

# Region K Public Meeting

January 10, 2018

Lower Colorado Regional Water Planning Group  
(Region K)



January 10, 2018

## Agenda

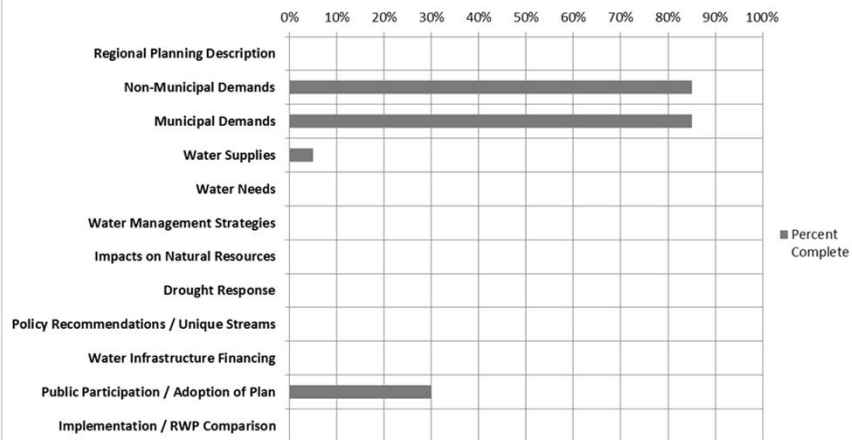
1. Call to Order
2. Welcome and Introductions
3. Member Terms
4. Nominating Committee Recommendations
5. Public Comments
6. Attendance Report
7. Consent Agenda
8. Texas Water Development Board

Agenda Item 9

# CONSULTANT STATUS REPORT

## 9. Consultant Status Report

2021 Region K Plan Task Percent Complete



All tasks are now partially or fully funded

## 9. Consultant Status Report Effort since last meeting (October 11, 2017)

- ▼ Population, Municipal, and Non-Municipal Demand Projections
  - Worked with the Population and Demand Committee to review and develop remaining recommended population, municipal demand, and non-municipal demand revisions to bring to the planning group for consideration.
  - Prepared draft revision request for submittal to TWDB, pending RWPG approval with any edits today.
  
- ▼ Water Supplies
  - Worked with Water Modeling Committee to review TWDB guidelines on determining surface water and groundwater availability numbers, discussed the Region K Cutoff Model and its assumptions, and determined potential updates to the modeling assumptions.
  - Prepared draft hydrologic variance request for submittal to TWDB, pending RWPG approval with any edits today.

## 9. Consultant Status Report Upcoming effort

- ▼ Submit Population and Water Demand revision request and Hydrologic Variance request to TWDB for review and approval.
  
- ▼ Update water availability and existing water supply numbers for Water User Groups and Wholesale/Major Water Providers. Coordinate with Water User Groups and others to do so.
  
- ▼ Work with Water Management Strategies Committee to determine any needed changes to our process for identifying potentially feasible water management strategies. Present process at public meeting for public comment.
  
- ▼ Begin TWDB database (DB22) entry of Region K numbers, when available.
  
- ▼ Prepare relevant chapter text updates, as able.

Agenda Item 10

## **POPULATION AND WATER DEMAND COMMITTEE REPORT**

### **10. Population and Water Demand Committee Report**

▼ **Objective Today:**

- Provide summaries of Population and Water Demand Committee meetings held on October 31<sup>st</sup> and December 7<sup>th</sup>.
- Ask the Population and Water Demand Committee members to approve the draft meeting minutes from December 7<sup>th</sup>.
- Present the population, municipal demand, and non-municipal demand revisions being requested for consideration by the RWPG. Allow for any discussion needed and answer questions from the RWPG.
- Allow for any needed edits to the draft revisions or draft revision request documents.
- Ask RWPG to approve revisions and submit revision request to TWDB – due this Friday. (Ag #11)
- Consider RWPG support for additional COA population request. (Ag #12)

## 10a. Population and Water Demand Committee Meeting Summary – October 31<sup>st</sup> meeting

### ▼ Meeting Objective:

- To discuss all potential revisions and determine recommendations to make to the RWPG.

### ▼ Municipal Revisions

- Reviewed potential revisions by county.
- Potential revisions based on WUG requests or significant difference in GPCD from city-boundary (draft projections) to utility-boundary (historical data provided by TWDB). Significant = 10 GPCD difference or more
- For GPCD revisions due to boundary changes, agreement to notify each utility to allow utility to comment.
- WUG requests not recommended by Committee due to lack of documentation: North San Saba WSC, Lago Vista

## 10a. Population and Water Demand Committee Meeting Summary – October 31<sup>st</sup> meeting

### ▼ Non-Municipal Revisions

- Irrigation Demands
  - Significant discussion of methodology for revising demand projections in Colorado, Wharton, and Matagorda Counties.
    - Memo from David Wheelock and Daniel Berglund calculating 2020 demands based on 2011 planted acreage and actual applied acre-foot per acre water rates, reduced based on recent irrigation efficiency improvements and current LCRA contracting.
    - David Lindsay presented information to the Committee regarding Irrigation Demand Metric and Associated Water Conservation Requirements Summary and Excerpts: Court Order from 1988 Adjudication of Water Rights; Certificates of Adjudication held by LCRA; LCRA's Water Management Plans (1989+) – specific reference to 5.25 acre-foot per acre maximum water use.
  - Committee agreed to schedule another meeting to discuss further.
- Steam-Electric Demands
  - Data error in Wharton County – moving facility demand from Region P to K.
  - Llano County – David Wheelock bringing request to next meeting.

## 10a. Population and Water Demand Committee Meeting Summary – October 31<sup>st</sup> meeting

### ▼ Non-Municipal Revisions

- Manufacturing Demands
  - TWDB provided data on 2015 potential unaccounted-for water use.
  - Committee looked at revisions to counties where the additional 2015 data pushed the peak historical year to 2015, rather than 2010-2014.
  - City of Austin requested modifications to Travis County manufacturing, based on city employee projections in various manufacturing sectors.
  - Committee agreed to recommend revisions to all applicable counties, except Travis County. Committee wanted to look at Travis County at the next meeting.
- Mining Demands
  - Bastrop County revisions recommended by Committee, based on Three Oaks Mine long-term limitations.
- Livestock Demands – no revisions

## 10a. Population and Water Demand Committee Meeting Summary – December 7<sup>th</sup> meeting

### ▼ Meeting Objective:

- To finalize all revision recommendations for RWPG to consider at January 10<sup>th</sup>, 2018 Region K meeting.

