SF 455: Preventing Local Stormwater Management and Putting Iowa Homeowners at Risk

Our communities need healthy private development and strong public infrastructure to meet the needs of Iowa homeowners and businesses. Collaboration among local stakeholders leads to smart, cost-effective stormwater infrastructure that protects homeowners and businesses, and creates value for communities and developers that are trying to attract residents. As cities and counties grow, it is important to effectively manage the additional stormwater runoff that is created by this growth.

Senate File 455 would preempt the ability of communities, developers, and engineers to work together on locally-tailored solutions to stormwater management that meets the needs of homeowners and businesses. Addressing complex questions about stormwater infrastructure and engineering should not be done through legislation. This bill would make flooding, erosion, and stream degradation more common in Iowa communities and downstream rural areas.

SF 455 SHOULD NOT MOVE FORWARD

Technical discussions of stormwater management and design are complicated and require expertise. Those discussions should happen in the Iowa Storm Water Management Manual (ISWMM) and Statewide Urban Design and Specifications (SUDAS) review processes, not through legislation.

PHOTOS COURTESY OF ISWEP MEMBERS

IAENVIRONMENT.ORG 515-244-1194

WHY WE NEED EFFECTIVE STORMWATER INFRASTRUCTURE

- **Installing improper or undersized stormwater infrastructure causes extensive downstream flooding and loss of property for home and business owners.** Less than half of businesses rebuild after a major flood event.

- Local governments, businesses, and residents all share the cost of stormwater infrastructure. **Just like roadways, drinking water lines, and sanitary sewers, stormwater infrastructure is a necessity.** For most public infrastructure, developers pay for the initial installation and the local jurisdiction (i.e. taxpayers) pays for the ongoing maintenance, repairs, and future upgrades.

- The cost of housing is a very important topic within our local communities. **Affordable housing options in Iowa are often coupled with greater flood risk.** Effective affordable housing solutions find balance between the initial cost of the home and the ongoing cost of living.

- **Proactive stormwater solutions are less disruptive and more cost effective in the long-term than future repairs and remediation.** Iowans are taxed millions of dollars to upgrade outdated stormwater infrastructure and repair damage from stormwater runoff. These projects are disruptive to our daily lives and inflate the cost of infrastructure compared to if it was installed properly as part of the initial development. We must proactively install infrastructure that will protect property and reduce costs for decades, not just do what is convenient now.

- **Adopting SF 455 language related to stormwater runoff will put communities out of compliance with state and federal requirements.** Iowa has 44 cities with stormwater permits from the Iowa Department of Natural Resources that are required under the EPA Clean Water Act to minimize discharge of pollutants into local water bodies.

PHOTOS COURTESY OF ISWEP MEMBERS

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WHY USE THE "MEADOW" RELEASE RATE?

Stormwater management requirements in Iowa regulate runoff rates, but not volumes.

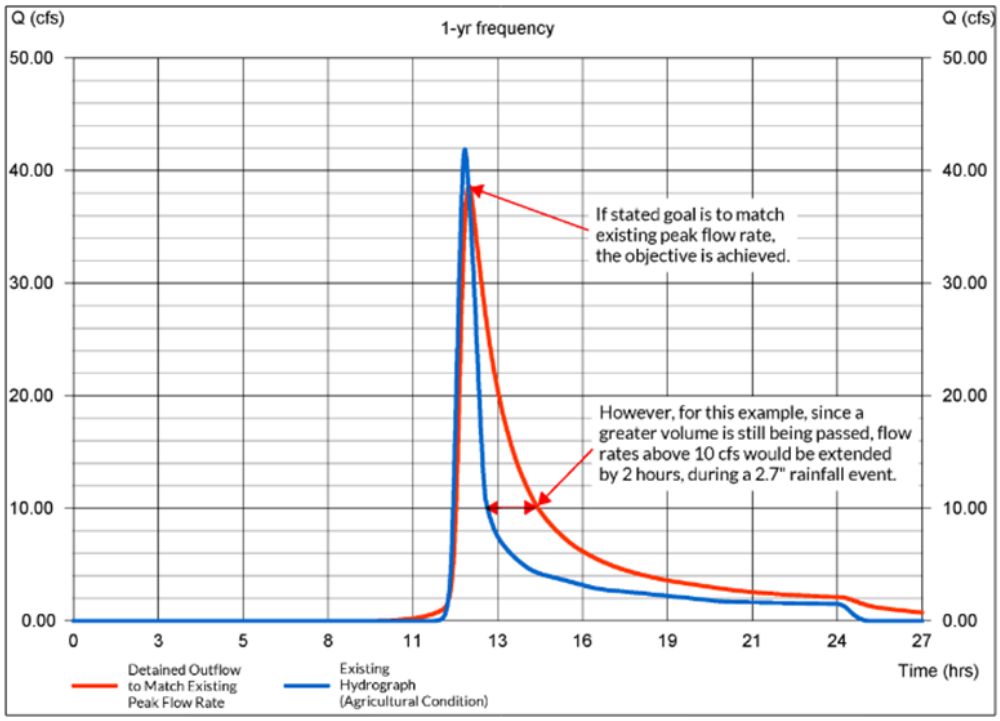
The rate of flow leaving a new development can be controlled by stormwater practices such as detention basins, ponds, and constructed wetlands.

