

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

Worth Annex

FINAL

July 2019

Prepared for:



Cook County
Department of Homeland Security and Emergency Management
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Hazard Mitigation Point of Contact

Primary Point of Contact	Alternate Point of Contact
Bruce Zartler, Building Commissioner 7112 West 111 Street Worth, IL 60482 Telephone: (708) 923-7504 Email Address: Bzartler@villageofworth.com	Mary Werner, Village President 7112 West 111 Street Worth, IL 60482 Telephone: (708) 448-1181 Email Address: mwerner@villageofworth.com

Jurisdiction Profile

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

- **Date of Incorporation:** 1914
- **Current Population:** 10,563 as of the 2018 US Census population estimate.
- **Population Growth:** The population of the Village of Worth has steadily declined at a rate of 1-3% over the past 40 years.
- **Location and Description:** The Village of Worth is a southwest suburb of Chicago in Cook County located 20 miles from the Chicago Loop. Worth is 3 miles west of the Chicago's south side. Suburbs adjacent to Worth include Palos Hills and Chicago Ridge to the north and east, Palos Heights to the south, and Palos Hills to the west. Worth is a generally a blue-collar residential community with a modest business district. Interstate 294 runs along the east side of Worth. Worth has boat launch access to the Calumet Sag Canal which runs along the southern border. According to the US Census Bureau, the Village of Worth has a total land area of 2.37 square miles.
- **Brief History:** In 1858 John Crandall built the first home in town on 111th Street, 31 additional homes soon followed. The Wabash Railroad was eventually built across from the Crandall farm. The railroad provided the real beginning to the community by establishing the Worth Train Station in 1880. The motivated Crandall sold portions of his land and encouraged establishing settlements. Following his efforts, the Calumet Sag Canal construction began in 1911 and was completed in 1922. The Village of Worth was officially founded In 1914, with a population of about 300. The Village is named after General William Jenkins Worth who served in both the War of 1812 and the Mexican War. The Village is surrounded by historic waterways and its northern border touches Stony Creek, a 14,000-year-old waterway.
- **Climate:** The Village of Worth and City of Chicago's weather is classified as humid continental, with all four seasons distinctly represented: wet springs; hot and humid summers; pleasant autumns; and cold winters. Annual precipitation is average and reaches its lowest points in the months of January and February, with peaks in the months of May and June. Winter weather is variable, with seasonal snowfall ranging from 9 – 90 inches. The daily average temperature in January at Midway Airport is 24.8 °F (-4.0 °C), and temperatures often stay below freezing for several consecutive days or even weeks in January and February. Temperatures drop to or below 0 °F (-18 °C) on 5.5 nights annually at Midway and 8.2 nights at O'Hare. Spring in the Chicago area is perhaps the areas wettest and most unpredictable season. Winter-like conditions can persist well into April and occasionally into May. Thunderstorms are especially prevalent in the springtime as the area's lakeside location makes it a center of conflicts between large volumes of warmer and colder air, triggering severe weather. Temperatures vary tremendously in the springtime; March is the month with the greatest span between the record highs and lows. On a typical summer day, humidity is usually moderately high and temperatures ordinarily reach anywhere between 78 and 92 °F (26 and 33 °C). The extreme heat that the Chicago area is capable of experiencing during the height of the summer season can persist into autumn. Temperatures have reached 100 degrees high and subzero lows below -18 °C. Fall can

bring heavy thunderstorms, many of which are capable of producing flooding. The first average accumulating snow occurs around November 19.

- **Governing Body Format:** The Village of Worth operates under a President-Trustee form of government with a Village President and a Board of Trustees elected at large. This body of Government will assume the responsibility for the adoption and implementation of this plan. In addition, the Village has a full-time police department, a Department of Public Works and Fire and EMS are contracted to the North Palos Fire Protection District.
- **Development Trends:** Anticipated development trends for Worth are low to moderate, consisting of residential and retail. Residentially, there has been a focus on remodeling, demolition, and new home construction. Worth recently hired an economic development consultant. The economic development committee has started the preliminary planning process with the Chicago Metropolitan Agency for Planning. Worth is currently reviewing Ordinances and Code Enforcement that regulate business. There is also a TIF district and information on the Village of Worth's website with additional information.

