CHAPTER 115.
VILLAGE OF WINNETKA ANNEX

115.1 HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact

Alan Berkowsky, Fire Chief
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Winnetka, IL 60093-2576
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Alternate Point of Contact

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115.2 JURISDICTION PROFILE

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

- **Date of Incorporation:** 1869
- **Current Population:** The 2012 population for Winnetka is 12,370.
- **Population Growth:** Based on City-Data.com, the 2012 population for Winnetka is 12,370, showing a 0.4% decrease since 2000. With mainly single-family residential dwellings, the population has remained relatively stable over the last 10 years.
- **Location and Description**: Winnetka is located just 16 miles north of Downtown Chicago nestled between Glencoe to the north, Kenilworth to the south, Northfield to the west, with Lake Michigan on our eastern border. The Village has been recognized as one of the most exclusive and wealthiest suburbs in the nation according to CNN Money. The building stock is mainly single family homes with four shopping districts throughout the Village. Winnetka produces its own water and electricity with both plants just off the Lake Michigan shoreline. According to the U.S. Census Bureau, the Village of Winnetka has a total land area of 3.81 square miles.
- **Brief History:** The first house was built in 1836 and the Village incorporated in 1869. During the Great Depression in the 1920s, the Village rebuilt the railroad right-of-ways and recessed them below grade to eliminate railroad gate crossing accidents. As a result, there are no railroad gate crossings in the Village. Winnetka has been providing fire protection to the Village of Kenilworth since the 1930s and both Fire & Police protection to the unincorporated areas of Cook County (also known as the Woodley area) adjacent to the Village. Numerous movies were filmed in Winnetka, but the most notable was the house used for Home Alone in 1990.
- **Climate:** The climate of Winnetka and the Chicago area 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, and peaks in the months of May and June. Winter proves quite variable. Seasonal snowfall in the Village has ranged 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 unpredictable season. Winter like conditions can persist well into April and even occasionally into May. Thunderstorms are especially prevalent in the spring time as the areas lakeside location makes it a center of conflicts between large volumes of warmer and colder air, triggering many kinds of 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 the autumn season. 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 average first accumulating snow occurs around Nov 19.Over the last two years; the Village has experienced significant rain fall and torrential flooding resulting in a plan to implement a storm water relief program. This plan is currently in discussions with all the involved entities.

- **Governing Body Format:** The Village of Winnetka follows the Village Manager form of government with the Manager responsible for the day-to-day operations of the Village and for hiring staff. This body of Government will assume the responsibility for the adoption and implementation of this plan. The Manager reports to the Village President and six trustees elected at-large through a caucus system of recommending candidates for office. There are eight lower boards and commissions that are appointed by and report to the Village Council including: Fire Pension, Police Pension, Plan Commission, Design Review Board, Environmental & Forestry Commission, Landmark Preservation Commission, Zoning Board of Appeals and Business Community Development Commission. The Village has seven departments including: Administration, Fire, Police, Finance, Water & Electric, Community Development and Public Works.
- **Development Trends:** With mainly single family homes, the Village has seen an uptick in demolition permits and newer homes being built on the same lots. Recent studies of our commercial areas indicate some additional emphasis is needed on economic development for our shopping districts. The Village is also in the process of securing funding for the storm water relief project utilizing bonds and a utility fee to cover the multi-million dollar work that is planned over the next several years. The utility fee is charged to each property owner and is based upon the amount of impervious surface on the property.

115.3 CAPABILITY ASSESSMENT

The assessment of the jurisdiction's legal and regulatory capabilities is presented in Table 115-1. The assessment of the jurisdiction's fiscal capabilities is presented in Table 115-2. The assessment of the jurisdiction's administrative and technical capabilities is presented in Table 115-3. Information on the community's National Flood Insurance Program (NFIP) compliance is presented in Table 115-4. Classifications under various community mitigation programs are presented in Table 115-5.

TABLE 115-1.
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	In accordance with Public Act 096-0704, Illinois has adopted the IBC as its state Building Code Winnetka Municipal Code adopted IBC in 2009
Zonings	Yes	No	No	Yes	(65 ILCS 5/) Illinois Municipal Code. Winnetka Municipal Code MC-221-1999
Subdivisions	Yes	No	No	No	Winnetka Municipal Code MC-221-1999
Stormwater Management	Yes	No	Yes	Yes	State regulates industrial activity from Construction sites 1 acre or larger under section 402 CWA. Winnetka Municipal Code MC-8-2001
Post Disaster Recovery	No	No	No	No	
Real Estate Disclosure	No	No	Yes	Yes	(765 ILCS 77/) Residential Real Property Disclosure Act.
Growth Management	No	No	No	No	
Site Plan Review	Yes	No	No	No	Design Review Board Adopted by Ordinance 1997.
Public Health and Safety	Yes	No	Yes	Yes	Cook County Board of Health. Winnetka MC MC-1-2004
Environmental Protection	Yes	No	No	No	MC-3-2011 (3.04.050)

