



Analysis of Proposed Impervious Cover Entitlements for CodeNEXT Draft 2

November 29, 2017

Introduction

Impervious cover is any surface that prevents the infiltration of water into the ground, such as roads, parking lots, and buildings. When rainwater falls on impervious surfaces, the increased volume and velocity of runoff from these surfaces can contribute to erosion and flooding and impair water quality by carrying contaminants such as sediment, bacteria, and nutrients into Austin's aquifer and creeks. Impervious cover also displaces soils, trees, and other plants, increasing ambient temperatures and reducing stream baseflows and natural habitat. To minimize these negative effects, the Land Development Code places restrictions on impervious cover.

The Land Development Code has two sets of impervious cover limits – zoning limits and watershed limits. For all existing single family lots and for other types of development within the Urban watersheds, impervious cover is set exclusively by zoning. For other types of development in the rest of the city, the impervious cover limit is governed by the lower (i.e., more protective) of the two requirements. The Watershed Protection Department uses the maximum impervious cover allowed by the code to model and map floodplains as well as to design upgrades to drainage infrastructure.

CodeNEXT—the City's initiative to revise the Land Development Code—proposes to rezone the entire city. Watershed Protection staff have analyzed whether the maximum impervious cover allowed by CodeNEXT significantly exceeds the maximum impervious cover allowed by current code. Because the City's floodplain models and drainage system capacity analyses are based on fully-developed conditions, an increase in allowed entitlements could potentially impact the extent of the 100-year floodplain as well as the capacity of existing stormwater infrastructure.

Methodology

The analysis was performed using an Excel spreadsheet to calculate and summarize processed Geographic Information Systems (GIS) data. For every parcel within the city limits, the analysis calculated the following values:

- Existing amount of constructed impervious cover based on planimetric data
- Maximum amount of impervious cover allowed under the current Land Development Code by zoning and watershed regulations
- Maximum amount of impervious cover allowed under the proposed Land Development Code by zoning and watershed regulations

If the existing amount of impervious cover exceeds the amount allowed by current or proposed code, the spreadsheet assumed the existing amount of impervious cover in order to provide the highest, most conservative estimate of maximum build out.

The analysis for Draft 2 includes deductions for waterway setbacks and floodplains, where development is restricted or prohibited by the code. The maximum impervious cover allowed was reduced for sites limited by these features that lacked sufficient developable area in the uplands (i.e., outside of the creek setback areas). In addition, the analysis for Draft 2 uses waterway setbacks to calculate allowed impervious cover on a net site area basis in the Drinking Water Protection Zone. This means that the percent of impervious cover allowed (e.g., 25%) is applied only to the uplands area rather than to the entire site.

The analysis for Draft 2 does not account for other unique environmental features that may be located on a site, including steep slopes, sensitive features, and trees. The regulatory protections associated with these features could potentially lower the total amount of impervious cover for any given site. The CodeNEXT draft states for every zoning category that “the maximum percentage of impervious cover allowed...may not be attainable by a project due to unique site characteristics, such as trees, waterways, and steep slopes. Where necessary, the project shall reduce the amount of proposed impervious cover to comply with other requirements.” Given this caveat, the maximum percentage of impervious cover shown below for each watershed will always be higher than the ultimate anticipated buildout. For the purposes of this analysis, the key results to evaluate are the differences between the percentages, rather than the percentages themselves.

Results

The existing impervious cover, as well as the comparison of maximum entitlements under current code and CodeNEXT, is summarized below by watershed as well as for the watershed classifications and Council districts. See the map below for the location of watersheds and watershed classifications. Note: The analysis was only performed on parcels within the city limits, so the total acreage for certain watersheds (e.g., Brushy Creek, Maha Creek) is very low compared to the overall size of the watershed.