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	Yes	Yes	2006 International Building Code; 2006 International Residential Code; 2006 International Existing Building Code; 2006 International Property Maintenance Code; 2006 International Mechanical Code 2006 International Energy Conservation Code; 2006 International Fuel Gas Code; 2007 Chicago Plumbing Code; 2007 Chicago Electrical Code; Americans with Disabilities Act. (Ord. 87-11, 4-21-1987, eff. 7-1-1987; amd. 1995 Code

Zonings	Yes	No	No	No	Ordinance 12-15-1964;
Subdivisions	Yes	No	No	No	1970 Code §35.1
Stormwater Management	Yes	No	MWRD	Yes	§6-4 of the MWRD Manual of Procedures
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	Yes	No	Yes	Yes	(765 ILCS 77/) Residential Real Property Disclosure Act. 1970 Code §2.37; amd. 1995 Code
Growth Management	Yes	No	No	No	REAL ESTATE DEVELOPMENT BOARD (Ord. 04-30, 5-18-2004, eff. 7-1-2004)
Site Plan Review	Yes	No	No	No	Building Regulations
Public Health and Safety	Yes	No	Yes	Yes	1991 Illinois Department of Public Health Food Service Sanitation Code
Environmental Protection	No	No	No	No	
Planning Documents					
General or Comprehensive Plan	Yes	No	No	No	Village of Worth Comprehensive Retail Plan, September 2004
<i>Is the plan equipped to provide linkage to this mitigation plan?</i>					No
Floodplain or Basin Plan	Yes	No	Yes	Yes	Title 12 – Flood Regulation, Village Code
Stormwater Plan	No	No	MWRD	No	Regional stormwater impacts

					are managed by MWRD. The Village lies within the Calumet Sag Channel watershed planning area of MWRD’s comprehensive Stormwater Master Planning Program §6-4 of the MWRD Manual of Procedures
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	No	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. Village Economic Development Commission
Shoreline Management Plan	No	No	No	No	
Response/Recovery Planning					
Comprehensive Emergency Management Plan	No	No	Yes	Yes	

Threat and Hazard Identification and Risk Assessment	No	No	Yes	Yes	Cook County DHSEM Preparing THIRA
Terrorism Plan	Yes	No	Yes	Yes	Partial plan for Village Infrastructure protection.
Post-Disaster Recovery Plan	No	No	No	No	
Continuity of Operations Plan	Yes	No	Yes	Yes	Village Emergency Operation Plan
Public Health Plans	No	No	Yes	Yes	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
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

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	Public Works Department / Village Engineer

Engineers or professionals trained in building or infrastructure construction practices	Yes	Public Works Department / Village Engineer
Planners or engineers with an understanding of natural hazards	Yes	Public Works Department / Village Engineer
Staff with training in benefit/cost analysis	Yes	Finance Department
Surveyors	Yes	Public Works Department / Village Engineer
Personnel skilled or trained in GIS applications	Yes	Cook County GIS Consortium
Scientist familiar with natural hazards in local area	No	
Emergency manager	Yes	Village President
Grant writers	Yes	Public Works Department / Village Engineer

TABLE: NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your jurisdiction?	Building Department
Who is your jurisdiction’s floodplain administrator? (department/position)	Building Commissioner
Are any certified floodplain managers on staff in your jurisdiction?	Yes, Village Engineer
What is the date of adoption of your flood damage prevention ordinance?	3/18/2008, Ordinance 08-06
When was the most recent Community Assistance Visit or Community Assistance Contact?	04/18/2001
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)	No – Local flooding caused by undersized sewers and culverts.
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. Technical Training and Equipment
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; Undecided

TABLE: COMMUNITY CLASSIFICATIONS			
	Participating?	Classification	Date Classified
Community Rating System	No	N/A	N/A
Building Code Effectiveness Grading Schedule	Yes	Unknown	Unknown
Public Protection/ISO	Yes	ISO Rating—Level 3	2009, North Palo Fire Protection District
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: 0
- 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
Hail	-	5/20/2014	-
Hail	-	5/20/2014	-
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 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.

Flooding: In 2006, Flash/Urban Flooding occurred on 114th Street east of Harlem Avenue and New England Avenue between 113th and 114th Streets. The streets were impassible.

