

# Discovery Report

*Chicago River Watershed, HUC # 07120003*

*Illinois Counties –Cook, Lake, and Will Counties  
Indiana County – Lake County*

*02/12/2015*



**FEMA**



# Project Area Community List

Illinois County	Illinois Community	Illinois County	Illinois Community
Cook	Village of Alsip	Cook	Village of Lincolnwood
	Village of Bedford Park		Village of Lynwood
	City of Blue Island		City of Markham
	Village of Bridgeview		Village of Merrionette Park
	City of Burbank		Village of Midlothian
	Village of Burnham		Village of Morton Grove
	City of Calumet		Village of Niles
	Village of Calumet Park		Village of Norridge
	City of Chicago		Village of Northbrook
	City of Chicago Heights		Village of Northfield
	Village of Chicago Ridge		City of Oak Forest
	Town of Cicero		Village of Oak Lawn
	City of Country Club Hills		Village of Oak Park
	Village of Crestwood		Village of Olympia Fields
	Village of Dixmoor		Village of Orland Hills
	Village of Dolton		Village of Orland Park
	Village of East Hazel Crest		City of Palos Heights
	Village of Elmwood Park		City of Palos Hills
	City of Evanston		Village of Palos Park
	Village of Evergreen Park		City of Park Ridge
	Village of Flossmoor		Village of Phoenix
	Village of Ford Heights		Village of Posen
	Village of Glencoe		Village of Richton Park
	Village of Glenview		Village of Riverdale
	Village of Glenwood		Village of Robbins
	Village of Golf		Village of Skokie
	City of Harvey		Village of South Chicago Heights
	Village of Harwood Heights		Village of South Holland
	Village of Hazel Crest		Village of Thornton
	Village of Hickory Hills		Village of Wilmette
	City of Hometown		Village of Winnetka
	Village of Homewood		Village of Worth
Village of Justice			
Village of Kenilworth			
Village of Lansing			

## Project Area Community List (continued)

Illinois County	Illinois Community	Indiana County	Indiana Community
Cook/Lake	Village of Deerfield	Lake	Town of Dyer
Cook/Will	Village of Matteson		City of East Chicago
	Village of Park Forest		City of Gary
	Village of Sauk Village		Town of Griffith
	Village of Steger		City of Hammond
	Village of Tinley Park		Town of Highland
	Village of University Park		City of Lake Station
	Lake		Village of Bannockburn
Village of Green Oaks			Town of Schererville
City of Highland Park			Town of St. John
City of Highwood			
Village of Lake Bluff			
City of Lake Forest			
Village of Lincolnshire			
Village of Mettawa			
City of North Chicago			
City of Park City			
Village of Riverwoods			
City of Waukegan			
Will	Village of Beecher		
	Village of Crete		
	Village of Frankfort		
	Village of Monee		

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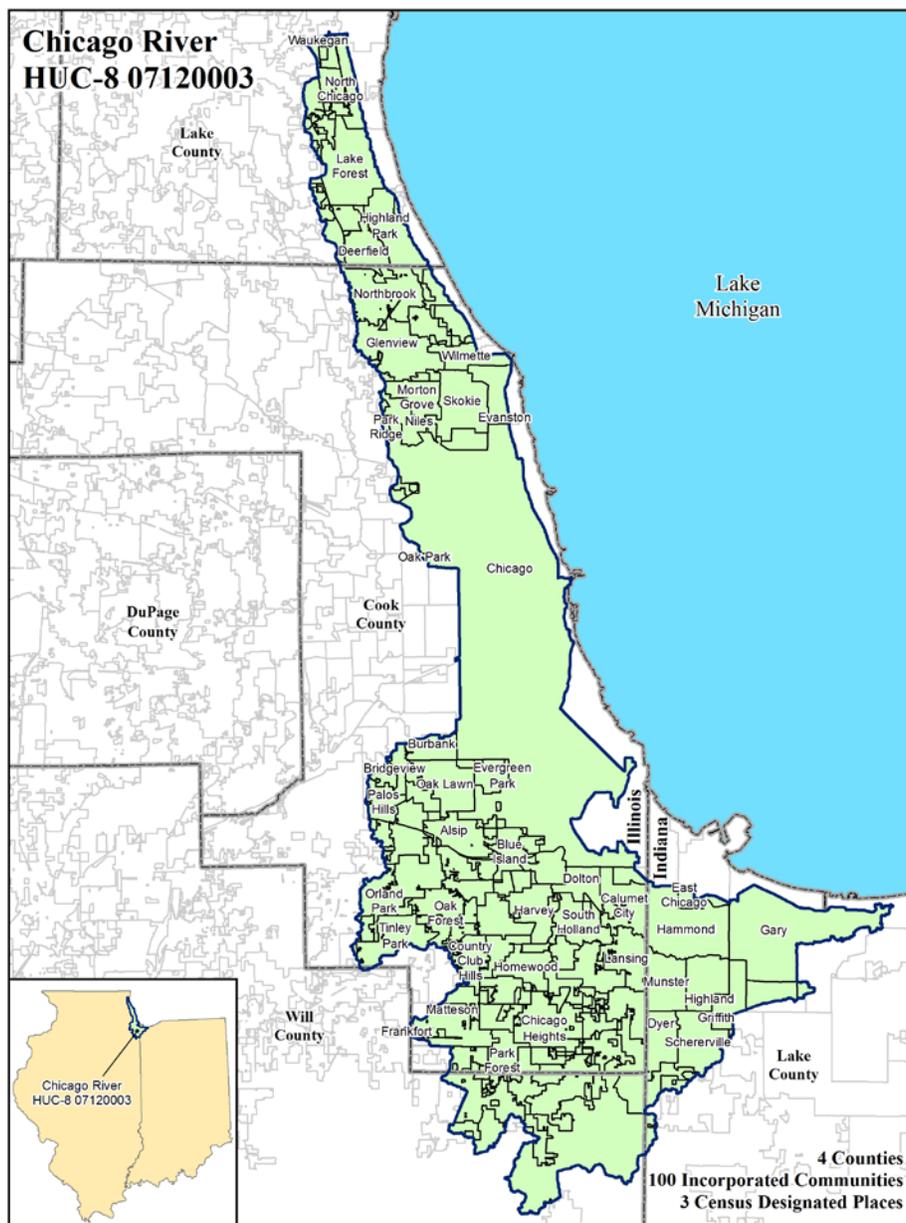
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# I. General Information



**Figure 1. Chicago River Watershed HUC 07120003**

The Chicago River watershed area includes portions of Lake, Cook, and Will Counties, Illinois and Lake County, Indiana (Figure 1). The majority of the watershed land area is found within Cook County. One hundred incorporated communities and three census designated places are included within the watershed, with the City of Chicago being the

largest community. Populations of all Chicago River watershed communities are listed in Table 8.

The Chicago River watershed is formed from the North and South Branches of the Chicago River. The North Branch Chicago River is an urban river. It originates as three forks: the 14-mile West Fork, 24-mile Middle Fork (also known as the West Skokie), and the 17-mile Skokie River. From their origins in Lake County, these tributaries flow south into Cook County where they converge to form the main stem of the North Branch. The North Branch flows south through Cook County to its confluence with the North Shore Channel and joins the South Branch of the river in downtown Chicago. The South Branch flows into the Chicago Sanitary and Ship Canal where it is diverted westward joining the Des Plaines River as a tributary of the Illinois River (Figure 1-2). The Illinois River flows southwest across the state and is a major tributary of the Mississippi River (Lake County, 2008).

The North Shore Channel, a constructed tributary in the North Branch Chicago River watershed, enters the main stem of the North Branch Chicago River near Albany Avenue in Chicago, and has a stream length of 7.7 miles and a drainage area of 25 square miles. The North Shore Channel subwatershed consists primarily of residential areas (HDR, 2011).

The North Branch Chicago River watershed encompasses over 50.4 square miles in Lake County and 44.4 square miles in Cook County. The total watershed area is 60,658 acres, with 32,240 acres in Lake County and 28,418 acres in Cook County. The North Branch Chicago River watershed area in Cook County includes over 50 miles of rivers and creeks (MWRDGC, 2007). Twenty-five municipalities comprise most of the watershed's area. Natural open spaces have been converted to agricultural, commercial, and residential uses. Flood damage has occurred, and water quality and habitat have been degraded (Lake County, 2012).

The North Branch Chicago River watershed is noted for three long and narrow subwatersheds surrounding the three forks of the North Branch of the river. The three subwatersheds are the West Fork, Middle Fork, and Skokie River (Figure 1-3). Floods on these long and narrow watersheds are affected by a storm direction.. On the three forks, the worst flooding is caused by storms that move from north to south. The runoff moves under the storm front and concentrates as it goes downstream. Storms that pass east to west produce smaller floods, and storms that pass south to north produce the smallest floods. The worst floods are caused by day-long rain events, but since the watershed is so narrow, short, intense rain events can also cause severe local flooding. The flood of record on the Skokie River in Highland Park was caused by a thunderstorm that rained only in the southern end of the watershed. Because of the channelization of these three forks, floodwaters usually drain away in just a few days (Lake County, 2012). In 2007 the average annual flood damages for the entire watershed were estimated to be \$2,995,000 (MWRDGC, 2007).

The Middle Fork North Branch Chicago River watershed is 24.1 square miles and runs north to south parallel to the west shore of Lake Michigan, in Lake and Cook Counties (see Figure 1-3). The watershed, which is approximately 19 miles long by 1.3 miles wide, consists primarily of residential areas with some commercial, industrial, and open floodplain areas. The Middle Fork watershed is a highly urbanized area that has led to narrowing of the channel, restrictive roadway structures, and development in the floodplain. The communities located in the Middle Fork watershed are (from north to south) Waukegan, Green Oaks, North Chicago, Lake Forest, Mettawa, Highland Park, Bannockburn, Deerfield, Northbrook, and Northfield. There are two reservoirs in the watershed including the Northbrook reservoir, located south of Lake-Cook road, and Reservoir 15 located just north of Atkinson Road (IDNR, 2010).

Today the North Branch is an urban watershed that includes downtown areas, city neighborhoods, and suburban municipalities. The watershed also includes a limited amount of undeveloped area that is characterized by encroaching urban sprawl. Improved drainage systems have been a significant component of land use change in the watershed. The storm sewer and drainage systems, rooftops, driveways, roads, highways, and parking lots that characterize the landscape of the North Branch all impact the watershed by causing water to move off the land more quickly. As results, larger amounts of stormwater reach streams in shorter periods of time. Despite the fact that in the past 15 to 20 years several measures were adopted to improve the level of flood protection and stormwater management in the North Branch watershed, stream channels overflow in some areas, flooding streets and buildings and causing significant economic damage. These are mostly located in areas developed before adopting stormwater ordinances that regulate and control new developments in the North Branch watershed (Lake County, 2008).

Both the Calumet-Sag Channel and the Little Calumet River are subwatersheds of the Chicago River watershed found within Cook County. The Calumet-Sag Channel originates in Cook County and accepts flows from the Little Calumet River. The channel is located in southern Cook County and has historically served barge traffic through heavy industrial zones. The Calumet-Sag Channel watershed area is approximately 126 square miles (excluding the Little Calumet watershed area), with over 25 miles of rivers and creeks. The Little Calumet River watershed originates in northwest Indiana and flows west into the Calumet-Sag Channel in Cook County. The Little Calumet River watershed area in southern Cook County is approximately 200 square miles, with over 100 miles of rivers and creeks (MWRDGC, 2007).

The Chicago River watershed basin in Indiana is located in northwest Lake County, Indiana. It drains areas of the towns of Dyer, Griffith, Munster, Schererville, and St. John, and the cities of East Chicago, Gary, Hammond, and Lake Station. The main water bodies are Little Calumet River, Grand Calumet River, Cady Marsh Ditch, Hart Ditch (Plum Creek in IL), and Dyer Ditch. The watershed is urbanized and has a large population. The

Cities of Gary and Hammond, Indiana, with populations of approximately 80,000 each, are located in the watershed area.

### **Chicago River History**

The Chicago River has undergone tremendous changes throughout history. Prior to 1898, the Chicago River flowed into Lake Michigan. However, due to pollution and health problems that arose from the city's sewage discharge from the river into the Lake (Chicago's drinking water supply), the flow of the Chicago River was reversed and diverted from Lake Michigan into the Mississippi River basin through the new Chicago Sanitary and Ship Canal that was opened on January 2, 1900 (Lake County, 2008).

As with the watershed, the river has undergone significant change since the time of European settlement in the early/mid 1800s. Two hundred years ago, the river would have been described as a marshy slough meandering slowly, falling imperceptibly as it flowed southward. The clear waters of the river channels supported marsh plants such as bulrushes and water lilies. Extending from the river were wet prairies and meadows interspersed and bordered by oak savannas that were situated on the higher ground in the watershed (Lake County, 2008).

The North Branch underwent its first dramatic change when its tributaries were straightened and deepened for agricultural drainage in the late 1800s and early 1900s. The river was no longer a meandering slough and more closely resembled a ditch. The land surrounding the river also changed as wetlands were tilled and drained and farming was expanded. Native oak savanna, wet prairie, and meadows were converted to farm fields wherever feasible. More recently, as farm fields have been replaced by homes and businesses of suburbia, the nature of the river continues to change as it carries ever-increasing volumes of runoff. However, there are still some areas where the North Branch resembles a river, but in other areas it remains a ditch (Lake County, 2008).

Today, the North Branch is maintained for urban stormwater management and is used to transport large volumes of runoff from streets, buildings, and parking lots. As a result, the river channels have lost their stability and are deeper, wider, and highly eroded from the altered hydrology. The marsh and deep-rooted prairie plants that originally dominated the channel corridor have been replaced with non-native trees and understory plants like buckthorn and garlic mustard that do not adequately stabilize stream banks. The physical changes to the river channels, combined with chemical pollution transported in runoff and poor streamside vegetation, have resulted in a river that is impaired for aquatic life, human recreation, and aesthetic enjoyment (Lake County, 2008).

