

AGENDA

Lower Colorado Regional Water Planning Group Meeting

LCRA Dalchau Service Center, 3505 Montopolis Drive, Austin, TX

October 4, 2023, 10:00 a.m.

Regular Meeting:

1. Call to Order –Chair David Van Dresar
2. Welcome and Introductions – Chair Van Dresar
3. Receive public comments on specific issues related to agenda items 4 through 12. Public comments limited to 3 minutes per speaker.
4. Planning Group Membership – Secretary Teresa Lutes
 - a. Attendance Report
 - b. Acknowledge retirement of Ron Fieseler as GMA 9 representative
 - i. Presentation of recognition plaque
 - c. Recognize appointment of Paul Babb by GMA9 as Voting Member to replace Ron Fieseler
 - i. Recognize designation of Charlie Flatten as alternate for GMA9 (as well as Environment)
 - d. Recognize Vanessa Chapman, TPWD (non-voting member)
5. Consider approval of July 12, 2023 LCRWPG regular meeting minutes – Chair Van Dresar
6. Committee Reports
 - a. Water Modeling Committee – Teresa Lutes, Committee Chair
 - i. Presentation of proposed surface water Hydrologic Variance Request packet
 - ii. Consider and take action on the proposed surface water Hydrologic Variance Request packet and authorize technical consultant to submit to TWDB
7. Consultant Report
 - a. Update on Water User Group (WUG) survey of Water Supplies – Consulting Team
 - b. Responses from TWDB on submitted Region K population and GPCD revision request – Adam Conner, FNI
 - c. Progress to date – Neil Deeds, INTERA

- d. Upcoming efforts and key dates – Neil Deeds, INTERA
 - i. Identification and revision of Infeasible Strategies in RWP
 - ii. Technical Memorandum presentation, due March 4, 2024

- 8. Texas Water Development Board (TWDB) Report – Lann Bookout, TWDB
 - a. Update on regional water planning activities and schedules

- 9. Interregional Coordination Activities – Chair Van Dresar
 - a. Liaison reports

- 10. Financial Report – Chair Van Dresar

- 11. Upcoming meetings, consider and take action as needed – Chair Van Dresar
 - a. Location and date of next RWPG meeting
 - b. Other committee meetings
 - i. Water Modeling Committee
 - ii. Water Management Strategies Committee

- 12. Future Agenda Items

- 13. Public Comments – limit 3 minutes per person

- 14. Adjourn

Item 4. Planning Group Membership

Lower Colorado Regional Water Planning Group Meeting Voting Member Attendance Record
for Secretary's LCRWPG Voting Member Attendance Report on 10/4/2023

Voting Members										
Name	Interest	County	Year Term Expires*	7/12/2023 Dalchau Service Center Austin	4/26/2023 Dalchau Service Center Austin	1/11/2023 Dalchau Service Center Austin	10/26/2022 Dalchau Service Center Austin	7/27/2022 Dalchau Service Center Austin	4/27/2022 Dalchau Service Center Austin	
1 Berglund, Daniel	Small Business	Wharton	2026	Absent	X	X	X	X	Absent	
2 Brasher, Jim	GMA 15	Colorado	n/a	X	X	X	Absent	Absent	X	
3 Castleberry Christianne	Water Utilities	Travis	2027	X	X	X	X	X	X	
4 Fauley, Jody	Counties	San Saba	2026	Absent	Absent	Elected				
5 Fieseler, Ron	GMA 9	Blanco	n/a	X	X	X	X	X	X	
6 Gillam, Lauri	Municipalities	Travis	2023	X	X	X	X	X	X	
7 Johnson, Barbara	Industries	Travis	2022	X	X	X	X	X	X	
8 Lindsay, David	Recreation	Travis	2024	X	X	X	X	X	X	
9 Loftus, Tim	GMA 10	Travis	n/a	Absent - Alternate Attended	X	Absent - Alternate Attended	X	Appointed by GMA		
10 Ludwig, Jason	Electric Gen. Utilities	Matagorda	2026	X	Absent	X	Absent	X	X	
11 Lutes, Teresa	Municipalities	Williamson	2022	X	X	X	X	Absent - Alternate Attended	X	
12 Luther Jim	Counties	Burnet	2022	X	X	X	X	X	Absent	
13 Masters, Monica	River Authorities	Travis	2023	X	X	X	X	Elected		
14 McElroy, Ann	Environmental	San Saba	2022	X	X	X	X	Absent - Alternate Attended	X	
15 Olewin, Carol	Public	Travis	2026	X	X	X	X	X	X	
16 Olfers, Charles	Agriculture	Gillespie	2023	Absent	Absent	Absent	Absent	Absent	Absent	
17 Reagor, Mike	Municipalities	Llano	2023	X	X	X	X	X	X	
18 Ruggiero, Robert	Small Business	Travis	2024	Absent	X	Absent	X	Absent - Alternate Attended	Absent	
19 Sliva, Paul	Agriculture	Matagorda	2026	Absent	X	Absent	X	X	Absent	
20 Sodek, Mitchell	GMA 8	Burnet	n/a	X	X	X	X	X	X	
21 Totten, Jim	GMA 12	Bastrop	n/a	X	X	Absent	Absent	X	X	
22 Tybor, Paul	GMA 7	Gillespie	n/a	X	Absent	X	X	Absent - Alternate Attended	X	
23 Uecker, Emil	Counties	Blanco	2027	X	Absent	X	Absent	X	X	
24 Van Dresar, David	Water Districts	Fayette	2024	Absent	X	Absent	X	Absent	Absent	
25 Walker, Jennifer	Environmental	Travis	2022	Absent - Alternate Attended	Absent - Alternate Attended	X	X	X	Absent - Alternate Attended	

*Jan. 1/Dec. 31st of previous year (for example, 2021 terms expire Dec. 31st, 2020)