The analysis showed a slight decrease (-0.57%) in the maximum amount of impervious cover allowed by CodeNEXT. The Urban watersheds in the inner core of the City—where the most severe challenges related to flooding, erosion, and water quality generally are located—also showed a slight decrease (-0.95%) in the maximum amount of impervious cover allowed by CodeNEXT. The reduction in the urban core is likely attributed to the shift from high-intensity commercial zones (e.g., CS, GR) to mixed use and main street zones in centers and corridors. This shift resulted in the maximum entitlement for many parcels decreasing from 90 to 95% down to 80 to 90%, depending on the zone.

In certain Suburban watersheds (e.g., Onion Creek, Dry Creek East, and Maha Creek watersheds) the increase in entitlements can be attributed almost entirely to the rezoning of large parcels (e.g., Roy Kizer Golf Course, Circuit of the Americas) from interim Rural Residential (I-RR) to categories that are more in line with the current land use (e.g., Public, Commercial Recreation).

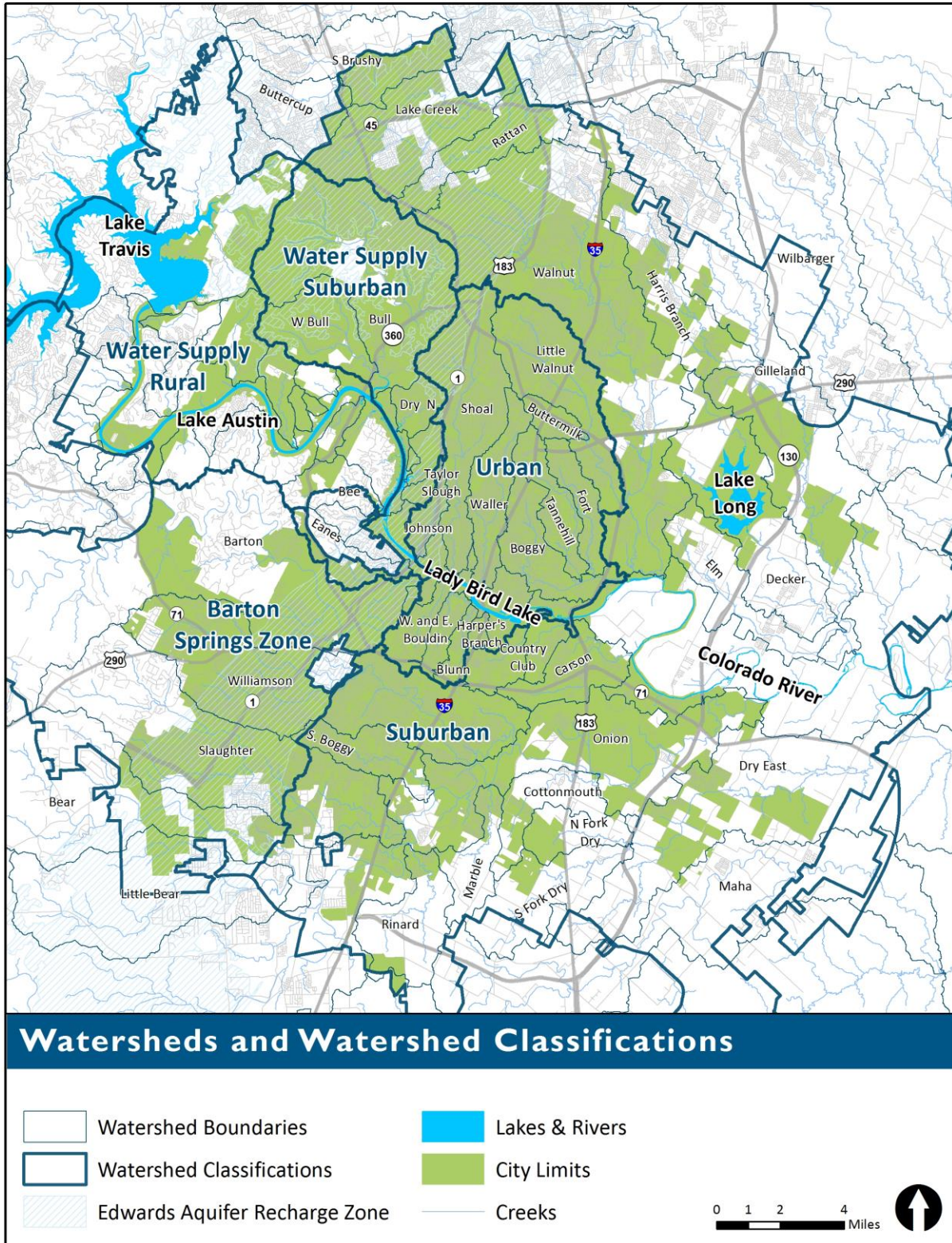
Next Steps

As the draft zoning map is refined during the public review process, Watershed Protection will continue to update the impervious cover entitlements analysis detailed above to evaluate whether the results have changed. In addition, Watershed Protection engineering staff are working on parallel modeling efforts to quantify the potential downstream benefits of the proposed CodeNEXT provision related to flood mitigation for redevelopment as well as to quantify the potential flood-related impacts associated with residential infill. The results of those modeling efforts will be published in a separate report.

Watershed	Total Acres within City Limits	Existing Impervious Cover (percent)	Allowed Maximum Impervious Cover (percent)		Difference between Current and Proposed Entitlements
			Current Land Development Code	Proposed Land Development Code	
Barton Creek	10,389	16.2%	17.9%	17.9%	-0.02%