### ▼ Municipal Revisions

- Feedback from WUGs on changing GPCD based on utility-boundaries – five WUGs asked to keep the draft projection and not change: Bastrop County-Other, Kingsland WSC, City of San Saba, Travis County WCID 17, North Austin MUD No. 1.
- Waiting for confirmation from Leander on their GPCD number, to allow consistency between Region G and K. Committee agreed to not include a recommendation and let RWPG make determination.
- Small modifications to City of Austin numbers in Travis and Williamson Counties, based on discussion at October 31<sup>st</sup> meeting. Supplemental request for additional population to be considered by RWPG.

## 10a. Population and Water Demand Committee Meeting Summary – December 7<sup>th</sup> meeting

### ▼ Non-Municipal Revisions

- Manufacturing Demands
  - City of Austin provided additional data for manufacturing demand revisions in Travis County. Committee agreed to recommend revisions for Travis County.
- Steam-Electric Demands
  - Llano County – David Wheelock submitted a letter requesting Llano County demand projections use peak 2015-2016 water use, as facility was under reconstruction during the 2010-2014 period. Committee agreed to recommend.
- Irrigation Demands
  - Additional discussion of surface water demand methodology and 5.25 acre-foot per acre water use rate.
  - Committee recommendation to use surface water demand numbers calculated in 10/5/17 memo by David Wheelock/Daniel Berglund.

## 10a. Population and Water Demand Committee Meeting Summary – December 7<sup>th</sup> meeting

### ▼ Non-Municipal Revisions

- Irrigation Demands
  - Committee discussion of methodology for surface water use by other irrigation water rights in the lower three counties.
  - Committee discussion of methodology for groundwater use for irrigation in lower three counties.
  - Committee recommendation for average 2010-2014 water use for both of the above demand components – similar to TWDB draft projection methodology.
  - Committee recommendation of additional 2,400 acre-feet of demand for non-rice irrigation use for Lakeside Irrigation District – had not been included in 10/5/17 memo.
  - Committee recommendation to reduce irrigation demands for Colorado, Wharton, and Matagorda Counties by 2.69% per decade.
  - Committee recommendation for RWPG to look at conservation strategies for reducing irrigation demands.

### **10b. Approval of December 7<sup>th</sup> Meeting Minutes by Population and Water Demand Committee**

- ▼ Population and Water Demand Committee work may be complete, with no future meetings to approve minutes.
- ▼ Consider any edits to meeting minutes prior to approval.

### **10c. Presentation of Committee Recommendations for Population and Water Demand Revisions**

- ▼ Draft Revision Request separated into two memorandums – one municipal and one non-municipal – provided to P&WD Committee and RWPG for review and comment. Memorandums detail requested revisions.
- ▼ Municipal Revisions – by County
- ▼ Non-Municipal Revisions – by Water Use Category
- ▼ This presentation will summarize requests, unless there are any questions or additional discussion is desired by RWPG members.



## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

- Many of the following requested revisions involve changing the base GPCD (gallons per capita daily) for a WUG from the city-boundary GPCD to the utility-boundary GPCD. City boundary GPCDs were carried over from last Plan and do not reflect new utility boundaries. This is the reason for the change unless otherwise noted.
- Revisions to population and base GPCD numbers result in associated revisions to water demands.
- Bastrop County
  - No population revisions
  - Revise base GPCD for City of Bastrop (from 191 to 175)
- Blanco County
  - No population revisions
  - Revise base GPCD for City of Blanco (from 161 to 141)

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

- Burnet County
  - Revise population for
    - County-Other (increase to balance County total from other changes)
    - Granite Shoals (decrease due to lower anticipated growth rate)
    - Meadowlakes MUD (decrease due to buildout conditions in 2020 decade)
  - Revise base GPCD for
    - City of Burnet (from 231 to 209)
    - Cottonwood Shores (from 154 to 166)
    - Horseshoe Bay (from 569 to 420)
  - Change WUG name for Chisholm Trail SUD to Georgetown

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

- Colorado County
  - No population revisions
  - Revise base GPCD for City of Weimar (from 229 to 214)
- Fayette County
  - Revise population for
    - County-Other (decrease to balance County total from other change)
    - Fayette County WCID Monument Hill (small increase in 2020 only based on TCEQ WDD listed population)
  - Revise base GPCD for County-Other (from 112 to 126)
  - Revise base GPCD for Fayette County WCID Monument Hill (from 144 to 226 based on submitted water use reports)
  - Revise base GPCD for Fayette WSC (from 119 to 134)
  - Revise base GPCD for La Grange (from 154 to 166)

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

- Gillespie County – no revisions
- Hays County
  - Revise population for
    - Austin (increase based on their City Demographer's projections)
    - County-Other (decrease to balance County total from other changes)
    - Dripping Springs WSC (increase based on input detailing current meters and pending projects and contracted projects, WTCPUA wholesale customer)
    - West Travis County Public Utility Agency (decrease based on numbers requested by WUG, meeting with WUG, and breakdown of retail/wholesale customers)
  - Revise base GPCD for Austin (from 157 to 162)
  - Revise base GPCD for West Travis County PUA (from 391 to 321)

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

- Llano County
  - No population revisions
  - Revise base GPCD for Horseshoe Bay (from 569 to 420)
  - Revise base GPCD for City of Llano (from 226 to 211)
- Matagorda County
  - No population revisions
  - Revise base GPCD for Markham MUD (from 112 to 95)
  - Revise base GPCD for Palacios (from 130 to 119)
- Mills County – no revisions

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

- San Saba County
  - No population revisions
  - Revise base GPCD for Richland SUD (from 135 to 217)
- Travis County
  - Requesting overall increase to county population of 1.5% of total Region K population for each decade. Region K currently shows an underprojection of 1.5% as compared to Census Data.
  - Requesting inclusion of Aqua Texas – Rivercrest as a Sub-WUG to County-Other. Region K has developed population, base GPCD, and water demand projections for this Sub-WUG, pulled out of County-Other.
  - TWDB staff have developed population, base GPCD, and water demand projections for two new WUGs – Rough Hollow in Travis County CRU and Sweetwater CRU. Region K is not requesting any revisions for these.

