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EXECUTIVE SUMMARY

Purpose of Study

Certain areas within Region K continue to have high growth. These areas center around the City of Austin and include Travis County, Hays County, Bastrop County, and Williamson County. In addition to the high growth, many of the water user groups (WUG), especially in Hays County, currently have water supply shortages as well as reduced water availability, according to updated data.

The construction of State Highway 130 (SH 130) is another cause of growth in the area. The Lower Colorado Regional Water Planning Group (LCRWPG) had concerns during the last round of planning that perhaps the population and demand numbers did not accurately reflect the growth that would occur due to the SH 130 Corridor, especially in the County-Other areas.

Based on these two changed conditions, it is necessary to evaluate the impacts of the revised availability numbers in Hays County and Travis County as well as to determine the effects of the construction of the SH 130 Corridor on the surrounding WUGs in Travis and Bastrop Counties.

Methodology

At the very end of the last round of planning, Barton Springs/Edwards Aquifer Conservation District (BS/EACD) reported revisions to their water availability. At that point, it was too late in the planning cycle to include it in the 2006 Region K Plan. As part of this study for this phase of the third round of planning, one of the first task items was to request the revised availability numbers (if any) from both BS/EACD and the Hays-Trinity Groundwater Conservation District (Hays-Trinity GCD).

Hays-Trinity GCD had no updated availability numbers to provide, but will most likely have updated numbers in time for the next phase of this round of planning. BS/EACD provided their updated permittee list for Hays County and Travis County within Region K. The total availability was calculated for each county and for specific WUGs. Once the revised availabilities were determined, a revised shortage analysis was performed to determine the impacts on the WUGs within the BS/EACD service area.

One water management strategy of particular concern that was presented in the 2006 Region K Plan as a strategy for Hays County-Other is the Onion Creek Recharge Structure. This strategy involved the construction of two channel dams across Onion Creek to temporarily retain runoff. In the 2006 Region K Plan, it was determined based on a study performed by the BS/EACD that the recharge dams constructed on Onion Creek may not perform as well as previously expected, due to the strong connection between Onion Creek recharge and Barton Springs. In this phase of study, the updated opinions of both BS/EACD and the City of Austin Watershed Protection department are presented and discussed to further analyze the viability of the strategy.

A third issue in this study is the question of whether the current County-Other population projections for 2010 through 2060 in the 2006 Region K Plan are sufficient for handling the growth due to SH 130 as well as the population of County-Other elsewhere in Travis County. Two methods of determining the population projections within the County-Other portion of the SH 130 Corridor were used. The first used population density, which was provided by the SH 130 report written by the Greater Austin Chamber of Commerce. The second method used mid-census data provided by the State as well as growth estimates for several WUGs within the Corridor area that were provided in a study done by the Capital Area Metropolitan Planning Organization (CAMPO), entitled *Revised Draft CAMPO 2035 Regional Growth Concept*.

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Results

The results from the revised availability calculation for BS/EACD showed a revised availability of 2,576 ac-ft for Hays County and a revised availability of 1,673 ac-ft for Travis County. The 2006 Region K Plan showed BS/EACD availabilities of 5,140 ac-ft for Hays County and 2,100 ac-ft for Travis County. This is a reduction of 2,564 ac-ft for Hays County and 427 ac-ft for Travis County. The overall availability of the Edwards Aquifer (BFZ) is reduced to 5,384 ac-ft in this study from 8,375 ac-ft in the 2006 Region K Water Plan. As a result, there are some changes in the shortage/surplus analysis for the affected WUGs in Hays County and Travis County.

In Travis County, only Creedmoor-Maha WSC and Goforth WSC have larger shortages based on the revised availabilities. In Hays County, the City of Buda, Cimarron Park Water Supply, Mountain City, and Manufacturing have larger shortages based on the revised availabilities. Mountain City did not have a shortage in the 2006 Region K Water Plan. County-Other continues to have a shortage, but it is a smaller shortage than it had in the 2006 Plan. These results do not reflect revised population and demand numbers, which will be looked at during the next phase of planning.