TABLE 115-1.
LEGAL AND REGULATORY CAPABILITY

	Local Authority	State or Federal Prohibitions	Other Jurisdictional Authority	State Mandated	Comments
Planning Documents					
General or Comprehensive Plan	Yes	No	No	No	"Winnetka 2012 Comprehensive Plan"
Is the plan equipped to provide linkage to this mitigation plan?					No
Floodplain or Basin Plan	No	No	No	No	
Stormwater Plan	Yes	No	Yes	No	Regional stormwater impacts are managed by MWRD. The Village lies within the North Branch of Chicago River watershed planning area of MWRD's comprehensive Stormwater Master Planning Program. The Village is also in the process of a large project to address flooding from storm water.
Capital Improvement Plan	Yes	No	No	No	
What types of capital facilities does the plan address?					Buildings, vehicles and infrastructure with a life expectancy of more than 20 years.
How often is the plan revised/updated?					Annual
Habitat Conservation Plan	No	No	No	No	
Economic Development Plan	No	No	Yes	Yes	ULI Report in Progress
Shoreline Management Plan	No	No	Yes	No	Army Corp of Engineers
Response/Recovery Planning					
Comprehensive Emergency Management Plan	Yes	No	Yes	Yes	Cook County DHSEM
Threat and Hazard Identification and Risk Assessment	No	No	Yes	No	Cook County DHSEM Preparing THIRA
Terrorism Plan	Yes	No	Yes	Yes	Cook County DHSEM
Post-Disaster Recovery Plan	Yes	No	No	No	
Continuity of Operations Plan	Yes	No	Yes	No	Cook County DHSEM
Public Health Plans	No	No	Yes	No	Cook County DPH

TABLE 115-2.
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
Other	Yes

TABLE 115-3.
ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/Personnel Resources	Available?	Department/Agency/Position
Planners or engineers with knowledge of land development and land management practices	Yes	Community Development
Engineers or professionals trained in building or infrastructure construction practices	Yes	Community Development – Public Works
Planners or engineers with an understanding of natural hazards	Yes	Community Development – Public Works
Staff with training in benefit/cost analysis	Yes	Several Departments
Surveyors	Yes	Contracted when needed
Personnel skilled or trained in GIS applications	Yes	Cook County GIS Consortium
Scientist familiar with natural hazards in local area	Yes	Public Works
Emergency manager	Yes	Fire Department
Grant writers	Yes	All – Contracted Position

TABLE 115-4.
NATIONAL FLOOD INSURANCE PROGRAM COMPLIANCE

What department is responsible for floodplain management in your jurisdiction?	Public Works
Who is your jurisdiction's floodplain administrator? (department/position)	Public Works/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?	Most recent amendment 5/6/2008
When was the most recent Community Assistance Visit or Community Assistance Contact?	May 18, 2012
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?	No
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?	Approval Pending

TABLE 115-5.
COMMUNITY CLASSIFICATIONS

	Participating?	Classification	Date Classified
Community Rating System	Yes	Pending	Pending
Building Code Effectiveness Grading Schedule	Yes	5/5	8/20/12
Public Protection	Yes	3	1/28/13
StormReady	Yes	Gold (countywide)	2014
Tree City USA	Yes	N/A	2013

115.4 JURISDICTION-SPECIFIC NATURAL HAZARD EVENT HISTORY

Table 115-6 lists all past occurrences of natural hazards within the jurisdiction. Repetitive flood loss records are as follows:

- Number of FEMA-Identified Repetitive Loss Properties: 18
- Number of FEMA-Identified Severe Repetitive Loss Properties: 0
- Number of Repetitive Flood Loss/Severe Repetitive Loss Properties That Have Been Mitigated: 0

TABLE 115-6.
NATURAL HAZARD EVENTS

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Severe Weather	DR-4116	April 2013	—
Severe Storm/Flooding	9325781	July 2011	—
Severe Winter Storm	9314001	Feb. 2011	—
Severe Winter Storm	DR-1960	Jan. 2011	—
Severe Storm	DR-1800	Sept. 2008	—
Windstorm	DR-1929	Aug. 2007	—
Severe Storm/Flooding	152870	Aug. 2001	—
Severe Winter Storm	EM-3134	Jan. 1999	—
Severe Storm/Flooding	DR-798	Aug. 1987	—
Severe Storm/Flooding	DR-776	Sept. 1986	—
Severe Winter Storm	EM 3068	Jan. 1979	—

115.5 HAZARD RISK RANKING

Table 115-7 presents the ranking of the hazards of concern.

TABLE 115-7.
HAZARD RISK RANKING

Rank	Hazard Type	Risk Rating Score (Probability x Impact)
1	Severe Weather	54
2	Severe Winter Weather	54
3	Flood	36
4	Tornado	30
5	Earthquake	18
6	Drought	6
7	Dam Failure	2

115.6 HAZARD MITIGATION ACTION PLAN AND EVALUATION OF RECOMMENDED ACTIONS

Table 115-8 lists the actions that make up the jurisdiction's hazard mitigation plan. Table 115-9 identifies the priority for each action. Table 115-10 summarizes the mitigation actions by hazard of concern and the six mitigation types.

