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September 23, 2016

Chairman John E. Burke
Lower Colorado Regional Water Planning Group
496 Shiloh Road
Bastrop, TX 78602

Re: Creedmoor-Maha Water Supply Corporation Request for Region K to Consider and Incorporate a Minor Amendment Into Its Approved 2016 Water Plan

Dear Chairman Burke,

GDS Associates, Inc. (GDS) has been retained by Creedmoor-Maha Water Supply Corporation (CMWSC) to assist them in pursuing a minor amendment to Region K's 2016 Regional Water Plan.

CMWSC has been experiencing significant (18-26%) losses of unaccounted for water from its system over at least the past five years. CMWSC is located in a rural area (*See Attachment A showing the aerial extent of CMWSC's service area*) near Austin. It has limited groundwater sources available to it and therefore has to rely on contracts with the City of Austin and Aqua Water Supply Corporation for supplemental water supplies to meet its water needs.

To improve its system efficiency and position itself for the future, CMWSC has been working over the past year on a water conservation project with the following objectives:

- replace its old, undersized and leak prone water mains to reduce unaccounted for losses;
- insure its water system has proper fire flow capability; and
- insure the capability of having a diversity of water supply.

This project is now to the point CMWSC is ready to begin implementation and would like to pursue State Water Implementation Fund for Texas (SWIFT) funding from the Texas Water Development Board (TWDB) in its next cycle. For this to occur, CMWSC needs to have its water conservation project recognized as a recommended water management strategy (WMS) in the approved 2016 Region K Water Plan.

CMWSC respectfully requests that Region K consider its proposed water conservation project as a recommended WMS through the minor amendment process – *See Attachment B showing a*

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diagram of the State Water Plan Amendment Process Timeline. CMWSC is aware there is a defined process for considering and approving a minor amendment. However, time is of the essence, so please accept this letter as our official request to have Region K put an item on its October 12, 2016 proposed meeting agenda to:

- 1) consider and act on CMWSC's request to amend the 2016 Region K Water Plan to include its proposed water conservation project; and
- 2) to begin the process for inclusion of a minor amendment into Region K's 2016 Water Plan.

CMWSC would ask to have a 45-minute time slot to provide the planning group with details of the proposed conservation project, a summary of the changes CMWSC believes will be needed to accomplish a minor amendment to the Region K's 2016 Water Plan and answer any questions the planning group may have about this minor amendment request.

CMWSC has consulted with TWDB Representative, Lann Bookout, and with Region K consultant, Jaime Burke with AECOM, on this proposal to solicit their input and guidance. In addition, GDS has retained James Kowis of James Kowis Consulting, LLC to assist GDS in identifying and proposing the modifications to the appropriate areas in the 2016 Region K Water Plan which will need to be amended/modified/updated in order to accomplish a minor amendment to Region K's 2016 Water Plan.

In addition to Attachments A and B (referenced above), GDS has attached the following for Region K consideration at its October 12th meeting:

- *Attachment C- Brief description of CMWSC's proposed Water Conservation Project; and*
- *Attachment D- A summary of proposed changes to Region K's 2016 Water Plan identified as being needed to accomplish adding CMWSC's water conservation project as a minor amendment.*

If you have any questions about this request, please contact me as shown below.