In this phase of study, the updated opinions of both BS/EACD and the City of Austin Watershed Protection department were presented and discussed to further analyze the viability of the Onion Creek Recharge Structure strategy. Letters of opinion were written by both entities. In general, it is the opinion of the BS/EACD that the Onion Creek recharge structure strategy is not feasible and would not be effective. The basis for this is three different viewpoints consisting of infrastructure and land-use compatibility, use of water resources, and relative recharge effectiveness. The District has some suggestions for alternative recharge enhancement strategies to consider. These include a number of smaller-scale recharge enhancement structures and facilities on Onion Creek and adjacent recharge streams. The City of Austin also believes that the proposed in-channel reservoirs are ineffective and cause additional concerns, and offers discussion of four alternative projects as replacements for the in-channel reservoirs. These projects include expanding the CenTex quarry, based on current data; protection of riparian corridors along major Colorado River tributaries; protection and maintenance of existing individual in-channel recharge features; and purchasing conservation zones in the contribution zone of Onion Creek. In addition, the City of Austin staff feels that there is an underestimate in the current Region K plan of the long-term benefits of recharge enhancement, and that additional analysis should be done to assess the volume of water available and the aquifer residence time of water resulting from recharge enhancement.

The SH 130 growth analysis used two methods for determining whether the County-Other population projections in the 2006 Region K Plan were sufficient. The first method used population density and calculated the percentage of County-Other population within the SH 130 Corridor to be 19 percent of the total County-Other population of Travis County for both 2007 and 2060. The second method looked at mid-census data that was provided by the State as well as 2035 growth estimates for various "activity centers" surrounding the SH 130 Corridor that were provided by the Capital Area Metropolitan Planning Organization (CAMPO). Using that method calculated the percentage of County-Other population within the SH 130 Corridor to be 24 percent of the total County-Other population of Travis County for 2035. The results of both methods show that it is likely the County-Other population projections in the 2006 Region K Plan are sufficient. Population projections for other WUGs in the Corridor will be updated during the next Phase of planning.

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Recommendations

The revised shortages occurring as a result of the reduction in availability from the Edwards (BFZ) Aquifer mean that it is likely that expanded or alternative water management strategies will be needed for several of the WUGs in Travis County and Hays County.

It appears from the information presented by BS/EACD and the City of Austin that the Onion Creek Recharge Structure strategy for Hays County may not be a feasible strategy. There are several alternatives that have been suggested, and these alternatives will be looked at more closely in the next phase of planning.

In the SH 130 potential high growth study, the main question was whether the current County-Other population projections for 2010 through 2060 in the 2006 Region K Plan are sufficient for handling the growth due to the SH 130 Corridor, as well as the population of County-Other elsewhere in Travis County. The results of both methods showed that the County-Other population projections for Travis County that were listed in the 2006 Region K Plan are reasonable and sufficient. Some of the other WUGs within the SH 130 Corridor have had growth that was not on target with the 2006 Region K Plan projections. These WUGs will need to have their population and demand numbers evaluated and adjusted during the next phase of planning.

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1.0 PURPOSE OF STUDY

Certain areas within Region K continue to have high growth. These areas center around the City of Austin and include Travis County, Hays County, Bastrop County, and Williamson County. In addition to the high growth, many of the water user groups (WUG), especially in Hays County, currently have water supply shortages as well as reduced water availability, according to updated data. To show the extent of the areas with shortages, a map was developed for Hays and Travis County that includes the WUGs with and without shortages. This map can be found in *Appendix A*.

The construction of State Highway 130 (SH 130) is another cause of growth in the area. The Lower Colorado Regional Water Planning Group (LCRWPG) had concerns during the last round of planning that perhaps the population and demand numbers did not accurately reflect the growth that would occur due to the SH 130 Corridor, especially in the County-Other areas.

Based on these two changed conditions, it is necessary to evaluate the impacts of the revised availability numbers in Hays County and Travis County as well as to determine the effects of the construction of the SH 130 Corridor on the surrounding WUGs in Travis and Bastrop Counties.

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2.0 METHODOLOGY

At the very end of the last round of planning, Barton Springs/Edwards Aquifer Conservation District (BS/EACD) reported revisions to their water availability. At that point, it was too late in the planning cycle to include it in the 2006 Region K Plan. As part of this study for this phase of the third round of planning, one of the first task items was to request the revised availability numbers (if any) from both BS/EACD and the Hays-Trinity Groundwater Conservation District (Hays-Trinity GCD).

Hays-Trinity GCD had no updated availability numbers to provide, but will most likely have updated numbers in time for the next phase of this round of planning. BS/EACD provided their updated permittee list for Hays County and Travis County within Region K and the formula they use in determining availability, defined as the “Extreme Drought Withdrawal Limitation”. This formula assumes a 30 percent reduction in supply availability for historical permits during extreme drought events, such as a drought-of-record. The list of permits was divided into Region K and Region L, and then the Region K permits were divided into Hays County and Travis County and then by river basin, in some cases. The total availability was calculated for each county and for specific WUGs.