From: Marty Kelly <Marty.Kelly@tpwd.texas.gov>
Sent: Monday, September 18, 2023 3:55 PM
To: Annette Keaveny <Annette.Keaveny@LCRA.ORG>
Cc: Vanessa Chapman <Vanessa.Chapman@tpwd.texas.gov>; Monica Polgar <Monica.Polgar@tpwd.texas.gov>
Subject: RE: Region K - TP&W Regional Water Planning Rep

You don't often get email from marty.kelly@tpwd.texas.gov. [Learn why this is important](#)

CAUTION - EXTERNAL EMAIL
Phishing? **Click the fish** in Outlook

Hi Annette

Vanessa Chapman will be the new TPWD representative for Region K and Monica Polgar will be our alternate (both cc'd). They will both be at the next meeting on October 4th. Will this email suffice or will I need to send a formal letter informing the Planning Group that they are TPWD's rep and alternate?

Thanks!

Marty Kelly
Water Resources Program Coordinator
Office (512) 389 – 8214
Cell (512) 413 – 1631

**RESOLUTION TO APPOINT A GROUNDWATER MANAGEMENT AREA 9
REPRESENTATIVE TO THE REGIONAL WATER PLANNING GROUP K**

THE STATE OF TEXAS	§
	§
GROUNDWATER MANAGEMENT AREA 9	§
	§
GROUNDWATER CONSERVATION DISTRICTS	§

WHEREAS, Texas Water Code § 16.053(c) requires the groundwater conservation districts located in whole or in part in a groundwater management area (“GMA”) designated by the Texas Water Development Board, located in the regional water planning area, to appoint one representative of a groundwater conservation district located in the management area and in the regional water planning area to serve on the regional water planning group;

WHEREAS, the groundwater conservation districts located wholly or partially within Groundwater Management Area 9 (“GMA 9”), as designated by the Texas Water Development Board, as of the date of this resolution are as follows: Bandera County River Authority and Groundwater District, Blanco-Pedernales Groundwater Conservation District, Comal Trinity Groundwater Conservation District, Cow Creek Groundwater Conservation District, Hays Trinity Groundwater Conservation District, Headwaters Groundwater Conservation District, Medina County Groundwater Conservation District, Southwestern Travis County Groundwater Conservation District, Trinity Glen Rose Groundwater Conservation District (collectively hereinafter “the GMA 9 Districts”);

WHEREAS, the GMA 9 Districts are each governmental agencies and bodies politic and corporate operating under Chapter 36, Water Code;

WHEREAS, the GMA 9 Districts met July 25, 2023 to appoint a representative from GMA 9 to the Regional Water Planning Group K, in accordance with its statutory duty to appoint a representative as identified in § 16.053(c);

WHEREAS, at least two-thirds of the GMA 9 Districts had a voting representative in attendance at the July 25, 2023, meeting in accordance with Section 16.053(c), Texas Water Code; and the following districts had a voting representative in attendance at the meeting: Bandera County River Authority and Groundwater District, Blanco-Pedernales Groundwater Conservation District, Comal Trinity Groundwater Conservation District, Cow Creek Groundwater Conservation District, Hays Trinity Groundwater Conservation District, Headwaters Groundwater Conservation District, Medina County Groundwater Conservation District, Southwestern Travis County Groundwater Conservation District, Trinity Glen Rose Groundwater Conservation District, and;

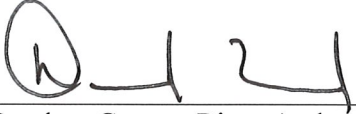
NOW, THEREFORE, BE IT RESOLVED BY THE AUTHORIZED VOTING REPRESENTATIVES OF THE GMA 9 DISTRICTS AS FOLLOWS:

THE GMA 9 APPOINTS Paul Babb OF THE
Blanco - Pedernales GROUNDWATER CONSERVATION DISTRICT TO REPRESENT THE
GMA 9 ON THE REGIONAL WATER PLANNING GROUP K.

AND IT IS SO ORDERED.

PASSED AND ADOPTED on this 27th day of July 2023.

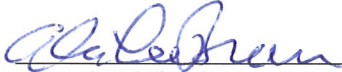
ATTEST:



Bandera County River Authority and Groundwater District



Blanco-Pedernales Groundwater Conservation District



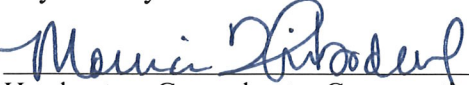
Comal Trinity Groundwater Conservation District



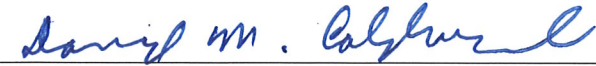
Cow Creek Groundwater Conservation District



Hays Trinity Groundwater Conservation District



Headwaters Groundwater Conservation District



Medina County Groundwater Conservation District



Southwestern Travis County Groundwater Conservation District



Trinity Glen Rose Groundwater Conservation District



September 26, 2023

David Van Dresar
Chair
Lower Colorado Regional Water Planning Group
c/o LCRA
P. O. Box 220
Austin, Texas 78676

Dear David:

In accordance with the Lower Colorado Regional Water Planning Group Bylaws Article VII, I am designating Tom Hegemier to represent me when I am unable to attend a meeting or hearing.

Tom Hegemier is the Director of Water Resources Management, and his team will develop the water supply strategies for LCRA. They also assist the consultant team with the water modeling done as part of Region K, and provide any assistance, when needed, on our basin information.

Tom will be a great asset to the team and brings a great amount of past experience and knowledge.

If you have any questions or would like additional information, please feel free to contact me at 512-578-3541.