Severe Weather: In 2003, a two-foot diameter tree limb was blown down and destroyed a camper because of Severe Winds.

Drought: Although no loss of life, livestock, crops, or property has ever been officially recorded within Cook County, on average, the nationwide annual impacts of drought are greater than the impacts of any other natural hazard. They are estimated to be between \$6 billion and \$8 billion annually in the United States and occur primarily in the agriculture, transportation, recreation and tourism, forestry, and energy sectors. Social and environmental impacts are also significant, although it is difficult to put a precise cost on these impacts.

Extreme Heat/Extreme Cold: Water mains infrastructures is 60 years old, there is risk that water mains breaks during the winter and summer season (when the fire department opens fire hydrant's to flush mains out).

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	Risk Rating Score (Probability x Impact)
1	Flood	54
2	Severe Weather	51
3	Severe Winder Weather	51
4	Tornado	42
5	Earthquake	12
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)
Action W8.1 —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.						
Removed	All	7, 13	Village of Worth	High	FEMA Hazard Mitigation Grants	Removed
Action W8.2 —Continue to support the countywide actions identified in this plan.						
Completed	All	All	Village of Worth	Low	General Fund	Completed
Action W8.3 —Actively participate in the plan maintenance strategy identified in this plan.						
Ongoing	All	3, 4, 6	DHSEM, Village of Worth	Low	General Fund	Short-term
Action W8.4 —Consider participation in incentive-based programs such as the Community Rating System, Tree City, and StormReady.						

Ongoing	All	3, 4, 5, 6, 7, 9, 10, 11, 13	Village of Worth	Low	General Fund	Long-term
Action W8.5 —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.						
Removed	Flooding	4, 6, 9	Village of Worth	Low	General Fund	Removed
Action W8.6 —Where feasible, implement a program to record high water marks following high-water events.						
Removed	Flooding, Severe Weather	3, 6, 9	Village of Worth	Medium	General Fund; FEMA Grant Funds (Public Assistance)	Removed
Action W8.7 —Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.						
Ongoing	All	3, 4, 6, 10, 13	Public Works, Village Engineer	Low	General Fund	Short-term
Action W8.8 —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	Public Works	High	CIP component of general fund (if implemented)	Long term
Action W8.9 —Update water mains						
New	Drought, Extreme Heat, Extreme Cold	1, 2, 7	Unknown	2 million; High	Unknown	Short term
(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	2	High	High	Yes	Yes	No	Medium
2	13	Medium	Low	Yes	No	Yes	High
3	3	Medium	Low	Yes	Yes	Yes	High
4	9	Medium	Low	Yes	No	Yes	Medium
5	3	Medium	Low	Yes	No	Yes	High
6	3	Medium	Medium	Yes	Yes	No	Medium
7	5	Medium	Low	Yes	No	Yes	High
8	3	High	High	Yes	No	No	Medium
9	3	High	High	Yes	Unknown	No	High

(a) See Chapter 1 for explanation of priorities.

New Mitigation Actions

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

Action W-8.9

Mitigation Action	Update water mains
Year Initiated	2019
Applicable Jurisdiction	Village of Worth
Lead Agency/Organization	
Supporting Agencies/Organizations	N/A
Applicable Goal	<ul style="list-style-type: none"> • Develop and implement sustainable, cost-effective, and environmentally sound risk-reduction (mitigation) projects. • Protect the lives, health, safety, and property of the citizens of Cook County from the impacts of natural hazards. • Protect public services and critical facilities, including infrastructure, from loss of use during natural hazard events. • Involve stakeholders to enhance the local capacity to mitigate, prepare for, and respond to the impacts of natural hazards. • Develop, promote, and integrate mitigation action plans. • Promote public understanding of and support for hazard mitigation.
Applicable Objective	<ul style="list-style-type: none"> • Eliminate or minimize disruption of local government operations caused by natural hazards through all phases of emergency management. • Increase the resilience of (or protect and maintain) infrastructure and critical facilities. • Retrofit, purchase, or relocate structures in high hazard areas, including those known to be repetitively damaged.
Potential Funding Source	No local funds
Estimated Cost	2 million
Benefits (loss avoided)	Infrastructure is 60 years old and this project would benefit our fire department and the health and welfare of our community

