URBAN FLOODING AWARENESS ACT

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URBAN FLOODING AWARENESS ACT

 ILLINOIS GENERAL ASSEMBLY UNDER THE URBAN FLOODING AWARENESS ACT (EFFECTIVE AUGUST 3, 2014) TASKED THE ILLINOIS DEPARTMENT OF NATURAL RESOURCES (IDNR) TO PREPARE A REPORT ON THE EXTENT, COST, PREVALENCE, AND POLICIES RELATED TO URBAN FLOODING IN ILLINOIS AND IDENTIFY RESOURCES AND TECHNOLOGY THAT MAY LEAD TO MITIGATION OF THE IMPACT OF URBAN FLOODING.



 OTHER STATE, REGIONAL, AND LOCAL STORM WATER MANAGEMENT AGENCIES, THOUGHT LEADERS, AND INTERESTED PARTIES AS THE DIRECTOR OF NATURAL RESOURCES DEEMS APPROPRIATE

ACT SPECIFIED NINE TOPICS TO BE ADDRESSED :

- PREVALENCE AND COSTS ASSOCIATED WITH URBAN FLOODING EVENTS ACROSS THE STATE, AND THE TRENDS IN FREQUENCY AND SEVERITY OVER THE PAST TWO DECADES
- APPARENT IMPACT OF GLOBAL CLIMATE CHANGE ON URBAN FLOODING
- THE IMPACT OF COUNTY STORMWATER PROGRAMS ON URBAN FLOODING OVER THE PAST 2 DECADES, INCLUDING A LIST OF PROJECTS AND PROGRAMS AND THE FLOOD DAMAGES AVOIDED
- AN EVALUATION OF POLICIES SUCH AS USING THE 100-YEAR STORM AS THE STANDARD FOR DESIGNING URBAN STORMWATER DETENTION INFRASTRUCTURE AND THE 10-YEAR STORM FOR THE DESIGN OF STORMWATER CONVEYANCE SYSTEMS
- REVIEW OF TECHNOLOGY TO EVALUATE THE RISK OF PROPERTY DAMAGE FROM URBAN FLOODING AND WHETHER A PROPERTY IS IN OR ADJACENT TO A 1% (100-YEAR) FLOODPLAIN OR NOT, INCLUDING LIDAR AND GIS

ACT SPECIFIED NINE TOPICS TO BE ADDRESSED (CONT.):

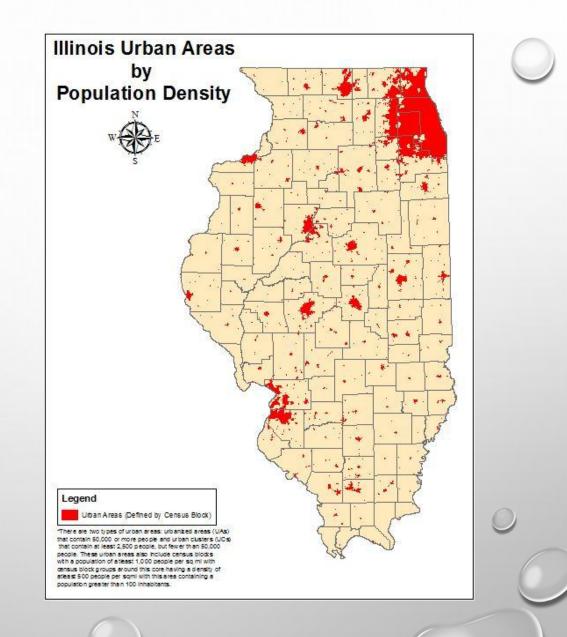
- STRATEGIES FOR MINIMIZING DAMAGE TO PROPERTY FROM URBAN FLOODING, WITH A FOCUS ON RAPID, LOW-COST APPROACHES, SUCH AS NON-STRUCTURAL AND NATURAL INFRASTRUCTURE, AND METHODS FOR FINANCING THEM
- THE CONSISTENCY OF THE CRITERIA FOR STATE FUNDING OF FLOOD CONTROL PROJECTS BETWEEN IDNR, IEMA, AND IDCED
- STRATEGIES FOR INCREASING PARTICIPATION IN THE NATIONAL FLOOD
 INSURANCE PROGRAM (NFIP) AND COMMUNITY RATING SYSTEM (CRS)
- STRATEGIES AND PRACTICES TO INCREASE THE AVAILABILITY, AFFORDABILITY AND EFFECTIVENESS OF FLOOD INSURANCE AND BASEMENT BACK-UP INSURANCE

URBAN AREAS

URBAN AREAS ARE DEFINED BY THE US DEPARTMENT OF COMMERCE, US CENSUS BUREAU (USCB).