Respectfully submitted,

for 
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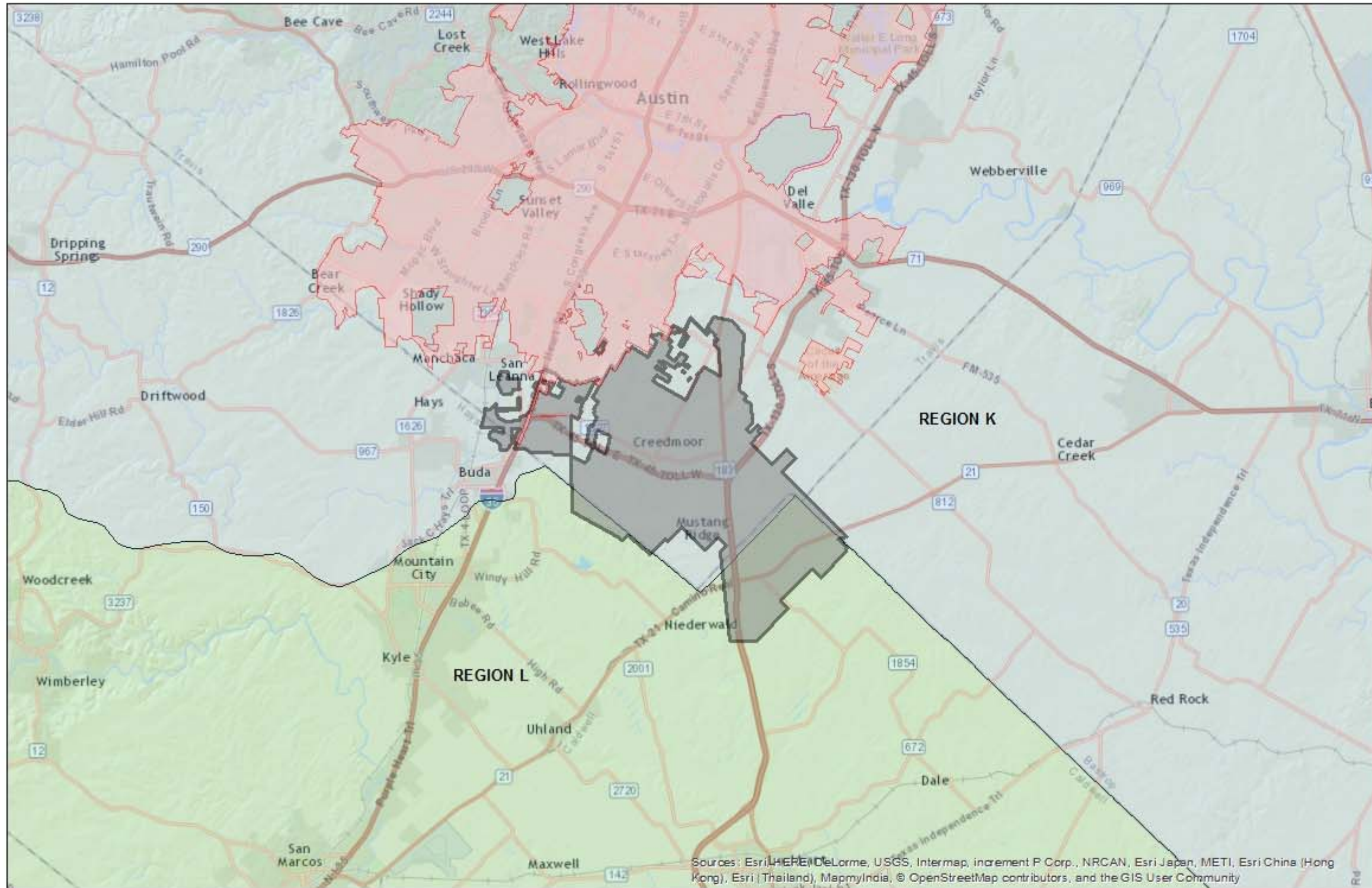
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Enclosures (4)

cc: Charles Laws, GM - CMWSC
Jaime Burke, AECOM
Lann Bookout, TWDB
James Kowis, James Kowis Consulting LLC
Ricky Anderson, RSAH20

ATTACHMENT A

Aerial Extent of CMWSC's Service Area



Legend

- Austin City Limits
- CMWSC 2015 CCN

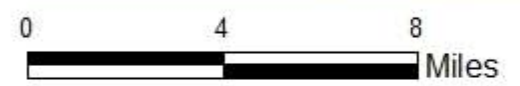
TWDB Regional Water Planning Areas

Region:

- K - Lower Colorado
- L - South Central Texas



- Notes:**
1. TWDB Regional Water Planning area boundaries taken from TWDB GIS data.
 2. 2015 CMWSC CCN area georeferenced and traced using ArcGIS.
 3. Austin City Limits taken from CAPCOG GIS data.