Projected Completion Date	N/A
Priority and Level of Importance (Low, Medium, High)	High Priority
Benefit Analysis (Low, Medium, High)	High—Project will provide an immediate reduction of risk exposure for life and property.
Cost Analysis (Low, Medium, High)	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).
Actual Completion Date	

Recommended Mitigation Action/Implementation Plan and Project Description

Action/Implementation Plan and Project Description:	New water main infrastructure would decrease water main breaks during winter season, and during summer season of having a water main break when the fire department opens fire hydrant's to flush mains out
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Mitigation Action and Project Maintenance

Year	Status	Comments
2019	New	
2020		
2021		
2022		
2023		

Mitigated Hazards

All Hazards	
	Dam/Levee Failure
X	Drought
	Earthquake
	Flood
X	Extreme Heat
	Lightning
	Hail
	Fog
	High Wind
	Snow
	Blizzard
X	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 W-8.3

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# W—8.3	Actively participate in the plan maintenance strategy identified in this plan.	
Status Description: Yes		O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action W-8.4

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# W—8.4	Consider participation in incentive-based programs such as the Community Rating System, Tree City, and StormReady.	
Status Description: No		O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action W-8.7

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# W—8.7	Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.	
Status Description: Yes		O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Action W-8.8

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# W—8.8	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		O
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = No Action Taken		

Completed Mitigation Actions

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

Action W-8.2

TABLE: ACTION PLAN MATRIX		
Action Number Action Taken Y/N	Action Item Description	Status (X, O, C, R, N)
# W—8.2	Continue to support the countywide actions identified in this plan.	
Status Description: Yes		C
Completion status legend: N = New O = Action Ongoing toward Completion C = Project Completed R = Want Removed from Annex X = 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

WORTH EXISTING CONDITIONS	
2010 Population	10,789
Total Assessed Value of Structures and Contents	\$2,859,599,830
Area in 100-Year Floodplain	36.66 acres
Area in 500-Year Floodplain	37.54 acres
Number of Critical Facilities	24

HAZARD EXPOSURE IN WORTH						
	Number Exposed		Value Exposed to Hazard		Total	% of Total Assessed Value Exposed
	Population	Buildings	Structure	Contents		
Dam Failure						
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%
Flood						
100-Year	16	5	\$14,444,104	\$13,794,840	\$28,238,945	0.99%

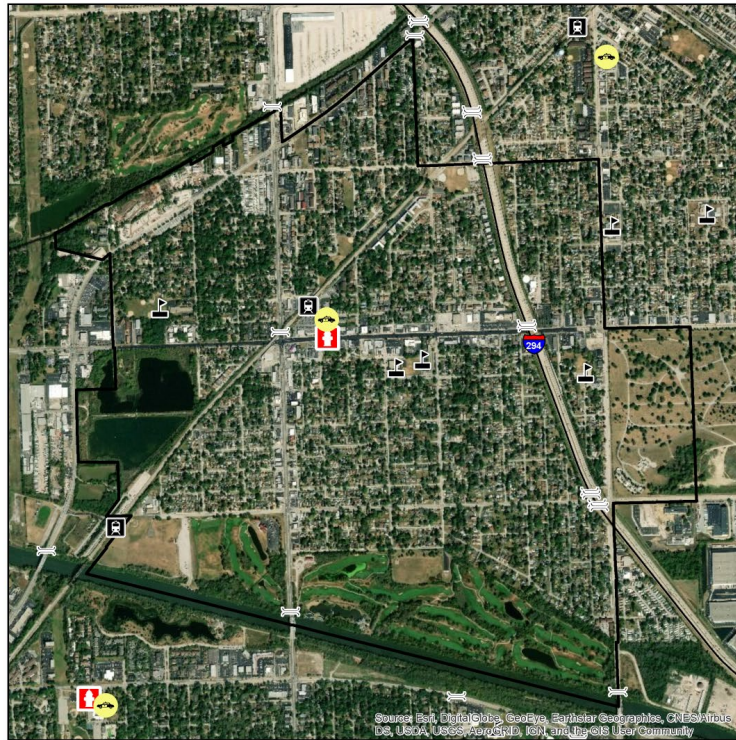
500-Year	16	5	\$14,444,104	\$13,794,840	\$28,238,945	0.99%
Tornado						
100-Year	—	—	\$320,058,245	\$222,437,956	\$542,496,201	18.97%
500-Year	—	—	\$1,150,912,495	\$974,593,638	\$2,125,506,133	74.33%