Sincerely,

Monica P. Masters

Monica P. Masters, P.E., PMP
Vice President, Water Resources

cc: Teresa Lutes, City of Austin
Tom Hegemier, LCRA

Item 5. July 12, 2023 Draft Meeting
Minutes

DRAFT MEETING MINUTES

Lower Colorado Regional Water Planning Group Meeting

July 12, 2023, 10:00 a.m.

LCRA Dalchau Service Center

3505 Montopolis Drive, Austin, TX

Meeting materials and an audio recording of the full meeting proceedings are available at regionk.org/all-meetings

Voting Members Signed in:

Jim Brasher, GMA 15	Charlie Flatten, Environment (Alternate)
Teresa Lutes, Municipalities	Monica Masters, River Authorities
Christianne Castleberry, Water Utilities	Ann McElroy, Environmental
Ron Fieseler, GMA 9	Carol Olewin, Public Interest
Lauri Gillam, Municipalities	Mike Reagor, Municipalities
David Lindsay, Recreation	Paul Tybor, GMA 7
Barbara Johnson, Industries	Mitchell Sodek, GMA 8
Kendell Bell-Enders, GMA 10 (Alternate)	Emil Uecker, Counties
Jason Ludwig, Electric Gen. Utilities	Jim Totten, GMA 12
Jim Luther, Counties	

Voting Members Absent:

Jody Fauley, Counties	Charles Olfers, Agriculture
Tim Loftus, GMA 10	David Van Dresar, Water Districts
Robert Ruggiero, Small Business	Daniel Berglund, Small Business
Paul Sliva, Agriculture	Jennifer Walker, Environmental

Support/Consultants/Visitors:

Jason Homan, Environmental Alternate	Sara Eatman, Austin Water
Justin DuRant, FNI	Marisa Flores-Gonzalez, Austin Water
Earl L. Foster, Small Municipalities Alternate	Helen Gerlach, Austin Water
Jon Albright, FNI	Sarah Hoes, Austin Water
Earl Wood, Water Utilities Alternate	Richard Hoffpauir, Hoffpauir Consulting
Annette Keaveny, LCRA	Shannon Hamilton, CTWC
Lann Bookout, TWDB	Robert Adams, Plummer
Mike Thuss, WRA	Jordan Furnans, LRE Water

Stacy Pandey, LCRA
Blake Neffendorf, City of Buda
Daria Deeds, Austin Water
Nick Zackoff, Lake Buchanan
Conservation Corporation

Laurence Brown, TSSWCB
Lauren Gonzalez, Black & Veatch
Cindy Smiley, Smiley Law Firm

Quorum

Quorum: Yes

Number of voting members or alternates representing voting members present: 19

Number required for quorum per current voting membership of 25: 13

Number of voting members required for 2/3 vote: 17

Formal Actions Taken:

1. The minutes from the April 26, 2023 planning group meeting were approved as presented.
2. A motion was approved to accept the proposed population and municipal demand revision request, authorize the consultant to submit to the TWDB on the planning group's behalf, and to authorize the consultant to make minor changes to the revision request based on further discussion with TWDB as needed prior to final submittal.
3. A motion was approved to accept a minor correction for irrigation demand projections for submittal to TWDB as presented.
4. A motion was approved to authorize LCRA to negotiate and execute an amendment to the TWDB contract to increase the total project cost and committed funds for the 2026 RWP.

Regular Meeting:

1. Vice Chair Monica Masters called the meeting to order at 10:09am.
2. Vice Chair Masters welcomed all to the meeting and asked that members introduce themselves.
3. Public Comment
 - a. Cindy Smiley, Smiley Law. Ms. Smiley thanked the planning group and the chair of the water modeling committee and asked that the planning group tailor the state-wide standard processes for water modeling to our region and minimize risk.
 - b. Jordan Furnans, LRE Water. Mr. Furnans provided feedback on environmental flow releases: the 33,000 acre-feet that is designated for environmental flow is only half of what LCRA has been releasing. Mr. Furnans strongly urged group to increase storage designated for environmental flow to 66,000 AF.
4. Planning Group Membership
 - a. Secretary Teresa Lutes asks the group to review the attendance information provided in the packet and let her know if there are any corrections that need to be made.
5. Vice Chair Masters asked the planning group to review the April 26, 2023 LCRWPG regular meeting draft minutes. Ron Fieseler made a motion to approve the minutes as presented, which was seconded by Jim Totten. Approved with none opposed.

6. Committee Reports

- a. Water Modeling Committee Chair Teresa Lutes provided an update on the most recent Water Modeling Committee meeting and additional meetings planned for August and September. Ms. Lutes noted that the committee is going to develop an updated Hydrologic Variance Request, and a draft will be provided to the group at the next meeting. Barbara Johnson and Christianne Castleberry requested to be included in that committee.
- b. Population and Demand Committee meeting Chair Lauri Gillam provided a report on meetings May 22, June 12, and June 22, 2023. The committee has substantially completed their work and is providing their recommendation for demand revisions (Item 7).

7. Population and Water Demand Projections

- a. A summary of proposed population and municipal demand revisions from Population and Demand Committee was presented by Adam Conner, FNI. Mr. Conner's presentation and the draft technical memo are included in the meeting packet.
- b. Vice Chair Masters asked that the voting membership consider Agenda item 7b. Lori Gillam made a motion to accept the proposed population and municipal demand revision request, authorize the consultant to submit to the TWDB on the planning group's behalf, and to authorize the consultant to make minor changes to the revision request based on further discussion with TWDB as needed prior to final submittal. The motion was seconded by Christianne Castleberry, and the motion passed with Mike Reagor abstaining.
- c. Robert Adams, Plummer, presented a minor correction of 400 acre-feet in how Wharton County's irrigation demand was split between Regions K and G. Barbara Johnson made a motion to accept the revision as presented, and Ron Fieseler seconded, and the motion passed. Mr. Adams' presentation and the draft technical memo are included in the meeting packet.