Once the revised availabilities were determined, a revised shortage analysis was performed to determine the impacts on the WUGs within the BS/EACD service area. The results of the analysis are presented in *Section 3.1*.

One water management strategy of particular concern that was presented in the 2006 Region K Plan as a strategy for Hays County-Other is the Onion Creek Recharge Structure. This strategy involved the construction of two channel dams across Onion Creek to temporarily retain runoff. This strategy would provide water to Hays County-Other to meet projected water shortages for that WUG. The water retained would be released under controlled conditions to maximize recharge in downstream reaches of Onion Creek. In the 2006 Region K Plan, it was determined based on a study performed by the BS/EACD that the recharge dams constructed on Onion Creek may not perform as well as previously expected, due to the strong connection between Onion Creek recharge and Barton Springs. As a result, the yield for the strategy was reduced by approximately 50 percent to account for the uncertainty. In this phase of study, the updated opinions of both BS/EACD and the City of Austin Watershed Protection department are presented and discussed to further analyze the viability of the strategy.

It has been determined that the population projections provided as part of the 2006 Region K Plan may not have sufficiently accounted for the growth that has and will occur as a result of the construction of the SH 130 Corridor in the eastern portion of Travis County. In particular is the question of whether the current County-Other population projections for 2010 through 2060 in the 2006 Region K Plan are sufficient for handling the growth due to SH 130 as well as the population of County-Other elsewhere in Travis County?

In order to answer this question, some research was initially done to determine whether there were any population projections that had been calculated specifically for the SH 130 Corridor or similar roadways. While one report written by the Greater Austin Chamber of Commerce and entitled, *SH 130: Is it too late to plan for successful development of this regional asset? An examination of peer cities and their benchmark toll road corridors as examples of the future of Central Texas and SH 130* presented information on what the land use percentages within the Corridor will likely look like as the Corridor becomes more established, no data was found on population numbers and projections themselves. As a result, other methodologies were required to make the determination.

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Two methods of determining the population projections within the County-Other portion of the SH 130 Corridor were used. The first used population density, which was provided by the SH 130 report written by the Greater Austin Chamber of Commerce mentioned above. The second method used mid-census data provided by the State as well as growth estimates for several WUGs within the Corridor area that were provided in a study done by the Capital Area Metropolitan Planning Organization (CAMPO), entitled *Revised Draft CAMPO 2035 Regional Growth Concept*.

3.0 RESULTS

The results section is divided into three parts. The first part is a discussion of the results of the Edwards Aquifer (Balcones Fault Zone) Availability. The second part discusses the Onion Creek Recharge Structure strategy and whether it is feasible or not. The third part discusses the results of the SH 130 Growth Analysis with regards to the County-Other population.

3.1 EDWARDS AQUIFER (BALCONES FAULT ZONE) AVAILABILITY

This section contains revised text and tables from the 2006 Region K Water Plan (pages 3-40 to 3-41).

The availability of the Barton Springs segment of the Edwards aquifer (BFZ) was determined by the BS/EACD staff using the Barton Springs Edwards aquifer GAM. The BS/EACD staff made revisions to the existing GAM (Scanlon et al, 2001) through an extensive cooperative process that included a technical advisory group with members from the Texas Water Development Board, the United States Geologic Survey, the City of Austin, the Bureau of Economic Geology, and the University of Texas at Austin. Through this cooperative process, the existing GAM was revised to better predict aquifer water levels and spring flow during the drought of record conditions. The approach to determining the availability value for the Barton Springs segment of the Edwards aquifer (BFZ) was to maintain a mean monthly spring flow of approximately 2.5 cubic feet per second (cfs) at Barton Springs. The total availability of the Barton Springs segment of the Edwards aquifer (BFZ) within the jurisdiction of BS/EACD was proportioned by the BS/EACD staff to provide the appropriate values for the area of Hays and Travis Counties within the LCRWPA. The Travis County availability value for the Edwards aquifer (BFZ) is a sum of the BS/EACD value for the Travis County portion of the Barton Springs segment and the Travis County portion of the northern segment derived from the Northern Edwards aquifer GAM. The availability values for Edwards aquifer (BFZ) obtained from different GAMs are presented in *Table 3.1*.

Table 3.1 Summary of GAM Availability Values for the Edwards Aquifer (BFZ) (ac-ft/yr)

County	Data Source	Year 2010	Year 2020	Year 2030	Year 2040	Year 2050	Year 2060
Hays	BSEACD	2,576	2,576	2,576	2,576	2,576	2,576
Travis	Northern Edwards GAM	860	860	860	860	860	860
Travis	BSEACD	1,673	1,673	1,673	1,673	1,673	1,673
	County Total	2,533	2,533	2,533	2,533	2,533	2,533
Williamson	Northern Edwards GAM	275	275	275	275	275	275
Region K	Region Total	5,384	5,384	5,384	5,384	5,384	5,384

The available water, by river basin was established by proportioning the total availability value based on the area located in each river basin in a county using GIS. This information is presented in *Table 3.2*.