TABLE 115-8.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to New or Existing Assets	Hazards Mitigated	Objectives Met	Lead Agencies	Estimated Cost	Sources of Funding	Timeline[a]
Action W6.1—Work towards completion of storm water improvements to mitigate flooding.						
New and existing	Severe Weather, Flooding	1,2,3,6,8,9	Department of Public Works	$41,000,000, Medium	Bonds, Storm Water Utility Fee	Short term
Action W6.2—Encourage the burying of electrical services lines underground to protect from weather events.						
Existing	All	1,10	Electric Department	$54,700,000, High	Capital Improvement Fund, Grants	Long term
Action W6.3—Encourage stormwater detention and runoff reduction through code enhancements.						
New and existing	Severe Weather, Flooding	1,3,4,9,11	Public Works, Community Development	Low	General Fund	Short-term and ongoing
Action W6.4—Develop a communications link with the Cook County Forest Preserve District to alert Winnetka in the event of a structural concern regarding the Skokie Lagoon Dam.						
New	Severe Weather, Flooding, Dam Failure	2,5,8	Public Works	Low	General Fund	Short term
Action W6.5—Update Emergency Operations Plans.						
Existing	All	1,2,5,8	Fire Department	Low	General Fund	Short term
Action W6.6—Continue to support the implementation (Countywide actions), monitoring, maintenance, and updating of this Plan as defined in Volume 1.						
New and existing	All	All	DHSEM, Fire Department	Low	General Fund	Short- and long term
Action W6.7—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.						
New and existing	Severe Weather Flooding	4,6,9	Public Works	Low	General Fund	Short-term and ongoing
Action W6.8—Once CRS classification is confirmed, Village will maintain/enhance that classification through its existing floodplain management program						
New	All	3, 4, 5, 6, 7, 9, 10, 11, 13	Public Works	Low	General Fund	Short and long term

TABLE 115-8.
HAZARD MITIGATION ACTION PLAN MATRIX

Applies to New or Existing Assets	Hazards Mitigated	Objectives Met	Lead Agencies	Estimated Cost	Sources of Funding	Timeline[a]
Action W6.9—Work with all schools on severe weather drills.						
New and existing	Severe Weather, Tornado	2, 5, 6, 8	Fire Department	Low	General Fund	Short-term
Action W6.10—Update shelter plan for extreme weather conditions.						
Existing	Severe Weather, Severe Winter Weather, Tornado	6, 8	Fire Department	Low	General Fund	Short-term and ongoing
Action W6.11—Develop an educational program to inform residents on how to prepare for severe weather events.						
New	Severe Weather, Severe Winter Weather, Tornado, Drought	1, 6, 8, 11	Multiple Departments	Low	General Fund	Long term
Action W6.12—Monitor water conservation initiatives in the event of drought conditions.						
New	Drought	1,6,8,11	Water Department	Low	General Fund	Short-term and ongoing
Action W6.13—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.						
Existing	All	7, 13	Village of Winnetka	High	FEMA Hazard Mitigation Grants	Long-term (depending on funding)
Action W6.14—Where feasible, implement a program to record high water marks following high-water events**.**						
New and existing	Flooding, Severe Weather	3, 6, 9	Village of Winnetka	Medium	General Fund; FEMA Grant Funds (Public Assistance)	Long-term
Action W6.15—Integrate the hazard mitigation plan into other plans, programs, or resources that dictate land use or redevelopment.						
New and existing	All	3, 4, 6, 10, 13	Community Development	Low	General Fund	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 115-9.
MITIGATION STRATEGY PRIORITY SCHEDULE

Action #	# 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	Yes	High
2	2	Medium	High	Yes	Yes	No	Medium
3	5	High	Low	Yes	No	Yes	Medium
4	3	Medium	Low	Yes	No	Yes	Low
5	4	Low	Low	Yes	No	Yes	Low
6	4	Medium	Low	Yes	Yes	Yes	Medium
7	4	Medium	High	Yes	No	Yes	High
8	4	Medium	Low	Yes	No	Yes	High
9	4	High	Low	Yes	No	Yes	High
10	2	Medium	Low	Yes	No	Yes	Medium
11	4	Low	Low	Yes	Yes	Yes	Low
12	4	High	Medium	Yes	No	Yes	Medium
13	2	High	High	Yes	Yes	No	Medium
14	3	Medium	Medium	Yes	Yes	No	Medium
15	5	Medium	Low	Yes	No	Yes	High

a. See Chapter 1 for explanation of priorities.

TABLE 115-10.
ANALYSIS OF MITIGATION ACTIONS

	Action Addressing Hazard, by Mitigation Type[a]					
Hazard Type	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Dam Failure	6, 5, 8,15	7, 13	6, 7, 8	N/A	6, 8	N/A
Drought	5, 6, 10, 11, 12, 15	11, 12, 13	6, 11, 12	12	5, 6, 10, 12	N/A
Earthquake	5, 6, 9, 10, 11, 15	11, 13	6, 9, 11	N/A	5, 6, 9, 10	N/A
Flood	1, 4, 5, 6, 7, 8, 10, 11, 14, 15	1, 4, 7, 8, 11, 13,	1, 6, 7, 8, 11	1, 4, 7, 8	5, 6, 7, 8, 10	1, 3, 7, 8
Severe Weather	1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 14, 15	1, 2, 3, 4, 7, 8, 11, 13	1, 2, 3, 6, 7, 8, 9, 11	1, 7, 8	2, 5, 6, 7, 8, 9, 10	1, 2, 3, 7, 8
Severe Winter Weather	2, 6, 8, 10, 11, 15	13	6, 8	8	6, 8	
Tornado	2, 5, 6, 8, 10, 11, 15	11, 13	6, 8, 11	N/A	5, 6, 8, 10	N/A

a. See Chapter 1 for explanation of mitigation types.