8. Consultant Report

- a. Robert Adams, Plummer, and Jon Albright, FNI, provided an Environmental Flows 101 presentation (see presentation in meeting packet). The planning group discussed LCRA's WMP and environmental releases in typical conditions and during drought periods.
- b. Robert Adams, Plummer, indicated that the non-municipal demand revision requests are progressing on schedule.
- c. Neil Deeds, INTERA, provided a summary of progress to date.
- d. Neil Deeds, INTERA, provided a summary on upcoming efforts and key dates.

9. Texas Water Development Board (TWDB) Report – Lann Bookout, TWDB

- a. Lann Bookout provided an update on regional water planning activities and schedules. Mr. Bookout shared that additional funding will be available to support the

work on determining the feasibility of Water Management Strategies (WMS) recommended in the 2021 RWP.

- b. Mr. Bookout requested that the group authorize LCRA to negotiate and execute an amendment to the TWDB contract to increase the total project cost and committed funds for the 2026 RWP. Teresa Lutes made said motion, David Lindsay seconded, and the motion passed.

10. Interregional Coordination Activities – Vice Chair Masters

- a. Ron Fieseler, Liaison to Region L, told the group that he will attend the next Region L meeting, but that he is in the process of retirement at the end of September. The GMA 9 meeting will be held September 5th and a new representative will be selected.
- b. Terry Bray reported on the recent Region G meeting at which there were two projects considered for Liberty Hill: a wellfield in Eastern Williamson County (however, it was not clear which RWPG it is located in) and a reuse project. Mr. Bray shared that Region G supported the reuse project but declined to support the wellfield project until additional information is made available.

11. Vice Chair Masters asked the planning group to review the financial report provided in the meeting packet.

12. Upcoming meetings– Vice Chair Masters

- a. The next RWPG meeting will be held October 4th
- b. Water Modeling Committee meetings will be scheduled by committee chair Teresa Lutes with input on availability.

13. No future agenda items were discussed.

14. No additional public comments were provided.

15. Adjourn 11:32 am.

Item 6a. Water Modeling Committee Report

i. Background information and Hydrologic
Variance Request packet

Agenda Item 6a(i)

Proposed Surface Water Hydrologic Variance Request Packet



History of the Hydrologic Variance Request (HVR) for Region K



- 2011 Region K Regional Water Plan (RWP)
 - Planning group determined TCEQ Full Authorization Water Availability Model (WAM) did not reflect historical operation of water rights and existing contractual commitments
 - Requested and received TWDB permission to use a modified version of the TCEQ Full Authorization WAM, known as the "Cutoff Model"
- 2016 Region K RWP: similar request (with some minor updates) approved by TWDB
- 2021 Region K RWP: similar request (with some minor revisions) approved by TWDB

Proposed Surface Water Hydrologic Variance Request (HVR) Packet – Current planning cycle (2026 RWP)



- Water Modeling Committee approved a recommendation of the proposed hydrologic variance request Checklist and Table A for full planning group approval
- Draft cover letter includes descriptions of additional items:
 - Include information about the current drought in the plan, and
 - Advance the plan's scope with regard to uncertainty and droughts worse than the drought of record, including:
 - an interim study between the current planning cycle and the next
- The proposed HVR is a similar request (with some minor revisions) approved by TWDB in past planning rounds
- Packet contents: cover letter, checklist, and table – all included in posted meeting materials

Proposed Region K Surface Water Hydrologic
Variance Request Packet

To: Texas Water Development Board

From: David Van Dresar, Lower Colorado Regional Water Planning Group Chair

On October 4, 2023, the Lower Colorado Regional Water Planning Group (Region K) authorized submitting this surface water hydrologic variance request to Texas Water Development Board (TWDB) for approval. Region K is requesting approval to use the Region K Cutoff Model (Cutoff Model) in determining availability of surface water resources and analyzing water management strategies for development of the 2026 Region K Regional Water Plan (RWP). Attached are the completed Surface Water Hydrologic Variance Request Checklist and a table for additional detail.

In the development of the 2011 Region K RWP, Region K determined that the standard Texas Commission on Environmental Quality (TCEQ) Full Authorization Water Availability Model (WAM) did not adequately reflect the historical operation of water rights and existing contractual commitments in the Colorado River Basin. Region K subsequently requested and received TWDB's approval to use a modified version of the TCEQ Full Authorization WAM, known as the Cutoff Model, in determining surface water availability and water management strategy analysis for the 2011 RWP.

Region K again requested to use the Cutoff Model for the 2016 Region K RWP, after making some updates that reflected new data and changed conditions within the basin. That request was also approved by TWDB, with limitations identified for water management strategy analysis. The Cutoff Model used for the 2021 RWP used the same assumptions as approved previously by TWDB plus some limited revisions.

Region K is requesting to use the same basic Cutoff Model assumptions with limited revisions to the assumptions used in the 2021 RWP. The attached **Surface Water Hydrologic Variance Request Checklist** provides detail on TWDB's standardized set of questions for each river basin. The attached **Table A – Summary of Region K Modeling Assumptions** outlines all of the major assumptions and identifies where a change to an assumption has been made since the 2021 RWP. It also indicates which section of TWDB's HVR Checklist correlates to each assumptions (if applicable).

There are two basic purposes for applying a Water Availability Model (WAM) in the context of regional water planning. One is to establish the available firm supply of surface water under drought of record conditions for each individual existing surface water right and for each decade of the planning period. The second is to analyze potential water management strategies for meeting projected future water demand by decade, including strategies that potentially involve new appropriations of state water. When the Cutoff Model is applied for these specific purposes, Region K has adopted the nomenclature of "**Region K Supply Evaluation Model**" and "**Region K Strategy Evaluation Model**" to differentiate between the selections of Cutoff Model assumptions as shown in Table A. The unmodified TCEQ Full Authorization WAM is used in addition to the Strategy Evaluation Model if a water management strategy involves a new appropriation of state water.

