URBAN STORMWATER MANAGEMENT

Illinois General Assembly under the Urban Flooding Awareness Act (effective Aug. 3, 2014) defines urban flooding as 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 causes damages each year outside the mapped floodplain. Urban flooding can be the result of many different factors, requiring solutions unique to the community or neighborhoods within a community. Urban flooding is most common in older sections of communities where original storm sewers were not designed to present day standards; urbanization has increased runoff, and climate is trending to more frequent and intense storm events.

While the science is not settled on increases in average precipitation due to climate change, more frequent and intense extreme rain are increasingly likely in the future. ISWS experts actively work with Illinois communities to develop and update flood insurance rate maps. ISWS data collection capabilities and floodplain planning expertise can provide technical assistance as local authorities expand their planning for mitigation programs to address urban flooding. ISWS working with IDNR/OWR has developed a statewide model storm water ordinance as a template for use by counties and local communities. However, the ordinance does not address climate change impacts.

Urban flood mitigation planning will require review of the effectiveness of current storm water management measures such as on-site runoff retention and guidelines for redevelopment improvements. Green infrastructure and increased open space have been shown to be effective as mitigation strategies and the effectiveness of these practices need to be tested in Illinois. Relatively low cost tools such as a Topographic Wetness Index (TWI) can help identify likely ponding areas and help to prioritize storm sewer upgrades and guide the appropriate placement of basements. Adaptive risk management principals are needed for guiding storm sewer placement/ replacement as well as cost benefit assessments.

The ISWS is in a position to work with community leaders, engineers, floodplain managers, planners, developers, and government authorities to evaluate urban stormwater issues; use climate science and best engineering practices to plan and prepare for the future.

The frequency and severity of urban flooding events has increased in the 21st century.

Between 2007-2014, $2.219 billion in urban flood damage was documented in Illinois — 90 percent of these damage claims were outside of previously mapped floodplains.

Without action, urban flooding is expected to increase. Urban planning and infrastructure solutions will take many years. In the short-term, science based analysis and greater stakeholder awareness is required to reduce risk.

FOCUS AREAS

Foundational Research

Emerging Issues

HEAL Laboratory

Community/Citizen Outreach

State Agency Engagement

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