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Table 3.2 Water Availability in the Edwards Aquifer (BFZ) (ac-ft/yr)

County	Basin	Year 2010	Year 2020	Year 2030	Year 2040	Year 2050	Year 2060
Hays	Colorado	2,576	2,576	2,576	2,576	2,576	2,576
Travis	Brazos	20	20	20	20	20	20
Travis	Colorado	2,486	2,486	2,486	2,486	2,486	2,486
Travis	Guadalupe	27	27	27	27	27	27
	County Total	2,533	2,533	2,533	2,533	2,533	2,533
Williamson	Brazos	265	265	265	265	265	265
Williamson	Colorado	10	10	10	10	10	10
	County Total	275	275	275	275	275	275
Region K	Region Total	5,384	5,384	5,384	5,384	5,384	5,384

In the Colorado River Basin of Travis County, groundwater availability from the Edwards aquifer (BFZ) (2,486 ac-ft/yr) is significantly lower than water usage during year 2000 (8,304 ac-ft/yr) indicated in TWDB Water Use Survey. The availability value was obtained from BS/EACD and Northern Edwards (BFZ) aquifer GAM. The BS/EACD availability number is consistent with the pumpage in its area of jurisdiction as the conservation district enforces permitting. However, it appears that the usage of groundwater in the northern part of Travis County is significantly higher than the availability from the Edwards aquifer (BFZ) established by Northern Edwards (BFZ) aquifer GAM modeling, where the GAM modeling criteria was set to minimize adverse effect on stream flow during drought of record condition. It is anticipated that several current users of groundwater from Edwards aquifer (BFZ) in the northern part of Travis County will switch to surface water usage from groundwater in the future due to the expected growth of the City of Austin service/retail area.

The availability of the Edwards Aquifer (BFZ) is reduced to 5,384 ac-ft in this study from 8,375 ac-ft in the 2006 Region K Water Plan. As a result, there are some changes in the shortage/surplus analysis for the affected WUGs in Hays County and Travis County. The following tables show the results of the analysis. *Table 3.3* shows the results for Travis County and *Table 3.4* shows the results for Hays County.

Table 3.3 Shortage Analysis Comparison for Travis County WUGs

WUG	Plan	Shortage/Surplus (ac-ft/yr)						Effect
		2010	2020	2030	2040	2050	2060	
County-Other	Revised Study	14,259	11,918	6,625	5,511	1,830	1,837	-
	2006 Plan	14,702	12,361	7,068	5,954	2,273	2,280	
Creedmoor-Maha WSC	Revised Study	0	-429	-544	-626	-708	-800	-
	2006 Plan	0	-287	-400	-479	-558	-639	
Goforth WSC	Revised Study	-11	-21	-30	-37	-43	-48	-
	2006 Plan	-3	-14	-23	-30	-38	-43	
Irrigation	Revised Study	287	369	443	511	558	615	+
	2006 Plan	155	237	311	379	426	483	
Livestock	Revised Study	197	197	197	197	196	196	-
	2006 Plan	383	383	383	383	382	382	

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In Travis County, only Creedmoor-Maha WSC and Goforth WSC have larger shortages based on the revised availabilities. These results do not reflect revised population and demand numbers, which will be looked at during the next phase of planning.

Table 3.4 Shortage Analysis Comparison for Hays County WUGs

WUG	Plan	Shortage/Surplus (ac-ft/yr)						Effect
		2010	2020	2030	2040	2050	2060	
City of Buda	Revised Study	-661	-1,537	-2,012	-2,497	-3,075	-3,549	-
	2006 Plan	-638	-1,514	-1,989	-2,474	-3,052	-3,526	
Cimarron Park Water Supply	Revised Study	-150	-236	-329	-423	-536	-629	-
	2006 Plan	-41	-127	-220	-314	-427	-520	
County-Other	Revised Study	-605	-1,918	-3,262	-4,630	-8,249	-9,587	+
	2006 Plan	-759	-2,072	-3,416	-4,784	-8,400	-9,738	
Mountain City	Revised Study	-25	-23	-23	-22	-22	-22	-
	2006 Plan	0	0	0	0	0	0	
Irrigation	Revised Study	42	42	42	42	41	41	-
	2006 Plan	963	963	963	963	962	962	
Livestock	Revised Study	2	2	2	2	0	0	-
	2006 Plan	626	626	626	626	621	621	
Manufacturing	Revised Study	-93	-211	-330	-450	-558	-657	-
	2006 Plan	0	0	-6	-126	-234	-333	
Mining	Revised Study	0	6	10	12	10	10	-
	2006 Plan	9	15	19	21	19	19	