Buttercup Creek	443	30.9%	54.0%	53.8%	-0.24%
Bee Creek	659	6.1%	10.6%	10.6%	0.03%
Bear Creek	2,669	11.6%	15.4%	15.5%	0.06%
Blunn Creek	926	48.9%	66.6%	64.9%	-1.67%
Buttermilk Branch	1,060	60.4%	73.0%	72.9%	-0.12%
Boggy Creek	3,929	45.0%	62.1%	60.7%	-1.41%
Bohls Hollow	2	0.0%	0.0%	0.0%	0.00%
Brushy Creek	4	48.6%	68.5%	68.5%	-0.01%
Bear Creek West	297	0.0%	3.8%	3.8%	0.00%
Bull Creek	14,174	22.3%	28.6%	28.4%	-0.14%
Carson Creek	3,315	35.9%	60.9%	61.5%	0.55%
Country Club East	1,173	27.6%	61.4%	57.1%	-4.26%
Country Club West	1,786	46.0%	62.7%	61.2%	-1.47%
Cedar Hollow	14	0.0%	0.0%	0.0%	0.00%
Commons Ford Creek	303	0.9%	11.5%	11.5%	0.00%
Connors Creek	395	1.9%	2.5%	2.5%	-0.01%
Colorado River	3,624	18.1%	48.1%	46.0%	-2.13%
Cuernavaca Creek	59	3.2%	6.1%	6.1%	0.00%
Cottonmouth Creek	876	0.8%	62.7%	62.7%	-0.08%
Coldwater Creek	175	3.8%	9.3%	8.9%	-0.40%
Decker Creek	4,856	6.1%	37.2%	26.2%	-10.95%
Dry Creek East	4,459	11.8%	50.5%	55.4%	4.96%
Dry Creek North	1,368	31.9%	36.4%	36.3%	-0.04%
Eanes Creek	1,161	33.4%	40.1%	39.6%	-0.48%
East Bouldin Creek	1,202	55.0%	68.8%	68.0%	-0.75%
Elm Creek	764	21.7%	53.3%	50.5%	-2.81%
Fort Branch	2,169	38.9%	58.7%	57.6%	-1.17%
Gilleland Creek	6,238	6.8%	57.4%	56.2%	-1.16%
Honey Creek	24	0.0%	1.1%	1.1%	0.00%
Hog Pen Creek	191	0.7%	5.6%	5.6%	-0.05%
Harrison Hollow	39	0.0%	0.3%	0.3%	0.00%
Harper's Branch	342	52.9%	63.0%	62.4%	-0.55%
Harris Branch	3,639	20.0%	63.8%	63.8%	0.03%
Huck's Slough	109	32.6%	40.1%	39.9%	-0.20%
Johnson Creek	1,155	49.5%	56.5%	56.3%	-0.25%
Little Bee Creek	60	17.2%	17.2%	17.2%	0.00%
Lady Bird Lake	4,385	41.1%	52.9%	50.9%	-2.01%
Little Bear Creek	909	0.0%	7.6%	7.6%	0.00%
Lake Austin	7,467	6.1%	12.2%	12.2%	-0.08%
Lake Creek	6,937	30.4%	56.6%	56.7%	0.08%
Lake Travis	3,774	4.5%	7.7%	7.4%	-0.24%
Little Walnut Creek	7,278	51.5%	66.5%	65.4%	-1.17%
Maha Creek	85	27.2%	31.2%	59.9%	28.69%
Marble Creek	696	23.5%	52.7%	51.5%	-1.19%
North Fork Dry Creek	930	0.9%	73.5%	73.6%	0.04%
Onion Creek	13,935	18.0%	54.6%	54.9%	0.28%
Panther Hollow	2,117	2.3%	7.2%	7.2%	0.00%