REGION K SUPPLY EVALUATION MODEL

Region K requests to perform water supply availability analyses using the Supply Evaluation Model. This model reflects historical and current water management operations in the basin with regard to existing water rights, and as such, it provides the best informed representation of available water supplies during drought of record conditions for water rights within the Region K planning area. The basic assumptions that differ from those included in the standard TCEQ Colorado WAM Full Authorization WAM are outlined in **Table A – Summary of Region K Modeling Assumptions**.

REGION K NEW APPROPRIATION MODEL

The analysis of potential surface water-based water management strategies can involve different WAM modeling approaches depending on the nature of a particular strategy and the purpose for which the analysis is being made. For a strategy that requires a new appropriation of surface water from TCEQ, the amount of water that the strategy is capable of producing under drought of record conditions is first determined under the same permitting assumptions used by TCEQ. This means that the strategy should be analyzed using TCEQ's standard Full Authorization WAM as it currently exists with all existing water rights in the entire Colorado River Basin fully exercised in accordance with their authorized impoundment and diversion amounts and with no return flows. The basic assumptions of this Region K "New Appropriation Model" are outlined in the attached **Table A Column 2**.

REGION K STRATEGY EVALUATION MODEL

The Region K "Strategy Evaluation Model" is used for surface water-based water management strategy evaluation. This includes both surface water-based strategies that require a new appropriation and those that rely on an existing water right. Once included in the Strategy Evaluation Model, these new sources of supply then would be available to meet the projected demands for specific water users at different decades in the future. The basic assumptions for the Strategy Evaluation Model for these types of strategy planning simulations are listed in the attached **Table A Column 3**.

RECOGNITION OF IMPACTS OF CURRENT DROUGHT

At the time of this Hydrologic Variance Request (HVR), Region K is experiencing an extraordinary multi-year drought. Inflows to the Highland Lakes, on a monthly and calendar year basis, have recently been the lowest in the period of record back to 1942. However, the current drought has still not been determined to be worse than the 2010s drought which is recognized by Region K as the drought of record for planning purposes. Region K has discussed including information about current drought conditions in Chapters 3 and 7 of the plan report. As the region's naturalized flows are updated and additional hydrological information becomes available, Region K will plan to update its models to reflect this information for future planning rounds.

For this round of planning, Region K intends to use the regional water planning Drought Task (Task/Chapter 7), including Section 7.2 regarding Uncertainty and Drought(s) Worse than the Drought of Record, to advance the plan's scope in this critical arena. Region K intends to request additional TWDB funding for an interim study to be completed prior to the next round of planning to assess methods of quantification of uncertainty and drought(s) worse than the Drought of Record, including safe yield and other approaches. Through the Region K Policy Committee process, the planning group will consider expanding

upon its 2021 RWP policy statement on Planning for Droughts Worse than the Drought of Record. This may include requesting that the Legislature increase funding for planning for uncertainty and droughts worse than the drought of record in a quantified manner.

CONCLUSION

We believe that the WAM modeling approach outlined above is consistent with directives from TWDB regarding regional water planning and meets the requirements of TCEQ with regard to how strategies involving potential new appropriations of surface water are analyzed and represented in the regional planning process. Furthermore, we believe that this approach will provide the best-informed estimates of future available surface water supplies that reflect historical water management operations in the basin with regard to existing water rights.

We appreciate your consideration of this submittal. If you have any questions about this request, please contact me as shown below.

DRAFT

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules¹ require that regional water planning groups (RWPG) use most current Water Availability Models (WAM) from the Texas Commission on Environmental Quality (TCEQ) and assume full utilization of existing water rights and no return flows for surface water supply analysis. Additionally, evaluation of existing stored surface water available during Drought of Record conditions must be based on Firm Yield using anticipated sedimentation rates. However, the TWDB rules also allow, and **we encourage**, RWPGs to use more representative, water availability modeling assumptions; better site-specific information; or justified operational procedures other than Firm Yield with written approval (via a Hydrologic Variance) from the Executive Administrator in order to better represent and therefore prepare for expected drought conditions.

RWPGs must use this checklist, which is intended to save time and reduce effort, to request a Hydrologic Variance for estimating the availability of surface water sources. For Questions 4 – 10, please indicate whether the requested variance is for determining Existing Supply, Strategy Supply, or both. Please complete a separate checklist for each river basin in which variances are being requested.

Water Planning Region:

K

1. Which major river basin does the request apply to? Please specify if the request only applies part of the basin or only to certain reservoirs.

Lower Colorado Basin (downstream of O.H. Ivie Reservoir and Lake Brownwood).

2. Please give a brief, bulleted, description of the requested hydrologic variances including how the alternative availability assumptions vary from rule requirements, how the modifications will affect the associated annual availability volume(s) in the regional water plan, and why the variance is necessary or provides a better basis for planning. You must provide more-detailed descriptions in the subsequent checklist questions. Attach any available documentation supporting the request.