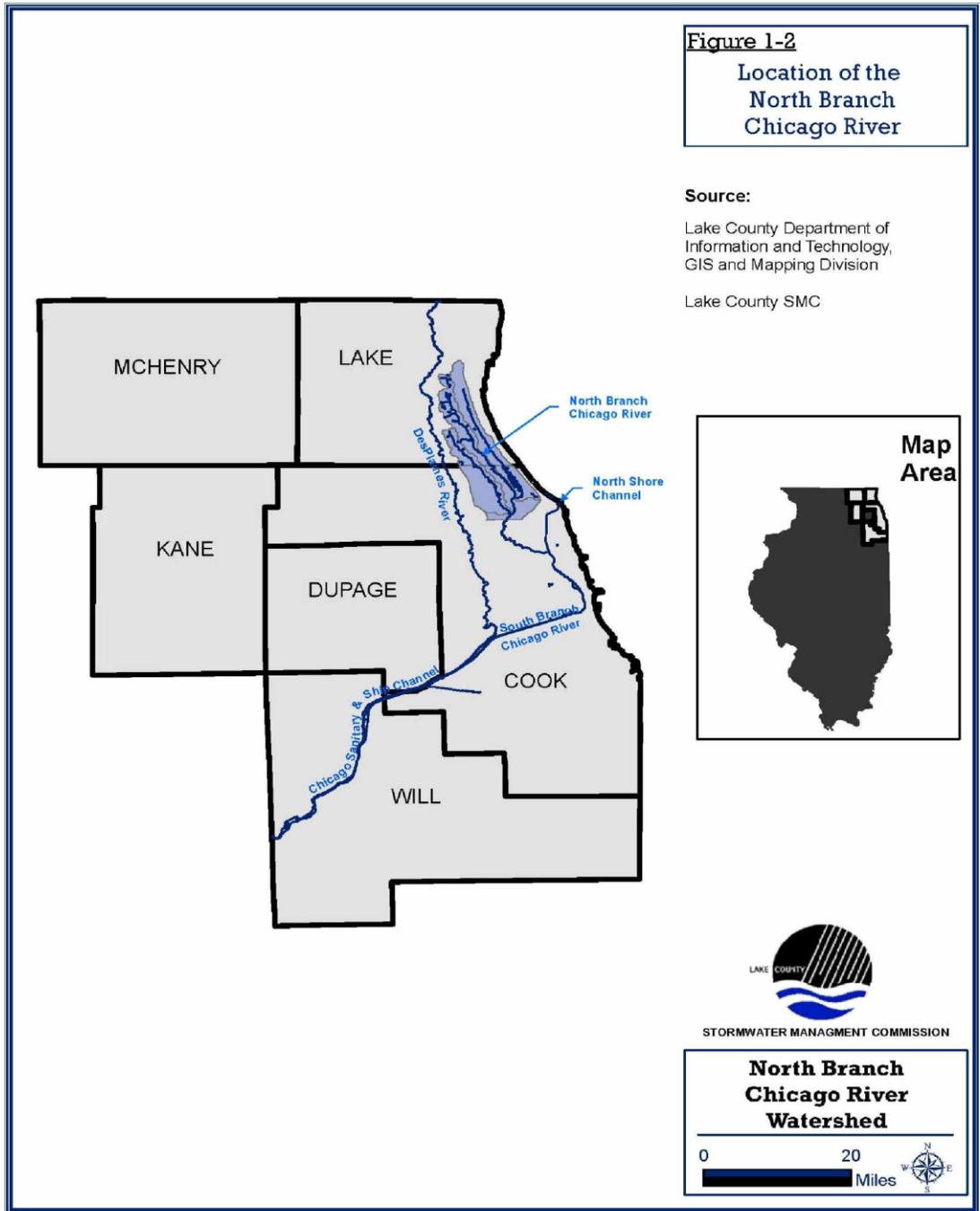
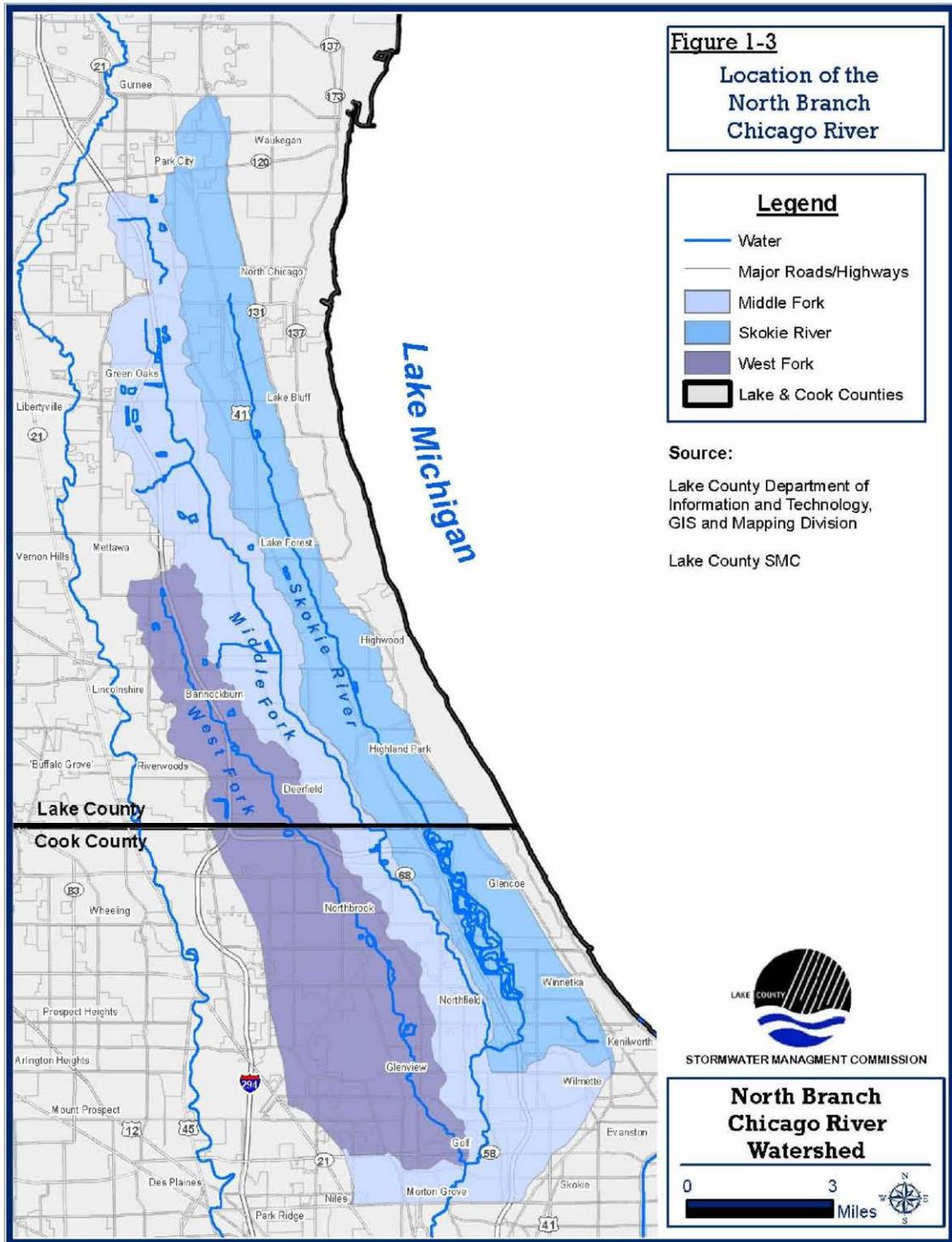


Figure 1-2. Chicago River Watershed - North Branch Chicago River Watershed



Maps to be used for Planning Purposes only.

Produced by V3 Companies

**Figure 1-3. North Branch Chicago River Watershed – Three Subwatersheds**

## **National Flood Insurance Program**

The National Flood Insurance Program (NFIP) is administered by the Federal Emergency Management Agency (FEMA). In 1968, Congress created the NFIP to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. The NFIP status of Chicago River watershed communities is listed in Table 1 (FEMA, 2013).

Table 1-A lists the number of flood insurance policies, total value of coverage for existing policies, the number of claims and value of the total claims for the Chicago River watershed communities in Cook, Lake, and Will Counties, Illinois and Lake County, Indiana. Repetitive loss structures and value of the total losses are also listed for each community (FEMA, 2013).

A repetitive loss property is a structure covered by a contract for flood insurance made available under the NFIP that: (a) has incurred flood-related damage on two occasions, in which the cost of the repair, on the average, equaled or exceeded 25 percent of the market value of the structure at the time of each such flood event; and (b) at the time of the second incidence of flood-related damage, the contract for flood insurance contains increased cost of compliance coverage (FEMA, 2014).

**Table 1. NFIP Participation Status**

Illinois County	Illinois Community	Participating	Illinois County	Illinois Community	Participating
Cook	Alsip, Village of	Yes	Cook	Lincolnwood, Village of	Yes
	Bedford Park, Village of	Yes		Lynwood, Village of	Yes
	Blue Island, City of	Yes		Markham, City of	Yes
	Bridgeview, Village of	Yes		Merrionette Park, Village of	Yes
	City of Burbank, City of	Yes		Midlothian, Village of	Yes
	Burnham, Village of	Yes		Morton Grove, Village of	Yes
	Calumet City, City of	Yes		Niles, Village of	Yes
	Calumet Park, Village of	Yes		Norridge, Village of	Yes
	Chicago, City of	Yes		Northbrook, Village of	Yes
	Chicago Heights, City of	Yes		Northfield, Village of	Yes
	Chicago Ridge, Village of	Yes		Oak Forest, City of	Yes
	Cicero, Town of	Yes		Oak Lawn, Village of	Yes
	Country Club Hills, City of	Yes		Oak Park, Village of	No
	Crestwood, Village of	Yes		Olympia Fields, Village of	Yes
	Dixmoor, Village of	Yes		Orland Hills, Village of	Yes
	Dolton, Village of	Yes		Orland Park, Village of	Yes
	East Hazel Crest, Village of	Yes		Palos Heights, City of	Yes
	Elmwood Park, Village of	Yes		Palos Hills, City of	Yes
	Evanston, City of	Yes		Palos Park, Village of	Yes
	Evergreen Park, Village of	Yes		Park Ridge, City of	Yes
	Flossmoor, Village of	Yes		Phoenix, Village of	Yes
	Ford Heights, Village of	Yes		Posen, Village of	Yes
	Glencoe, Village of	Yes		Richton Park, Village of	Yes
	Glenview, Village of	Yes		Riverdale, Village of	Yes
	Glenwood, Village of	Yes		Robbins, Village of	Yes
	Golf, Village of	Yes		Skokie, Village of	Yes
	Harvey, City of	Yes		South Chicago Heights, Village of	Yes
	Harwood Heights, Village of	Yes		South Holland, Village of	Yes
	Hazel Crest, Village of	Yes		Thornton, Village of	Yes
	Hickory Hills, Village of	Yes		Wilmette, Village of	Yes
	Hometown, City of	No		Winnetka, Village of	Yes
	Homewood, Village of	Yes		Worth, Village of	Yes
	Justice, Village of	Yes		Cook County	Yes
	Kenilworth, Village of	Yes			
Lansing, Village of	Yes				

**Table 1. NFIP Participation Status (continued)**

<b>Illinois County</b>	<b>Illinois Community</b>	<b>Participating</b>	<b>Indiana County</b>	<b>Indiana Community</b>	<b>Participating</b>
Cook/Lake	Deerfield, Village of	Yes	Lake	Dyer, Town of	Yes
Cook/Will	Matteson, Village of	Yes		East Chicago, City of	Yes
	Park Forest, Village of	Yes		Gary, City of	Yes
	Sauk Village, Village of	Yes		Griffith, Town of	Yes
	Steger, Village of	Yes		Hammond, City of	Yes
	Tinley Park, Village of	Yes		Highland, Town of	Yes
	University Park, Village of	Yes		Lake Station, City of	Yes
	Lake	Bannockburn, Village of		Yes	Munster, Town of
Green Oaks, Village of		Yes		Schererville, Town of	Yes
Highland Park, City of		Yes		St. John, Town of	Yes
Highwood, City of		No		Lake County	Yes
Lake Bluff, Village of		Yes			
Lake Forest, City of		Yes			
Lincolnshire, Village of		Yes			
Mettawa, Village of		Yes			
North Chicago, City of		Yes			
Park City, City of		Yes			
Riverwoods, Village of		Yes			
Waukegan, City of		Yes			
Lake County	Yes				
Will	Beecher, Village of	Yes			
	Crete, Village of	Yes			
	Frankfort, Village of	Yes			
	Monee, Village of	No			
	Will County	Yes			

**Table 1-A. Chicago River Watershed Flood Insurance Information**

<b>Community</b>	<b>Flood Insurance Policies</b>	<b>Flood Policy Coverage</b>	<b>Total Claims</b>	<b>Claims Value</b>	<b>Repetitive Loss Structures*</b>	<b>Total Rep Loss*</b>
<b>COOK COUNTY, IL</b>	708	\$788,751	584	\$7,663,036	306	\$5,364,051.52
ALSIP, VILLAGE OF	38	\$3,806,000	10	\$29,031	0	\$0
BEDFORD PARK, VILLAGE OF	2	\$400,000	0	\$0	0	\$0
BLUE ISLAND, CITY OF	3	\$1,083,800	0	\$0	0	\$0
BRIDGEVIEW, VILLAGE OF	12	\$3,840,000	2	\$24,844	0	\$0
BURBANK, CITY OF	15	\$3,556,000	13	\$98,012	6	\$20,464
BURNHAM, VILLAGE OF	10	\$2,027,700	4	\$3,451	0	\$0
CALUMET CITY, CITY OF	668	\$88,467,200	320	\$1,622,316	36	\$336,463
CALUMET PARK, VILLAGE OF	3	\$231,000	3	\$14,883	0	\$0
CHICAGO, CITY OF	1,341	\$262,591,200	634	\$3,399,437	47	\$1,571,315
CHICAGO HEIGHTS, CITY OF	21	\$4,094,900	41	\$113,420	4	\$24,450
CHICAGO RIDGE, VILLAGE OF	62	\$8,647,300	4	\$5,002	0	\$0
CICERO, TOWN OF	10	\$1,927,000	6	\$39,744	0	\$0
COUNTRY CLUB HILLS, CITY OF	46	\$8,025,800	14	\$108,239	2	\$16,074
CRESTWOOD, VILLAGE OF	274	\$30,867,600	14	\$134,351	2	\$15,577
DIXMOOR, VILLAGE OF	87	\$12,063,600	31	\$81,199	6	\$23,410
DOLTON, VILLAGE OF	104	\$19,378,600	269	\$1,160,456	56	\$361,573
EAST HAZEL CREST, VILLAGE OF	2	\$341,300	0	\$0	0	\$0
ELMWOOD PARK, VILLAGE OF	64	\$13,128,000	55	\$308,980	12	\$84,587
EVANSTON, CITY OF	51	\$11,326,000	9	\$18,577	0	\$0
EVERGREEN PARK, VILLAGE OF	6	\$1,162,000	1	\$2,920	0	\$0
FLOSSMOOR, VILLAGE OF	93	\$24,421,900	82	\$368,546	17	\$80,504
FORD HEIGHTS, VILLAGE OF	29	\$2,402,400	75	\$200,743	24	\$91,676