In Hays County, the City of Buda, Cimarron Park Water Supply, Mountain City, and Manufacturing have larger shortages based on the revised availabilities. Mountain City did not have a shortage in the 2006 Region K Water Plan. County-Other continues to have a shortage, but it is a smaller shortage than it had in the 2006 Plan. Again, these results do not reflect revised population and demand numbers, which will be looked at during the next phase of planning. Summaries of the availability and supply tables can be found in *Appendix B*.

3.2 FEASIBILITY OF THE ONION CREEK RECHARGE STRUCTURE STRATEGY

In this phase of study, the updated opinions of both BS/EACD and the City of Austin Watershed Protection department were presented and discussed to further analyze the viability of the strategy. Letters of opinion were written by both entities and are included in *Appendix C*. Summaries of the letters are provided below.

In general, it is the opinion of the BS/EACD that the Onion Creek recharge structure strategy is not feasible and would not be effective. The basis for this is three different viewpoints consisting of infrastructure and land-use compatibility, use of water resources, and relative recharge effectiveness.

With respect to the first issue of infrastructure and land-use compatibility, it is likely that there would be a significant amount of resistance to the emplacement of a reservoir along Onion Creek that would be large enough to serve as an effective recharge enhancement facility during a drought-of-record event. It is unlikely that landowners would be willing to give up their land for this purpose. There is also the issue of

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excessive sedimentation that might result from intense storms disturbing the temporary construction area. The sedimentation could potentially plug the recharge areas downstream and be difficult to remediate.

With respect to the use of water resources issue, in addition to concerns regarding water rights, the evaporation rate is twice the precipitation rate in the area of the proposed structure. A large percentage of the flows in the creek come from flash floods, causing more evaporative losses than would otherwise be expected. Stream nutrient loadings are rather high during storm events. Under current conditions, these nutrients are washed down to the Colorado River where they are assimilated in the larger stream. If these flows were captured, they could cause water quality problems for the recharge water.

With respect to the relative recharge effectiveness, previous studies have questioned whether the impounded water would be available during a drought-of-record. If more groundwater is available to users during non-drought or early drought stages, it is generally more difficult to curtail use during times of worse drought. In addition, it is a requirement of the District that any additional recharge that is available during a drought-of-record will firstly be reserved for ecological flows to protect the endangered salamander.

The District has some suggestions for alternative recharge enhancement strategies to consider. These include a number of smaller-scale recharge enhancement structures and facilities on Onion Creek and adjacent recharge streams. Some may be designed to reduce siltation of runoff events entering the aquifer. Other sites might be beneficially excavated or be facilitated by the installation of wells that would act as injection sites for creek flow. The District's current Management Plan addresses these activities.

The City of Austin stated the following in their letter:

“The current Region K plan contains four recharge enhancement options to increase the amount of groundwater available in the Barton Springs segment of the Edwards Aquifer. Three of the proposed projects are construction of in-channel reservoirs in Onion Creek. Typical in-channel impoundments slow water velocity resulting in trapping sediment and debris in the reservoirs which will eventually clog up in-channel natural recharge features. Additionally, impoundment structures typically prohibit stream dynamics from cleaning and opening in-channel recharge features through scouring. These results would likely negate the proposed benefits from the proposed impoundments. In addition, in-channel dams would require significant disturbance of the riparian corridor along Onion Creek and threaten downstream sediment transport and deposition during rain events. Sediment can clog in-channel recharge features and underground groundwater flow conduits, fill in water wells and smother endangered species habitat in Barton Springs. For these reasons, it is requested by City of Austin staff that the Lower Colorado Regional Water Planning Group remove the proposed in-channel reservoirs from the Region K plans.”

The City of Austin offered discussion of four alternative projects as replacements for the in-channel reservoirs. These projects include expanding the CenTex quarry, based on current data; protection of riparian corridors along major Colorado River tributaries; protection and maintenance of existing individual in-channel recharge features; and purchasing conservation zones in the contribution zone of Onion Creek.