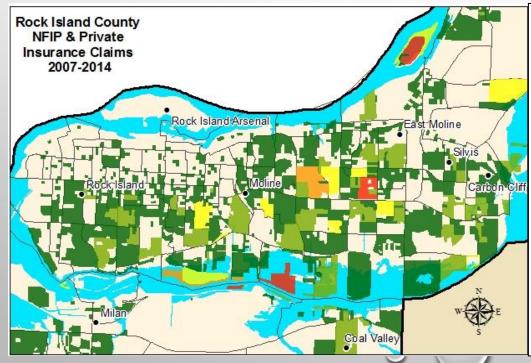
CENSUS BLOCK DATA WAS USED TO IDENTIFY THE GEOGRAPHIC LOCATIONS OF URBAN AREAS.

THE USCB DEFINITIONS WERE USED AS A BASIS, BUT BROADEN TO ENCOMPASS HIGH DENSITY POPULATION AREAS WHERE URBAN FLOODING MAY OCCUR.



WHAT IS URBAN FLOODING?

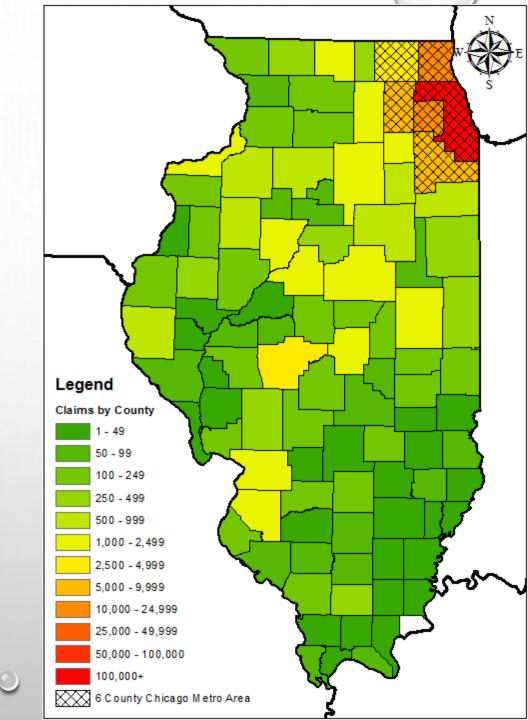
As defined by the Act: "The inundation of property in a built environment, particularly in more densely populated areas, caused by rainfall overwhelming the capacity of drainage systems, such as storm sewers. 'Urban flooding' does not include flooding in undeveloped or agricultural areas. 'Urban flooding' includes (i) situations in which stormwater enters buildings through windows, doors, or other openings, (ii) water backup through sewer pipes, showers, toilets, sinks, and floor drains, (iii) seepage through walls and floors, and (iv) the accumulation of water on property or public rights-of-way."



Between 2007 and 2014 there have been a total of 1972 urban flood damage claims within Rock Island County. Roughly three fourths (71.3%) of the claims occurred outside the mapped floodplain.

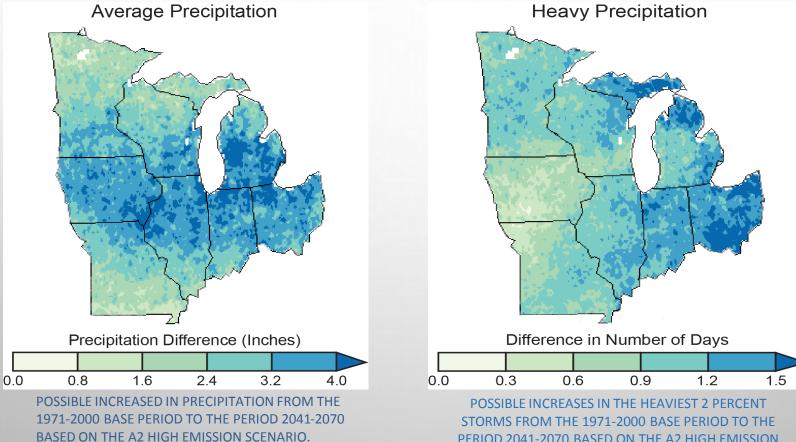
URBAN FLOODING IN ILLINOIS IS A MAJOR ISSUE