**Table 1-A. Chicago River Watershed Flood Insurance Information (continued)**

<b>Community</b>	<b>Flood Insurance Policies</b>	<b>Flood Policy Coverage</b>	<b>Total Claims</b>	<b>Claims Value</b>	<b>Repetitive Loss Structures*</b>	<b>Total Rep Loss*</b>
GLENCOE, VILLAGE OF	43	\$11,470,000	15	\$89,185	4	\$15,125
GLENVIEW, VILLAGE OF	245	\$65,821,900	167	\$4,183,852	50	\$1,142,815
GLENWOOD, VILLAGE OF	14	\$2,422,100	20	\$148,956	11	\$68,591
GOLF, VILLAGE OF	1	\$350,000	0	\$0	0	\$0
HARVEY, CITY OF	361	\$42,380,000	311	\$899,469	48	\$167,340
HARWOOD HEIGHTS, VILLAGE OF	3	\$483,000	1	\$3,173	0	\$0
HAZEL CREST, VILLAGE OF	41	\$7,067,200	27	\$70,436	5	\$13,462
HICKORY HILLS, CITY OF	14	\$4,076,000	11	\$28,598	0	\$0
HOMETOWN, CITY OF	0	0	0	0	0	\$0
HOMEWOOD, VILLAGE OF	40	\$7,919,300	46	\$215,279	14	\$54,287
JUSTICE, VILLAGE OF	145	\$25,221,100	17	\$89,473	3	\$28,749
KENILWORTH, VILLAGE OF	12	\$3,655,900	0	\$0	0	\$0
LANSING, VILLAGE OF	335	\$57,174,600	192	\$927,807	19	\$126,978
LINCOLNWOOD, VILLAGE OF	19	\$5,223,000	13	\$67,101	4	\$19,109
LYNWOOD, VILLAGE OF	37	\$7,395,900	18	\$83,259	3	\$22,348
MARKHAM, CITY OF	55	\$7,956,700	191	\$792,334	50	\$417,277
MERRIONETTE PARK, VILLAGE OF	1	\$100,000	0	\$0	0	\$0
MIDLOTHIAN, VILLAGE OF	220	\$34,661,700	65	\$168,887	5	\$16,113
MORTON GROVE, VILLAGE OF	20	\$5,529,100	23	\$63,033	7	\$30,789
NILES, VILLAGE OF	55	\$15,189,600	22	\$902,155	0	\$0
NORRIDGE, VILLAGE OF	11	\$1,652,000	3	\$7,694	0	\$0
NORTHBROOK, VILLAGE OF	159	\$43,823,800	105	\$1,044,576	7	\$492,839
NORTHFIELD, VILLAGE OF	159	\$36,025,300	108	\$1,260,347	29	\$379,846

**Table 1-A. Chicago River Watershed Flood Insurance Information (continued)**

<b>Community</b>	<b>Flood Insurance Policies</b>	<b>Flood Policy Coverage</b>	<b>Total Claims</b>	<b>Claims Value</b>	<b>Repetitive Loss Structures*</b>	<b>Total Rep Loss*</b>
OAK FOREST, CITY OF	92	\$18,083,800	72	\$377,928	32	\$225,834
OAK LAWN, VILLAGE OF	646	\$101,595,000	16	\$184,133	2	\$82,424
OAK PARK, VILLAGE OF	0	0	0	\$0	0	\$0
OLYMPIA FIELDS, VILLAGE OF	20	\$4,639,400	21	\$82,486	2	\$20,586
ORLAND HILLS, VILLAGE OF	24	\$5,210,200	7	\$17,523	0	\$0
ORLAND PARK, VILLAGE OF	69	\$17,316,200	53	\$807,128	12	\$186,253
PALOS HEIGHTS, CITY OF	72	\$15,334,700	3	\$17,539	0	\$0
PALOS HILLS, CITY OF	118	\$21,409,500	46	\$330,891	10	\$119,768
PALOS PARK, VILLAGE OF	16	\$5,080,000	8	\$154,806	3	\$32,602
PARK RIDGE, CITY OF	128	\$32,402,800	62	\$1,196,385	9	\$40,218
PHOENIX, VILLAGE OF	2	\$487,900	1	\$2,038	0	\$0
POSEN, VILLAGE OF	118	\$20,707,900	32	\$87,826	8	\$33,518
RICHTON PARK, VILLAGE OF	27	\$6,095,300	64	\$20,706	2	\$4,762
RIVERDALE, VILLAGE OF	6	\$756,400	3	\$6,228	0	\$0
ROBBINS, VILLAGE OF	59	\$6,947,100	20	\$107,719	7	\$25,274
SKOKIE, VILLAGE OF	74	\$15,121,900	206	\$900,701	53	\$615,550
SOUTH CHICAGO HEIGHTS, VILLAGE OF	1	\$280,000	1	\$4,377	0	\$0
SOUTH HOLLAND, VILLAGE OF	275	\$57,229,200	460	\$2,189,962	29	\$262,486
THORNTON, VILLAGE OF	7	\$881,400	3	\$8,864	0	\$0
WILMETTE, VILLAGE OF	98	\$27,868,200	73	\$283,886	22	\$146,347
WINNETKA, VILLAGE OF	332	\$89,020,200	103	\$1,174,044	18	\$226,863
WORTH, VILLAGE OF	6	\$690,900	1	\$4,856	0	\$0
<b>LAKE COUNTY, IL</b>	100	\$80,075	110	\$2,670,515	66	\$2,091,374.17
BANNOCKBURN, VILLAGE OF	3	\$1,050,000	1	\$0	0	\$0

**Table 1-A. Chicago River Watershed Flood Insurance Information (continued)**

<b>Community</b>	<b>Flood Insurance Policies</b>	<b>Flood Policy Coverage</b>	<b>Total Claims</b>	<b>Claims Value</b>	<b>Repetitive Loss Structures*</b>	<b>Total Rep Loss*</b>
DEERFIELD, VILLAGE OF	150	\$42,114,600	170	\$1,245,146	17	\$324,866
GREEN OAKS, VILLAGE OF	11	\$2,648,900	2	\$3,689	0	\$0
HIGHLAND PARK, CITY OF	160	\$44,347,000	105	\$207,112	12	\$65,787
HIGHWOOD, CITY OF	0	\$0	0	\$0	0	\$0
LAKE BLUFF, VILLAGE OF	11	\$3,252,500	0	\$0	0	\$0
LAKE FOREST, CITY OF	77	\$20,550,300	32	\$85,980	4	\$18,359
LINCOLNSHIRE, VILLAGE OF	112	\$32,226,000	31	\$1,123,332	1	\$336,976
METTAWA, VILLAGE OF	5	\$1,505,000	1	\$8,558	0	\$0
NORTH CHICAGO, CITY OF	10	\$1,579,000	8	\$22,787	0	\$0
PARK CITY, CITY OF	27	\$5,002,900	0	\$0	0	\$0
RIVERWOODS, VILLAGE OF	85	\$26,087,900	26	\$49,588	0	\$0
WAUKEGAN, CITY OF	71	\$15,347,000	32	\$410,922	2	\$8,142
<b>WILL COUNTY, IL</b>	810	\$784,918	711	\$9,210,950	331	\$4,502,247
BEECHER, VILLAGE OF	5	\$1,102,700	4	\$15,548	0	\$0
CRETE, VILLAGE OF	18	\$3,200,300	12	\$85,328	4	\$61,007
FRANKFORT, VILLAGE OF	66	\$12,539,100	20	\$435,317	8	\$327,200
MATTESON, VILLAGE OF	82	\$19,186,400	23	\$55,951	1	\$4,684
MONEE, VILLAGE OF	0	\$0	0	\$0	0	\$0
PARK FOREST, VILLAGE OF	8	\$1,525,900	6	\$11,010	0	\$0
SAUK VILLAGE, VILLAGE OF	15	\$4,242,100	9	\$25,916	0	\$0
STEGER, VILLAGE OF	14	\$2,017,800	9	\$71,525	2	\$59,390
TINLEY PARK, VILLAGE OF	185	\$26,220,800	67	\$77,850	0	\$0
UNIVERSITY PARK, VILLAGE OF	4	\$775,600	1	\$0	0	\$0
<b>LAKE COUNTY, IN</b>	274	\$39,901,700	117	\$667,564	13	\$271,974

**Table 1-A. Chicago River Watershed Flood Insurance Information (continued)**

<b>Community</b>	<b>Flood Insurance Policies</b>	<b>Flood Policy Coverage</b>	<b>Total Claims</b>	<b>Claims Value</b>	<b>Repetitive Loss Structures*</b>	<b>Total Rep Loss*</b>
DYER, TOWN OF	178	\$43,285,200	141	\$1,796,978	11	\$210,601
EAST CHICAGO, CITY OF	5	\$1,260,000	2	\$71,680	1	\$71,680
GARY, CITY OF	100	\$25,640,600	95	\$796,313	7	\$99,923
GRIFFITH, TOWN OF	304	\$49,067,400	276	\$2,591,043	25	\$1,156,944
HAMMOND, CITY OF	856	\$112,334,600	472	\$1,470,849	30	\$406,044
HIGHLAND, TOWN OF	401	\$69,904,700	803	\$9,284,555	27	\$592,179
LAKE STATION, CITY OF	49	\$6,576,000	109	\$4,153,546	17	\$1,017,899
MUNSTER, TOWN OF	535	\$109,976,100	573	\$24,579,801	27	\$2,819,649
SCHEREVILLE, TOWN OF	51	\$5,205,200	13	\$40,427	1	\$11,403
ST. JOHN, TOWN OF	24	\$5,576,800	2	\$3	0	\$0

\*Since 1978 (FEMA, April 4, 2014)

## II. Watershed Stakeholder Coordination

The Discovery phase included an investigation of existing terrain, flood hazard data, and flood risk data; broad data mining for development of an initial Discovery map; and detailed data collection to refine the Discovery maps, which were prepared by the Illinois State Water Survey (ISWS). Indiana Department of Natural Resources (IN-DNR) and ISWS led the stakeholder coordination in Indiana and Illinois, respectively. Watershed coordination meetings were held with community, state, and federal officials to share information concerning the watershed and its stakeholders. Pre-Discovery materials are available in Appendix A.

Prior to the Discovery meetings, a contacts database was created by IN-DNR and ISWS using available websites and directories, and making phone calls to the communities. These calls included an overview of the Risk MAP program and Discovery process. An invitation list for the Discovery meetings was compiled from the information gathered for the contacts database. Approximately four weeks prior to the meetings, IN-DNR and ISWS sent letters to invited stakeholders providing a background of the Risk MAP program and an invitation to attend a Discovery meeting. The contact information and invitations are available in Appendix B.

The Chicago Watershed Discovery meetings were hosted by ISWS on behalf of FEMA. Indiana community officials were invited to the Oak Lawn, Illinois meeting and IN-DNR staff helped facilitate. The meetings were held at the following places, dates, and times.

Thursday, April 25, 2013, 1:30 PM – 3:00 PM  
Forest Preserve District of Will County  
Four Rivers Environmental Education Center  
25055 W Walnut Lane  
Channahon, IL 60411

Wednesday, November 13, 2013, 2:00 PM – 4:00 PM  
Northbrook Village Hall  
Village Board Room  
1225 Cedar Lane  
Northbrook, IL 60062

Thursday, November 14, 2013, 10:00 AM – 12:00 PM  
Oak Lawn Park District  
Oak View Center, Rooms 22-23  
4625 W. 110th Street  
Oak Lawn, IL 60453

Each Discovery meeting was approximately two hours long and consisted of introductory presentations followed by a break-out session in which stakeholders could review the Discovery map and Flood Insurance Rate Maps (FIRMs), ask questions, and provide comments and revisions.

Presentations were made describing Risk MAP program goals and objectives, hazard mitigation projects, FEMA's Community Rating System (CRS), the NFIP, and the Discovery meeting goals and objectives. The meeting materials are available in Appendix C.

For the break-out session, Discovery maps were available for review at approximately six to eight stations, and each station was staffed by meeting personnel. After reviewing the maps and clarifying any questions, stakeholders completed comment forms that included their contact information and recommended revisions or general feedback about flood risk issues and mitigation efforts. The meeting summary, attendance, and comments are available in Appendix D. The Discovery Maps are available in Appendix E.

As part of the ongoing outreach process, meeting participants received a community communications assessment seeking their feedback on the best way to correspond with their community throughout the Chicago River Watershed Risk MAP project. The assessment results and summary report are available in Appendix F.

Chicago Watershed Discovery Follow-Up Meetings hosted by the ISWS were held at the following places, dates, and times.

Wednesday, May 14, 2014 - 2:00 PM – 4:00 PM  
Northbrook Village Hall  
Village Board Room  
1225 Cedar Lane  
Northbrook, IL 60062

Thursday, May 15, 2014 - 10:00 AM – 12:00 PM  
Oak Lawn Park District  
Oak View Center  
4625 W. 110th Street  
Oak Lawn, IL 60453

Each Discovery follow-up meeting was approximately two hours long and consisted of introductory presentations followed by a break-out session in which stakeholders could review the Discovery map to provide comments, and explore the uses of FEMA's online Mitigation Action Tracker and the Discovery database. These meetings were offered to familiarize communities with these resources for their flood risk assessment and mitigation planning efforts.

Presentations were made describing Risk MAP program goals and objectives for building community resilience, hazard mitigation projects, FEMA's CRS, Mitigation Action Tracker (MAT), Discovery database, and the NFIP's Homeowner Affordability Flood Insurance Reform Act. The meeting materials are available in Appendix C.

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During the meeting break-out sessions communities were given the opportunity to explore the uses of the database and the MAT. Communities were encouraged to contribute additional information through the use of the comment form and Discovery map. Data collected at both the November 2013 and May 2014 Discovery meetings have been entered into FEMA's Discovery database and MAT. The meeting summary, attendance, and comments are available in Appendix D.

### III. Data

A list of the data collected, the deliverable or product in which the data are included, the source of the data, and any pertinent comments is provided in Table 2. Table 2 data can be used for flood risk products and additional information to benefit the project.