115.7 FUTURE NEEDS TO BETTER UNDERSTAND RISK/ VULNERABILITY

No needs have been identified at this time.

115.8 ADDITIONAL COMMENTS

No additional comments at this time.

HAZUS-MH RISK ASSESSMENT RESULTS FOR WINNETKA

WINNETKA EXISTING CONDITIONS

2010 Population	12,187
Total Assessed Value of Structures and Contents	$3,550,875,301
Area in 100-Year Floodplain	661.96 acres
Area in 500-Year Floodplain	742.89 acres
Number of Critical Facilities	32

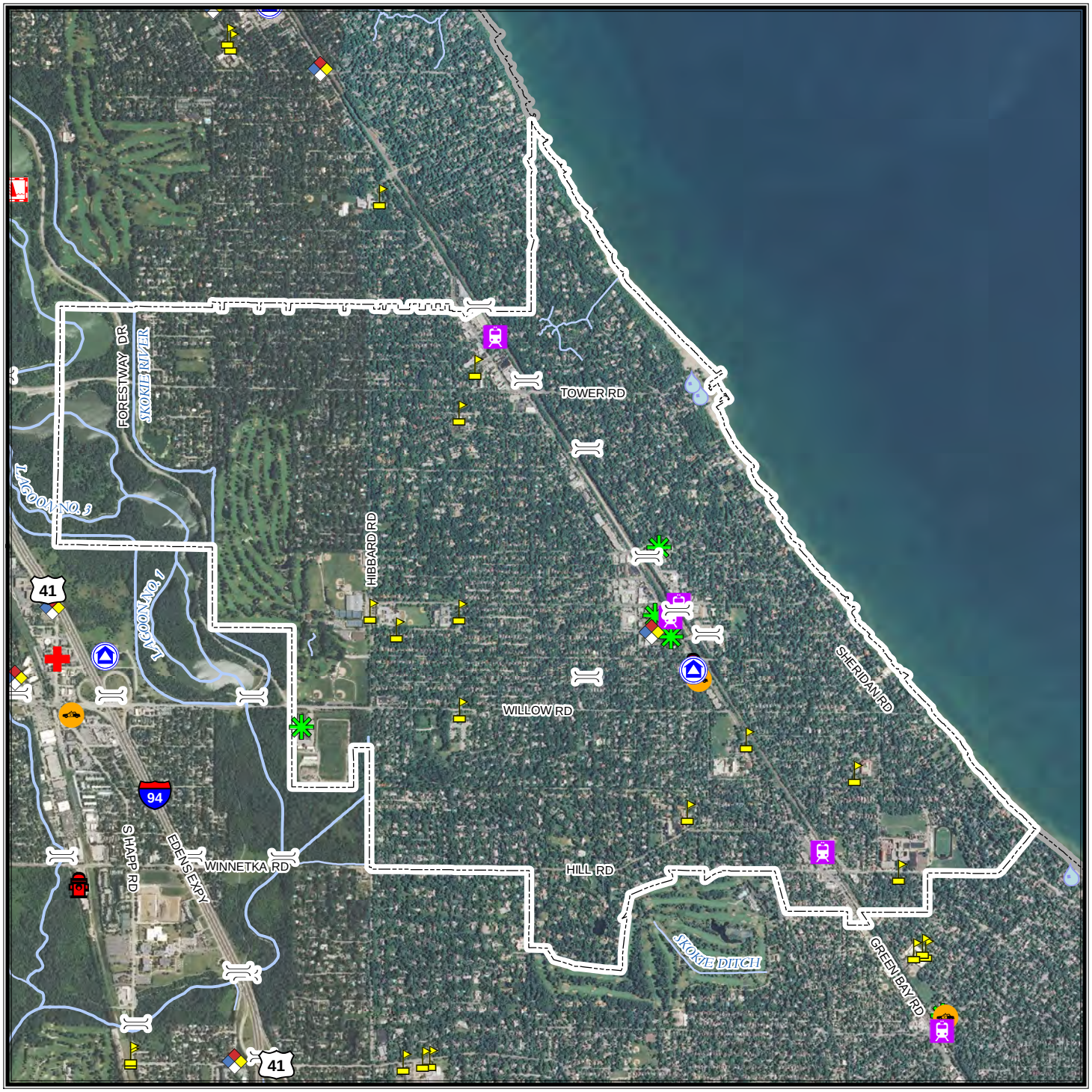
HAZARD EXPOSURE IN WINNETKA

	Number Exposed		Value Exposed to Hazard			% of Total Assessed Value Exposed
	Population	Buildings	Structure	Contents	**Total**	
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	1,232	379	$184,386,517	$92,193,259	**$276,579,776**	7.79%
500-Year	1,742	536	$283,661,831	$141,830,915	**$425,492,746**	11.98%
Tornado						
100-Year	—	—	$376,823,131	$188,712,674	**$565,535,806**	15.93%
500-Year	—	—	$721,565,920	$419,543,887	**$1,141,109,807**	32.14%

ESTIMATED PROPERTY DAMAGE VALUES IN WINNETKA

	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	$8,538,310	$1,495,996	**$10,034,306**	0.28%
Flood				
10-Year	$1,268,923	$544,971	**$1,813,894**	0.05%
100-Year	$23,540,891	$9,715,524	**$33,256,414**	0.94%
500-Year	$40,664,427	$17,051,700	**$57,716,126**	1.63%
Tornado				
100-Year	$37,682,313	$18,871,267	**$56,553,581**	1.59%
500-Year	$105,348,624	$61,253,408	**$166,602,032**	4.69%