Region K uses three variations of the Colorado River WAM:

- *Region K Supply Evaluation Model.* This is used for the decadal supply evaluations that will be reported in Chapter 3. This includes the yield of the Lower Colorado River Authority (LCRA) system. Modifications to TCEQ WAM include:
 - Region K Cutoff assumptions
 - This modification to the TCEQ WAM essentially creates two separate systems within the same WAM: one for upstream of O.H. Ivie Reservoir and Lake Brownwood, and another for downstream. The system above Ivie and Brownwood executes first before the downstream system, which prevents

¹ 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)the

- senior rights in the lower basin from making priority calls on the upstream system. This assumption is consistent with existing agreements among water right holders and reflects the actual operation of the basin.
- No LCRA interruptible supplies or environmental flow support
 - Both of these items are part of the 2020 LCRA Water Management Plan (WMP) which is included in the Strategy Evaluation Model only.
 - Sedimentation projections by decade
 - This modification to the TCEQ WAM utilizes the most recent sedimentation surveys for projecting changes to reservoir storage as storage is reduced over time due to sediment accumulation.
 - *Region K New Appropriation Model.* This model is TCEQ's Run 3 with an error correction (see below). This will be used for any strategies that require a new water right appropriation. Key features of the Region K New Appropriation Model include:
 - Priority order analysis (no cutoff)
 - 2020 LCRA WMP
 - Authorized storage capacities (no adjustments for sedimentation)
 - No external agreements
 - *Region K Strategy Evaluation Model.* This model will be used to evaluate strategies that a) do not require a new water right appropriation (i.e. strategies based on existing water rights), and/or b) for strategies that use a new water right appropriation evaluated with the New Appropriation Model to meet a specific need. Modifications to TCEQ WAM include:
 - Region K Cutoff assumptions
 - LCRA interruptible supplies and environmental flow support. For future decades, we may need to adjust curtailment triggers and other related factors from the 2020 LCRA WMP modeling to protect firm supplies.
 - Sedimentation for current and future decades
 - Wastewater effluent (herein referred to as "return flows") are only considered as a strategy

The Region K Cutoff assumptions modify the priority assumptions in Run 3 and are included in the Supply Evaluation and Strategy Evaluation models. These models assume that all water rights at and above Lakes O.H. Ivie and Brownwood are simulated prior to downstream water rights while maintaining relative date priority in rights upstream. This assumption reflects historical, current, and expected future water management operational practices between the upper and lower Colorado Basin, and is therefore a better basis for planning. The cutoff models show increased water availability upstream of Lakes O.H. Ivie and Brownwood in Region F and decreased availability downstream in Region K.

The Region K Supply Evaluation Model does not include interruptible supplies because:

- a). TWDB Regional Planning Rules require (and Region K agrees) that supply estimates be made for firm yield conditions with all water rights fully utilized.

b). Including LCRA's 2020 WMP operation into the supply analysis does not align with the requirement to use firm yield. The LCRA WMP is a near-term operational plan that is not based on the full utilization of senior water rights.

The Region K Supply Evaluation Model represents the environmental flow support as an LCRA commitment of 33,440 ac-ft/year from the firm yield of the Highland Lakes. This is consistent with how LCRA represents its commitment to environmental flows from the firm yield of the system.

The projected conditions within the Region K Strategy Evaluation does include both interruptible supplies and environmental flow support from the 2020 LCRA WMP. The curtailment triggers from the 2020 WMP may need to be modified to protect firm supplies as demand increases.

More details on these modifications may be found in the summary table in Attachment A.

A modification will be made to the models to correctly assign locations for the Twin Buttes/Nasworthy system. These location errors have been identified in previous modeling efforts but have not been incorporated into TCEQ's WAM Run 3 at this time.

3. Was this request submitted in a previous planning cycle? If yes, please indicate which cycle and note how it is different, if at all, from the previous request?

Yes

Only substantive change from request submitted for the 2021 Region K Plan is changing the LCRA WMP cited to be the 2020 WMP.

4. Are you requesting to extend the period of record beyond the current applicable WAM hydrologic period? If yes, please describe the proposed methodology. Indicate whether you believe there is a new drought of record in the basin.

No

Choose an item.

No request is being made to extend the period of record beyond the Colorado WAM hydrologic period which covers 1940-2016. The basin is currently experiencing drought conditions. However, no determination of a new drought of record has been made at the time of this variance request.

5. Are you requesting to use a reservoir safe yield? If yes, please describe in detail how the safe yield would be calculated and defined, which reservoir(s) it would apply to, and why the modification is needed or preferable for drought planning purposes.

No

Choose an item.

Region K will use the new Chapter 7 subsection on uncertainty and droughts worse than the drought of record (DWDOR) to advance the region’s planning process towards identification of strategies that can be used to address DWDORs.

- 6. Are you requesting to use a reservoir yield other than firm yield or safe yield? If yes, please describe, in a bulleted list, each modification requested including how the alternative yield was calculated, which reservoir(s) it applies to, and why the modification is needed or preferable for drought planning purposes. Examples of alternative reservoir yield analyses may include using an alternative reservoir level, conditional reliability, or other special reservoir operations.

No

Choose an item.

Click or tap here to enter text.

- 7. Are you requesting to use a different model (such as a RiverWare or Excel-based models) than RUN 3 of the applicable TCEQ WAM? If yes, please describe the model being considered including how it incorporates water rights and prior appropriation and how it is more conservative than RUN 3 of the applicable TCEQ WAM.

No

Choose an item.

Click or tap here to enter text.

- 8. Are you requesting to use a modified TCEQ WAM? If yes, please describe in a bulleted list all modifications in detail including all specific changes to the WAM and whether the modified WAM is more conservative than the TCEQ WAM RUN 3. Examples of WAM modifications may include adding subordination agreements, contracts, updated water rights, modified spring flows, updated lake evaporation, updated sedimentation², system or reservoir operations, or special operational procedures into the WAM.

Yes

Existing and Strategy Supply

The following assumptions are also summarized in the table in Attachment A.

² Updating anticipated sedimentation rates does not require a hydrologic variance under 31 TAC § 357.10(14). The Technical Memorandum will require providing details regarding the sedimentation methodology utilized. Please consider providing that information with this request.