**Table 2. Data Collection for Chicago River Watershed**

Data Types	Description	Source	Deliverable
<b>Illinois</b>			
Areas of Mitigation Success	Any flood mitigation strategies, tactics, and/or projects that have been demonstrated to reduce losses associated with flooding events	Community Comments gathered during Discovery process	Discovery Map; Geodatabase
Areas of Significant Erosion	Areas of significant riverine erosion	Community Comments gathered during Discovery process	Discovery Map; Geodatabase
Coordinated Needs Management Strategy (CNMS) Streams	Streams categorized by study validity. Also categorized by level of concern determined by the ISWS in-house process.	Region V Coordinated Needs Management Strategy Inventory \ ISWS	Discovery Map; Geodatabase
Community Boundaries	Location of community boundaries	U.S. Census 2013	Discovery Map; Geodatabase
County Boundaries	Location of county boundaries	U.S. Census 2013	Discovery Map; Geodatabase
Dams	Location of dams	USACE National Inventory of Dams 1999 taken from the HAZUS Dams Database	Discovery Map; Geodatabase
EPA 303(d) Streams	Streams included in the EPA 303(d) list of impaired streams	U.S. EPA Office of Water	Geodatabase
Federal Lands	Location of Federally owned or administered lands	National Atlas of the United States	Discovery Map; Geodatabase
FEMA Average Annualized Loss	FEMA's Level 1 Hazus Average Annualized Loss Analysis	FEMA	Geodatabase
FEMA Composite Risk Analysis	National Flood Risk Analysis HUC Risk Data.	FEMA Region V	Discovery Map; Geodatabase
FEMA Public Assistance Grant Program	Location of public assistance grant projects	Federal Emergency Management Agency	Discovery Map; Geodatabase

**Table 2. Data Collection for Chicago River Watershed (continued)**

<b>Data Types</b>	<b>Description</b>	<b>Source</b>	<b>Deliverable</b>
<b>Illinois</b>			
HUC 8, 10, & 12 Watersheds	Watershed Boundary (HUC8)	USGS National Hydrography Dataset	Discovery Map; Geodatabase
Key Emergency Routes Overtopped	Location of roads and bridges overtopped by flooding	Community comments collected during Discovery	Discovery Map; Geodatabase
Letters of Map Change	Locations of letters of map change	FEMA Mapping Information Platform Database	Discovery Map; Geodatabase
Levees	Location of levees considered for accreditation status by FEMA	FEMA Midterm Levee Inventory	Discovery Map; Geodatabase
MWRD Reported Problems	Reported problems in Cook County Illinois	Metropolitan Water Reclamation District of Greater Chicago	Discovery Map; Geodatabase
Non-Accredited Levees	A levee that does not meet 44CFR Part 65.10 criteria for accreditation	Community Comments gathered during Discovery process	Discovery Map; Geodatabase
OEMC Basement Flooding	Reports of basement flooding in the City of Chicago on April 16th - April 25th, 2013. Points were reduced to represent point	City of Chicago Office of Emergency Management & Communications	Discovery Map; Geodatabase
Other	Information that does not fit into other classifications	Community comments collected during Discovery	Discovery Map; Geodatabase
Other Flood Risk Areas	Locations of flooding outside of identified SFHAs	Community comments collected during Discovery; OEMC	Discovery Map; Geodatabase
Past Claims Hot Spots	Repetitive Loss Properties	Local Mitigation Plans for Lake County	Discovery Map; Geodatabase
Roads	Location of interstates and major highways	Illinois Department of Transportation, 2012	Discovery Map; Geodatabase
Special Flood Hazard Areas	Location of special flood hazard areas	FEMA Digital Flood Insurance Rate Maps	Discovery Map; Geodatabase
Stream Flow Constrictions	Locations of Ice Jams and other stream flow constrictions.	U.S. Army Corps. Of Engineers - Ice Jam Database	Discovery Map; Geodatabase
Stream Gages	Locations of stream gages operated by multiple agencies	United States Geological Survey (USGS)	Discovery Map; Geodatabase
Wetlands	Location and type of wetlands and deep water habitats	U.S. Fish and Wildlife Service National Wetlands Inventory	Discovery Map; Geodatabase

**Table 2. Data Collection for Chicago River Watershed (continued)**

<b>Data Types</b>	<b>Description</b>	<b>Source</b>	<b>Deliverable</b>
<b>Indiana</b>			
Average Annualized Loss	FEMA's Level 1 HAZUS Average Annualized Loss Analysis	FEMA	Discovery Map; Geodatabase
At-Risk Essential Facilities	Essential Facilities Located in FEMA SFHAs	Lake County Surveyor Office	Discovery Map; Geodatabase
FIRM Panels	DFIRM Panels boundaries	FEMA National Flood Hazard Layer	Geodatabase
Floodplain Activity Data	Locations of Permits Applications for activities that impact flood prone areas.	Indiana Department of Natural Resources	Discovery Map; Geodatabase
Levee	Location of levees considered for accreditation status by FEMA	FEMA Midterm Levee Inventory	Discovery Map; Geodatabase
Level 2 Average Annualized Loss	Polis Centers Level 2 HAZUS Average Annualized Loss Analysis	The Polis Center – IUPUI	Discovery Map; Geodatabase
Coordinated Needs Management Strategy (CNMS)	Engineering study needs as defined by Phase 3 CNMS data	Region V CNMS inventory	Discovery Map; Geodatabase
Community Boundaries	Location of municipal boundaries	Indiana Department of Transportation, 2007; FEMA DFIRMs	Discovery Map; Geodatabase
County Boundaries	Location of county boundaries	Indiana Department of Transportation, 2007; FEMA DFIRMs	Discovery Map; Geodatabase
Federal Lands	Federal Jurisdictional boundary data	National Atlas	Discovery Map; Geodatabase
Streams and Rivers	Stream centerlines based on USGS topo quads	USGS Topographic Maps	Discovery Map; Geodatabase
HUC 8 Watershed	Watershed boundary	USGS Watershed Boundary Dataset	Discovery Map; Geodatabase
Public Assistance (PA)	Locations of PA Disbursements	FEMA Region 5	Discover Map; Geodatabase
Letters of Map Change	Locations of letters of map change	FEMA National Flood Hazard Layer	Discovery Map; Geodatabase
Major Roads and Street Centerlines	Location of interstates and major highways	Indiana Department of Transportation, 2006	Discovery Map; Geodatabase
Special Flood Hazard Areas	Location of FEMA flood hazard areas	FEMA Digital Flood Insurance Rate Maps	Discovery Map; Geodatabase
Stream Gages	Location of stream gages operated by multiple agencies	USGS National Hydrography Dataset	Discovery Map; Geodatabase

**Table 2. Data Collection for Chicago River Watershed (continued)**

<b>Data Types</b>	<b>Description</b>	<b>Source</b>	<b>Deliverable</b>
<b>Indiana</b>			
Watershed Boundaries	Hydrologic Unit Code-8, watershed boundaries	USGS National Hydrography Dataset	Discovery Map; Geodatabase
Wetlands	Location and type of wetlands and deep water habitats	U.S. Fish and Wildlife Service National Wetlands Inventory	Discovery Map; Geodatabase

## i. Data Used for Flood Risk Products

### Topographic and Imagery Data

#### Illinois

As part of the Illinois Height Modernization effort, the Illinois Department of Transportation (IDOT) is leading LiDAR data acquisition for Illinois counties scheduled by individual IDOT districts. Figure 2 displays the LiDAR status for Illinois counties.

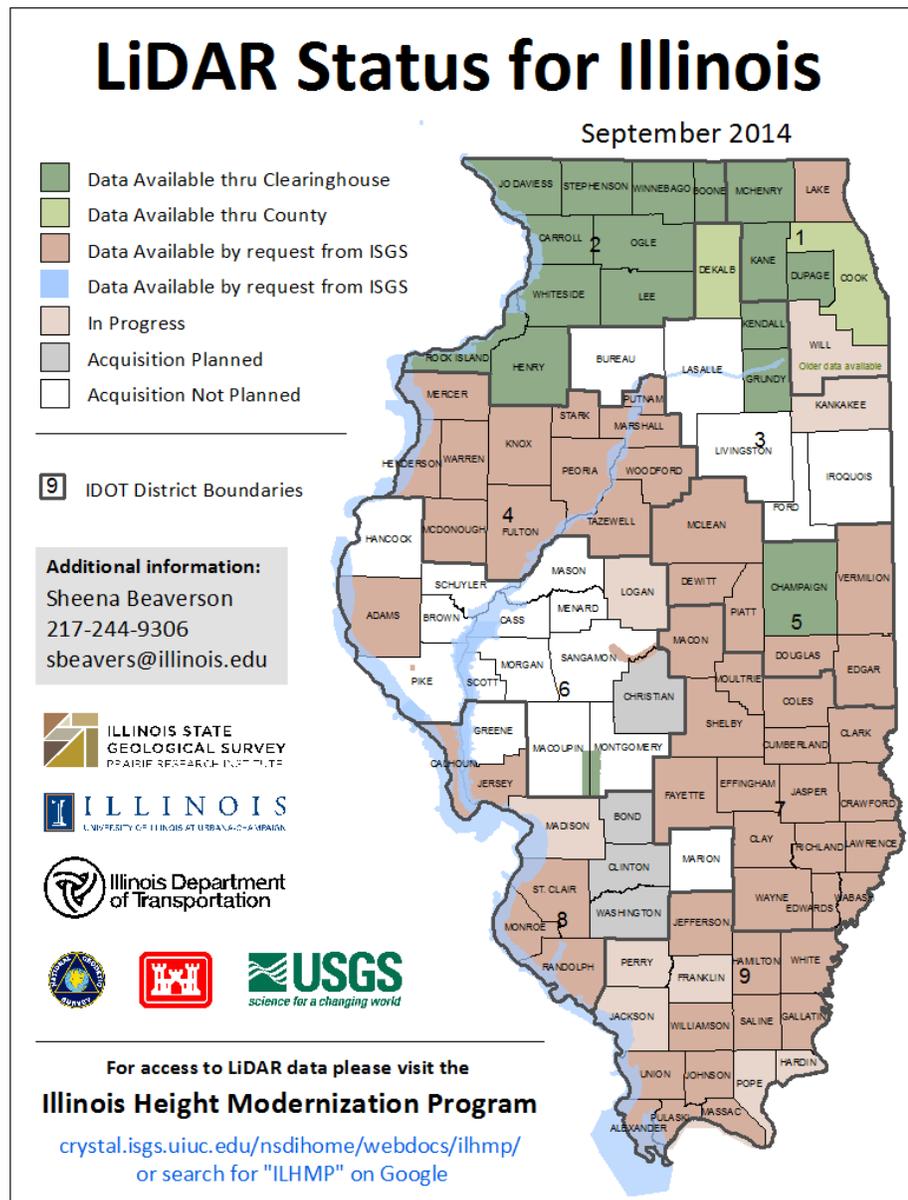


Figure 2. LiDAR Status for Illinois

## Indiana

Lake County, Indiana has benefited from a three-year program to acquire orthophotography (RGBI) and LiDAR elevation data for the entire state of Indiana. Lake County data were collected in 2013 as part of the final acquisition area. Lake County purchased six-inch photography and 1.0-meter NPS LiDAR.

## USGS Gages

The ISWS and IN-DNR project teams identified USGS stream gages in the watershed. The locations of the gages are shown on the Discovery map and listed in Table 3.

**Table 3. USGS Stream Gages**

Gage Number	Station Name and Location
<b>Illinois</b>	
05534400	NORTH BRANCH CHICAGO RIVER AT BANNOCKBURN, IL
05534500	NORTH BRANCH CHICAGO RIVER AT DEERFIELD, IL
05534600	NORTH BRANCH CHICAGO RIVER AT NORTHFIELD, IL
05534900	SKOKIE RIVER AT LAKE BLUFF, IL
05535000	SKOKIE RIVER AT LAKE FOREST, IL
05535070	SKOKIE RIVER NEAR HIGHLAND PARK, IL
05535150	SKOKIE RIVER AT NORTHFIELD, IL
05535200	NORTH BRANCH CHICAGO RIVER AT GLENVIEW, IL
05535300	WF OF NB CHICAGO RIVER AT BANNOCKBURN, IL
05535400	WF OF NB CHICAGO RIVER AT DEERFIELD, IL
05535500	WF OF NB CHICAGO RIVER AT NORTHBROOK IL
05535700	WF OF NB CHICAGO RIVER AT GLENVIEW, IL
05535800	NORTH BRANCH CHICAGO RIVER AT MORTON GROVE, IL
05536000	NORTH BRANCH CHICAGO RIVER AT NILES, IL
05536105	NB CHICAGO RIVER AT ALBANY AVENUE AT CHICAGO, IL
05536118	NB CHICAGO RIVER AT GRAND AVENUE AT CHICAGO, IL
05536162	PLUM CREEK NEAR CRETE, IL
05536178	PLUM CREEK NEAR DYER, IN
05536201	THORN CREEK AT PARK FOREST, IL
05536207	THORN CREEK TRIBUTARY AT CHICAGO HEIGHTS, IL
05536210	THORN CREEK NEAR CHICAGO HEIGHTS, IL
05536215	THORN CREEK AT GLENWOOD, IL
05536235	DEER CREEK NEAR CHICAGO HEIGHTS, IL
05536238	BUTTERFIELD CREEK NEAR LINCOLN ESTATES, IL
05536255	BUTTERFIELD CREEK AT FLOSSMOOR, IL

**Table 3. USGS Stream Gages (continued)**

<b>Gage Number</b>	<b>Station Name and Location</b>
<b>Illinois</b>	
05536265	LANSING DITCH NEAR LANSING, IL
05536270	NORTH CREEK NEAR LANSING, IL
05536275	THORN CREEK AT THORNTON, IL
05536290	LITTLE CALUMET RIVER AT SOUTH HOLLAND, IL
05536310	CALUMET UNION DRAINAGE CANAL NEAR MARKHAM, IL
05536325	LITTLE CALUMET RIVER AT HARVEY, IL
05536335	MIDLOTHIAN CREEK NEAR TINLEY PARK, IL
05536340	MIDLOTHIAN CREEK AT OAK FOREST, IL
05536460	TINLEY CREEK NEAR OAK FOREST, IL
05536500	TINLEY CREEK NEAR PALOS PARK, IL
05536510	NAVAJO CREEK AT PALOS HEIGHTS, IL
05536550	STONY CREEK (WEST) TRIBUTARY AT OAK LAWN, IL
05536560	MELVINA DITCH NEAR OAK LAWN, IL
05536570	STONY CREEK (WEST) AT WORTH, IL
05536620	MILL CREEK NEAR PALOS PARK, IL
05536630	MILL CREEK AT PALOS PARK, IL
<b>Indiana</b>	
05536179	HART DITCH AT DYER, IN
05536190	HART DITCH AT MUNSTER, IN
05536195	LITTLE CALUMET RIVER AT MUNSTER, IN
05536357	GRAND CALUMET RIVER AT HOHMAN AV AT HAMMOND, IN
04092677	GRAND CALUMET RIVER AT INDUSTRIAL HWY AT GARY, IN

(USGS, October 2013)

## ii. Other Data and Information

### **Mitigation Plans/Status, Mitigation Projects**

Multi-Hazard Mitigation Plans (MHMPs) are prepared for unincorporated and incorporated communities to help communities reduce long-term risk to life and property from natural hazards. The plans include comprehensive mitigation strategies intended to promote flood-resilient communities. The ISWS project teams reviewed the mitigation strategies in available MHMPs to reflect whenever possible, mitigation actions in the Discovery material. Table 4 lists the MHMPs, their status, and their availability for review.

**Table 4. MHMPs: Status and Availability**

County/Community	MHMP	Hazus	Issue Date	Expiration Date	Available for Review
<b>Illinois</b>					
Calumet City, City of	Y		07/11/2013	07/11/2018	Y
Chicago, City of	Y		08/05/2013	08/05/2018	N
Cook County	Y	Y	09/10/2014	09/10/2019	Y
Glenview, Village of	Y		08/12/2010	08/12/2015	Y
Lake County	Y	N	06/2012	06/2017	Y
Oak Park, Village of	Y	N	10/07/2013	10/2018	Y
Will County	Y	Y	2014	2019	Y
<b>Indiana</b>					
Lake County	Y	Y	11/2011	11/2016	Y

(IEMA, 2014)

## **CNMS and NFIP Mapping Study Needs**

### **Illinois**

The ISWS applied geospatial technologies to coordinate the management of mapping needs. The Coordinated Needs Management Strategy (CNMS) contains data for stream reaches to support existing and proposed flood mapping activities. An update and analyses of the CNMS data for the Chicago watershed are complete. Analyzed studies have been identified in Illinois as “VALID,” “UNVERIFIED,” “UNKNOWN,” and “ASSESSED.”