The City of Austin staff also feels that there is an underestimate in the current Region K plan of the long-term benefits of recharge enhancement. “During recharge events, groundwater flow conduits are defined by mounds of water compared to adjacent areas. This mounding forces water into the rock matrix and

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smaller voids areas in the aquifer adjacent to the conduits. As the recharge event wanes, this “matrix” porosity drains into the conduits, providing baseflow at the springs long after the recharge events end. While the duration of water artificially recharged into the aquifer may not protect spring flows throughout the drought of record or remain in aquifer storage for well users, it may offset the severity of severe drought and delay the most severe effects. Additional analysis is required to assess the volume of water available and the aquifer residence time of water resulting from recharge enhancement.”

3.3 SH 130 CORRIDOR POTENTIAL HIGH GROWTH

The main question for this portion of the study is whether the current County-Other population projections for 2010 through 2060 in the 2006 Region K Plan are sufficient for handling the growth due to the SH 130 Corridor, as well as the population of County-Other elsewhere in Travis County. An exhibit entitled *SH 130 Corridor Areas of Growth* is provided in *Appendix D*, and shows the SH 130 Corridor area and the proposed locations of high growth along it.

Two methods were used when analyzing the growth. The first method used population density. *Table 3.5* shows the calculation progression.

Table 3.5 County-Other Growth Analysis Using Population Density

Overall Population Density of the SH 130 Corridor (2004), taken from SH 130 Report by the Austin Chamber of Commerce	213.5 persons/sq.mi.
Projected Population Density to 2007	244 persons/sq.mi.
From this overall density, assume Population Density just for County-Other areas	150 persons/sq.mi.
Length of County-Other (current) area within SH 130 Corridor	11.5 miles
Total Area of County-Other (current) within SH 130 Corridor, assuming Corridor width of 4 miles	46 sq.mi.
Population of current County-Other within the SH 130 Corridor	6,900 persons
2007 Interpolated County-Other Population for Travis County using TWDB numbers from the 2006 Region K Plan	36,770 persons
Percent of County-Other Population within the SH 130 Corridor (Current)	19%
Projected 2060 Total Area of County-Other within SH 130 Corridor, assuming all ETJ areas have been annexed	16 sq. mi.
Projected 2060 County-Other Population within the SH 130 Corridor, assuming a density of 150 persons/sq.mi.	2,400 persons
2060 County-Other Population for Travis County using TWDB numbers from the 2006 Region K Plan	12,636 persons
Percent of County-Other Population within the SH 130 Corridor (2060)	19%

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An overall population density for the SH 130 Corridor for 2004 was provided in the SH 130 Report by the Greater Austin Chamber of Commerce, which can be found in *Appendix E*. This population density of 213.5 persons per square mile was projected from 2004 to 2007 to become 244 persons per square mile. Since this is the overall density, which includes cities and higher growth areas, an approximate population density specifically for County-Other was assumed to be 150 persons per square mile, based on a conservative estimate of population density for rural areas, using information from the U.S. Census Bureau. The length of the Corridor was measured for just the 2007 County-Other areas using GIS. County-Other areas were considered to be any area not within a city limit or WUG. The length measured at 11.5 miles. The Corridor was assumed to be a width of two miles on either side of SH 130, or a width of four miles total. The width multiplied by the length gave a total area of County-Other of 46 square miles. Multiplying the County-Other population density by the total County-Other area gave a population of County-Other equal to 6,900 persons. The 2006 Region K Plan has County-Other population values for the years 2000 and 2010 for Travis County. By interpolating between the two decades, a total County-Other population for Travis County was calculated to be 36,770 persons for the year 2007. Therefore, the percentage of the Travis County-Other population within the SH 130 Corridor for the year 2007 is 19 percent.

The process was then done for the year 2060. An assumed length of the Corridor for 2060 County-Other was measured. For 2060, it was assumed that any portion of land within the City of Austin extra territorial jurisdiction (ETJ) would be City of Austin property and no longer County-Other. This left approximately four miles in length of County-Other within the Corridor. This length multiplied by the four miles of Corridor width gave a total County-Other area of 16 square miles. It was also assumed that the population density within County-Other would not increase from the 2007 density of 150 persons per square mile, since the majority of growth will occur in the cities and WUGs. Multiplying the County-Other population density by the total County-Other area within the Corridor for 2060 gave a population of County-Other equal to 2,400 persons. The 2006 Region K Plan shows a projected County-Other population of 12,636 persons for Travis County in 2060. Therefore, the percentage of the Travis County-Other population within the SH 130 Corridor for the year 2060 is 19 percent as well.