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

#### – Travis County

- Revise population for
  - Austin (increase based on their City Demographer's projections, within the county total increase)
  - County-Other (balance out county total based on other changes)
  - Lakeway MUD (decrease based on submitted LUE connection data)
  - Leander (increase and decrease based on submitted population and growth rates)
  - Manville WSC (decrease based on current population and growth rates from WUG)
  - Oak Shores Water System (increase and decrease based on data from WUG)
  - Pflugerville (decrease beginning in 2030, expect buildout in 2060)
  - Sunset Valley (decrease based on calculation submitted by WUG)
  - Travis County WCID 17 (increase to 2020 population, based on 2016 population)
  - Travis County WCID Point Venture (increase to 2020, 2030 based on historical)
  - Wells Branch MUD (increase based on data submitted by WUG)
  - West Travis County PUA (increase based on data and coordination with WUG)

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

#### – Travis County

- Revise base GPCD for
  - Austin (from 157 to 162)
  - Barton Creek West WSC (from 272 to 299)
  - Barton Creek WSC (from 649 to 675)
  - Cottonwood Creek MUD 1 (from 80 to 67)
  - Hurst Creek MUD (from 447 to 504)
  - Jonestown WSC (from 138 to 161)
  - Lakeway MUD (from 301 to 234, based on provided potable water operations for 2011)
  - Shady Hollow MUD (from 151 to 171)
  - Sunset Valley (from 312 to 362)
  - Travis County MUD 10 (from 260 to 199)
  - Travis County MUD 2 (from 142 to 122)
  - Travis County MUD 4 (from 755 to 554)

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

#### – Travis County

- Revise base GPCD for
  - Travis County WCID 10 (from 319 to 419)
  - Travis County WCID 19 (from 628 to 595)
  - Travis County WCID Point Venture (from 283 to 228, based on 2015 historical GPCD number being more in line with population revisions)
  - Wells Branch MUD (from 107 to 75, based on updated existing population)
  - West Travis County PUA (from 391 to 321)

#### – Wharton County

- No population revisions
- Revise base GPCD for County-Other (from 126 to 128, consistent with Region P)

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Municipal Revisions – by County

#### – Williamson County

- Revise population for
  - Austin (increase based on moving 97% of County-Other under Austin)
  - County-Other (decrease based on moving 97% of County-Other under Austin)
- Revise base GPCD for
  - Austin (from 157 to 162)
  - Wells Branch MUD (from 107 to 75, based on updated existing total population in Travis and Williamson Counties)

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Non-Municipal Revisions – by Water Use Category

#### – Mining Demands

- Revise Bastrop County demands, based on Three Oaks Mine lignite coal mining and expectations that it will only occur for the next 25 years.
- Revision to 2050-2070 only.

RWPG	County	WUG Name	DRAFT	2020	2030	2040	2050	2060	2070
K	BASTROP	MINING	Demand (AF)	2,884	6,813	7,498	8,263	9,085	9,996
K	BASTROP	MINING	REVISED	2020	2030	2040	2050	2060	2070
K	BASTROP	MINING	Demand (AF)	2,884	6,813	7,498	5,998	399	476
K	BASTROP	MINING	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	BASTROP	MINING	Demand (AF)	0	0	0	-2,265	-8,686	-9,520

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Non-Municipal Revisions – by Water Use Category

#### – Steam-Electric Demands

- Revise Llano County based on better water use data.

RWPG	County	WUG Name	DRAFT	2020	2030	2040	2050	2060	2070
K	LLANO	STEAM-ELECTRIC	Demand (AF)	6	6	6	6	6	6
K	LLANO	STEAM-ELECTRIC	REVISED	2020	2030	2040	2050	2060	2070
K	LLANO	STEAM-ELECTRIC	Demand (AF)	1,748	1,748	1,748	1,748	1,748	1,748
K	LLANO	STEAM-ELECTRIC	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	LLANO	STEAM-ELECTRIC	Demand (AF)	1,742	1,742	1,742	1,742	1,742	1,742

- Revise Wharton County based on data error with facility location in wrong region.

RWPG	County	WUG Name	DRAFT	2020	2030	2040	2050	2060	2070
K	WHARTON	STEAM-ELECTRIC	Demand (AF)	5,465	5,465	5,465	5,465	5,465	5,465
K	WHARTON	STEAM-ELECTRIC	REVISED	2020	2030	2040	2050	2060	2070
K	WHARTON	STEAM-ELECTRIC	Demand (AF)	7,901	7,901	7,901	7,901	7,901	7,901
K	WHARTON	STEAM-ELECTRIC	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	WHARTON	STEAM-ELECTRIC	Demand (AF)	2,436	2,436	2,436	2,436	2,436	2,436

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Non-Municipal Revisions – by Water Use Category

#### – Manufacturing Demands

- Revise Bastrop, Fayette, Gillespie, Hays, and Williamson Counties based on addition of 2015 unaccounted for manufacturing water use.
- Revise Travis County based on addition of 2015 unaccounted for manufacturing water use and City of Austin requested increases.

RWPG	County	WUG Name	DRAFT	2020	2030	2040	2050	2060	2070
K	BASTROP	MANUFACTURING	Demand (AF)	104	119	119	119	119	119
K	BASTROP	MANUFACTURING	REVISED	2020	2030	2040	2050	2060	2070
K	BASTROP	MANUFACTURING	Demand (AF)	188	215	215	215	215	215
K	BASTROP	MANUFACTURING	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	BASTROP	MANUFACTURING	Demand (AF)	84	96	96	96	96	96
RWPG	County	MANUFACTURING	DRAFT	2020	2030	2040	2050	2060	2070
K	FAYETTE	MANUFACTURING	Demand (AF)	325	363	363	363	363	363
K	FAYETTE	MANUFACTURING	REVISED	2020	2030	2040	2050	2060	2070
K	FAYETTE	MANUFACTURING	Demand (AF)	396	442	442	442	442	442
K	FAYETTE	MANUFACTURING	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	FAYETTE	MANUFACTURING	Demand (AF)	71	79	79	79	79	79

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Non-Municipal Revisions – by Water Use Category