A methodology was determined to rank streams based on several criteria to provide a basis for prioritizing mapping needs in the watershed. There are a number of flooding issues in the Chicago River HUC8 watershed. ISWS identified streams of concern by performing a spatial analysis of the data to determine where there are combinations of potentially unverified engineering data, high risk, and community concerns. Three sources of information were used for this initial screening task. The CNMS Phase III data are organized in a geospatial database of stream reaches attributed with an assessment of the engineering analyses as valid, unverified, assessed, or unknown. The FEMA National Flood Risk Analysis HUC Risk Data spatial data were used to provide a relative risk ranking. The FEMA National Flood Risk Analysis HUC Risk Data are formed in a Census Block Group GIS layer that contains aggregated flood claims data along with 10 weighted parameters used to compute relative national risk (1 to 10 with 1 being highest risk) by Census Block Group. Study requests contained in the CNMS as well as local mapping concerns collected at the Discovery meeting were used to identify areas of known flooding issues.

A subset of stream segments was created by combining those stream segments identified as having engineering analyses that may no longer be valid (CNMS unverified) and any

stream segment for which comments collected indicate that the Special Flood Hazard Area (SFHA) mapping is inaccurate or inadequate. This subset of stream segments was then intersected with the HUC Risk Data and separated into two categories: high concern for those segments which flow through Census Block Groups with Risk Rankings between 1 and 5; medium concern for those segments which flow through Census Block Groups with Risk Rankings between 6 and 10. Stream segments outside the combined set were categorized as low concern. Table 5 displays the streams of concern categorization used in Illinois. The entire list of categorized stream segments, including stream names, floodplain zones, stream lengths, and categories of concern, are provided in Appendix G. The stream segment categories are stored in the Discovery geodatabase as well as a GIS feature class derived from the CNMS. The feature class name is Streams of Concern.

**Table 5. Streams of Concern Categorization - Illinois**

Level of Concern	CNMS Status	Study Request	FEMA Risk Decile
<i>High</i>	Unverified	Yes/No	1-5
	Unknown	Yes	1-5
<i>Medium</i>	Unverified	Yes/No	6-10
	Unknown	Yes	6-10
	Valid	Yes	1-10
<i>Low</i>	Valid	No	n/a
	Unknown	No	n/a

## Indiana

To prioritize the mapping study needs listed in Section I and Appendix E of this report, the project team used a flood risk ranking methodology that assembles flood risk metrics along a floodway to deterministically rank all stream reaches within the watershed. The methodology tabulated values (by min, max, sum, or count) for three required risk categories and three optional risk categories, and then calculated a total score for each CNMS reach. The required risk categories include 1) CNMS status, 2) local mapping request, and 3) FEMA risk decile score.

Indiana had compiled additional flood risk data sets and these were included in the ranking methodology as optional categories. The optional categories for this watershed include the following:

1. Hazus level 2 annualized losses: individual building AAL scores summed for each CNMS reach
2. Essential facilities (EFs) at risk: schools, fire stations, police stations, EOCs, and care facilities located within the special flood hazard area
3. Permit requests related to floodplain activity, including flood insurance determination, miscellaneous study, flood insurance study, 100-year discharge, permit amendment, new levee, levee, outfall structure- stormwater, FEMA LOMA/LOMR letter, and bank protection: riprap, permit revision, erosion control, dam.

Table 6 displays the streams of concern categorization used in Indiana.

**Table 6. Streams of Concern Categorization - Indiana**

<b>REQUIRED CATEGORY 1: CNMS STATUS</b>	
<b>Validation</b>	<b>Score</b>
IN PROGRESS, VALIDATED, UNKNOWN	0
All Other Values	1
UNMET NEED	2
REQUIRES ASSESSMENT	3
<b>REQUIRED CATEGORY 2: LOCAL MAPPING REQUEST</b>	
<b>Study Requested</b>	<b>Score</b>
No	0
Yes	2
<b>REQUIRED CATEGORY 3: FEMA RISK DECILE</b>	
<b>Minimum Risk Decile</b>	<b>Score</b>
0	0
6-10	1
1-5	2
<b>OPTIONAL CATEGORY 4: HAZUS LEVEL 2 AAL</b>	
<b>Sum AAL</b>	<b>Score</b>
0	0
< \$10,000	1
> \$10,000	2
<b>OPTIONAL CATEGORY 5: EFs IN SFHA</b>	
<b>Count EFs</b>	<b>Score</b>
0	0
> 0	2
<b>OPTIONAL CATEGORY 6: PERMIT ACTIVITY IN FLOODPLAIN</b>	
<b>Count Select Permits</b>	<b>Score</b>
0	0
1-5	1
> 5	2

### **Community Rating System (CRS)**

The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain

management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS. The three goals are to reduce flood damage to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.

Twelve communities and one county in the Chicago River watershed participate in the CRS (Table 7).

**Table 7. CRS Communities**

<b>Community/County</b>	<b>Rating</b>	<b>Premium Discount</b>
<b>Illinois</b>		
Lincolnshire/Lake	5	25%
Orland Hills/Cook	5	25%
South Holland/Cook	5	25%
Calumet City/Cook	6	20%
Deerfield/Cook, Lake	6	20%
Glenview/Cook	6	20%
Lake County	6	20%
Niles/Cook	6	20%
Tinley Park/Cook/Will	6	20%
Winnetka/Cook	6	20%
Flossmoor/Cook	7	15%
Lake Forest/Lake	7	15%
Lansing/Cook	7	15%
Northbrook/Cook/Lake	7	15%
Country Club Hills/Cook	8	10%
Highland Park/Lake	8	10%
Riverwoods/Lake	8	10%
<b>Indiana</b>		
Dyer/Lake	9	5%
Lake County	9	5%

(FEMA, January, 2015)

## **Levees**

### **Illinois**

#### Village of Lansing Levee System

The Village of Lansing levee system is located along the south bank of the Little Calumet River. The levee begins near the Illinois-Indiana state line near Bernice Road and runs generally northwest across Wentworth Avenue to Burnham Avenue. Lansing's levee system is composed of a 2,150-foot section of concrete floodwall immediately adjacent to a residential subdivision, as well as a 4,500-foot section of earthen berm levee, two pump stations, ten gatewells, and a reservoir. According to the original plans, the Lansing Levee was constructed at an elevation of 597.67 NAVD88, or a 0.27 percent-chance exceedance level.

The US Army Corps of Engineers (USACE) inspected the Lansing Levee System in 2013 to determine the upgrades needed to become eligible for enrollment in their certified levee program. The 2013 inspection indicated the lowest elevation along the line of protection was 596.86 feet NAVD88, which is about the 0.5 percent-chance exceedance level (200-year flood). The minimum amount of freeboard above the 100-year level (595.5 feet NAVD88) for this system is about 1.3 feet. The Village of Lansing is currently working toward having the levee certified through implementation of the Corps recommendations.

### **Indiana**

#### Little Calumet River Flood Control Project

A levee project for the Little Calumet area has been an item of concern and attention since the early 1980's. This project is authorized for flood control and recreation, which includes constructing 22 miles of levees and floodwalls, installing a control structure at Hart Ditch, building almost 17 miles of hiking trails, and preserving over 550 acres of wetland. The project also involves relocating seven miles of river channel to allow better water flow, modifying highway bridges to permit unobstructed flow of water and installing a flood warning system. The project will protect more than 9,500 homes and businesses in Gary, Griffith, Hammond, Highland, and Munster, preventing nearly \$11 million in average annual flood damage.

The USACE has completed unsteady flow modeling, design, and construction on several reaches of the levee system for the Little Calumet River. FEMA has also issued several LOMRs for the completed reaches of the levee. Approximately 90 percent of the total project is complete. The project is divided into two sections. The East Reach, which is mainly in Gary, Ind., extends from Cline Avenue to I-65. The west reach extends from the Illinois/Indiana state line to Cline Avenue.

(Indiana DNR, February 2015)

## Floodplain Management/Community Assistance Visits (CAVs)

Community Assistance Contacts (CACs) and Community Assistance Visits (CAVs) are two key methods FEMA uses to identify community floodplain management program deficiencies and violations and to provide technical assistance to resolve these issues. As the state coordinating agency for the National Flood Insurance Program, the Illinois Department of Natural Resources, Office of Water Resources (IDNR/OWR), along with the IN-DNR, conduct CACs and CAVs as part of their floodplain management programs. A CAV typically consists of a tour of the floodplain to assess any recent construction activities, a review of the local permitting process, and evaluation of the local floodplain ordinance. A meeting with the local floodplain official is held to discuss the NFIP, the local permitting process, any recent flood events, training opportunities, and any program deficiencies.

A CAC can be conducted by a telephone call to the community or a brief visit. The CAC provides a means to establish or re-establish contact with an NFIP community to determine any existing problems or issues and offer assistance if necessary.

Table 8 lists the communities in the watershed and the date of their latest CAV or CAC.

**Table 8. Recent CAV/CACs**

County	Community	CID	2010 Census Population	CAV	CAC
COOK	ALSIP, VILLAGE OF	170055	19,277	07/27/06	03/21/94
	BEDFORD PARK, VILLAGE OF	171007	580	N/A	N/A
	BLUE ISLAND, CITY OF	170064	23,706	01/12/99	09/09/96
	BRIDGEVIEW, VILLAGE OF	170065	16,446	01/13/99	09/11/98
	BURBANK, CITY OF	170069	28,925	N/A	N/A
	BURNHAM, VILLAGE OF	170070	4,206	11/14/96	N/A
	CALUMET CITY, CITY OF	170072	37,042	01/26/00	N/A
	CALUMET PARK, VILLAGE OF	170073	7,835	N/A	06/07/99
	CHICAGO, CITY OF	170074	2,695,822	12/31/97	N/A
	CHICAGO HEIGHTS, CITY OF	170075	30,276	08/30/07	N/A
	CHICAGO RIDGE, VILLAGE OF	170076	14,305	09/11/07	03/21/94
	CICERO, TOWN OF	170077	83,891	N/A	N/A
	COOK COUNTY	170054	15,924	N/A	08/04/11
	COUNTRY CLUB HILLS, CITY OF	170078	16,541	11/23/98	08/29/97
	CRESTWOOD, VILLAGE OF	170080	10,950	08/29/06	08/29/97
	DIXMOOR, VILLAGE OF	170082	3,644	10/11/95	N/A
	DOLTON, VILLAGE OF	170083	23,153	01/30/02	09/09/97
	EAST HAZEL CREST, VILLAGE OF	170085	1,543	N/A	12/05/97
ELMWOOD PARK, VILLAGE OF	170089	24,883	02/13/96	N/A	

**Table 9. Recent CAV/CACs (Continued)**

County	Community	CID	2010 Census Population	CAV	CAC
COOK	EVANSTON, CITY OF	170090	74,486	06/30/05	09/21/98
	EVERGREEN PARK, VILLAGE OF	170733	19,852	N/A	N/A
	FLOSSMOOR, VILLAGE OF	170091	9,464	02/23/07	07/27/95
	FORD HEIGHTS, VILLAGE OF	170084	2,763	09/25/07	09/06/96
	GLENCOE, VILLAGE OF	170095	8,899	07/25/07	02/21/94
	GLENVIEW, VILLAGE OF	170096	44,692	10/12/10	08/03/95
	GLENWOOD, VILLAGE OF	170097	8,969	02/23/07	09/02/97
	GOLF, VILLAGE OF	170098	500	N/A	09/03/98
	HARVEY, CITY OF	170100	25,282	03/16/04	07/19/95
	HARWOOD HEIGHTS, VILLAGE OF	170101	8,612	N/A	N/A
	HAZEL CREST, VILLAGE OF	170102	14,100	10/18/97	09/04/96
	HICKORY HILLS, CITY OF	170103	14,049	04/16/08	09/03/97
	HOMETOWN, CITY OF	171040	4,349	N/A	N/A
	HOMEWOOD, VILLAGE OF	170109	19,323	03/31/99	09/09/96
	JUSTICE, VILLAGE OF	170112	12,926	04/10/96	09/22/99
	KENILWORTH, VILLAGE OF	170113	2,540	N/A	N/A
	LANSING, VILLAGE OF	170116	28,331	05/11/98	09/09/96
	LINCOLNWOOD, VILLAGE OF	171001	12,590	N/A	N/A
	LYNWOOD, VILLAGE OF	170119	9,007	02/20/03	08/28/97
	MARKHAM, CITY OF	175169	12,508	06/29/95	N/A
	MERRIONETTE PARK, VILLAGE OF	170126	1,900	N/A	09/28/98
	MIDLOTHIAN, VILLAGE OF	170127	14,819	06/12/97	09/17/99
	MORTON GROVE, VILLAGE OF	170128	23,270	07/29/05	07/26/95
	NILES, VILLAGE OF	170130	29,803	09/21/11	12/08/97
	NORRIDGE, VILLAGE OF	170131	14,572	N/A	N/A
	NORTHBROOK, VILLAGE OF	170132	33,170	N/A	09/15/99
	NORTHFIELD, VILLAGE OF	170133	5,420	02/06/07	09/10/96
	OAK FOREST, CITY OF	170136	27,962	06/25/09	05/21/96
	OAK LAWN, VILLAGE OF	170137	56,690	12/18/96	08/19/96
	OAK PARK, VILLAGE OF	171037	51,878	N/A	N/A
	OLYMPIA FIELDS, VILLAGE OF	170139	4,988	N/A	09/21/98
	ORLAND HILLS, VILLAGE OF	170172	7,149	N/A	06/07/99
	ORLAND PARK, VILLAGE OF	170140	56,767	06/27/95	04/04/94
PALOS HEIGHTS, CITY OF	170142	12,515	01/22/97	09/14/10	
PALOS HILLS, CITY OF	170143	17,484	12/11/96	09/01/10	
PALOS PARK, VILLAGE OF	170144	4,847	02/04/98	09/14/10	