SITE LOCATION MAP
CREEDMOOR-MAHA WATER SUPPLY CORPORATION
(CMWSC)

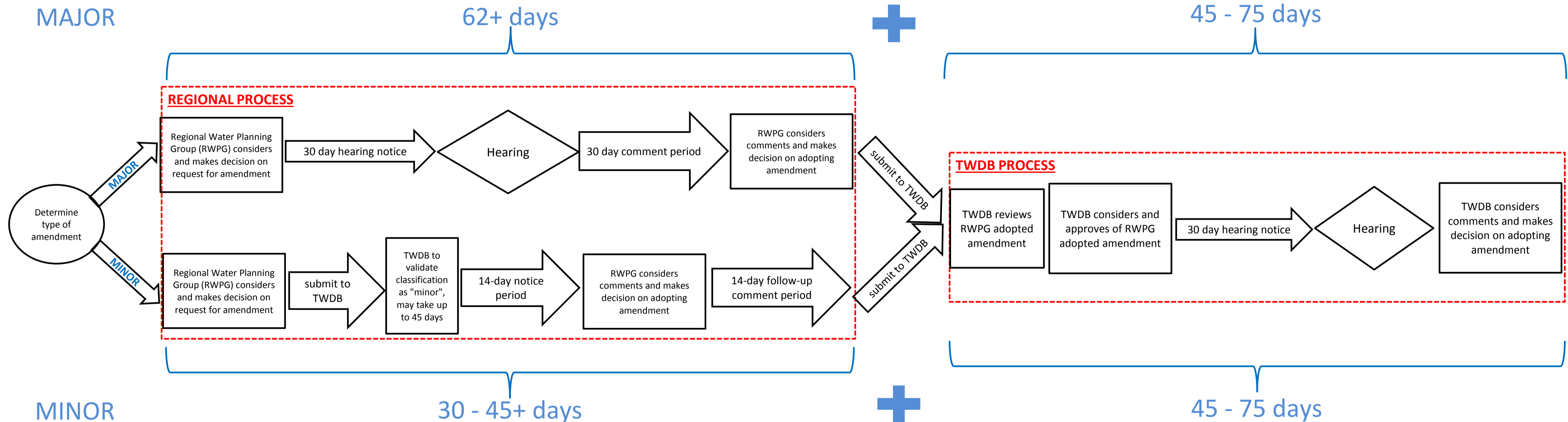
GDS Associates, Inc.
 919 Congress Avenue, Suite 800
 Austin, Texas 78701
 Texas Registered Engineering Firm
 F-4089

CMWSC <small>Creedmoor-Maha Water Supply Corporation</small>	FIGURE NO. 1
Sheet No. 1 of 1	Drawn By: Kevin Ashley
	Checked by: Richard Varnell
	Date: 19 September 2018

ATTACHMENT B

Diagram of the
State Water Plan Amendment Process Timeline

Texas Water Development Board State Water Plan Amendment Process Timeline



Please note: the Regional Process timeline outlined above is exclusive of any additional days needed to accommodate scheduling for public meetings, posting of public notice, or other variables. Also, the timeline does not reflect the additional days needed by the Regional Water Planning Group (RWPG) to prioritize the amended regional plan.

Example: If amendments to the 2012 State Water Plan are required to be adopted by the TWDB Board by May 1, 2015; then RWPGs would need to submit their final adopted 2011 Regional Water Plan amendments to TWDB no later than February 10, 2015. *

**This example timeframe is provided as a guide for RWPGs to use as a resource when considering the submission of amendments and providing supporting documentation to TWDB. Please note the dates set forth are not intended to represent actual deadlines. Rather, the dates are being provided only to illustrate the minimum amount of time necessary to process an amendment in accordance with all statutory and regulatory requirements. The dates do not account for additional time that may be needed by TWDB staff to review amendments based on the number of amendments received or complexity of major amendments.*

ATTACHMENT C

Brief description of CMWSC's Proposed Water Conservation Project
ATTACHMENT C
CMWSC Proposed Water Conservation Project

CMWSC's proposed Water Conservation Project would be designed and implemented in three phases over an eight-year period.

Phase 1 consists of an improvement to the connection to Aqua Water Supply Corporation (Aqua). Currently CMWSC has a 4 inch ("") meter at its only interconnection to the Aqua System. Phase 1 would:

- 1) Create a master plan for CMWSC and specifications for use during future development in the Certificate of Convenience and Necessity ("CCN").
- 2) Upsize the meter connecting to Aqua to a 12" connection.
- 3) Install new, 12" HDPE water piping to connect the Aqua meter the Alexander elevated water tank. Approximately 6.8 miles of 12" HDPE piping will be installed during this phase.
- 4) Install a booster pump station on the new 12" line near the Aqua interconnection to boost system pressure and ensure a strong flow to and complete filling of the Alexander tank.
- 5) This phase would be designed and constructed in 2017-2018.