ESTIMATED PROPERTY DAMAGE VALUES IN WORTH

	Estimated Damage Associated with Hazard			% of Total Assessed Value Damaged
	Building	Contents	Total	
Dam Failure				
Buffalo Creek	\$0	\$0	\$0	0.00%
U. Salt Cr. #2	\$0	\$0	\$0	0.00%
Touhy	\$0	\$0	\$0	0.00%
U. Salt Cr. #3	\$0	\$0	\$0	0.00%
U. Salt Cr. #4	\$0	\$0	\$0	0.00%
Earthquake				
1909 Historical Event	\$34,213,007	\$11,301,447	\$45,514,455	1.59%
Flood				
10-Year	\$0	\$0	\$0	0.00%
100-Year	\$0	\$0	\$0	0.00%
500-Year	\$307,792	\$179,384	\$487,176	0.02%

Tornado				
100-Year	\$32,005,824	\$22,243,796	\$54,249,620	1.90%
500-Year	\$168,033,224	\$142,290,671	\$310,323,895	10.85%

Hazard Mapping



VILLAGE OF WORTH

CRITICAL INFRASTRUCTURE

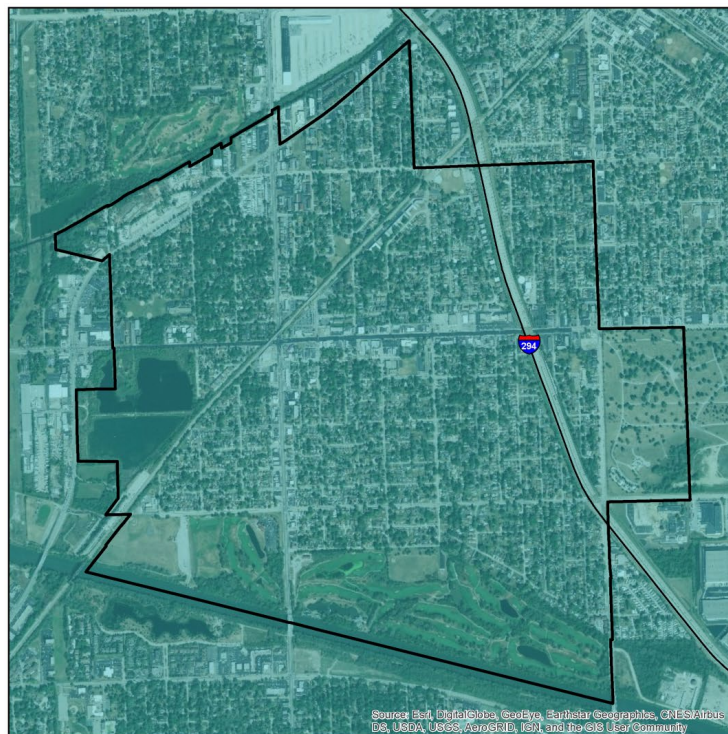
- Oil Facilities
- Transit Centers
- Military Facilities
- Police Stations
- Fire Stations
- Hazardous Waste
- Airports
- Hospitals
- Highway Bridges
- Warming Centers
- Cooling Centers
- Schools
- Railroad Stations

Base Map Data Sources:
Cook County, ESRI



0 0.075 0.15 0.3 0.45 0.6 Miles

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



VILLAGE OF WORTH

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.