**Table 10. Recent CAV/CACs (Continued)**

County	Community	CID	2010 Census Population	CAV	CAC
COOK	PARK RIDGE, CITY OF	170146	37,480	02/23/06	N/A
	PHOENIX, VILLAGE OF	170147	1,964	05/10/01	10/28/99
	POSEN, VILLAGE OF	170148	5,987	03/24/04	07/26/95
	RIGHTON PARK, VILLAGE OF	170149	13,646	N/A	03/31/94
	RIVERDALE, VILLAGE OF	170150	13,549	04/06/04	08/03/95
	ROBBINS, VILLAGE OF	170154	5,337	01/27/00	08/27/96
	SKOKIE, VILLAGE OF	171000	64,784	06/22/05	N/A
	SOUTH CHICAGO HEIGHTS, VILLAGE OF	170162	4,139	N/A	09/14/98
	SOUTH HOLLAND, VILLAGE OF	170163	22,030	12/18/95	N/A
	THORNTON, VILLAGE OF	170168	2,338		09/17/99
	WILMETTE, VILLAGE OF	170175	27,094	N/A	09/23/98
	WINNETKA, VILLAGE OF	170176	12,214	05/03/12	N/A
	WORTH, VILLAGE OF	170177	10,789	04/18/01	09/20/99
COOK/ LAKE, IL	DEERFIELD, VILLAGE OF	170361	18,225	07/17/02	09/20/99
COOK/ WILL	MATTESON, VILLAGE OF	170123	19,009	N/A	09/14/99
	PARK FOREST, VILLAGE OF	170145	21,975	06/13/01	09/25/98
	SAUK VILLAGE, VILLAGE OF	170157	10,506	02/18/98	N/A
	STEGER, VILLAGE OF	170713	9,570	05/21/01	08/28/96
	TINLEY PARK, VILLAGE OF	170169	56,703	07/14/04	09/19/96
	UNIVERSITY PARK, VILLAGE OF	170708	7,129	01/25/07	09/21/98
LAKE, IL	BANNOCKBURN, VILLAGE OF	170359	1,583	03/25/08	06/10/99
	GREEN OAKS, VILLAGE OF	170364	3,866	05/03/12	N/A
	HIGHLAND PARK, CITY OF	170367	30,051	05/23/07	N/A
	HIGHWOOD, CITY OF	171033	5,405	N/A	N/A
	LAKE COUNTY	170400	2,698	02/27/04	N/A
	LAKE BLUFF, VILLAGE OF	170373	5,848	03/26/03	09/24/97
	LAKE FOREST, CITY OF	170374	19,375	07/24/06	09/15/99
	LINCOLNSHIRE, VILLAGE OF	170378	7,275	04/13/05	09/04/96
	METTAWA, VILLAGE OF	170381	547	11/21/02	09/30/96
	NORTH CHICAGO, CITY OF	170384	32,575	03/16/94	N/A
	PARK CITY, CITY OF	170386	7,570	04/03/01	09/29/98
	RIVERWOODS, VILLAGE OF	170387	3,660	01/30/06	03/29/93
WAUKEGAN, CITY OF	170397	89,081	08/25/11	N/A	

**Table 11. Recent CAV/CACs (Continued)**

County	Community	CID	2010 Census Population	CAV	CAC
WILL	BEECHER, VILLAGE OF	170696	4,359	10/30/03	09/21/98
	CRETE, VILLAGE OF	170700	8,259	04/08/04	08/28/96
	FRANKFORT, VILLAGE OF	170701	17,782	11/29/09	08/15/95
	MONEE, VILLAGE OF	171029	5,148	N/A	N/A
	WILL COUNTY	170695	9076	01/29/97	N/A
LAKE, IN	DYER, TOWN OF	180129	16,390	04/23/13	07/07/09
	EAST CHICAGO, CITY OF	180130	29,698	03/03/04	06/30/09
	GARY, CITY OF	180132	80,294	04/24/12	N/A
	GRIFFITH, TOWN OF	185175	16,893	07/05/06	04/12/10
	HAMMOND, CITY OF	180134	80,830	04/29/13	04/21/10
	HIGHLAND, TOWN OF	185176	4,489	04/29/13	07/14/06
	LAKE COUNTY	180126		05/22/13	04/26/10
	LAKE STATION, CITY OF	180131	12,572	05/22/13	N/A
	MUNSTER, TOWN OF	180139	23,603	04/29/13	N/A
	SCHEREVILLE, TOWN OF	180142	29,243	04/23/13	07/07/09
ST. JOHN, TOWN OF	180141	14,850	06/11/98	07/07/09	

(FEMA, April 4, 2014) \*2010 Census Population

### Regulatory Mapping

As part of FEMA’s Map Modernization program, the ISWS and the IN-DNR have recently updated several of the countywide Flood Insurance Rate Maps (FIRMs) throughout the states of Illinois and Indiana. Many of these maps are effective or in the final stages of map adoption. While these maps are in a digital format, they do not necessarily reflect newer hydrologic or hydraulic study information and therefore may not be the most accurate representation of flood risk within the watershed. Table 9 lists the Digital Flood Insurance Rate Map (DFIRM) status for counties in the Chicago River watershed.

**Table 12. Digital Flood Insurance Rate Map Status**

County	Status	Effective Date
Cook County	Effective	08/19/2008
Lake County, IL	Effective	9/18/2013
Will County	Prelim	N/A
Lake County, IN	Effective	01/18/2012

(FEMA, April 4, 2014)

## IV. Risk MAP Needs and Recommendations

The Illinois and Indiana project teams presented the Discovery map and discussed the results of the data collection and analysis with the watershed stakeholders in detail during the Discovery meetings. This section addresses the areas of concern and interest within the Chicago River watershed that could be addressed with Risk MAP projects.

### i. Floodplain Studies

Although DFIRMs have been produced for many of the counties in the Chicago River HUC 8 watershed, there are still study and mapping needs that exist. Using the Coordinated Needs Management System (CNMS) and input from community stakeholders, ISWS and IN-DNR have identified several areas where new or updated studies rank highest in terms of need and risk relative to other locations in the Chicago River HUC8 watershed. The proposed new study areas and types (detailed or approximate) are listed in Table 10.

The goal of the floodplain mapping program is to have a high quality, model-based floodplain mapped for all streams that drain greater than 1 square mile. While the mapping needs listed in the following table are the highest priority stream reaches for modeling, there are other mapping needs that also should be included in any project proposed for this basin. These needs are fully documented in the CNMS. Appendix G lists the additional mapping needs required to meet this goal.

**Table 13. Mapping Needs**

CNMS Reach ID	Stream Name	Length (Mi.)	County	CID	Study Type
<b>Illinois</b>					
170310100006	76th Street Ditch	1.51	Cook	170169	Detailed
170310100010	Boca Rio Ditch	1.23	Cook	170136	Detailed
170310100014	Butterfield Creek	15.39	Cook	170123	Detailed
170310100015	Butterfield Creek East Branch	4.14	Cook	170123	Detailed
170310100019	Butterfield Creek, Tributary No. 1	0.38	Cook	170091	Detailed
170310100020	Butterfield Creek, Tributary No. 3	0.91	Cook	170091	Detailed
170310100021	Butterfield Creek, Tributary No. 4	1.17	Cook	170091	Detailed
170310100407	Calumet Sag Channel	10.38	Cook	170054	Approximate
170310100026	Calumet Sag Channel, Tributary C	1.52	Cook	170127	Detailed
170310100027	Calumet Union Drainage Ditch	5.43	Cook	175169	Detailed
170310100030	Calumet Union Drainage Ditch Southwest Branch	2.02	Cook	170102	Detailed
170310100035	Cherry Creek	0.40	Cook	170102	Detailed
170310100036	Cherry Creek East Branch	0.30	Cook	170102	Detailed
170310100037	Cherry Creek East Branch	1.53	Cook	170109	Detailed

CNMS Reach ID	Stream Name	Length (Mi.)	County	CID	Study Type
<b>Illinois</b>					
170310100038	Cherry Creek East Branch	0.85	Cook	170091	Detailed
170310100040	Cherry Creek West Branch	1.71	Cook	170102	Detailed
170310100404	Chicago River	1.29	Cook	170074	Approximate
170310100043	Chicago River, North Branch	1.75	Cook	170074	Detailed
170310100044	Chicago River, North Branch	1.27	Cook	170130	Detailed
170310100046	Chicago River, North Branch	7.21	Cook	170128	Detailed
170310100418	Chicago River, North Branch	5.22	Cook	170074	Approximate
170310100480	Chicago River, North Branch	7.85	Cook	170074	Approximate
170310100048	Chicago River, North Branch, Middle Fork	6.63	Cook	170132	Detailed
170310100516	Chicago River, North Branch, Middle Fork	0.02	Cook	170132	Detailed
170310100053	Chicago River, North Branch, West Fork	9.44	Cook	170096	Detailed
170310100403	Chicago River, South Branch	3.95	Cook	170074	Approximate
170310100413	Chicago River, South Branch, South Fork	1.43	Cook	170074	Approximate
170310100054	Crestwood Drainage Ditch	0.89	Cook	170080	Detailed
170310100057	Deer Creek	8.58	Cook	170054	Detailed
170310100504	Deer Creek Tributary B	0.64	Cook	170157	Detailed
170310100078	Dixie Creek	0.90	Cook	175169	Detailed
171970100015	Goose Creek	2.49	Will	170700	Detailed
170310100127	Little Calumet River	13.30	Cook	170072	Detailed
170310100503	Little Calumet River	5.99	Cook	170072	Approximate
170310100400	Little Calumet River Unnamed Tributary	1.11	Cook	170163	Detailed (Backwater)
170310100138	Lucas Ditch	2.03	Cook	170143	Detailed
170310100139	Lucas Ditch Cut-Off	1.25	Cook	170143	Detailed
170310100160	Melvina Ditch	0.92	Cook	170076	Detailed
170310100162	Merrionette Park Ditch	0.87	Cook	170055	Detailed
170310100163	Midlothian Creek	12.85	Cook	170169	Detailed
170310100350	Midlothian Creek Storm Sewer System Bound By Springfield Ave to the West, the Tri State Tollway *	0.35	Cook	170127	Detailed (AH)
170310100164	Midlothian Creek Western Branch	0.77	Cook	170136	Detailed
170310100428	Midlothian Creek Western Branch	0.66	Cook	170054	Approximate

CNMS Reach ID	Stream Name	Length (Mi.)	County	CID	Study Type
<b>Illinois</b>					
170310100167	Midlothian Creek Western Tributary	1.27	Cook	170169	Detailed
170310100427	Midlothian Creek Western Tributary	0.02	Cook	170172	Approximate
170310100408	Mosquito Creek	3.22	Cook	170055	Approximate
170310100174	Natalie Creek	2.86	Cook	170136	Detailed
170310100436	Natalie Creek	0.15	Cook	170136	Approximate
170310100175	Natlie Creek Overland Flow	0.85	Cook	170127	Detailed
170310100498	Navajo Creek	2.17	Cook	170142	Detailed
170310100405	North Branch Canal	1.09	Cook	170074	Approximate
170310100177	North Creek	7.56	Cook	170054	Detailed
170310100406	North Shore Channel	7.66	Cook	171000	Approximate
170310100461	Np	0.30	Cook	170126	Approximate
170310100475	Np	0.54	Cook	170139	Approximate
170310100180	Oak Lawn Ditch	1.08	Cook	170076	Detailed
171970100048	Plum Creek	12.68	Will	170695	Detailed
170310100502	Skokie Lagoons	2.00	Cook	170054	Detailed
170310100230	Skokie River	7.11	Cook	170054	Detailed
170310100396	Skokie River, East Ditch	3.13	Cook	170054	Approximate
170310100240	Skokie River, West Ditch	1.63	Cook	170054	Detailed
170310100371	Skokie River, West Ditch	1.33	Cook	170054	Approximate
170310100241	South Navy Ditch	0.42	Cook	170096	Detailed
170310100244	Stony Creek (East)	3.93	Cook	170055	Detailed
170310100247	Stony Creek (West)	3.62	Cook	170076	Detailed
170310100248	Stony Creek (West)	1.78	Cook	170143	Detailed
170310110247	Stony Creek (West)	0.75	Cook	170076	Detailed
170310110248	Stony Creek (West)	0.75	Cook	170143	Detailed
170310100254	Thorn Creek	4.29	Cook	170163	Detailed
170310100255	Thorn Creek	7.09	Cook	170054	Detailed
170310100256	Thorn Creek	0.68	Cook	170097	Detailed
170310100257	Thorn Creek	4.07	Cook	170075	Detailed
170310100261	Tinley Creek	0.91	Cook	170080	Detailed
170310100263	Tinley Creek	3.16	Cook	170140	Detailed
170310100264	Tinley Creek	0.66	Cook	170172	Detailed
170310100265	Tinley Creek	0.28	Cook	170172	Detailed
170310100280	Tinley Creek	0.36	Cook	170172	Detailed
170310100375	Tinley Creek	5.61	Cook	170054	Approximate

CNMS Reach ID	Stream Name	Length (Mi.)	County	CID	Study Type
<b>Illinois</b>					
170310100437	Tinley Creek	0.12	Cook	170055	Approximate
170310100330	Tinley Park Reservoir	0.27	Cook	170169	Detailed
170970100137	Unnamed Ponding Area 4	0.46	Lake	170357	Detailed
170310100334	Unnamed Ponding Area Located at the Upstream Side of Stony Creek (West)	0.38	Cook	170137	Detailed (AH)
170310100351	Unnamed Ponding Area off of Chicago River North Branch, Bound By Harms Rd to the West and Juniper R*	0.34	Cook	170096	Detailed
170310100332	Unnamed Ponding Area South of Navajo Creek Bound By Harlem Ave on the West and Forestview Rd on *	0.27	Cook	170142	Detailed (AO)
170310100363	Unnamed Ponding Area Surrounded Tinley Park Reservoir	0.97	Cook	170169	Detailed (AO)
<b>Indiana</b>					
180890100060	Little Calumet River	7.25	Lake	180132	Detailed
180890100033	Unt Dyer Ditch	0.71	Lake	180142	Detailed