#### – Manufacturing Demands

RWPG	County	MANUFACTURING	DRAFT	2020	2030	2040	2050	2060	2070
K	GILLESPIE	MANUFACTURING	Demand (AF)	21	25	25	25	25	25
K	GILLESPIE	MANUFACTURING	REVISED	2020	2030	2040	2050	2060	2070
K	GILLESPIE	MANUFACTURING	Demand (AF)	77	93	93	93	93	93
K	GILLESPIE	MANUFACTURING	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	GILLESPIE	MANUFACTURING	Demand (AF)	56	68	68	68	68	68
RWPG	County	MANUFACTURING	DRAFT	2020	2030	2040	2050	2060	2070
K	HAYS	MANUFACTURING	Demand (AF)	149	174	174	174	174	174
K	HAYS	MANUFACTURING	REVISED	2020	2030	2040	2050	2060	2070
K	HAYS	MANUFACTURING	Demand (AF)	277	324	324	324	324	324
K	HAYS	MANUFACTURING	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	HAYS	MANUFACTURING	Demand (AF)	128	150	150	150	150	150
RWPG	County	MANUFACTURING	DRAFT	2020	2030	2040	2050	2060	2070
K	TRAVIS	MANUFACTURING	Demand (AF)	11,597	13,085	13,085	13,085	13,085	13,085
K	TRAVIS	MANUFACTURING	REVISED	2020	2030	2040	2050	2060	2070
K	TRAVIS	MANUFACTURING	Demand (AF)	13,164	14,853	18,300	19,492	20,684	21,877
K	TRAVIS	MANUFACTURING	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	TRAVIS	MANUFACTURING	Demand (AF)	1,567	1,768	5,215	6,407	7,599	8,792

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Non-Municipal Revisions – by Water Use Category

#### – Manufacturing Demands

RWPG	County	MANUFACTURING	DRAFT	2020	2030	2040	2050	2060	2070
K	WILLIAMSON	MANUFACTURING	Demand (AF)	3	4	4	4	4	4
<b>K</b>	<b>WILLIAMSON</b>	<b>MANUFACTURING</b>	<b>REVISED</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
K	WILLIAMSON	MANUFACTURING	Demand (AF)	25	30	30	30	30	30
K	WILLIAMSON	MANUFACTURING	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	WILLIAMSON	MANUFACTURING	Demand (AF)	22	26	26	26	26	26

#### – Livestock Demands

- No revisions

## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Non-Municipal Revisions – by Water Use Category

#### – Irrigation Demands

- Revise Travis County based on data error in historical water use.

RWPG	County	IRRIGATION	DRAFT	2020	2030	2040	2050	2060	2070
K	TRAVIS	IRRIGATION	Demand (AF)	6,010	6,010	6,010	6,010	6,010	6,010
<b>K</b>	<b>TRAVIS</b>	<b>IRRIGATION</b>	<b>REVISED</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
K	TRAVIS	IRRIGATION	Demand (AF)	4,816	4,816	4,816	4,816	4,816	4,816
K	TRAVIS	IRRIGATION	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	TRAVIS	IRRIGATION	Demand (AF)	-1,194	-1,194	-1,194	-1,194	-1,194	-1,194

- Revise Colorado, Matagorda, and Wharton Counties based on historical data used to develop draft projections being not representative of a dry/drought year demand due to emergency curtailment of surface water from the Colorado River in 2012-2015. Decrease decadal demands by 2.69% instead of keeping flat, which is consistent with the 2017 State Water Plan projections.



## 10c. Presentation of Committee Recommendations for Population and Water Demand Revisions

### ▼ Non-Municipal Revisions – by Water Use Category

#### – Irrigation Demands

RWPG	County	IRRIGATION	DRAFT	2020	2030	2040	2050	2060	2070
K	COLORADO	IRRIGATION	Demand (AF)	123,682	123,682	123,682	123,682	123,682	123,682
<b>K</b>	<b>COLORADO</b>	<b>IRRIGATION</b>	<b>REVISED</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>K</b>	<b>COLORADO</b>	<b>IRRIGATION</b>	<b>Demand (AF)</b>	<b>173,112</b>	<b>168,455</b>	<b>163,924</b>	<b>159,514</b>	<b>155,223</b>	<b>151,048</b>
K	COLORADO	IRRIGATION	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	COLORADO	IRRIGATION	Demand (AF)	49,430	44,773	40,242	35,832	31,541	27,366
RWPG	County	IRRIGATION	DRAFT	2020	2030	2040	2050	2060	2070
K	MATAGORDA	IRRIGATION	Demand (AF)	109,505	109,505	109,505	109,505	109,505	109,505
<b>K</b>	<b>MATAGORDA</b>	<b>IRRIGATION</b>	<b>REVISED</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>K</b>	<b>MATAGORDA</b>	<b>IRRIGATION</b>	<b>Demand (AF)</b>	<b>191,588</b>	<b>186,434</b>	<b>181,419</b>	<b>176,539</b>	<b>171,790</b>	<b>167,169</b>
K	MATAGORDA	IRRIGATION	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	MATAGORDA	IRRIGATION	Demand (AF)	82,083	76,929	71,914	67,034	62,285	57,664
RWPG	County	IRRIGATION	DRAFT	2020	2030	2040	2050	2060	2070
K	WHARTON	IRRIGATION	Demand (AF)	147,543	147,543	147,543	147,543	147,543	147,543
<b>K</b>	<b>WHARTON</b>	<b>IRRIGATION</b>	<b>REVISED</b>	<b>2020</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>
<b>K</b>	<b>WHARTON</b>	<b>IRRIGATION</b>	<b>Demand (AF)</b>	<b>189,110</b>	<b>184,023</b>	<b>179,073</b>	<b>174,256</b>	<b>169,569</b>	<b>165,008</b>
K	WHARTON	IRRIGATION	DIFFERENCE	2020	2030	2040	2050	2060	2070
K	WHARTON	IRRIGATION	Demand (AF)	41,567	36,480	31,530	26,713	22,026	17,465

Region K

Page 33

**AECOM**

## 10d. Presentation of Minor Additional Revisions Received after Committee Met on December 7th

### ▼ For consideration by RWPG:

- Revise base GPCD for Leander (from 114 to 128 based on discussions with WUG, TWDB, and Region G)
- Do not revise base GPCD for Matagorda County WCID 6 (request to keep draft base GPCD instead of revising to utility-boundary GPCD was received after Committee met)
- Do not revise base GPCD for Sunrise Beach Village (based on historical data and coordination with WUG, consultant recommends making no revisions to this WUG's projections)

Region K

Page 34

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Agenda Item 11

## **DISCUSSION AND TAKE ACTION ON REVISIONS TO DRAFT PROJECTIONS**

### **11. Discuss and Take Action on Revisions to TWDB Projections**

- ▼ Consider edits and any additional discussion.
  
- ▼ Consider action to approve revisions to population, municipal demand, and non-municipal demand projections, as discussed today with any identified edits, and authorize consultant to submit revision request to TWDB.
  