The total volume of runoff is typically increased after developments are built. This is because water cannot infiltrate the soil where structures and impervious surfaces are built, so that water runs off the lot where it is then managed as stormwater.

Releasing a larger volume of water from a detention basin or other stormwater structure at the same rate as the pre-development condition extends how long that rate will be sustained. **This extended time frame results in increased erosion.**

In the example below, the pre-development peak rate is not exceeded (blue line), but the length of time flow is expected to be above 10 cubic feet per second (4,500 gallons per minute) is **tripled** (red line).

Figure 5.5: Compare existing hydrograph with detention outflow hydrograph



Ankeny Stormwater Master Plan (2020), page 83.

This means that a greater volume of water causes erosion over a longer period of time, causing additional damage to residential lots and stream channels.

WHY USE THE "MEADOW" RELEASE RATE?

In addition to an increased volume of runoff from a single site, in highly developed areas, peak flows from *multiple* developments have greater chances of overlapping, leading to what is known as "peak matching". In these situations, the total rate of flow at a downstream point actually increases, even though the peak rate of flow from any *individual* development is maintained.

Considering the impact of multiple development projects is the role of the city or county when planning for stormwater management. This is why they need local control to determine what management strategies are necessary for their communities.

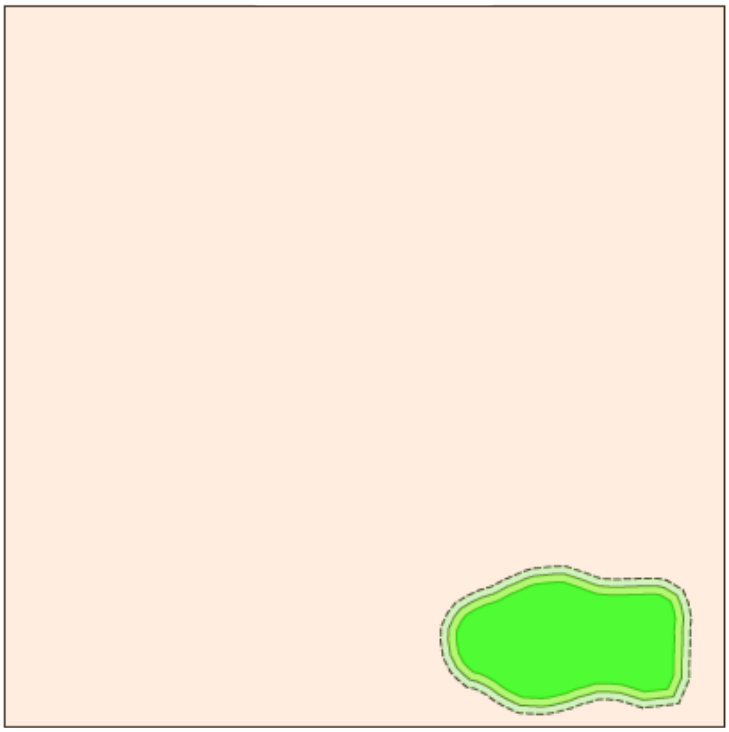
Setting allowable release rates at levels lower than the existing pre-construction condition compensates for the fact that additional runoff volume may be released. This lower rate, known as the "meadow" rate, is less expensive and more practical than trying to mandate that existing runoff volumes be maintained.

Lower release rates reduce the potential that the increased volume will cause erosion or additional flooding due to "peak matching".

Lower release rates also provide for adequate factors of safety in design. Adding factors of safety is typical in engineering design. For example, a bridge design has added safety factors to make sure the structure won't be damaged if a loading rate is exceeded, such as one truck more than expected driving over.

40 ACRE SINGLE FAMILY DEVELOPMENT EXAMPLE

HYDROLOGIC SOIL GROUP (HSG) C
(1320' x 1320')
1,742,400 SQUARE FEET



SF 455 proposes using a "match existing rate" standard, which would make it very possible that actual release rates for post-construction conditions would **exceed** existing levels due to variances such as additional soil compaction, a steeper than expected grade, frequent irrigation that saturates the soil, or additional construction such as a shed or patio.

Using the "meadow" standard provides a factor of safety which is expected to modestly increase the required size of detention basins. SF 455 would require a smaller basin, leading to more flooding and erosion.

BASIN SIZE EXAMPLE
= 66,700 SF (1.5 acres)
SF 455 STANDARD

EXAMPLE OF 25% LARGER BASIN TOP AREA
= 83,300 SF (1.9 acres)

EXAMPLE OF 50% LARGER BASIN TOP AREA
= 100,000 SF (2.3 acres)