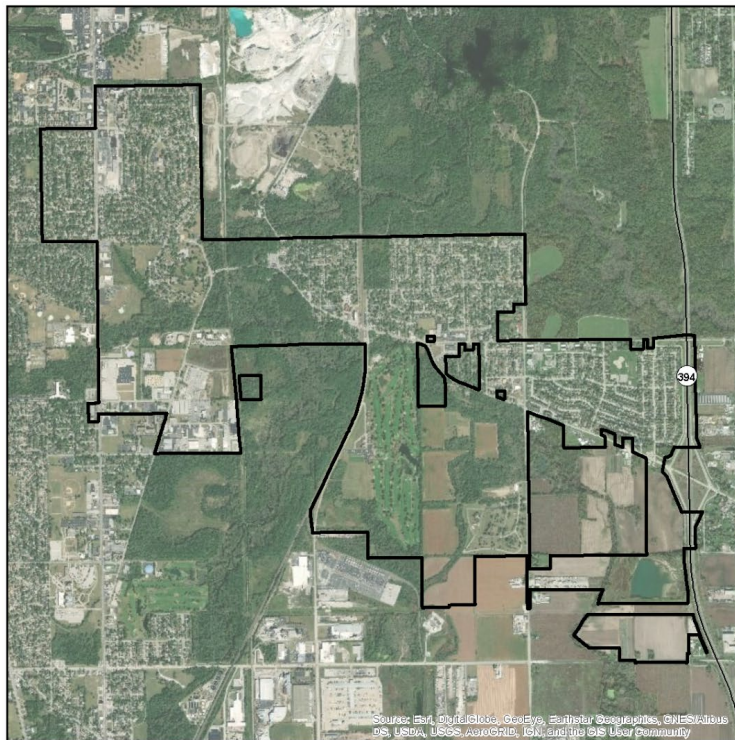
Data provided by the Illinois State Geological Survey and Cook County.

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-2789 Map of Surficial Deposits and Materials in the Eastern and Central United States (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 2002 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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**VILLAGE OF GLENWOOD**

**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.



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