- ▼ Consider action to authorize consultant to continue any needed discussions with TWDB staff regarding the revisions, on behalf of the RWPG.

Agenda Item 12

## CITY OF AUSTIN UPWARD REVISION REQUEST

### 12. Discuss and Take Action on City of Austin Request to TWDB for Additional Region K Population

- ▼ City of Austin's demographic projections are much higher than Region K's numbers show.
- ▼ Austin would like Region K's support to submit a request to TWDB to incorporate this additional population growth into Region K's population projections.

Revised Draft\* Retail Population Comparison between COA and Region K revised projections, with breakdown of revised Region K Pop.

WUGs	2020	2030	2040	2050	2060	2070
Region K total pop. projections with submitted revisions	1,039,588	1,238,017	1,438,692	1,584,433	1,707,636	1,870,419
COA retail pop. projections	1,050,239	1,280,239	1,510,239	1,734,630	1,973,008	2,235,090
Difference in Projections	(10,651)	(42,222)	(71,547)	(150,197)	(265,372)	(364,671)

COA proposed revision request: increase Region K population (to be added to the Austin WUGs) so TWDB and Austin City demographer projections better align.

Agenda Item 13

## **WATER MODELING COMMITTEE REPORT**

### **13. Water Modeling Committee Report**

▼ Objective Today:

- Present summary of December 13<sup>th</sup> Committee Meeting
- Informational presentation on surface water modeling and the Region K Cutoff Model
- Presentation of Committee recommendations for updates to the assumptions incorporated into the Region K Cutoff Model for use in determining surface water availability numbers in the 2021 Plan.
- Presentation of the associated hydrologic variance request for submittal to TWDB.
- Ask RWPG to approve recommended updates to the Cutoff Model assumptions and the hydrologic variance request, and authorize submittal of the request to TWDB. (Ag # 14)

### 13a. Water Modeling Committee Meeting Summary – December 13<sup>th</sup> meeting

- ▼ Defined purpose of Water Modeling Committee
  - Review both surface water and groundwater information.
  - Evaluate modeling assumptions and recommend changes needed for this planning cycle.
  - Review requests to TWDB for use of alternative models
  - Review results of modeling and recommend actions to RWPG for both water supplies and water management strategies (work with Water Management Strategies Committee)
  
- ▼ Reviewed TWDB guidelines for surface water availability modeling

### 13a. Water Modeling Committee Meeting Summary – December 13<sup>th</sup> meeting

- ▼ Reviewed surface water model used by Region K last cycle (Region K Cutoff Model) and its assumptions.
  
- ▼ Identified which Region K Cutoff Model assumptions should be updated for this cycle.
  
- ▼ Discussed planning timeline with respect to TWDB approvals, modeling efforts, and deliverable due dates.
  
- ▼ Agreed to meet again immediately prior to this Region K meeting for an informational presentation on surface water modeling, and for any final discussion before taking action to recommend model assumption updates to RWPG for consideration.

# Region K Meeting Agenda Item 13b.

January 10, 2018

Surface Water Modeling and Region K Cutoff Model Presentation



January 10, 2018

## SURFACE WATER MODELING 101

## Surface Water Modeling 101

### ▼ Texas Water Development Board Planning Guidelines

- RWPGs shall evaluate water source availability and existing water supplies during drought conditions for entities including Water User Groups and Wholesale Water Providers...
- All surface water availability shall be based on Water Availability Model (WAM) runs.
- Regional water planning surface water availability shall be evaluated using the Texas Commission on Environmental Quality's (TCEQ) WAMs; specifically the unmodified Run #3 version
  - All water rights at full authorization
  - All applicable permit conditions, such as flow requirements
  - No return flows
- Include anticipated sedimentation into the WAM for major reservoirs

## Surface Water Modeling 101

### ▼ What is a Water Availability Model (WAM)?

- According to TCEQ, "A water availability model is a computer-based simulation predicting the amount of water that would be in a river or stream under a specified set of conditions. The model used by TCEQ consists of two parts:
  - *the modeling program, "WRAP"(Water Rights Analysis Package)*
  - *text files that contain basin-specific information for WRAP to process (input file or WAM)"*
- There are 15 major river basins and 8 designated coastal basins in Texas. Each basin is represented in a WAM available from TCEQ.
- WAMs and their modeling program are free and available to the public.

## Surface Water Modeling 101

### ▼ How is the WAM used?

- According to TCEQ, “TCEQ staff use the models in evaluating water rights applications to help determine if water would be available for a newly requested water right or amendment, or if an amendment might affect other water rights.
  - **Full Authorization** simulation model (Run #3):
    - all water rights utilize their maximum authorized amounts
    - used to evaluate applications for *perpetual* water rights and amendments
  - **Current Conditions** simulation model (Run #8):
    - includes return flows
    - used to evaluate applications for *term* water rights and amendments
- If water is available, these models estimate how *often* water would be available. For example, would it be available only during very wet times, or would it also be available during very dry times?”
- Regional water planning uses the Full Authorization model (Run #3) to look at availability of existing water rights for determining existing water supplies.
  - May look at new water rights for water management strategy evaluations

## Prior Appropriation Doctrine and Naturalized Flows

- Main input file containing water rights data is read.
- Water rights are ranked in priority order.
- Various other data manipulations are performed.
- Flow distribution file containing watershed parameters is read.
- Watershed parameters are determined for incremental watersheds.

### *Annual and Monthly Simulation Loop*

- Naturalized flow and net evaporation rates are read or activated.
- Naturalized flows are transferred from gaged to ungaged sites.

### *Water Right Priority Loop*

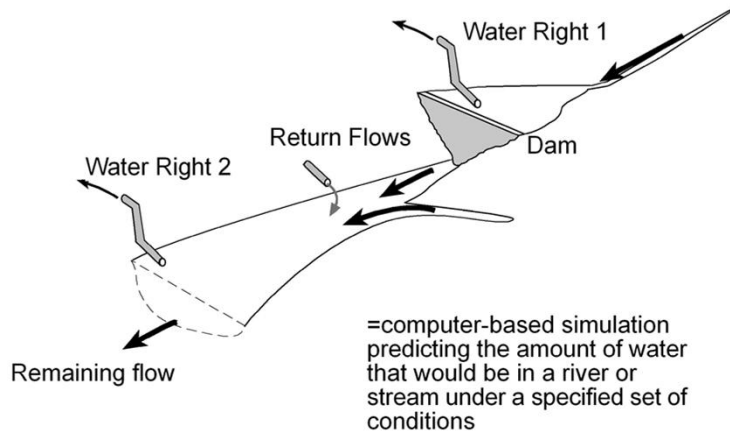
1. Diversion, instream flow, or hydropower target is set.
2. Water availability is determined from available flow array.
3. Operating decisions and water balance in an iterative loop.
4. Available stream flow array is adjusted for effects of right.
5. Simulation results for this water right are recorded.