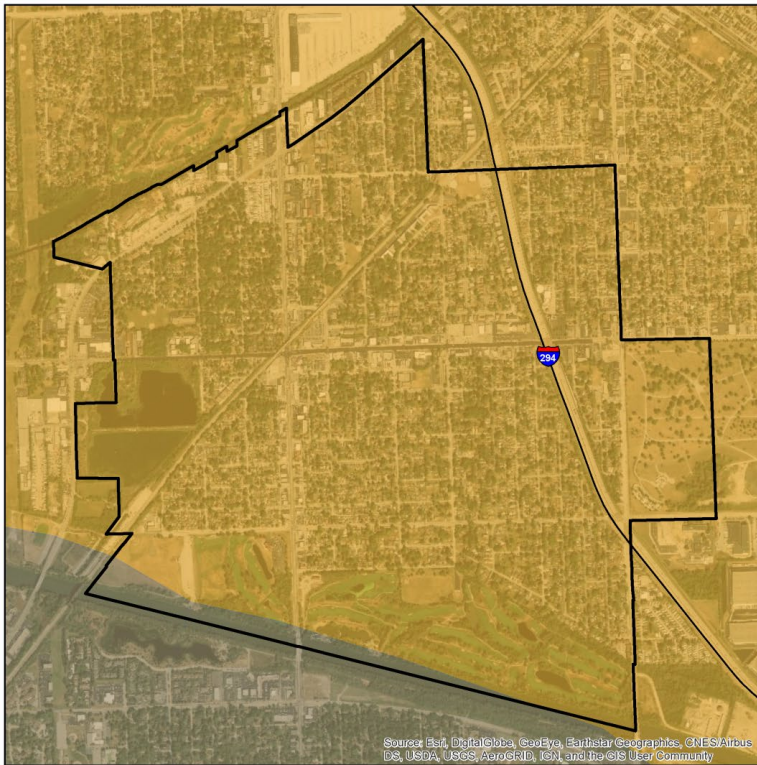
Probabilistic seismic-hazard maps were prepared for the conterminous United States for 2014 portraying peak horizontal acceleration and horizontal spectral response acceleration for 0.2- and 1.0-second periods with probabilities of exceedance of 10 percent in 50 years and 2 percent in 50 years. All of 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.

The information included on this map has been compiled for Cook County from a variety of sources and is subject to change without notice. Cook County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. Cook County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of Cook County.



0 0.075 0.15 0.3 0.45 0.6 Miles

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



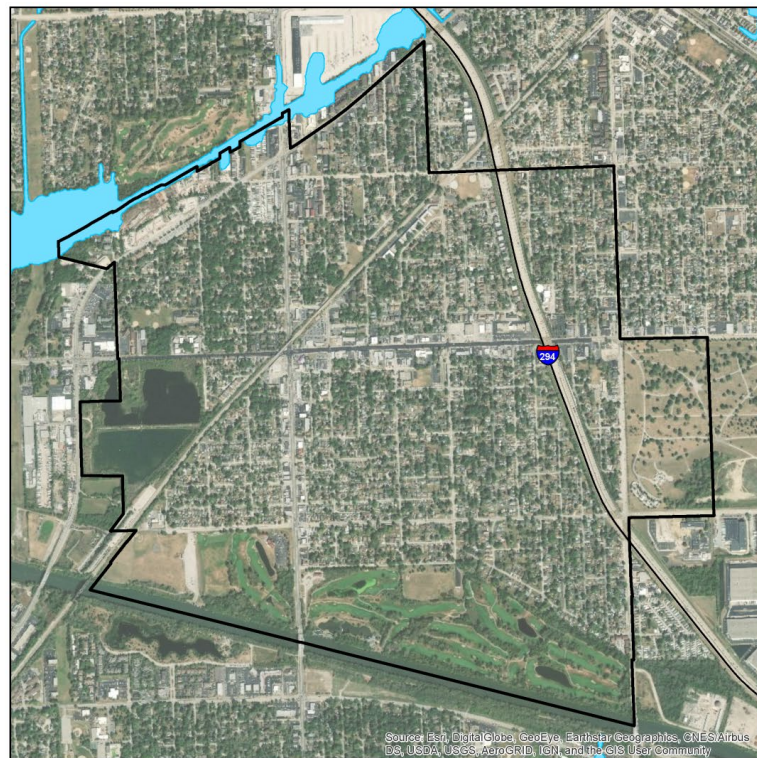
VILLAGE OF WORTH
NATIONAL EARTHQUAKE HAZARD REDUCTION PROGRAM (NEHRP) SOIL CLASSIFICATION

- 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 Class map (NEHRP Soil Profile Type Map) as 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 I 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 Juan N. Pinnell (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 2000 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 WORTH