- \$2.319 BILLION IN DOCUMENTED DAMAGE BETWEEN 2007 AND 2014;
- OF WHICH \$1,240 BILLION WERE PRIVATE CLAIMS THAT TYPICALLY REPRESENT BASEMENT FLOODING AND SEWER BACKUP.
- LARGEST PERCENTAGE OF INSURANCE CLAIMS IS FROM NORTHEASTERN ILLINOIS,
- URBAN FLOOD DAMAGES AND PROBLEMS OCCUR STATEWIDE IN URBAN AREAS.



CHANGING CLIMATE

Illinois may be wetter on average, and experience more high intensity storms with large cumulative rainfall.



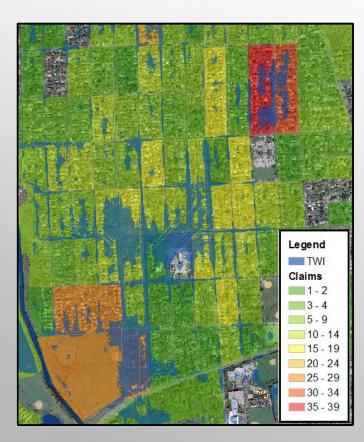
SOURCE: NCA(2014).

PERIOD 2041-2070 BASED ON THE A2 HIGH EMISSION SCENARIO. SOURCE NCA (2014).

TECHNOLOGY

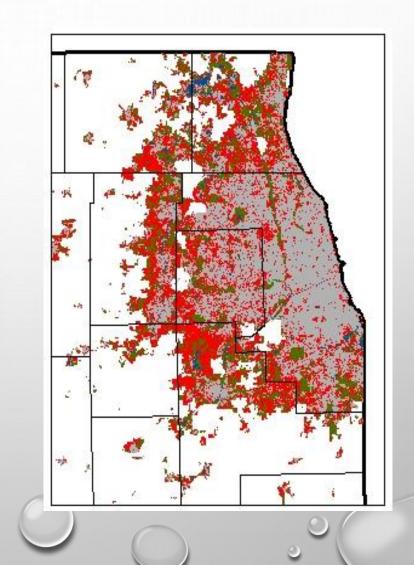
TOPOGRAPHIC WETNESS INDEX

– USE LIDAR TO IDENTIFY PONDING AREAS



LAND USE CHANGE ASSESSMENT

- USE DATASETS TO IDENTIFY CHANGES AND RATES OF CHANGE (MULTI-RESOLUTION LAND CHARACTERISTICS CONSORTIUM, 1992, 2001, 2006, AND 2011)

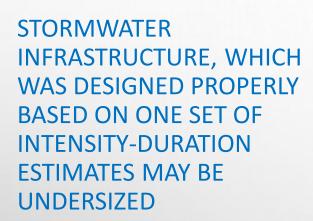


STORMWATER DESIGN STANDARDS VARY ACROSS THE STATE; RELY ON DESIGN STORM RAINFALL

•NORTHERN ILLINOIS TYPICALLY USES 10-YEAR DESIGN STORMS FOR MINOR CONVEYANCE SYSTEMS

•SOUTHERN AND CENTRAL ILLINOIS MANDATE 5-YEAR OR 10-YEAR (SOMETIMES 2-YEAR) DESIGN STORMS FOR MINOR CONVEYANCE SYSTEMS

•THE MAJORITY OF DETENTION FACILITIES THROUGHOUT ILLINOIS ARE SIZED BASED ON THE 100-YEAR, 24-HOUR DESIGN STORM



Precipitation intensity-duration estimates for Northeastern Illinois (O'Hare Airport)

Design	TP-40	Bulletin 70	Atlas-14
Storm	(in)	(in)	(in)
10yr-2hr	2.37	2.64	2.48
100yr-24hr	5.75	7.58	7.22

Example 1:

storm sewer designed to accommodate the TP-40 10-year, 2-hour storm event would correspond to a sewer designed to convey:

- the 6.6-year, 2-hour Bulletin 70 design storm
- the 8 year 2 hour Atlas 13 design storm.