HAZARD MAPPING FOR WINNETKA

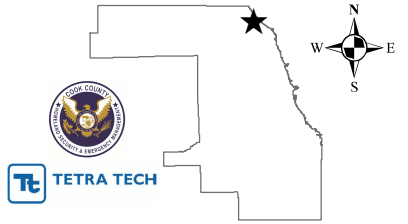


VILLAGE OF WINNETKA

Critical Facililties

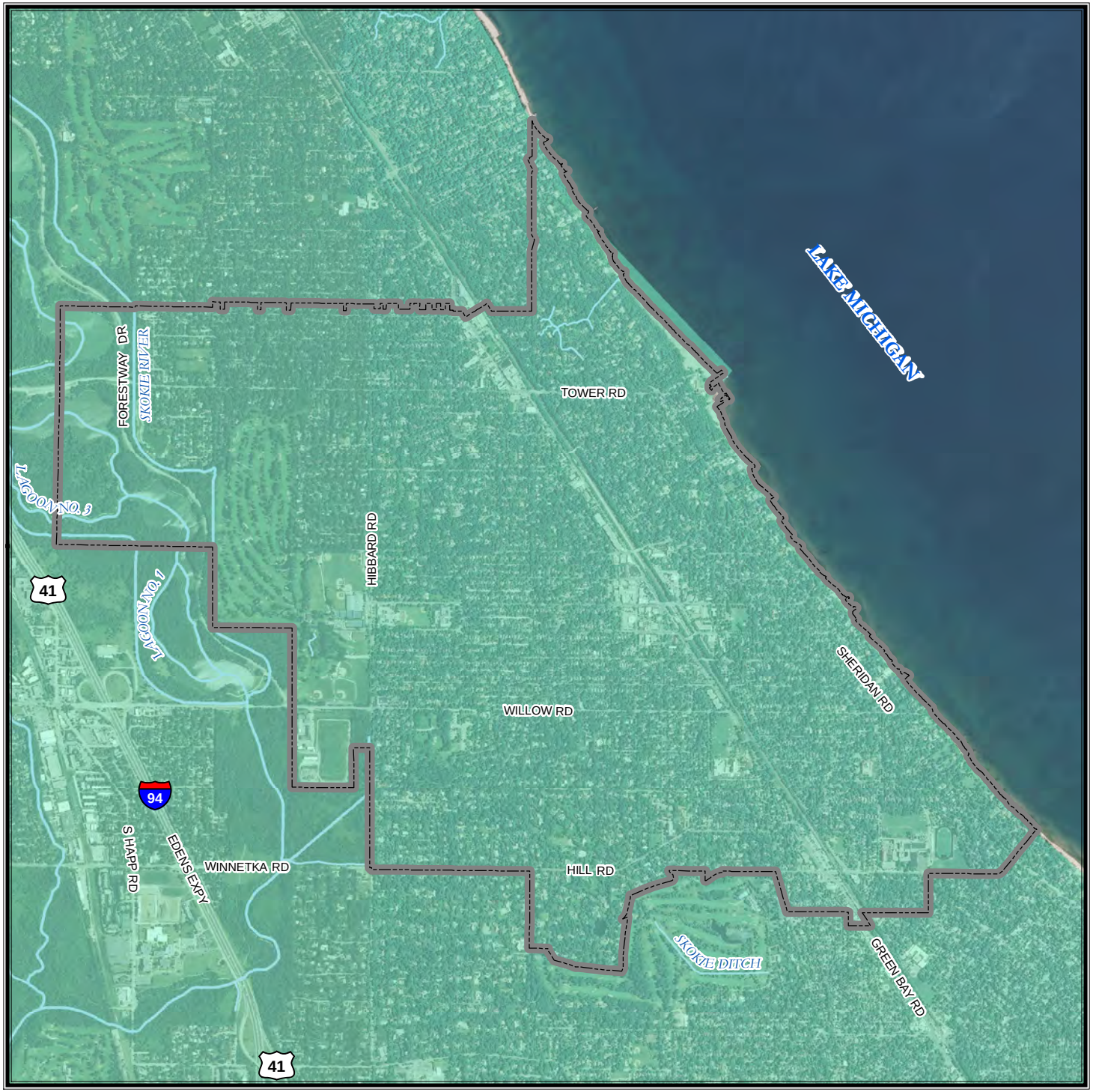
- Airport Facility
- Bus Facility
- Dams
- Emergency Operations Center
- Fire Station Facility
- Hazardous Materials
- Highway Bridge
- Light Rail Bridge
- Light Rail Facility
- Medical Care Facility
- Military
- Oil Facility
- Police Station Facility
- Port Facility
- Potable Water Facility
- Rail Facility
- Railway Bridge
- School Facility
- Other Facility

Base Map Data Sources:
Cook County, U.S. Geological Survey



TETRA TECH

0 0.25 0.5 Miles



VILLAGE OF WINNETKA

Illinois Historical 1909 Earthquake

Modified Mercalli Intensity

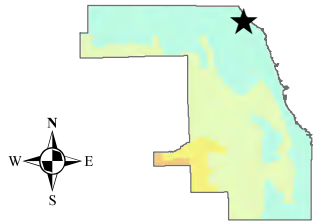
- I (Not Felt)
- II-III (Weak)
- IV (Light)
- V (Moderate)
- VI (Strong)
- VII (Very Strong)
- VIII (Severe)
- IX (Violent)
- X+ (Extreme)