- Simulation results for control points are recorded.
- Simulation results for reservoirs/hydropower projects are recorded.

Figure 3.1 Outline of Simulation Performed by SIM



## Water Availablely Model (WAM)



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## Surface Water Modeling 101

### ▼ What does the WAM look like?

- The model itself is made up of several text files
  - \*name\*.dat – main data input file
  - \*name\*.dis – watershed parameters for distributing flows input file
  - \*name\*.eva – monthly net evaporation minus precipitation input file
  - \*name\*.fad – monthly naturalized flow adjustment input file
  - \*name\*.flo (or .inf) – monthly naturalized streamflow input file

```

** Colorado WAM Changes Co WAM readme.txt
*****
*****Please maintain readme.txt in the following style:
**** - Date When Completed - If No WAMs Use Unrated Date and note
**** - Applicatn Name, Application No., and Water Section and an Assistance
00/00/00
D011 - Brief description of analysis conducted -
**** - Additions/Changes to *.dis file
**** - Additions/Changes to *.dat file
*****
2/27/2007, Patty Cervantes, CDA 14-998A, bh
and doing use and show new diversion projects and two off-channel reservoirs
upstream for short term contract in RUN 8
Changes to *.dat file:
CPW4000 040790      6      810000      0.000002
CPW4070 040790      6      810000      0.0013021
CPW4070 040790      6      810000      0
CPW4070 040790      6      810000      0
CPW4070 040790      6      810000      0
CPW4070 040790      6      810000      0.000002
CPW4070 040790      6      810000      0.000002
W040741 100.0      188-019611231      61400998001
E14009980098001
W040730 189.0      188-019611231      61400998001
E14009980098001
Changes to *.dis file:
DIS0474 000000      1      820000
W040741 510.48      70.23      19.73
00/00/00, 00 00001, CDA 14-0488C, bh
river and canals 172acFT from 2479 to 2488, upstream to downstream, existing CP
Changes to *.dat file:
W040741 129.0      188-019611231      61402479001
E140247900129001
W040740 15.0      188-019611231      61402479002
E140247900129001
W040470 239.0      188-019611231      61402488001
E14024880012488001
W040465 100.0      188-019611231      61402488002
E14024880012488001
W040470 0.0      188-019611231      61402488001
E14024880012488001
SO
BACKUP
*****
**Prepared by Peter Sanyal Corp., App. No. 14-15730, WY04/2006, PW
**Full Timing Times were added to *.dis file
DIS1100 120000      0      620000      100000      140000
W041700 4402.01      300.00      25.88
**Full Timing Times were added to *.dat file
CP121100 121100      6      610000      0
CP12100 121100      6      610000      0
W041700 40.0      MW19100131      Page 1      61401372001
    
```

Region K

Page 50

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## Surface Water Modeling 101

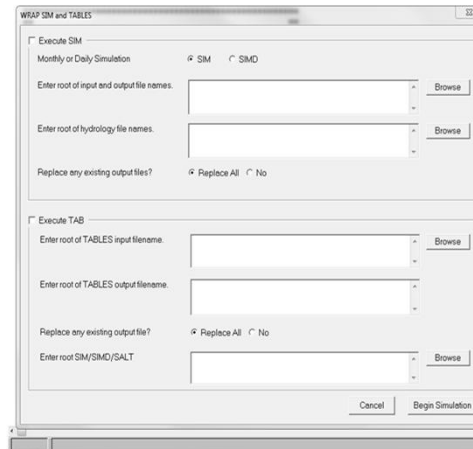
### ▼ How do you run the WAM?

- Use WordPad, NotePad, or Word to create or edit input files
- Place all files in one folder (directory) along with the modeling program WRAP
- WRAP – Water Rights Analysis Package
  - Developed by Dr. Ralph Wurbs at Texas A&M University, WRAP is designed to simulate management and use of the streamflow and reservoir storage resources of a river basin, or multiple basins, under a prior appropriation water rights permit system.
  - A simulation (model run) is performed with the SIM program (monthly time step model for simulating water resources) using the input files in the same folder (directory).
  - The TABLES program is a post-simulation program used to organize the simulation results.
  - SIM and TABLES are available as individual executable files, or a Windows Interface program WinWRAP is available to run the programs together.

## Surface Water Modeling 101

### ▼ WinWRAP

- Enter the name of the SIM and/or TABLES input file(s) and hit “Begin Simulation”.
- The TABLES input file lets you specify what output you want to see for particular water rights, reservoirs, etc.
- TABLES output can provide monthly results for each year in the period of record.
- Use Excel to organize, perform calculations, or format results.



## Surface Water Modeling 101

▼ Where can I find more information?

- Texas Water Resources Institute article on WRAP:  
<http://twri.tamu.edu/publications/txh2o/summer-2013/united/>
- TCEQ Water Availability Models:  
[https://www.tceq.texas.gov/permitting/water\\_rights/wr\\_technical-resources/wam.html](https://www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/wam.html)
- Water Rights Analysis Package (WRAP) Modeling System (contains downloads of software and user manuals):  
<https://ceprofs.civil.tamu.edu/rwurbs/wrap.htm>

## REGION K CUTOFF MODEL

## Region K Cutoff Model

### ▼ History

#### – 2006 Region K Water Plan

- TWDB required RWPGs to calculate availability of existing surface water supplies using the TCEQ WAM Run 3 model. (new requirement)
- Request from Region F to use a modified version of the model.
  - Region F is on the Colorado River upstream of Region K.
  - TCEQ Colorado River WAM Run 3 indicated a lack of water available on a firm yield basis for several Region F reservoirs as compared to previous planning cycle.
  - Potential “quick fix” needed to address situation with lack of funding available and TWDB deadline approaching.
  - Region F developed a modified model called the “No Call” WAM Run 3.
  - Region K also used the “No Call” model and adopted the adjusted numbers, although there were “concerns” about the model.

