Mitigate Future Flash Floods

Support Bill #__

The University Heights Neighborhood Association supports Bill # ____ to mitigate the damage caused by future urban floods. As we approach the first anniversary of the July 26 flash flood, the tragedy that resulted in over $30 million in damages and condemned over 300 homes continues to loom over our community. As global temperatures continue to rise, the frequency and severity of extreme storm events will drastically increase. While University City alone cannot prevent the effects of climate change, there is another way the city can make a difference: by reducing the amount of land covered by impervious surfaces.

Flooding and Impervious Surfaces

Urban flooding affects cities and towns around the world. Many have been able to relieve the burden these disasters inflict on residents through the successful and inexpensive practice of limiting impervious surface coverage. Impervious surfaces are water-resistant materials, like asphalt and concrete, which prevent water from entering the soil. They increase the likelihood of urban flooding by causing the rapid accumulation of stormwater into nearby rivers, resulting in the flooding of the surrounding area.

Proposed Legislation

The ordinance will reduce the prevalence and impact of future flash floods by incorporating concepts that have already been used in Brentwood, Town and Country, St. Peters and Ladue:

- Mandate that almost every property development be offset by equivalent stormwater management practices (see back) so that no development has the potential to increase the risk and severity of flooding in University City.
- Create an implementation committee to assist property owners and builders in achieving compliance with this policy. The Public Works Director will be responsible for overseeing this committee along with other aspects of the legislation.

Without action, flooding will continue to devastate the University City. Our community is searching for meaningful relief from these disasters, and we believe this ordinance is a significant step towards that change.

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Definition: Green infrastructure is any practice that uses or replicates natural systems to achieve a desired outcome. Green infrastructure looks to nature for advice, restoring and replicating ecological systems to create human benefits, https://www.usgbc.org/resources/green-infrastructure. Green infrastructure are **pollution control systems** which slow down, redirect to irrigation, and clean stormwater. Select Pretreatment such as large rocks to collect debris, and native flora & fauna which thrive on organic/carbon rich stormwater.

#	Green Infrastructure	Offset Guidelines for Ratio of New Impervious surface area: to green infrastructure improvement	References
1	Plant Native Plants, such as grassy and herbaceous vegetation	**5:1**	https://grownative.org/learn/manage-stormwater/
2	Direct new Impervious Surface runoff to permeable areas on the property	**5:1** Ex: new 100 sf patio : 20 sf permeable area offset	https://www.missouribotanicalgarden.org/sustainability/sustainability/sustainable-living/at-home/rainscaping-guide/design-and-build-a-rain-garden
3	Install tree cover	See Arbor Day Foundation calculations for Stormwater offset	https://www.arborday.org/calculator/
4	Install permeable pavement	No offset required	
5	Aerate lawns		
6	Build green roofs	**5:1 A**llow for 10% evaporation in green roof capacity for stormwater offset	https://www.epa.gov/sites/default/files/2018-09/documents/greenroofs_casestudy_kansascity.pdf https://sustainability-innovation.asu.edu/urban-climate/green-roof-calculator/
7	Install rain barrels to capture and slow runoff	**1:1** Ex:1 gallon of increased run-off: 1 gallon of rain barrel capacity	1 sf of Impervious Surface causes an increase of 0.6 gal of Stormwater Flow on the property
8	Install infiltration basins such as rain gardens and bioswales	**5:1**	https://www.missouribotanicalgarden.org/sustainability/sustainability/sustainable-living/at-home/rainscaping-guide/design-and-build-a-rain-garden
9	Direct water into stormwater detention basins, such as ponds	As low as **100:1** (1%) Ex: If you paved 1 acre (43,560 sf) property, the area of the green infrastructure base would be around 435 sf with a 1 ft depth and 3:1 side slopes.	Design variables include ponding depth, side slopes, pond bottom area, length & width of pond top, runoff coefficient, drainage area, % impervious, coefficient of permeability of filter media, land use & zoning http://chesapeakestormwater.net

Research on Green Infrastructure has increased with more publications on design & results. Select similar climate region for design parameters.