Event Date of May 26, 1909. Original magnitude of 5.0; increased magnitude for analysis of 6.0. Depth: 10 km. Epicenter Lat/Long: 41.6N 88.1W

An Epicenter Map is derived from a database of historical earthquakes developed from three sources (Composite Earthquake Catalog, 2002, Earthquake Data Base, 2002, and Earthquake Seismicity Catalog, 1996). The database has been sorted to remove historical earthquakes with magnitudes less than 5.0. The Epicenter Map is based on a historical earthquake epicenter, selected from the database.

Base Map Data Sources:
Cook County, U.S. Geological Survey

TETRA TECH



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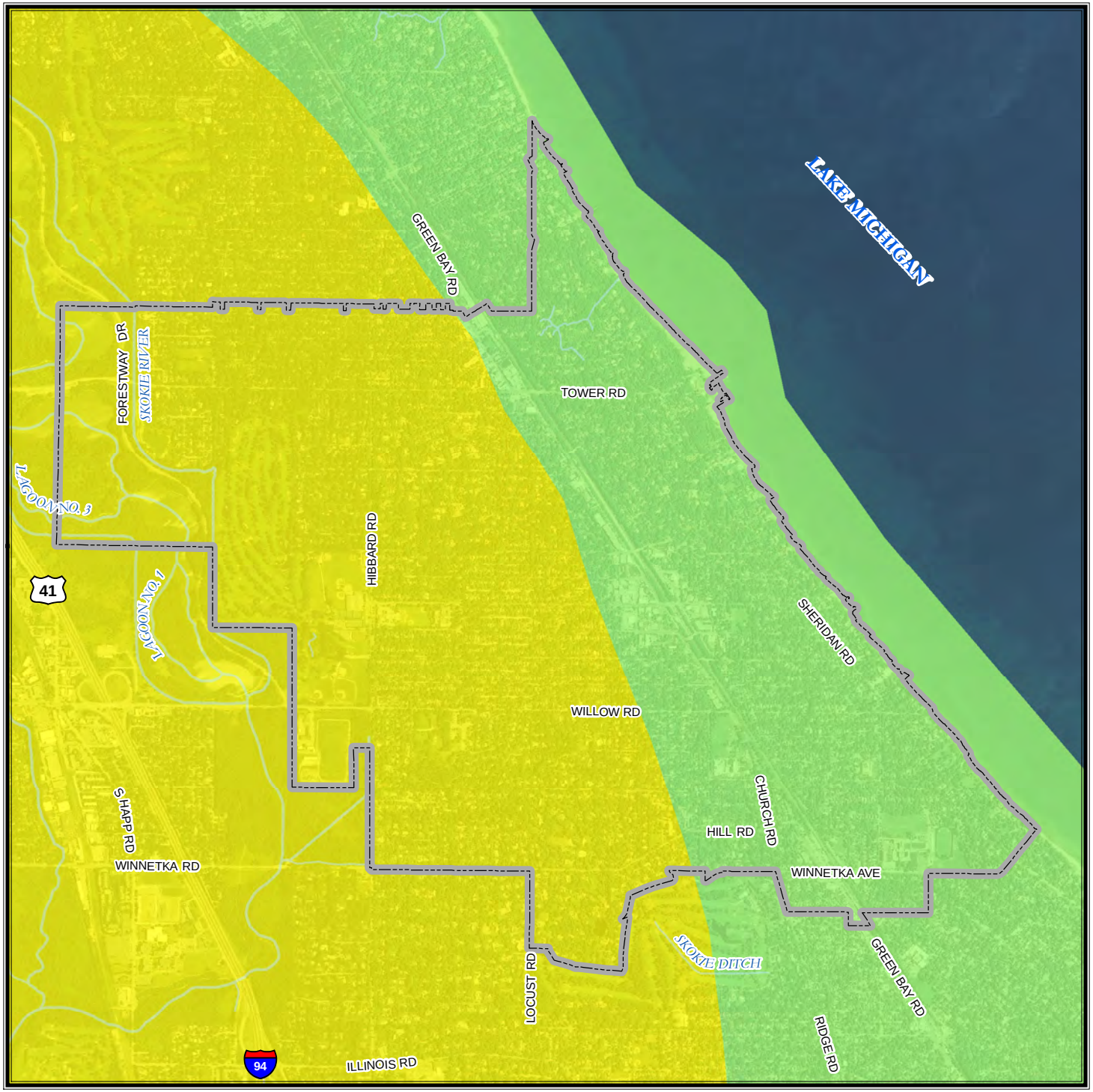

VILLAGE OF WINNETKA

National Earthquake Hazard Reduction Program (NEHRP) Soil Classification

Site Class

- A - Hard Rock
- B - Rock
- C - Very Dense Soil, Soft Rock
- D - Stiff Soil
- E - Soft Soil
- F - Site-Specifc Evaluation

Soil classification data provided by the Illinois State Geological Society.

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. Central U.S. Earthquake Consortium (CUSEC) State Geologists used the entire column of soil 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.