## Region K Cutoff Model

### ▼ History

#### – 2011 Region K Water Plan

- Special studies during first biennium of planning cycle
  - Region K received funding to review concerns of the “No Call” model and the TCEQ WAM Run 3 model, and determine if a more accurate alternative version of the TCEQ WAM Run 3 model could be created and approved by TWDB for use in determining surface water availabilities for Region K planning.
  - Consultants for Region K, City of Austin, and LCRA worked together to aid Region K in making the decision on modeling alternatives.
  - Several model alternatives were evaluated, with a memorandum providing details on the description of each model and their advantages and disadvantages.

## Region K Cutoff Model

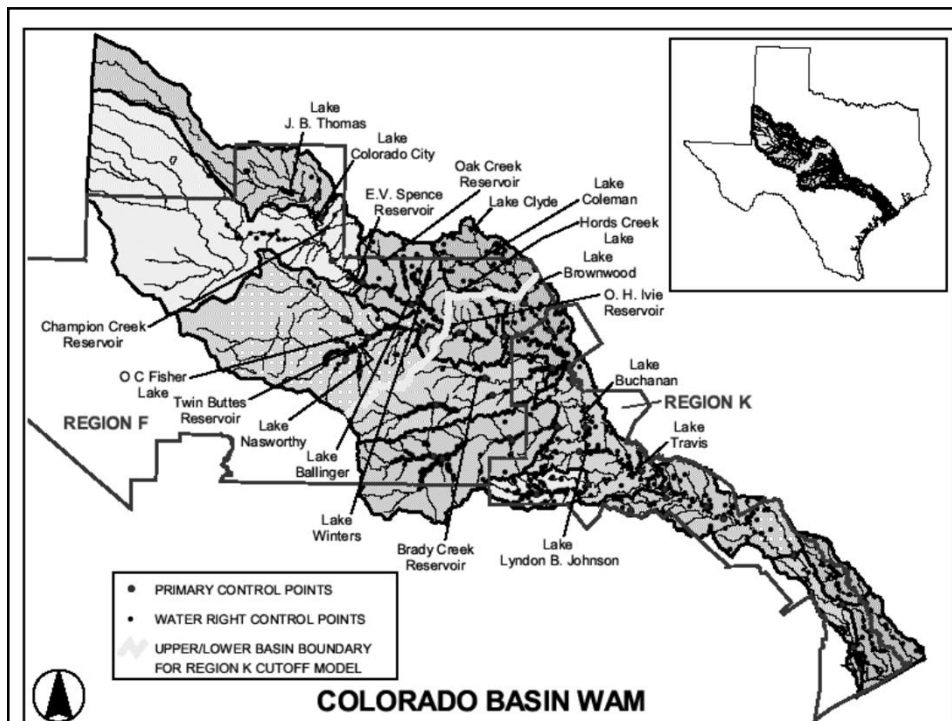
### – 2011 Region K Water Plan – Special Studies

– Details are provided in the Surface Water Availability Modeling Study on the TWDB website under the 2011 Plan Region-Specific Studies for Region K.

– [http://www.twdb.texas.gov/waterplanning/rwp/planningdocu/2011/r3p1/special\\_studies.asp#region-k](http://www.twdb.texas.gov/waterplanning/rwp/planningdocu/2011/r3p1/special_studies.asp#region-k)

– Region K WAM Run 3 Cutoff Model was chosen by Region K and approved by TWDB.

- » Modified version of TCEQ WAM Run 3 Model
- » Colorado River Basin is divided into two parts
- » Dividing point is dams at Ivie Reservoir and Lake Brownwood
- » All water rights in upper basin are considered senior to all water rights in lower basin – still maintain priority order among water rights in each basin



## Region K Cutoff Model

### • Why is the Cutoff Model better?

- This model provides a closer approximation of reality with regard to water rights operations in the upper basin above Ivie and Brownwood Reservoirs and the limited passage of streamflows from the upper basin for downstream senior water rights than either the TCEQ WAM Run 3 or the “No Call” Run 3 WAM, reflecting LCRA legal agreements with CRMWD, Brownwood, San Angelo, and Austin.
- Applied modeling assumptions are more representative of the basin’s real world operation, which is a better tool for planning.
- Different assumptions used in planning models versus permitting models do not imply the other is not a correct representation of the model for its own task.
- The Cutoff Model can be updated each planning cycle using the latest version of the TCEQ WAM Run 3 and modifying assumptions using the best available information.

## Region K Cutoff Model

### ▼ History

#### – 2016 Region K Water Plan

- Requested hydrologic variance to TWDB to use the Region K Cutoff Model to determine surface water availabilities and evaluate water management strategies. TWDB approved.
- Extended naturalized flow period from 1940-1998 to 1940-2009 earlier in planning cycle, and then to 1940-2013 late in planning cycle to capture available data from the recent drought.
- Updated 1999 LCRA Water Management Plan components to 2010 LCRA Water Management Plan.
- Included certain components, such as return flows and interruptible water supplies, only in the strategy version of the model. (same as 2011 Plan model)
- All models looked at reservoir sedimentation by decade.

## Region K Cutoff Model

### ▼ 2021 Region K Water Plan

- Looking to request to TWDB to use Region K Cutoff Model again.  
Updating assumptions based on best available data.

END OF 13B. PRESENTATION

## 13c. Presentation of Committee Recommendations for Updates to the Region K Cutoff Model Assumptions

- ▼ The Region K Cutoff Model is used to determine the volume of water available from a particular surface water source, such as the Highland Lakes or the Colorado River for a particular water right during drought-of-record conditions.
- ▼ These available volumes are the maximum amount of existing water Region K can use to provide current or future water supplies.
- ▼ Most of the recommended updates to the modeling assumptions are based on new or changed conditions or available data since the last planning cycle or to provide clarification.
- ▼ Three columns identify in which type of analysis (supply or strategy) the assumption will be incorporated.
- ▼ See Table A Handout at end of Agenda #13 packet.