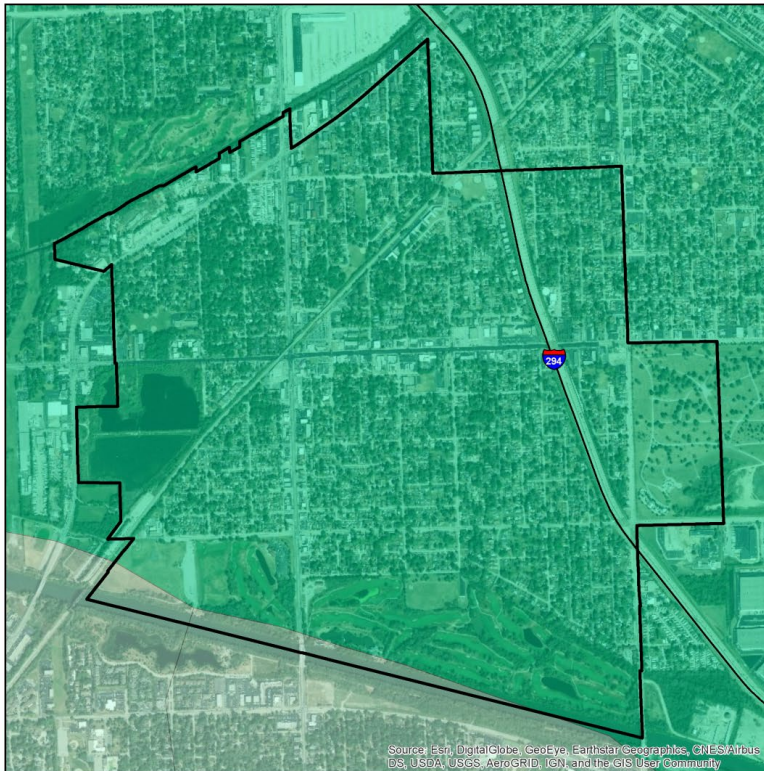
COOK COUNTY MWRDGC 100-YEAR INUNDATION AREA

- 100-year Inundation Area

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

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VILLAGE OF WORTH

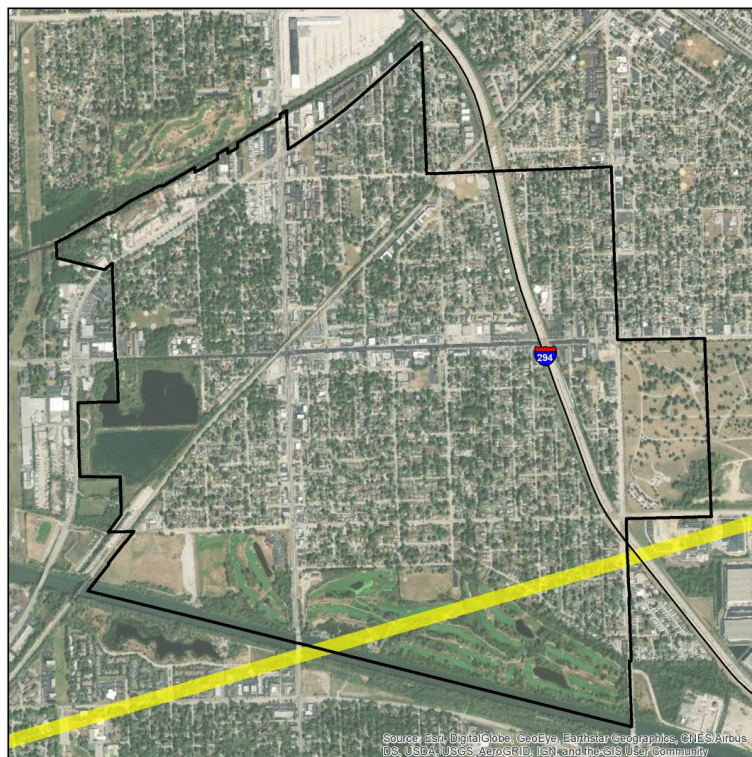
LIQUEFACTION SUSCEPTIBILITY



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

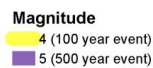
The Central United States Earthquake Consortium (CUSEC) State Geologists produced a regional Soil Site Class map (NEHRP Soil Profile Type Map), a Liquefaction Susceptibility Map and a Soil Response Map for the 8 states to be used in the FEMA New Madrid Catastrophic Planning Initiative Phase II work. 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 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, 2003) 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 WORTH

100- AND 500- YEAR TORNADO EVENTS



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