Phase 2 consists of an improvement on the north side of the system along Highway 183 between the I-45 Tollroad on the south to one of the three connections to the City of Austin system to the north. There would also be other improvements to the system in that area. Phase 2 would:

- 1) Upsize the piping to the City of Austin meter to 12".
- 2) Install approximately 5.2 miles of new, 12" HDPE water piping along Highway 183.
- 3) Install approximately 1.9 miles of new, 8" HPDE water piping in ancillary areas along the route of the new 12" line.
- 4) This phase would be designed and constructed in 2020-2021.

Phase 3 consists of an improvement on the northwest side of the system. There would also be other improvements to the system in that area. Phase 2 would:

- 1) Upsize the piping leading to the two City of Austin meters in that area to 12".
- 2) Install approximately 6.6 miles of new, 12" HDPE water piping.
- 3) Install approximately 1.9 miles of new, 8" HPDE water piping in ancillary areas along the route of the new 12" line.
- 4) This phase would be designed and constructed in 2023-2024.

ATTACHMENT D

Summary of Proposed Changes to Region K's 2016 Water Plan

ATTACHMENT D

Summary of Proposed Changes to the 2016 Region K Water Plan

Chapter 5

Modifications to Page 5-13 of 2016 Region K Water Plan (Underlined- new text; and [] showing deleted text...

Burnet County-Other did not fall under the above criteria, but is recommended to receive water from the Buena Vista Regional Project (*Section 5.2.1.5.1*) through an interbasin transfer, requiring that the highest practicable level of achievable water conservation be considered. Therefore, municipal conservation is recommended for Burnet County-Other, Brazos Basin, based on the achievement of 130 gpcd by 2020 and 125 gpcd by 2030. This strategy is recommended using these criteria, and is shown in *Table 5.7*.

Also, Creedmoor-Maha WSC (CMWSC) did not fall under the above criteria and methodology since its current system per capita (about 100 gpcd) demands are below the criteria described above. CMWSC has been experiencing unaccounted for water losses in its water mains of between 18-26% of the total metered flows. CMWSC has worked with an engineering consultant to develop a phased approach to strategically replace old, undersized and leak prone water mains and to improve the fire flow capability in its system. Therefore, municipal conservation (water main line replacement) is recommended for CMWSC based on a goal of lowering its overall unaccounted water losses to 10% of total metered flows. This strategy is recommended using information from an engineering report submitted by CMWSC [using the criteria above], and is shown in *Table 5-7*.

The City of Austin Water Conservation is a separate strategy and is discussed in *Section 5.2.2.2*; therefore, it is not included in this table.

Examples of measures that can be implemented to meet this strategy include the following:

Utility water loss audits and repair. System water audits are required every five years for all retail utilities and every year for utilities over 3,300 connections. To maximize the benefits of this measure, a utility would use the information from the water audit to revise meter testing and repair practices, reduce unauthorized water use, improve accounting for unbilled water, and implement effective water loss management strategies. Water loss....

Modifications to Table 5-7 (Highlighted in Yellow)

Table 5-7: Municipal Water Conservation Savings (ac-ft/yr)

WUG Name	County	River Basin	Conservation Water Savings (ac-ft/yr)					
			2020	2030	2040	2050	2060	2070
AQUA WSC	BASTROP	BRAZOS	6	9	10	11	15	20
AQUA WSC	BASTROP	COLORADO	619	895	960	1,128	1,499	1,992
AQUA WSC	BASTROP	GUADALUPE	5	7	8	9	12	14
BASTROP	BASTROP	COLORADO	195	440	688	1,084	1,459	1,958
COUNTY-OTHER	BASTROP	BRAZOS	1	2	4	7	8	10
COUNTY-OTHER	BASTROP	COLORADO	89	191	337	403	515	663
COUNTY-OTHER	BASTROP	GUADALUPE	2	3	3	4	4	4

WUG Name	County	River Basin	Conservation Water Savings (ac-ft/yr)					
			2020	2030	2040	2050	2060	2070
CREEDMOOR-MAHA WSC	BASTROP	COLORADO	2	3	4	4	6	7
CREEDMOOR-MAHA WSC	TRAVIS	COLORADO	57	62	68	76	83	90
CREEDMOOR-MAHA WSC	TRAVIS	GUADALUPE	3	3	3	4	4	4
SMITHVILLE	BASTROP	COLORADO	44	72	76	88	117	155
BLANCO	BLANCO	GUADALUPE	19	32	28	26	27	27