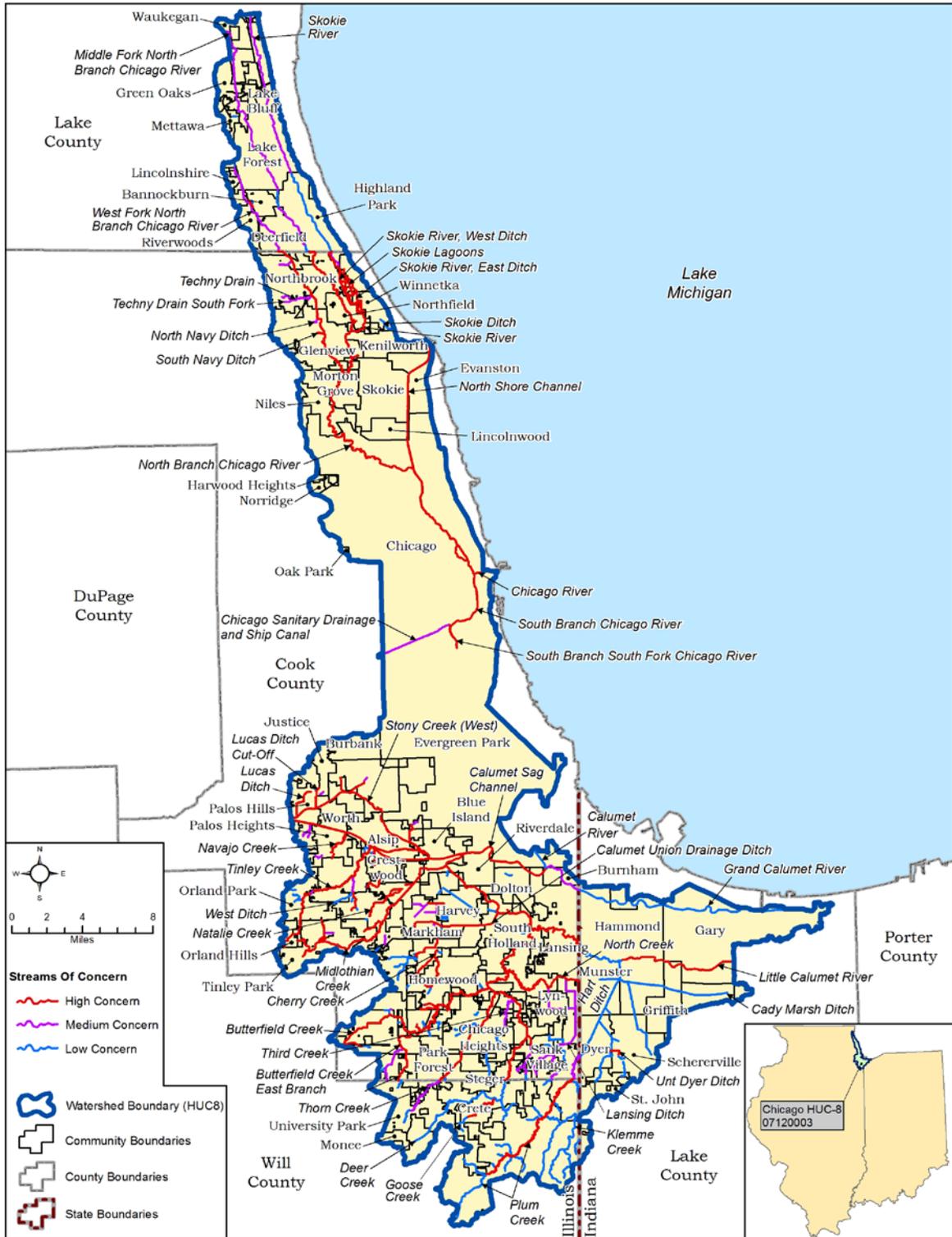


Figure 3. Streams of Concern

## ii. Mitigation Projects

In the Discovery meetings, community stakeholders identified several possible locations in which mitigation projects could reduce the impacts of flooding. Topics of mitigation interest included levees, roads that frequently flood, significant riverine erosion, at-risk essential facilities, stream flow constriction, and recent and/or future development. Table 11 lists the mitigation projects identified during the Discovery meetings.

**Table 14. . Mitigation Projects**

Community	Subject(s)	Project	Status	Comment Number
<b>Illinois</b>				
Bannockburn	Residential Flooding	Rain garden installations near the intersection of Telegraph Road and North Avenue.	Identified	33
Bannockburn	Street Closure Due to Flooding	Bannockburn Court - 12 inch flooding of street	Identified	201
Bridgeview	Street Closure Due to Flooding	Mitigate overtopping of Roberts Road and Southfield Avenue.	Identified	91
Chicago	Basement Flooding	Mitigate basement flooding due to sewer backups from the combined sewer system and other causes.	Identified	93A
Chicago	Residential Flooding	Mitigate flooding of Albany Park homes from overbank flooding of the NB Chicago River.	Identified	93B
Chicago	Detailed Studies Needed	Detailed studies are needed to establish a BFE on the Chicago River, North Branch, South Branch, Sanitary & Ship Canal, Cal-Sag Channel.	Identified	93C
Cook County	Streamflow Constriction	Remove restrictive Union Pacific RR bridge which crosses the Skokie River.	Identified	1
Cook County	Street Closure Due to Flooding	In Northfield mitigate the overtopping of Winnetka Road at the crossing with the Middle Fork N. Branch Chicago River.	Identified	2
Deerfield	Overtopped road/ Residential Flooding	Mitigate flooding.	Identified	34
Evergreen Park	Basement Flooding; Street Closure Due to Flooding	Mitigate basement flooding due to backed up sewers and street flooding.	Identified	88

Community	Subject(s)	Project	Status	Comment Number
Glenview	Residential Flooding	Storm sewer relief project	Started Fall 2014	8
Glenview	Basement Flooding/Street Closure Due to Flooding	Mitigate flooding of homes in SFHA in Tall Trees Subdivision, South Circle, and on Pine Street. MWRD working on possible buy outs and other mitigation actions.	In Progress	40A, B, C; 111
Green Oaks	Culvert Restriction/ Street Flooding	Open second culvert on USACE Flood Control Basin No. 15.	Identified	2A/B
Highland Park	Basement Flooding / Street Closure due to Flooding	Mitigate flooding on North Branch Chicago River in Highland Park.	Complete	38
Highland Park	Basement Flooding / Street Closure due to Flooding	Mitigate identified areas of flooding.	Identified	102,112,113,114,115
Homewood	Street Closure Due to Flooding	Mitigate flooding on Dixie Highway, Birch Road and Harwood Ave.; Heather Road and Perth Ave; Birch Road and Carpenter St.; Ridge Road.	Identified	206 A-E
Homewood	Residential Flooding	North side of Ridge Road in 1500 block; East side of Sacramento Ave in 18100 block	Identified	206 F-G
Lake County	Overtopped Road	Mitigate flooding of Washington Street between US Route 41 and IL Route 131.	Identified	15
Lincolnshire	Street Closure Due to Flooding/ Impacts Evacuation	Mitigate flooding at Sutton Place/Westminster Way and East Side Water Reservoir.	Identified	37A, B
Lincolnshire	Significant Riverine Erosion	Install boulder toe and remove invasives from commercial detention to village limits.	Identified	37C
Lincolnshire	Significant Riverine Erosion	Designed, bid, and awarded contract to mitigate severe erosion on North Branch due to large discharge cross flow.	In Progress	37D
Lincolnwood	Basement Flooding and Street Closure Due to Flooding	A pilot study which includes surface storage has been initiated to address a combined sewer overflow issue.	In Progress	17
Lynwood	Streamflow Constriction	Repair pinch point at Glenwood Lansing Road.	Identified	84B

Community	Subject(s)	Project	Status	Comment Number
Morton Grove	Street Closure Due to Flooding	Mitigate flooding of Illinois 58 from Lehigh Avenue to Ferris Avenue.	Identified	35
Niles	Basement flooding; Street closure due to flooding	Updated regulations. Development and implementation of a flood assistance program and capital improvements program.	In Progress	7
Niles	Street Closure Due to Flooding; Basement Flooding; Other Flood Risk Areas	Areas that flood need to be mapped for mitigation purposes.	Identified	Email Comment
Niles	Mitigation Success	Two reports: Stormwater Commission Report (2009) and Stormwater Relief Program (2012) completed to document and address the variety of flood concerns (basement backups, overland flow, overbank flooding, etc.) throughout the village.	Complete	Email Comment
Northbrook	Critical Facilities	Mapping of critical facilities.	Identified	10 A, B, C, D
Northbrook	Basement Flooding / Street Closure Due to Flooding	Increase spillway capacity on the reservoir on the West Fork at Lake-Cook/Pfingsten Roads.	Identified	43
Northfield	Street Closure Due to Flooding	Repair identified streamflow constriction.	Identified	9A/B/C
Northfield	Street Closure Due to Flooding	Eliminate restrictive abandoned RR bridge.	Identified	9D
Northfield	Street Closure Due to Flooding	Street flooding SW quadrant Willow/Wagner; Sunset Ridge Road; Winnetka Road.	Identified	NF1
Northfield	Residential Flooding	First floor flooding SW quadrant Willow/Wagner and Winnetka Road.	Identified	NF1
Olympia Fields	Street Closure due to Flooding	Mitigate street flooding at Crawford and Vollmer Road and other identified areas.	Identified	86 A, B, C, D
Orland Park	Basement Flooding; Street Closure Due to Flooding	Residential neighborhood with substantial street and home flooding. Village conducting flood study for possible solutions.	Identified	2022
Orland Park	Mitigation Success	Culvert Improvements have been completed by the Village of Orland Park.	Identified	3

Community	Subject(s)	Project	Status	Comment Number
Palos Heights	Street Closure Due to Flooding	Increase detention at 131 <sup>st</sup> Street and Harlem Avenue.	In Progress	69A
Palos Heights	Streamflow Constriction	Mitigate streamflow constriction at 131 <sup>st</sup> and Cypress.	In Progress	69B
Palos Hills	Street Closure Due to Flooding	Lucas Ditch needs to be dredged from Roberts Road to 103 <sup>rd</sup> Street.	Identified	59A
Palos Hills	Basement Flooding	Mitigate flooding of Lucas Ditch extension, which is undersized.	Identified	59B
Palos Hills	Street Closure Due to Flooding; Basement Flooding; Streamflow Constriction	Mitigate flooding of streets and home dues to an undersized storm sewer under Roberts Road.	Identified	59C
Palos Hills	Residential Flooding	Increase height of levee.	Identified	64A
Palos Hills	Significant Riverine Erosion	Mitigate erosion of ravine, 102 <sup>nd</sup> Street to 105 <sup>th</sup> Street in the 89 <sup>th</sup> Avenue easement.	Identified	64B
Palos Hills	Mitigation Project	Erosion control and detention and dredging of ponds at 95 <sup>th</sup> Street and Kean Avenue.	In Progress	64C
Palos Park	Incorrect Floodplain Boundary	New detailed study needs to be completed.	Identified	56A
Palos Park	Streamflow Constriction	Culvert repair or replacement.	Identified	56B
Palos Park	Overtopped Roads	Mitigate overtopping on 123 <sup>rd</sup> Street and Hillcrest Lane.	Identified	56 C, D
Park Forest	Street Closure Due to Flooding	Mitigate roads overtopping.	Identified	54, 131, 134
Richton Park	Basement Flooding /Mitigation Success	Bypass storm sewer and additional detention.	Complete	5A
Richton Park	Street Closure Due to Flooding	Mitigate flooding at Sauk Trail and Governor's Highway.	Identified	5B
Riverdale	Basement Flooding	Mitigate basement flooding in Riverdale identified areas.	Identified	184
Riverwoods	Street Closure Due to Flooding	Mitigate flooding on West Course Drive.	Identified	45; RW1
Sauk Village	Basement Flooding	Mitigate basement flooding in the area of Clyde Avenue, South Brook, 221 <sup>st</sup> and 220 <sup>th</sup> Streets.	Identified	80A

Community	Subject(s)	Project	Status	Comment Number
Sauk Village	Overtopped Road	Mitigate street flooding at Torrence Avenue and Sauk Trail.	Identified	80B
South Holland	Street Closure Due to Flooding	Mitigate flooding at 170 <sup>th</sup> Street at Cornell and Everett Streets and south of 159 <sup>th</sup> Street.	Identified	87 A, B
South Holland	Future Development	Future development to occur at Rt. 6 and I-94 - Future Development, west side of I-94.	Identified	4111
Tinley Park	Incorrect Mapped Floodplain Area	A new detailed study needs to be completed.	Identified	76
Wilmette	Overtopped Roads	Mitigate flooding west of Ridge Road. Study underway to identify a project of reduce flooding.	Identified	42; 2018
Winnetka	Basement Flooding and Street Closure Due to Flooding	Large Zone A. New study is needed to produce Zone AE with a determined BFE.	Identified	27
Indiana				
Munster	Street Closure Due to Flooding; Mitigation Success	Pulling out piers on old RR bridge and replacing with pedestrian bridge spanning Little Calumet River.	In Progress	105
Munster	Street Closure Due to Flooding; Mitigation Success	Raising bridge on Columbia Avenue over the Little Calumet River between Hammond and Munster.	In Progress	107

### Priority Community Mitigation Projects

Following the Discovery meetings, comments were reviewed and additional community outreach was conducted to help identify high priority community mitigation projects within the Chicago River watershed area. The high priority mitigation projects are described in the following narratives.



## Unincorporated Cook County Email Comment

According to the Drainage and Utilities Division Head of the Cook County Department of Transportation, Unincorporated Cook County has two areas of concern within the Chicago River watershed area. The first area exists just west of Happ Road, which is a Cook County roadway located near the village borders of Northfield and Winnetka. At this location, an abandoned Union Pacific skewed-timber railroad bridge crosses the Skokie River, a tributary to the North Branch of the Chicago River. The railroad bridge is the cause of backwater flooding to the upstream areas of Happ Road. Requests have been made by the county to the Union Pacific Railroad to have this bridge removed, but unfortunately, this bridge is being maintained for possible future use as a rails-to-trails project. Mitigation efforts need to be taken to eliminate the restrictive features of this bridge.



**Railroad Bridge – Unincorporated Cook County**

The second area of concern within Unincorporated Cook County exists where Winnetka Road floods at the crossing with the Middle Fork of the North Branch Chicago River in the Village of Northfield. County officials will be looking at this flooding issue as part of future roadway improvements to be considered along Winnetka Road.