Watershed	Total Acres within City Limits	Existing Impervious Cover (percent)	Allowed Maximum Impervious Cover (percent)		Difference between Current and Proposed Entitlements
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Plum Creek	159	0.0%	65.1%	65.1%	0.00%
Rattan Creek	3,499	10.9%	57.2%	57.2%	0.02%
Running Deer Creek	25	0.0%	2.4%	2.4%	0.00%
Rinard Creek	886	8.3%	57.8%	57.8%	0.03%
South Boggy Creek	2,824	33.3%	51.9%	51.9%	0.07%
South Brushy Creek	2,507	29.0%	59.4%	59.4%	0.01%
South Fork Dry Creek	634	0.0%	77.9%	77.9%	0.00%
Shoal Creek	8,271	54.4%	63.5%	63.1%	-0.42%
Slaughter Creek	11,004	26.9%	34.9%	34.2%	-0.66%
Steiner Creek	37	0.0%	0.4%	0.4%	-0.01%
St. Stephens Creek	656	22.8%	27.1%	27.1%	0.00%
Tannehill Branch	2,646	47.2%	66.6%	65.3%	-1.29%
Turkey Creek	1,324	0.8%	7.3%	7.3%	0.00%
Taylor Slough North	957	33.9%	37.9%	37.7%	-0.17%
Taylor Slough South	414	41.5%	44.5%	44.5%	-0.03%
West Bull Creek	4,243	6.9%	15.9%	15.7%	-0.18%
West Bouldin Creek	1,705	47.4%	62.4%	61.5%	-0.91%
Walnut Creek	22,837	31.9%	58.0%	57.1%	-0.88%
Waller Creek	3,594	59.9%	71.2%	71.2%	-0.08%
Williamson Creek	17,900	35.3%	44.3%	44.2%	-0.08%
Watershed Classification					
Barton Springs Zone	30,595	20.8%	24.1%	24.1%	0.01%
Suburban	98,855	24.5%	55.8%	55.1%	-0.76%
Urban	38,115	50.7%	64.3%	63.3%	-0.95%
Water Supply Rural	16,875	4.4%	9.4%	9.3%	-0.10%
Water Supply Suburban	24,246	21.5%	28.1%	27.9%	-0.23%
Council District					
District 1	30,208	21.0%	54.4%	51.6%	-2.77%
District 2	29,603	21.4%	55.9%	56.8%	0.91%
District 3	11,543	40.9%	60.0%	58.4%	-1.54%
District 4	7,596	57.1%	68.3%	67.9%	-0.37%
District 5	15,304	32.4%	49.3%	48.7%	-0.63%
District 6	31,810	18.0%	36.3%	36.2%	-0.09%
District 7	17,960	40.3%	61.8%	61.0%	-0.78%
District 8	28,919	20.0%	23.7%	23.6%	-0.07%
District 9	7,994	54.3%	66.4%	65.2%	-1.22%
District 10	27,409	22.1%	28.9%	28.8%	-0.10%
TOTAL	208,686	26.8%	45.8%	45.2%	-0.57%

Map of Watersheds and Watershed Classifications



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