Base Map Data Sources:
Cook County, U.S. Geological Survey

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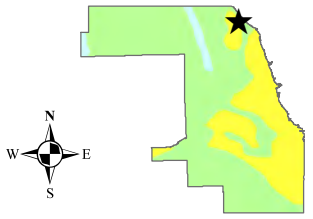

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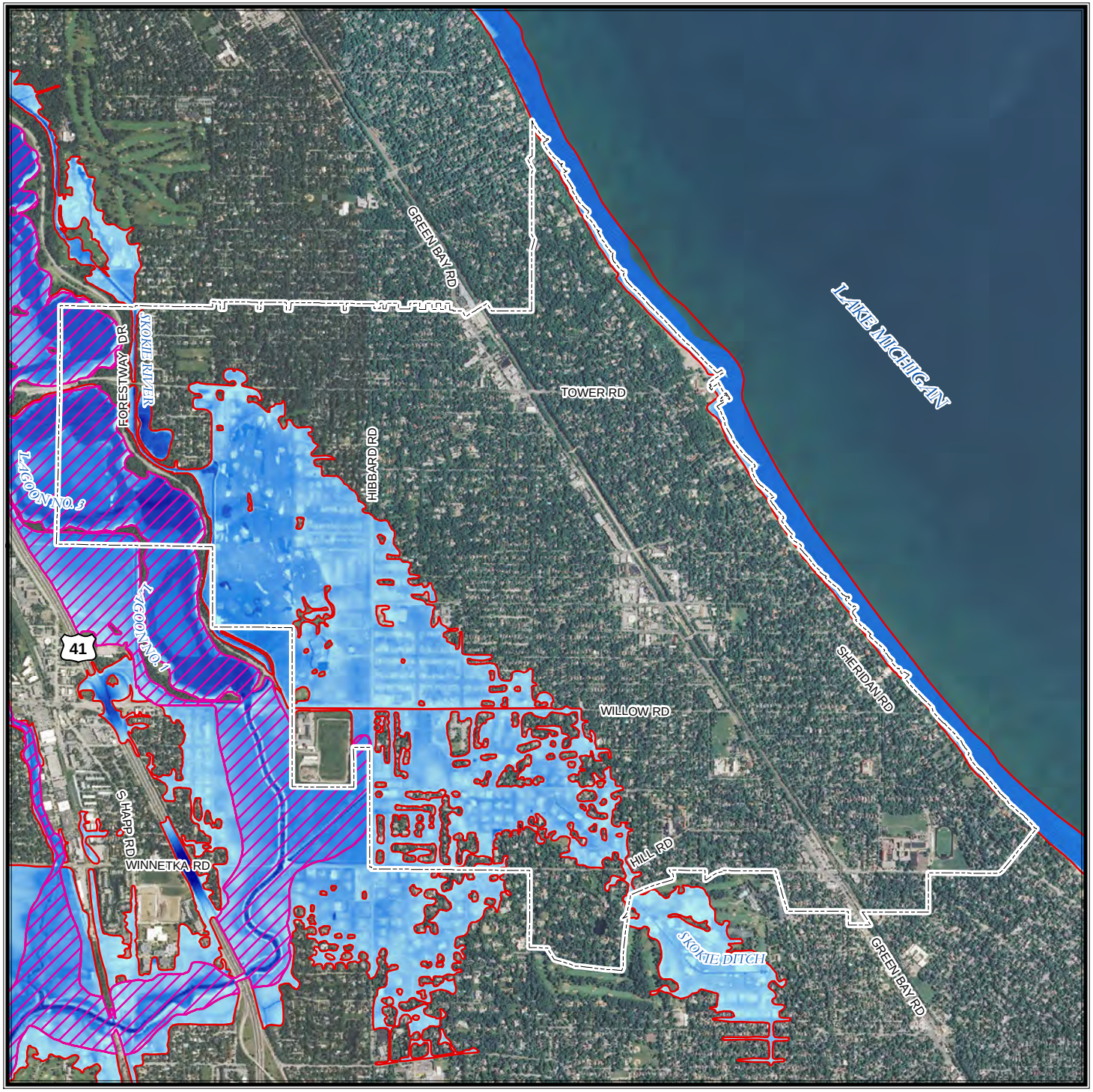


VILLAGE OF WINNETKA

FEMA DFIRM Flood Hazard Areas

- Floodway
- 1 Percent Annual Flood Hazard

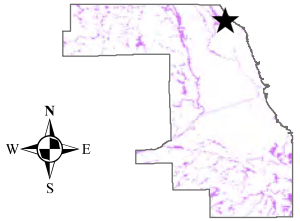
Flood Depth
20 ft
-1 ft

Flood hazard areas as depicted on FEMA Digital Flood Insurance Rate Maps (DFIRM).