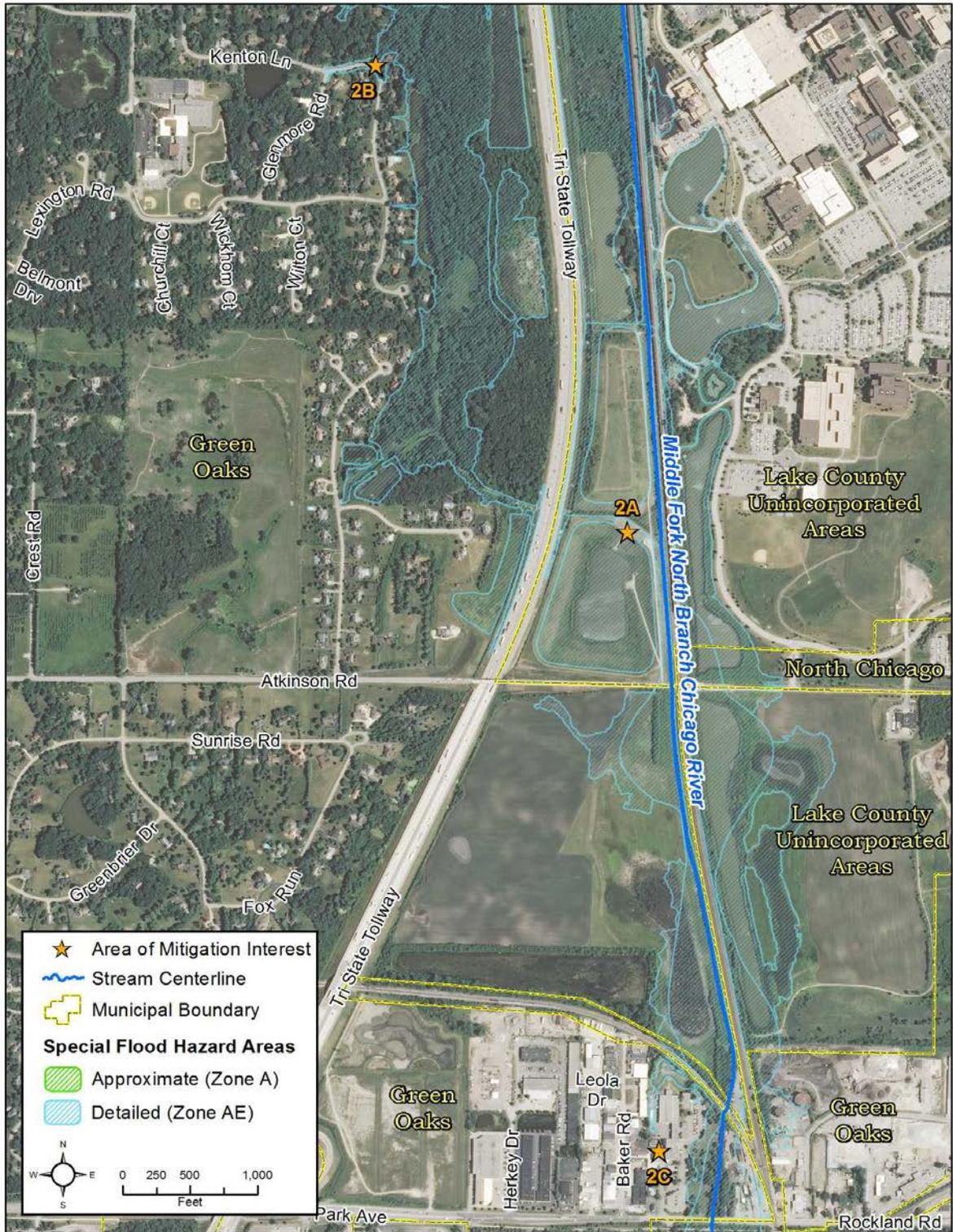
**Winnetka Road – Unincorporated Cook County**

**Village of Green Oaks / Lake County  
Comments 2A, 2B, 2C**

Within the Village of Green Oaks, chronic flooding that impacts vehicular traffic occurs at a bend on Kenton Lane where it transitions from a north-south to an east-west road. Downstream improvements have been made by the Village of Green Oaks that have reduced the frequency, magnitude, and durations of these events. However, in order to achieve further improvements, modifications to the USACE Basin No. 15 are necessary. The inlet control structure for USACE Flood Control Basin No.15 includes two 36-inch culverts, one of which is plugged. According to the basis of design report, the second culvert was intended to eventually be opened as the watershed became more developed. Opening the second 36-inch culvert would reduce upstream flood elevations in Green Oaks and therefore is desirable.

Village officials met with the USACE pertaining to this matter in December 2006. At that time the village was informed that they would need to perform detailed hydrologic and hydraulic modeling of the North Branch of the Chicago River to demonstrate that opening the second 36-inch culvert would not have any adverse impacts, and then submit the analysis along with a written request to the USACE. The modeling effort was deemed very involved and costly, and subsequently, the initiative was put on hold. However, the village recently completed hydrologic and hydraulic modeling necessary as part of the replacement of the existing bridge over the North Branch at Atkinson Road and will now be able to utilize this model to analyze the impacts of opening the second 36-inch culvert. Once this analysis is completed a submittal will be made to the USACE.

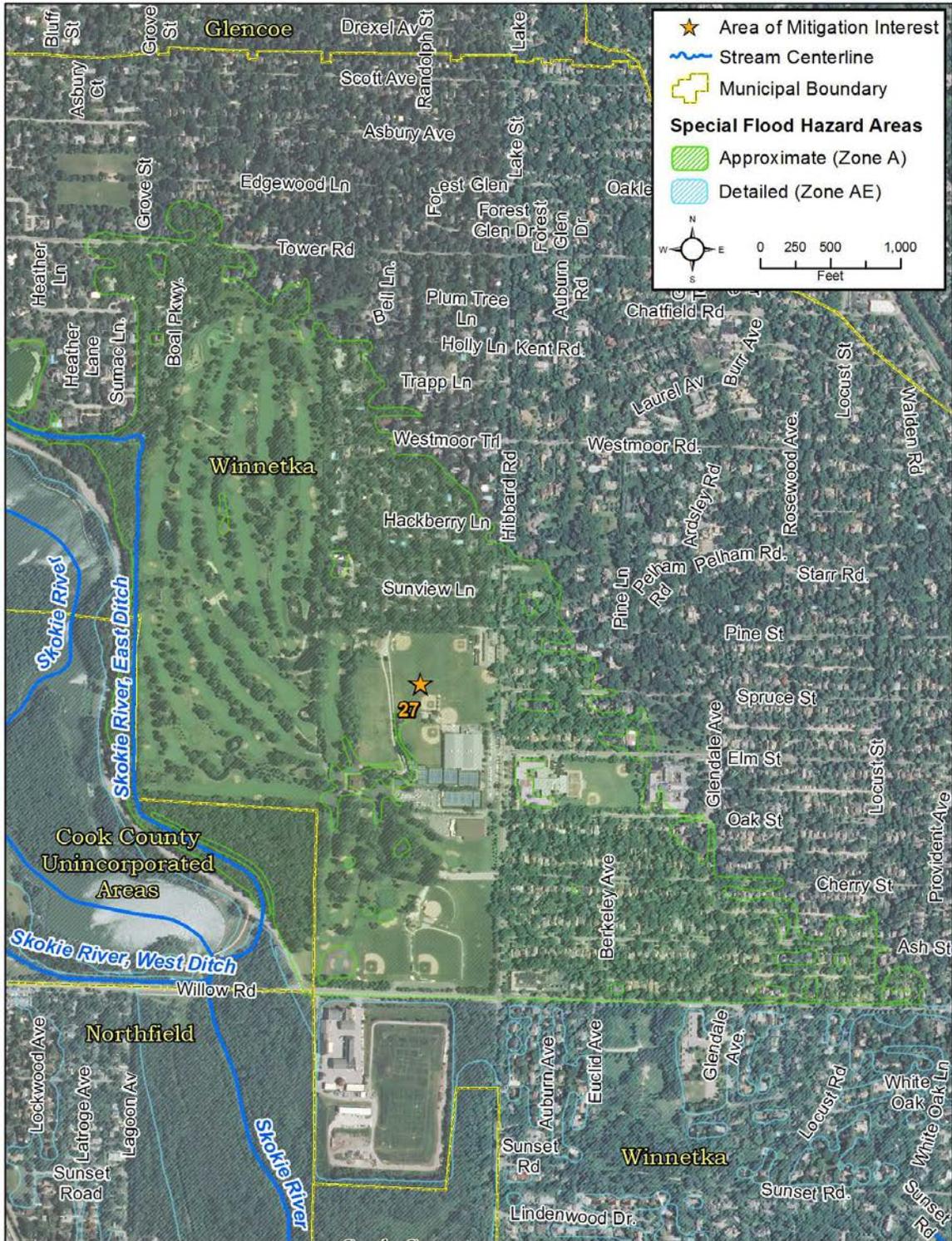
Another area that experiences flooding within the Village of Green Oaks is the West Rondout portion of the village that is served by an undersized storm sewer system. This results in flooding on commercial properties during significant rainfall events. Village officials are working with property owners to upsize the storm sewer system in conjunction with redevelopment activities.



**Flood Issue Areas - Village of Green Oaks, Lake County Illinois**

**Village of Winnetka / Cook County**  
**Comment 27**

The Village of Winnetka has a large Zone A, which is a backwater condition from the diversion ditch off of the Skokie River. The village has established the base flood elevation (BFE) to be equal to the BFE immediately south of Willow Road (BFE 625.3 NAVD). For floodplain management purposes it would be beneficial for this area to be remapped as Zone AE.

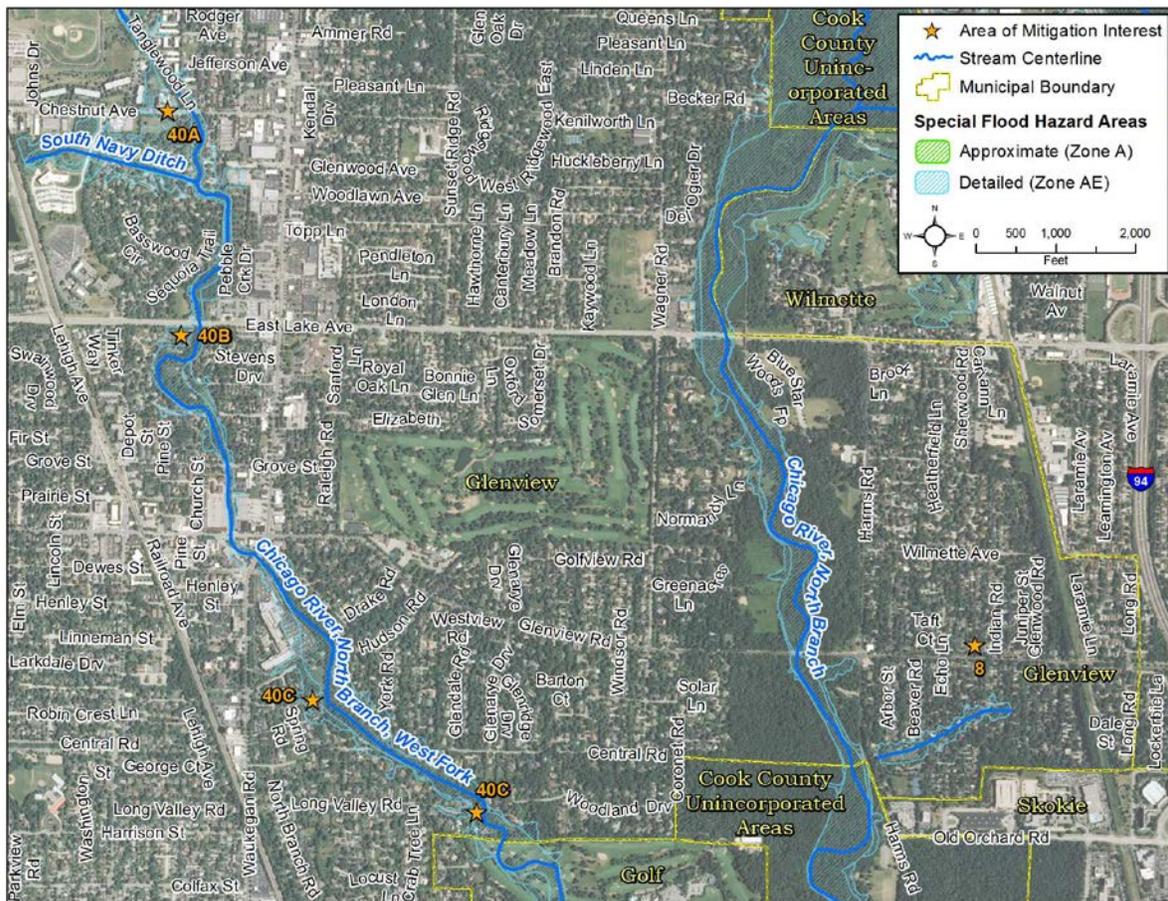


**Zone A – Village of Winnetka, Cook County**

**Village of Glenview / Cook County  
Comment 8, 40A, 40B, 40C**

Approximately 1,100 homes in the Village of Glenview east of Harms Road have experienced flooding due to North Branch Chicago River backups into local storm sewers. Ponding depths of approximately two feet were common, and foundation overtopping resulted in basement flooding. A storm sewer relief project was started in the fall of 2014. This project involves the construction of two new pump stations with backflow prevention from the North Branch Chicago River. The project also includes the installation of 1200 feet of 84-inch diameter pipe to collect, store, and divert water to the pump stations. Roads are being rebuilt and new local storm sewers are being installed. The project is expected to be completed in the fall 2015. The Metropolitan Water Reclamation District (MWRD) is funding a large portion of the project with a \$6.6 million grant. Total costs are estimated to be between 11 to 12 million dollars.

In addition, voluntary buyouts in the Raleigh and Pine Street area are being funded by FEMA and MWRD. There are approximately 18 homes in the floodway that could be demolished and then the area would become open space for the community. A floodwall project for the Tall Trees subdivision is currently being reviewed by MWRD.



**Flood Problem Area - Village of Glenview, Cook County  
 Village of Wilmette / Cook County  
 Comment 2018**

The Village of Wilmette has basement, street, and sanitary sewer backup flooding issues. Village officials have hired an engineering firm to perform a study of the storm sewers and sanitary sewers for the area west of Ridge Road. The area east is combined sewer. The study will help identify the mechanism of flooding and sanitary back-ups and overflows in order to establish specific mitigation projects to reduce the future flood risk. The report outlines several large capital projects to mitigate flooding with costs ranging from \$70 to \$75 million. Findings of the study were presented to a Committee of the Village Board on January 28, 2015. No decisions were made at the meeting to move forward with any particular project, but the Village Board will be making plans for the next steps.



**Storm Sewer Flood Backup Area - Village of Wilmette, Cook County**

## Village of Lincolnshire / Lake County, IL Comments 37C, 37D

The Village of Lincolnshire has erosion issues on the West Fork North Branch Chicago River throughout a section from the commercial detention to the village limits. Village officials recommend bank stabilization with boulder toe or similar material and the removal of invasive vegetation for mitigating the erosion. Village officials have designed, bid, and awarded a contract to mitigate a severe erosion problem caused by a large discharge crossflow with the West Fork North Branch Chicago River in a nearby location. The contract is awaiting a USACE permit.



Severe Erosion Areas – Village of Lincolnshire, Lake County Illinois

**Town of Griffith / Lake County, IN  
Cady Marsh Ditch**

The USACE Cady Marsh Drainage Ditch project is located in Griffith, Indiana. The project involves construction of a tunnel to divert flood water from the Cady Marsh Drainage Ditch located in the Town of Griffith to provide regional flood control benefits. The project consists of widening and deepening 1,290 feet of Cady Marsh Ditch, constructing 6,400 feet of 10-foot diameter pipe under Arbogast Avenue, and improving 1,300 feet of open channel that leads into the Little Calumet River. It also consists of constructing an interior drainage system which will include an upgrade of an existing pumping station and adding concrete culverts with flap gates. Construction of the underground tunnel system caused the least amount of disturbances to existing utilities, roads, and properties as compared to using the standard open cut construction technique and was less costly than the pipe-jacking alternative studied.



Cady Marsh Ditch – Town of Griffith, Lake County Indiana

## V. **Appendix and Tables**

- Appendix A: Pre-Discovery Meeting Contacts & Materials
- Appendix B: Stakeholder Contact Information & Meeting Invitations
- Appendix C: Discovery Meeting Attendance & Handouts
- Appendix D: Discovery Meeting Summary & Comments
- Appendix E: Discovery Maps
- Appendix F: Discovery Meeting Participant Feedback
- Appendix G: Comprehensive List of Study Needs

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