The second method of growth analysis used mid-census data provided by the State as well as the Capital Area Metropolitan Planning Organization (CAMPO) estimates of growth. In *Table 3.6* below, the mid-census population data provided by the State for cities surrounding the SH 130 Corridor are compared to the projected population provided by TWDB in the 2006 Region K Plan for the year 2007. Some cities' populations had been overestimated, while others had been underestimated. The differences were added for a total of -7,388, or an overestimation in the 2006 Region K Plan of 7,388.

Table 3.6 State Data Comparison with TWDB Projected Population Data

WUGs Surrounding the SH 130 Corridor	Estimated Population, State Data Center, 1/1/2007	Projected Population (Interpolated), TWDB, 1/1/2007	Difference	% Change
City of Austin	726,840	747,318	-20,478	-2.7%
Manville WSC	N/A	N/A	0	N/A
City of Pflugerville	32,652	21,987	10,665	48.5%
Aqua WSC	N/A	N/A	0	N/A
Mustang Ridge	965	958	7	0.7%
Creedmoor-Maha WSC	N/A	N/A	0	N/A
City of Manor	3,700	1,282	2,418	188.6%
		Total	-7,388	

WUGs Surrounding the
City of Austin
Manville WSC
City of Pflugerville
Aqua WSC
Mustang Ridge
Creedmoor-Maha WSC
City of Manor

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A report was obtained from CAMPO, entitled, *Revised Draft CAMPO 2035 Regional Growth Concept*, which projects that the majority of growth over the next few decades will occur in “activity centers”. The activity centers located along the SH 130 Corridor can be seen on the exhibit in *Appendix E*.

Table 3.7 CAMPO Activity Center Growth Estimates for 2035

Activity Centers Within the SH 130 Corridor	Jurisdiction	CAMPO 2035 Population Estimate	2006 Region K Plan Projected 2035 Population	On Track With Plan?	How Much Should be Added to Projection from County-Other?
City of Pflugerville	City of Pflugerville	9,000 - 75,000	49,500	Yes	0
Decker (currently Travis County)	COA likely in future	2,000 - 10,000	N/A	N/A	0
Del Valle (City of Austin)	COA	2,000 - 10,000	N/A	N/A	0
City of Manor	City of Manor	2,000 - 10,000	1,660	No	6,000
Mustang Ridge	City of Mustang Ridge	2,000 - 10,000	716	No	2,000
SH 130 & US 290 (City of Austin)	COA	2,000 - 10,000	N/A	N/A	0
Total					8,000

Table 3.7 shows the CAMPO 2035 population estimates for the various activity centers within the SH 130 Corridor, as well as the 2006 Region K Plan TWDB projected 2035 populations and whether the CAMPO estimates match well with the TWDB projections. If the estimates do not match well, a determination of how much additional population needs to be added. Based on the CAMPO estimates, for the SH 130 Corridor, it was determined that the TWDB population projection needs to increase by approximately 8,000. The suggested increases were determined by looking at current growth in the individual area to estimate where the population in 2035 would fall within the given CAMPO range. The City of Manor is growing much faster than predicted, so the estimate suggests a population at the higher end of the CAMPO range. The City of Mustang Ridge, on the other hand, is not growing quite as fast, and the estimation suggests a population at the lower end of the CAMPO range. These suggested population increases are only estimates and should not be considered a request for revisions to the Region K population projections in the 2006 Region K Plan.

Table 3.8 shows the analysis of what portion of County-Other for Travis County is within the SH 130 Corridor using the mid-census data and CAMPO estimates method. The interpolated 2035 County-Other TWDB population projection for Travis County from the 2006 Region K Plan was calculated to be 20,170. The State data projection corrections from Table 3.6 were projected from 2007 to 2035 by assuming the current growth rate shown in the 2006 Region K Plan would remain the same and were added to the TWDB population projection. The 2035 CAMPO projection corrections from Table 3.7 were then subtracted from the TWDB population projection to give a revised County-Other population total for Travis County of 19,558 for the year 2035. Interpolating the estimated SH 130 Corridor County-Other population for 2035 using the two values determined in the population density method of analysis (see Table 3.5), gave a Corridor population of 4,650, which is 24 percent of the total Travis County-Other population for 2035. This percentage is reasonably close to the percentages calculated using the population density method.

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Table 3.8 County-Other Growth Analysis Using Mid-Census Data and CAMPO Estimates

2035 County-Other TWDB Population Projection from 2006 Region K Plan	20,170
2035 State Data Projection Corrections*	7,388
2035 CAMPO Projection Corrections	-8,000
Amount County-Other Remaining	19,558
2035 Estimated SH 130 Corridor County-Other Population	4,650
Percent of Total County-Other Population Within the SH 130 Corridor in 2035	24%

* Can project 2007 correction to 2035 by assuming growth rate will remain the same as in the 2006 Region K Plan

The results of both methods show that it is likely the County-Other population projections in the 2006 Region K Plan are sufficient. Population projections for other WUGs in the Corridor will be updated during the next Phase of planning.