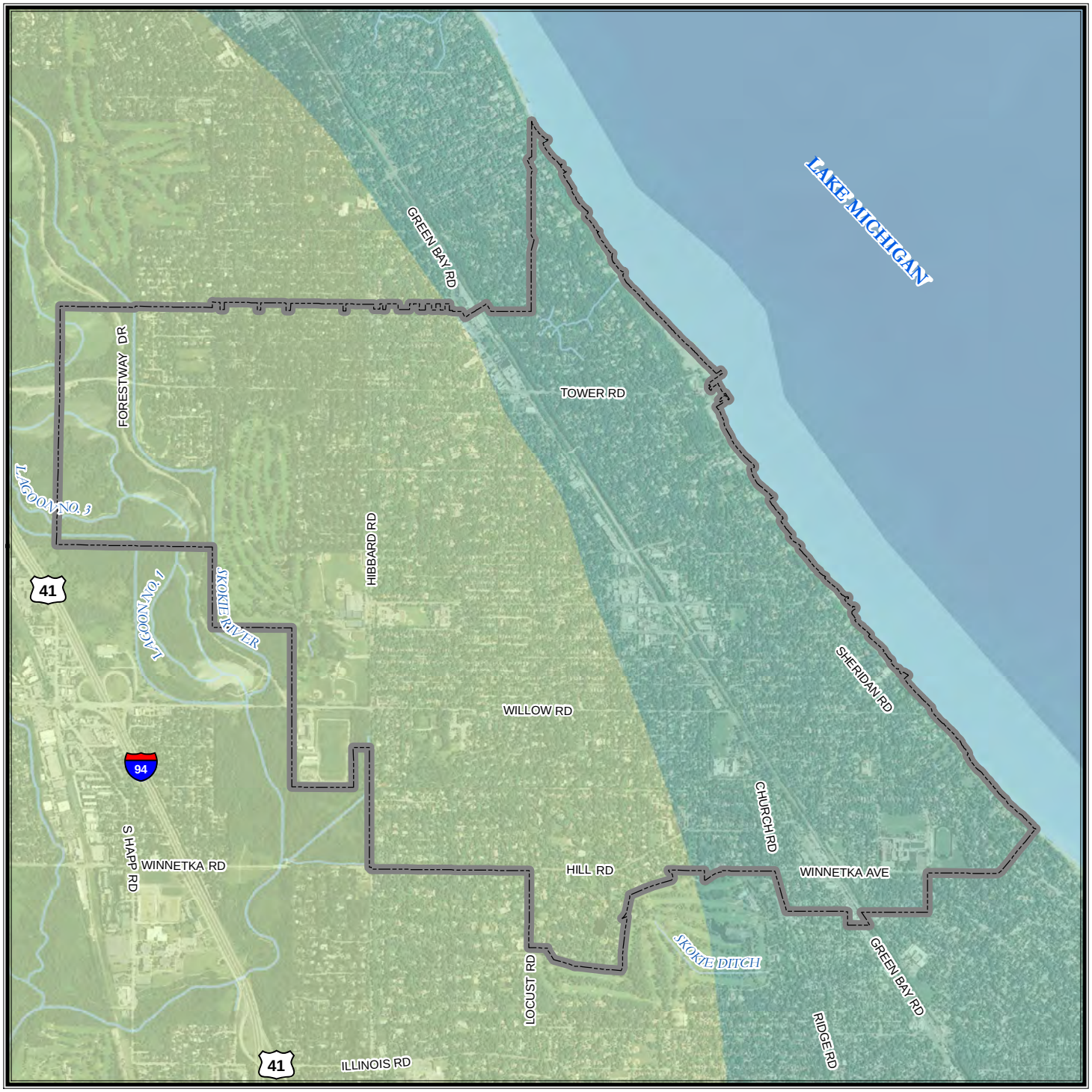
The 1 percent annual flood hazard is commonly referred to as the 100 year floodplain.

Base Map Data Sources:
Cook County, U.S. Geological Survey

TETRA TECH



0 0.25 0.5 Miles



VILLAGE OF WINNETKA

Liquefaction Susceptibility

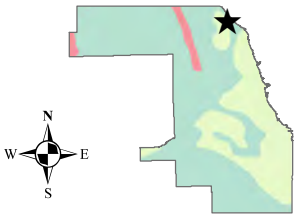
Susceptible	Not Susceptible
High	Bedrock
Moderate to High	Peat
Moderate	Water
Low to Moderate	Ice
Low	
Very Low to Low	
Very Low	

Liquefaction data provided by the Illinois State Geological Society. Liquefaction data based on the Youd and Perkins (1978) method.

A liquefaction susceptibility map provides an estimate of the likelihood that soil will liquefy as a result of earthquake shaking. This type of map depicts the relative susceptibility in a range that varies from very low to high. Areas underlain by bedrock or peat are mapped separately as these earth materials are not liquefiable, although peat deposits may be subject to permanent ground deformation caused by earthquake shaking.

Base Map Data Sources:
Cook County, U.S. Geological Survey

TETRA TECH



0 0.25 0.5 Miles

VILLAGE OF WINNETKA

100- and 500-Year Tornado Events

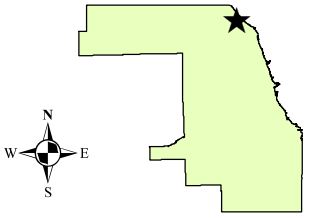
100-Year Modeled Tornado Event (F4)

500-Year Modeled Tornado Event (F5)

The 100- and 500-year events have been modeled based on fifty-nine years of tornado data for Cook County. The wind speeds, widths, lengths, and direction for each event were developed using existing historical tornado data. The simulated storms and their corresponding losses within this jurisdiction were used to determine the 100- and 500-year economic loss event.

Base Map Data Sources:
Cook County, U.S. Geological Survey

TETRA TECH



0 0.25 0.5 Miles