AGENDA ITEM SUMMARY

District Impacted
- ☐ 1 = Wolosin
- ☐ 2 = Woolard
- ☐ 3 = Scott
- ☐ 4 = Fowler
- ☐ 5 = Macaluso
- ◆ All

AGENDA DATE	*September 24, 2019*
DESCRIPTION	CONSIDER ON FIRST READING ORDINANCE NO. 2019-40: AN ORDINANCE AMENDING THE CITY OF BOERNE SUBDIVISION ORDINANCE NO. 2007-56, DATED NOVEMBER 13, 2007, ARTICLE 6. DRAINAGE AND FLOOD HAZARDS, SECTION 04. DRAINAGE SYSTEM DESIGN STANDARDS. *(Atlas 14 Study)*
STAFF'S RECOMMENDED ACTION (be specific)	Approve on first reading Ordinance No. 2019-40; revisions to the rainfall intensity values in Article 6 of the City of Boerne Subdivision Ordinance No. 2007-56, in accordance with recently published data from NOAA (Atlas 14).
CONTACT PERSON	Michael Mann – Utilities Director
SUMMARY	The National Oceanic and Atmospheric Administration (NOAA) periodically publishes revisions to their Atlas 14 data. This information is intended to provide a representation of rainfall intensity based on analysis of rainfall events occurring since the last revision. In the most recent Atlas 14 revisions for the Central Texas area, data suggests much higher intensity values should be used in design of drainage facilities for less frequent storms (25, 50 and 100 year design events). The revisions indicate that the previously used intensity values for more frequent storms (2, 5, 10 and 25 year events) should be similar to before. The only place in our current ordinances that use intensity values directly are the stormwater management provisions in the subdivision ordinance. These are usually thought of as our detention requirements. But, the design storms calculations are also used to design stormwater routing facilities such as channels, culverts, bridges, etc. We hired Maestes and Associates to make suggested changes to our rainfall intensity values in the ordinance. Maestes was performing similar work for the City of San Antonio at the time. The changes suggested by Maestes are shown in the attached ordinance draft. It is the changes to those values that Staff recommends the Council approve immediately. Various changes to drainage design would be anticipated if the recommended storm intensity values are adopted. The basic equation for calculating the anticipated flows from a particular land area is Q=CIA, where flow (Q) is calculated by multiplying a runoff factor (C) times an intensity (I) times the area of the land being

	considered (A). The Atlas 14 modifications effect the intensity (I) segment of the formula. In consideration for development stormwater discharge design, I and A values remain constant in pre and post-development conditions. The C values for pre-and post-development calculations are specified in the ordinance as a function of how much impervious cover gets added or how much vegetation gets removed. Typically, post development C values are greater than pre-development values. Thus more total runoff would be expected in post-development conditions. Since Atlas 14 data suggest higher intensities for larger storms, routing facilities required to design for larger events would presumably become larger. For instance, our ordinance allows routing of the 10-year design flow within the street section; however, the 100-year design flow must be contained within the street right of way. So, extra channelization or larger storm sewers outside the pavement would presumably be required to contain larger calculated flows within the ROW. The calculations for the volume to be contained in the streets themselves (between the curbs) would be relatively the same if we adopt the new values. Our stormwater "detention" requirements mandate that post-development <u>peak</u> flows for the 2, 5, 10, 25, 50 and 100-year design events be less than or equal to pre-development peak flow rates. The requirements of Kendall County are the same. More total runoff would be expected from a developed site. But the rate of discharge is to be controlled so it discharges at or below pre-development peak rates. Some water would be detained, and that additional volume remains on site in a pond or other storage facility, to be released over a longer period of time. When a detention pond is constructed and there has been little impervious cover added upstream, no water should theoretically collect in the pond since the pre-development flows are allowed to discharge unhindered. However, as development occurs, more and more water should collect in the facilities until finally a site is fully developed. The overall detention capacity (total required volume) of a detention facility should contain the expected difference between the pre-development and post-development peak flow rates in the 100-year event. So even if an area is fully developed, we would not expect to see a "full" pond in any event less than the 100-year event (the storm that has a one-percent chance of happening in any given year). Larger intensity values used in the calculations would produce higher

	pre and post-development flow rates. The outlets for stormwater detention facilities can become very complicated due to the range of storms for which we require management. But the effect of the suggested changes would be similar discharge facilities for smaller storms, larger discharge facilities for larger storms, and more total storage capacity for the basins. Council is aware that a comprehensive review of our development related ordinances is underway. Staff and our consultants will be reviewing the required stormwater management calculation methodology and we anticipate recommending additional changes aside from the various storm intensity values that we are recommending modifying at present. But, the currently recommended modifications are a great step in the right direction and will have an effect on any development platted after the final approval of the ordinance.
COST	N/A
SOURCE OF FUNDS	N/A
ADDITIONAL INFORMATION	Maestes Report, draft ordinance

This summary is not meant to be all inclusive. Supporting documentation is attached.