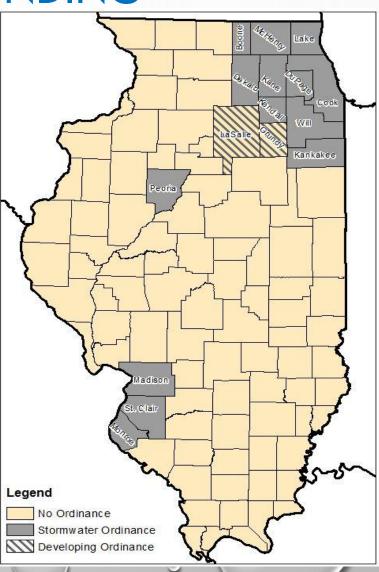
Example 2:

detention basin sized to accommodate the TP-40 100-year, 24-hour storm event would accommodate:

- the 31.3-year, 24-hour Bulletin 70 design storm
- the 84-year, 24-hour Atlas 14 design storm

STORMWATER MANAGEMENT AUTHORITY AND FUNDING

- STORMWATER MANAGEMENT IN ILLINOIS MUST BE AUTHORIZED BY STATE LEGISLATION FOR COUNTY GOVERNMENTS TO POSSESS THE LEGAL AUTHORITY TO MANAGE AND MITIGATE DRAINAGE DUE TO URBANIZATION
- COMMUNITIES WITH THE PROPER LEGAL AUTHORITY TO IMPOSE DESIGN STANDARDS AND ORDINANCES HAVE IMPLEMENTED A SUCCESSFUL PROGRAMS AND PROJECTS TO REDUCE URBAN FLOODING
- LACK OF THE PROPER LEGAL AUTHORITY TO ADOPT STORMWATER MANAGEMENT ORDINANCES AND / OR COLLECT FEES TO SECURE A RELIABLE FUNDING SOURCE HAMPERS COMMUNITIES TO TAKE ACTION



MORE FINDINGS

- THERE ARE NUMEROUS CONTRIBUTING FACTORS TO URBAN FLOODING AND IN ANY LOCATION CAUSES MAY BE UNIQUE.
- URBAN FLOODING IS MOST COMMON IN OLDER SECTIONS OF COMMUNITIES WHERE ORIGINAL STORM SEWERS WERE NOT DESIGNED TO PRESENT DAY STANDARDS AND URBANIZATION HAS INCREASED RUNOFF
- CLIMATE IS TRENDING TO MORE FREQUENT AND INTENSE STORM EVENTS AND URBAN FLOODING IS EXPECTED TO INCREASE UNLESS ACTION IS TAKEN

RESOURCES

URBAN FLOODING AWARENESS ACT REPORT

REPORT: <u>HTTPS://WWW.DNR.ILLINOIS.GOV/WATERRESOURCES/DOCUMENTS/FINAL_UFAA_REPORT.PDF</u> **APPENDIX:**

HTTPS://WWW.DNR.ILLINOIS.GOV/WATERRESOURCES/DOCUMENTS/FINAL_UFAA_APPENDICES.PDF

MODEL STORMWATER ORDINANCE

HTTPS://WWW.DNR.ILLINOIS.GOV/WATERRESOURCES/DOCUMENTS/IL_MODEL_STORMWATER_ORDINANCE.PDF

CNT RAIN READY

HTTP://RAINREADY.ORG/

FEMA MITIGATION IDEAS

HTTPS://WWW.FEMA.GOV/MEDIA-LIBRARY/ASSETS/DOCUMENTS/30627

FEMA READY.GOV HTTP://WWW.READY.GOV/

 ILLINOIS EMERGENCY MANAGEMENT AGENCY <u>HTTP://WWW.ILLINOIS.GOV/IEMA/MITIGATION/PAGES/DEFAULT.ASPX</u>