**TABLE A  
SUMMARY OF REGION K CUTOFF MODEL MODELING ASSUMPTIONS  
REGARDING SUPPLY AND STRATEGY ANALYSES  
FOR 2021 REGIONAL PLAN DEVELOPMENT**

NO.	ASSUMPTION	(1)	(2)		Change from 2016 Planning Cycle
		SUPPLY ANALYSIS	STRATEGY ANALYSIS		
		Region K Cutoff Model by Decade	TCEQ Full-Basin WAM Run 3	Region K Cutoff Model by Decade	
1	Use TCEQ Full-Basin WAM Run 3 Without Modification for New Appropriation Water Supply Strategies Analysis	No	Yes	No	No Change
2	All Rights at and Above Ivie-Brownwood Senior to Downstream Rights (maintaining relative date priority in rights upstream)	Yes	No	Yes	No Change
3	Use Expanded 1940-2016 Naturalized Flows	Yes	No	Yes	Expanded hydrology period to 2016
4	Determine Firm Yield for Buchanan-Travis Reservoir System	Yes	No	No	No Change
5	Use Sediment-Adjusted Future Reservoir Storage by Decade	Yes	No	Yes	No Change
6	Use 2015 Water Management Plan Environmental Flow Criteria	No*	Yes	Yes	Changed "2010" to "2015"; Added a footnote for clarification
7	Set All Water Right Demands at Authorized Diversion Amounts	Yes	Yes	No	No Change
8	Include Provisions of LCRA-STP 2006 Settlement Agreement	Yes	No	Yes	No Change
9	Include Operating Rules for Lakes Buchanan and Travis to Reflect Combined Firm Yield Operation	Yes	Yes	Yes	Revised "Maintain Consistent Levels of Drawdown in the Lakes" to say "Reflect Combined Firm Yield Operations"
10	Include Latest Approved LCRA Permits and Amendments (as of December 2017)	Yes	Yes	Yes	Added "(as of December 2017)"
11	Include 2015 Water Management Plan Highland Lakes Interruption Water	No	Yes	Yes	Changed "2010" to "2015"
12	Adjust 2015 Water Management Plan Environmental Flow Triggers (Decadal)	No	No	Yes	Changed "2010" to "2015"; Added "(Decadal)" for clarification
13	Set All Region K Municipal and Industrial Water Right Demands at Projected Future Demand Amounts by Decade	No	No	Yes	Expanded "M&I" to "Municipal and Industrial" for clarification
14	Modify Curtailment of Highland Lakes Interruption Water as Necessary to Satisfy LCRA Future Firm Municipal and Industrial Demands	No	No	Yes	Expanded "M&I" to "Municipal and Industrial" for clarification
15	Set LCRA Lower Basin Irrigation Demands Equal to Projected Future Demands by Decade	No	No	Yes	Removed "Weather Variable" after the word "Future"
16	Include LCRA Irrigation Return Flows to the Colorado River	No	No	Only As A Strategy	No Change
17	Include Return Flows from Austin Wastewater Treatment Plants	No	Only As A Strategy	Only As A Strategy	No Change
18	Include Other Municipal and Industrial Return Flows	No	Only As A Strategy	Only As A Strategy	Expanded "M&I" to "Municipal and Industrial" for clarification
19	Include Reuse Provisions and Environmental Flow Requirements of LCRA-Austin 2007 Settlement Agreement	No	Only As A Strategy	Only As A Strategy	No Change

\* The LCRA 2015 Water Management Plan states that the amount of firm water allocated for environmental purposes is 33,440 acre-feet per year (10-year average). This amount is a commitment from the firm yield of the Highland Lakes.

Note: TCEQ SB-3 requirements will be taken into consideration in strategies involving a new appropriation of water.

### 13c. Presentation of Committee Recommendations for Updates to the Region K Cutoff Model Assumptions

#### ▼ Hydrologic Variance Request

- Any variation from the standard TCEQ WAM Run 3 model must be submitted to TWDB for review and approval prior to beginning modeling work.
- Draft Hydrologic Variance Request letter is provided in handout packet for review and comment.
- Details how the Region K Cutoff Model assumptions will change depending on whether the model is being used for the water supply analysis or a water management strategy analysis.

Variations being requested:

1. All water rights at and above Lakes O.H. Ivie and Brownwood are senior to downstream water rights (while maintaining relative date priority in rights upstream). This assumption reflects historical and current water management operational practices between the upper and lower Colorado Basin, and allows for increased water availability upstream of Lakes O.H. Ivie and Brownwood in Region F and decreased availability downstream in Region K.



### 13c. Presentation of Committee Recommendations for Updates to the Region K Cutoff Model Assumptions

#### ▼ Hydrologic Variance Request

Variations being requested (continued):

2. Expand the period of naturalized flows to include 1940-2016. Extending the hydrology period to 2016 will allow for better analysis of the recent drought and may identify a new "drought of record".
3. Calculation of the firm yield for the Buchanan-Travis Reservoir System. These two reservoirs are operated as a system, and their firm yield should be determined as such.
4. Include provisions of LCRA-STP 2006 Settlement Agreement. This is an agreement that is not included in the TCEQ WAM Run 3, but is representative of current water management operations in the basin.
5. The 2015 LCRA Water Management Plan environmental flow criteria is not used for water supply analysis. An amount of firm water (33,440 AFY) is allocated per year, and is a commitment from the firm yield of the Highland Lakes.
6. 2015 LCRA Water Management Plan Interruptible Water is turned off for water supply analysis.

Agenda Item 14

## **DISCUSS AND TAKE ACTION ON UPDATES TO MODELING ASSUMPTIONS AND HYDROLOGIC VARIANCE REQUEST**

#### 14. Discuss and take action on updates to modeling assumptions and hydrologic variance request

- ▼ Consider edits and any additional discussion.
- ▼ Consider action to approve updates to Region K Cutoff Model assumptions and the associated hydrologic variance request letter, as discussed today with any identified edits, and authorize consultant to submit hydrologic variance request to TWDB.
- ▼ Consider action to authorize consultant to continue any needed discussions with TWDB staff regarding the variance request, on behalf of the RWPG.

Agenda Item 15

### **DISCUSSION OF WATER SUPPLIERS IN REGION K THAT ARE NOT WUGS, BUT SHOULD BE LISTED AS WHOLESALE WATER PROVIDERS**

## 15. Wholesale Water Providers in Region K that are not WUGs

- ▼ TWDB asking for Wholesale Water Providers in Region K that are not also Water User Groups (WUGs). Can be public or private. Purpose is to identify relationships within the TWDB database and identify as sponsors for water management strategy projects, as applicable.
- ▼ Currently, LCRA has been the only one. (Austin is also a WUG.)
- ▼ BlueWater Systems sells wholesale water to City of Manor, Manville WSC, and others. Company location is within Region K even though source of water is outside Region K.
- ▼ Are RWPG members aware of others?
- ▼ Does Region K wish to include any entities , other than LCRA, as Wholesale Water Providers that are not WUGs in the 2021 Plan? Consider action.

## Agenda

16. Other Committee Reports (as needed)
17. RWPG as a Governmental Body
18. Agenda items for next meeting
19. New / Other Business
20. Public Comments
21. Adjourn