- All rights at and above Ivie/Brownwood are simulated prior to downstream rights, also referred to as “Region K Cutoff” (Yes for Region K Supply Evaluation Model and Region K Strategy Evaluation Model, No for Region K New Appropriation Model)
- Determine Firm Yield for Buchanan-Travis Reservoir System (Yes for Supply Analysis, No for Strategy Analysis)
- Use reservoir storage with adjustment for sedimentation projections by decade
- Include provisions of LCRA-STP 2006 Settlement Agreement
- Include operating rules for Lakes Buchanan and Travis to reflect combined Firm Yield operation
- Include any permits and amendments (as of 2023)
- Modify curtailment of Highland Lakes interruptible water as necessary to satisfy future LCRA Firm Municipal and Industrial Demands (Yes for Strategy Analysis, NA for Supply Analysis)
- Set LCRA lower basin irrigation demands equal to projected future demands by decade (Yes for Strategy Analysis, NA for Supply Analysis)
- Include LCRA Irrigation Return Flows to the Colorado River (Only when evaluating indirect use of these flows as a Strategy, No for Supply Analysis)
- Include Return Flows from Austin Wastewater Treatment Plants (Only when evaluating these flows as a Strategy, No for Supply Analysis)
- Include Other Municipal and Industrial Return Flows (Only when evaluating these flows as a Strategy, No for Supply Analysis)
- Include Reuse Provisions and Environmental Flow Requirements of LCRA-Austin 2007 Settlement Agreement (Only when evaluating the applicable flows as a Strategy, No for Supply Analysis)
- Correct the WAM input file for errors regarding the spatial location and assignment of net evaporation data for Twin Buttes Reservoir and Lake Nasworthy.

○

The common assumption used for Supply and Strategy Evaluations is the Region K cutoff assumption. This assumption differs from Run 3 in that the order of simulation is changed to allow upper basin water rights to be simulated prior to the lower basin rights. This assumption is more conservation than Run 3.

9. Are you requesting to include return flows in the modeling? If yes, are you doing so to model an indirect reuse water management strategy (WMS)? Please provide complete details regarding the proposed methodology for determining reuse WMS availability.

Yes

Strategy Supply

Return flows are not used in evaluating supplies. Return flows are only included in the strategy evaluation modeling as a water management strategy.

10. Are any of the requested Hydrologic Variances also planned to be used by another region for the same basin? If yes, please indicate the other Region. Please indicate if unknown.

Yes

Many of these changes will be included in Region F.

11. Please describe any other variance requests not captured on this checklist or add any other information regarding the variance requests on this checklist.

[Click or tap here to enter text.](#)

Draft - TABLE A
SUMMARY OF REGION K MODELING ASSUMPTIONS
REGARDING SUPPLY AND STRATEGY ANALYSES
FOR 2026 REGIONAL PLAN DEVELOPMENT

ITEM	ASSUMPTION	(1)	(2)	(3)	Change from 2021 Planning Cycle	Pertinent HVR Checklist Question No.
		SUPPLY ANALYSIS	STRATEGY ANALYSIS			
		Region K Supply Evaluation	Region K New Appropriations	Region K Strategy Evaluation		
A	Use TCEQ Full-Basin WAM Run 3 Without Modification for New Appropriation Water Supply Strategies Analysis	No	Yes	No	No Change	2, 8
B	All Rights at and Above Ivie/Brownwood simulated prior to Downstream Rights (maintaining relative date priority in rights upstream)	Yes	No	Yes	No Change	2, 8
C	Use 1940-2016 Naturalized Flows	Yes	Yes	Yes	Changed Column 2 to "Yes". Removed "Expanded".	2, 4, 8
D	Determine Firm Yield for Buchanan-Travis Reservoir System	Yes	No	No	No Change	2, 6, 8
E	Use Sediment-Adjusted Future Reservoir Storage by Decade	Yes	No	Yes	No Change	2, 8
F	Use Lower Colorado River Authority (LCRA) 2020 Water Management Plan Environmental Flow Criteria	No*	Yes	Yes	Changed "2015" to "2020". Added "LCRA".	2, 8
G	Set All Water Right Demands at Authorized Diversion Amounts	Yes	Yes	No	No Change	2, 8
H	Include Provisions of LCRA-STP 2006 Settlement Agreement	Yes	No	Yes	No Change	2, 8
I	Include Operating Rules for Lakes Buchanan and Travis to Reflect Combined Firm Yield Operation	Yes	Yes	Yes	No change	2, 8
J	Include Latest Approved Permits and Amendments (as of 2023)	Yes	Yes	Yes	Updated to include latest approved permits and amendments in general, not LCRA's and updated date to 2023.	2, 8
K	Include LCRA 2020 Water Management Plan Highland Lakes Interruptible Water	No	Yes	Yes	Changed "2015" to "2020". Added "LCRA".	2, 8
L	Adjust LCRA 2020 Water Management Plan Environmental Flow Triggers (Decadal)	No	No	Yes	Changed "2015" to "2020" Added "LCRA".	2, 8

M	Set All Region K Municipal and Industrial Water Right Demands at Projected Future Demand Amounts by Decade	No	No	Yes	No change	2, 8
N	Modify Curtailment of Highland Lakes Interruptible Water as Necessary to Satisfy LCRA Future Firm Municipal and Industrial Demands	No	No	Yes	No change	2, 8
O	Set LCRA Lower Basin Irrigation Demands Equal to Projected Future Region K Demands by Decade	No	No	Yes	Add "Region K" before "Demands by Decade"	2, 8
P	Include LCRA Irrigation Return Flows to the Colorado River	No	No	Only As A Strategy	No Change	2, 8
Q	Include Return Flows from Austin Wastewater Treatment Plants	No	Only As A Strategy	Only As A Strategy	No Change	2, 8, 9
R	Include Other Municipal and Industrial Return Flows	No	Only As A Strategy	Only As A Strategy	No change	2, 8, 9
S	Include Reuse Provisions and Environmental Flow Requirements of LCRA Austin 2007 Settlement Agreement	No	Only As A Strategy	Only As A Strategy	No Change	2, 8

* The LCRA 2020 Water Management Plan states that the amount of firm water allocated for environmental purposes is 33,440 acre-feet per year (drought 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.