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4.0 RECOMMENDATIONS

The revised shortages occurring as a result of the reduction in availability from the Edwards (BFZ) Aquifer mean that it is likely that expanded or alternative water management strategies will be needed for several of the WUGs in Travis County and Hays County. Mountain City in Hays County had no shortage in the 2006 Region K Plan and will likely need a strategy now, based on the revised availability numbers. Cimarron Park Water Supply in Hays County had a strategy from the 2006 Region K Plan that used remaining Edwards (BFZ) Aquifer availability. With the reduced availability, that strategy is no longer an option and a new strategy will be needed.

It appears from the information presented by BS/EACD and the City of Austin that the Onion Creek Recharge Structure strategy for Hays County may not be a feasible strategy. For the reasons mentioned in *Section 3.2*, the strategy would not likely provide a viable source of water during a drought-of-record. There are several alternatives that have been suggested, and these alternatives will be looked at more closely in the next phase of planning.

In the SH 130 potential high growth study, the main question was whether the current County-Other population projections for 2010 through 2060 in the 2006 Region K Plan is sufficient for handling the growth due to the SH 130 Corridor, as well as the population of County-Other elsewhere in Travis County. Two methods were used to analyze the growth, with one using population density and the other looking at mid-census data and CAMPO growth estimates for activity centers in the area. The results of both methods showed that the County-Other population projections for Travis County that were listed in the 2006 Region K Plan are reasonable and sufficient. Some of the other WUGs within the SH 130 Corridor have had growth that was not on target with the 2006 Region K Plan projections. These WUGs will need to have their population and demand numbers evaluated and adjusted during the next phase of planning.

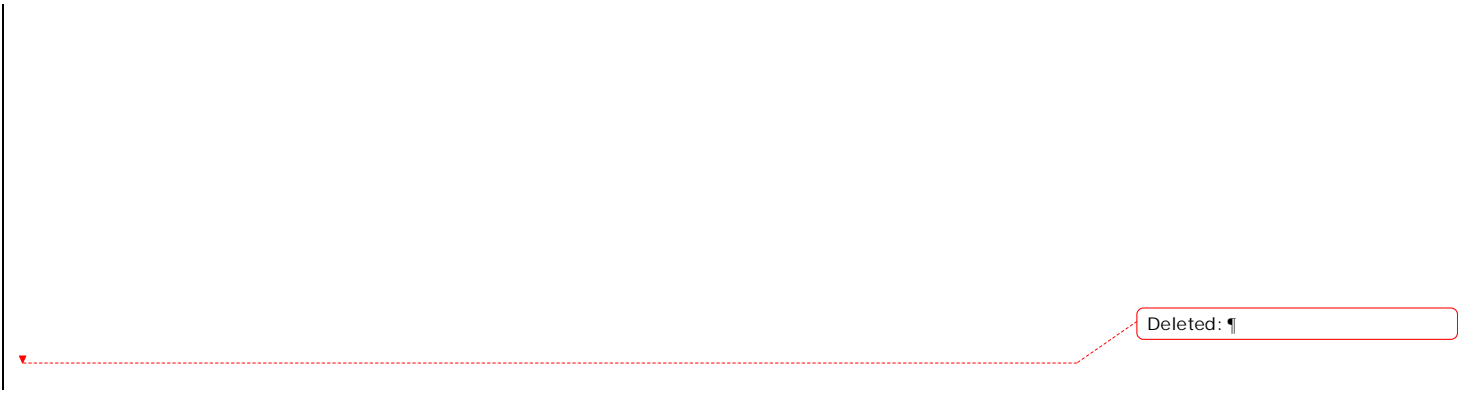
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APPENDIX A

LOCATION OF WUGS IN TRAVIS AND HAYS COUNTIES

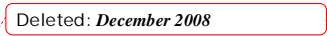


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APPENDIX B

***REVISED AVAILABILITY BY WATER SOURCE
REVISED SUPPLY BY WATER USER GROUP (WUG)***



APPENDIX C

***LETTERS OF OPINION REGARDING THE ONION CREEK RECHARGE
STRUCTURE STRATEGY***

APPENDIX D

SH 130 CORRIDOR AREAS OF GROWTH

APPENDIX E

***SH 130 REPORT BY THE GREATER AUSTIN CHAMBER OF COMMERCE
REVISED DRAFT CAMPO 2035 REGIONAL GROWTH CONCEPT***