Modifications to Table 5-8 (Modifications Highlighted in Yellow)

Table 5-8: Cost Estimate for Municipal Conservation Strategies

WUG Name	County	River Basin	Total Construction Cost	Total Capital Cost	Largest Annual Cost	Unit Cost (\$/ac-ft)
AQUA WSC	BASTROP	BRAZOS	\$12,126	\$12,126	\$2,126	\$352
AQUA WSC	BASTROP	COLORADO	\$1,217,517	\$1,217,517	\$217,485	\$352
AQUA WSC	BASTROP	GUADALUPE	\$8,625	\$8,625	\$1,691	\$352
BASTROP	BASTROP	COLORADO	\$224,866	\$224,866	\$59,136	\$303
COUNTY-OTHER	BASTROP	BRAZOS	\$2,918	\$2,918	\$391	\$374
COUNTY-OTHER	BASTROP	COLORADO	\$225,540	\$225,540	\$33,303	\$374
COUNTY-OTHER	BASTROP	GUADALUPE	\$4,278	\$4,278	\$707	\$374
CREEDMOOR-MAHA WSC**	BASTROP	COLORADO	\$530,091	\$589,275	\$49,310	\$24,655
CREEDMOOR-MAHA WSC**	TRAVIS	COLORADO	\$11,798,706	\$13,116,018	\$1,097,540	\$19,255
CREEDMOOR-MAHA WSC**	TRAVIS	GUADALUPE	\$568,783	\$632,287	\$52,909	\$17,636
SMITHVILLE	BASTROP	COLORADO	\$109,412	\$109,412	\$16,524	\$376
BLANCO	BLANCO	GUADALUPE	\$47,867	\$47,867	\$7,181	\$378

....

After end of Table 5-8 add: (Underlined- new text)

****Note:** The cost estimates for Creedmoor-Maha WSC (CMWSC) shown in Table 5-8 Cost Estimate for Municipal Conservation Strategies shown above are significantly higher than the other proposed water conservation strategies listed in the table. This significant difference in costs appears to be due to: CMWSC’s service area covers a large suburban/rural area with fewer meters per mile of main line as compared to a more compact municipal system; CMWSC has to rely on three different sources of supply (groundwater wells, City of Austin and Aqua Water Supply Corp.), therefore it has three different source water systems which needs to be rehabilitated which adds to overall project costs; a portion of the CMWSC service area is located in Region L and the additional savings associated with that portion of the service is not part of the calculation of unit cost in this region; and lastly, the per capita (gpcd) usage in the CMWSC system is already well below other systems and therefore the overall return in savings is much less.

Environmental Impact

Conservation has other potential impacts for WUGs that are served by groundwater. Communities that are served by surface water will divert less water from streams, meaning more water will remain in channels for downstream uses. However, groundwater communities contribute to streamflow by discharging treated groundwater into streams...

Table 5-A-1 Region K Water Management Strategies Considered and Evaluated
Page 1 of 2

What is shown below is just the portion of Table 5-A-1 which was modified; all other elements and values in the table were left unchanged.

Table 5A-1: Region K Water Management Strategies Considered and Evaluated

Every WUG Entity with an Identified Need		WMSs REQUIRED TO BE CONSIDERED BY STATUTE					
Water User Group Name	Maximum Need 2020-2070 (af/yr)	Conservation	Drought Management	Reuse	Reallocation/management of existing supplies	Conjunctive Use	
<i>Aqua WSC</i>	26,269	PF	PF	nPF	nPF	nPF	NOTE: NO CHANGES PROPOSED TO THIS SECTION OF TABLE, SO IT IS NOT SHOWN IN THIS ATTACHMENT
<i>Bastrop</i>	6,390	PF	PF	PF	nPF	nPF	
<i>Bastrop County WCID #2</i>	644	nPF	PF	nPF	nPF	nPF	
<i>County-Other, Bastrop</i>	1,490	PF	PF	nPF	nPF	nPF	
<i>Creedmoor-Maha WSC</i>	609	PF	PF	nPF	nPF	nPF	
<i>Elgin</i>	4,124	nPF	PF	nPF	nPF	nPF	
<i>Smithville</i>	721	PF	PF	nPF	nPF	nPF	
<i>Manufacturing, Bastrop</i>	199	nPF	nPF	nPF	nPF	nPF	

The only change on this table was to change the “nPF” in the Conservation column to “PF” for Creedmoor-Maha WSC.

Table 5-A-2 Region K Potentially Feasible WMS Screening

Adding an Item 136 at end of Conservation Projects to include the Creedmoor-Maha WSC and the adding the following highlighted information into the screening matrix table:

Attachment D: Summary of Proposed
 Changes to the 2016 Region K Water Plan
 September 29, 2016

No.	Water Management Strategy	WUG	Strategy Description	Addressing A Need	Total Strategy Costs \$
136	Conservation	Creedmoor-Maha WSC	Conservation- Water Main Line Replacement and Installation of Booster Pump	Yes	\$14,337,580

Continued...

Annual Strategy Costs (\$)	Cost Of Water (\$)	Max Yield AFY	Starting Decade	Basin	Interbasin Transfer (Yes/No)	Cost	Yield	Location
\$1,199,759	\$19,351.00	62	2020	Colorado & Guadalupe	No	-1	0	1

Continued...

Water Quality	Environmental And Natural Resources	Local Preference	Institutional Constraints	Impacts On Water Resources	Impact on Agricultural Resources	Impacts on Recreation
0	0	0	0	1	0	0

Continued...

Impacts on Other Management Strategies	Total Of Screening Factors	Quantified Environmental Impacts	Quantified Agriculture Impacts
0	1	Negligible impacts to streamflow and bay	Negligible agricultural impacts

End.

Appendix 5-B Recommended and Alternative Water Management Strategies Tables

Adding the Creedmoor-Maha WSC’s project information (highlighted) on pages 2 (Bastrop County) and 16 (Travis County) of the Excel spreadsheet and the adding of this information into the table changed the “Remaining Surplus/Shortage” totals which is also highlighted in yellow:

WUG Name	County	River Basin	Water Management Strategy Name	Source Name
Surplus/(Shortage)				
Creedmoor-Maha WSC	Bastrop	Colorado	Drought Management	5%
Creedmoor-Maha WSC	Bastrop	Colorado	Conservation	blank
Remaining Surplus/Shortage				
Surplus/(Shortage)				
Creedmoor-Maha WSC	Travis	Colorado	Drought Management	5%
Creedmoor-Maha WSC	Travis	Colorado	Saline Edwards ASR Project	Saline Edwards ASR
Creedmoor-Maha WSC	Travis	Colorado	New LCRA Contract	LCRA System
Creedmoor-Maha WSC	Travis	Colorado	Conservation	blank
Creedmoor-Maha WSC	Travis	Guadalupe	Conservation	blank
Remaining Surplus/Shortage				

Continued...

Water Management Strategies (ac-ft/yr)					
2020	2030	2040	2050	2060	2070
16	12	5	0	0	0
1	1	2	2	3	4
2	3	4	4	6	7
19	16	11	6	9	11
160	(182)	(284)	(412)	(550)	(686)
28	31	34	38	41	45
0	300	300	300	300	300
0	400	400	400	400	400
57	62	68	76	83	90
3	3	3	4	4	4
248	614	521	406	278	153

End.

Chapter 9

Table 9.1 Region K Recommended Water Management Strategies with Capital Costs

Adding the following highlighted information into Table 9.1 on page 9-3 of the current 2016 Region K Water Plan. No other changes are proposed for this table.

WMS Project Sponsor Region	Project Name	Project Sponsor Entity	Capital Cost
K	City of Austin –Rainwater Harvesting	AUSTIN	\$690,167,000
K	City of Austin Conservation	AUSTIN	\$41,434,437
K	Creedmoor-Maha WSC - Conservation	CREEDMOOR-MAHA WSC	\$14,337,580
K	Development of New Carrizo-Wilcox Aquifer Supplies – Bastrop	BASTROP	\$2,976,000
K	Development of New Carrizo-Wilcox Aquifer Supplies – Bastrop County Mining	MINING, BASTROP	\$3,391,000

NOTE: There will need to be some additions/changes made to the TWDB database. CMWSC’s consultants will work with AECOM, Region K’s consultant, to provide any needed information to accomplish that task.