Item 7. Consultant Report

October 4, 2023

10:00 AM

Region K Planning Group Meeting



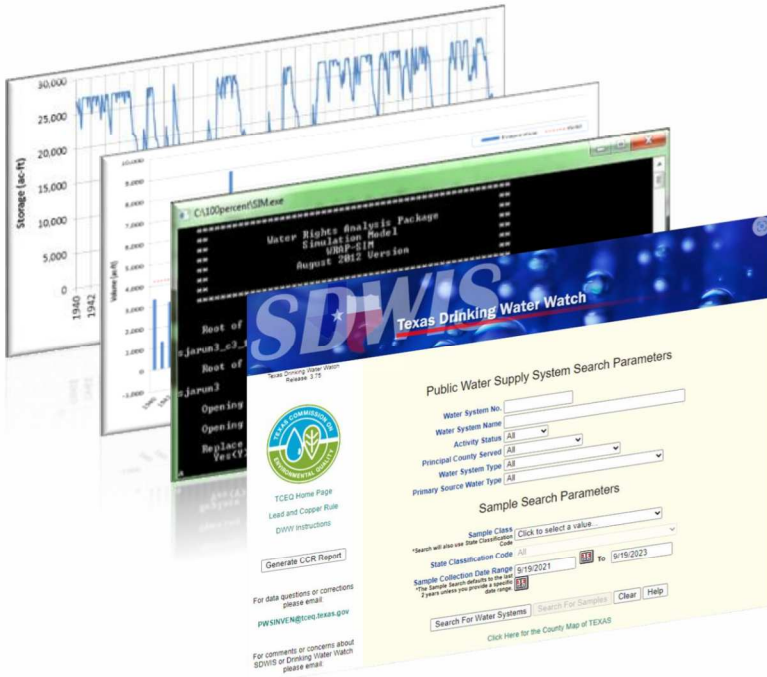
Agenda Item 7a

Update on water supplies WUG survey



Agenda Item 7a Task 3 Overview

Differences between “Source” and “Supply”



- **Source:** Evaluated by RWPGs
 - Surface water – TCEQ WAMs
 - Groundwater – MAG, peaking analysis
 - Reuse – Historic and infrastructure data
- **Supply:** Physical AND legally accessible
 - Water rights or source ownership
 - Contracts
 - Infrastructure

Agenda Item 7a Existing Supplies Data Sources



- Utility Survey
- State and federal databases
- Prior RWPs
- Meetings with stakeholders

Agenda Item 7b

Responses from TWDB on submitted Region K population and GPCD revision request



Agenda Item 7b

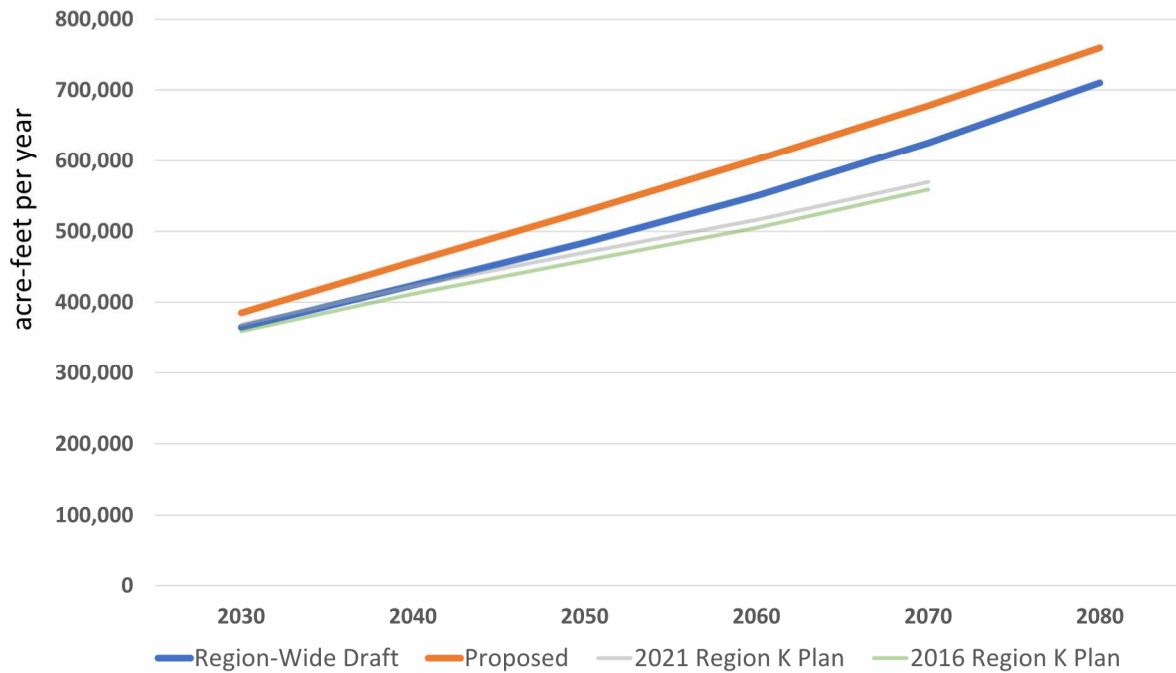
TWDB Response to Submitted Region K Population and GPCD Revision Requests



- Majority of responses related to reconciling shared WUG projections
 - Round Rock
 - Leander
 - Georgetown
 - Corix
 - Kempner WSC
- For WUGs entirely in Region K, TWDB's responses effectively reduce the requested population but still hold closer to requested population than original draft projections
 - Austin
 - Elgin
 - Lago Vista
 - Undine Development

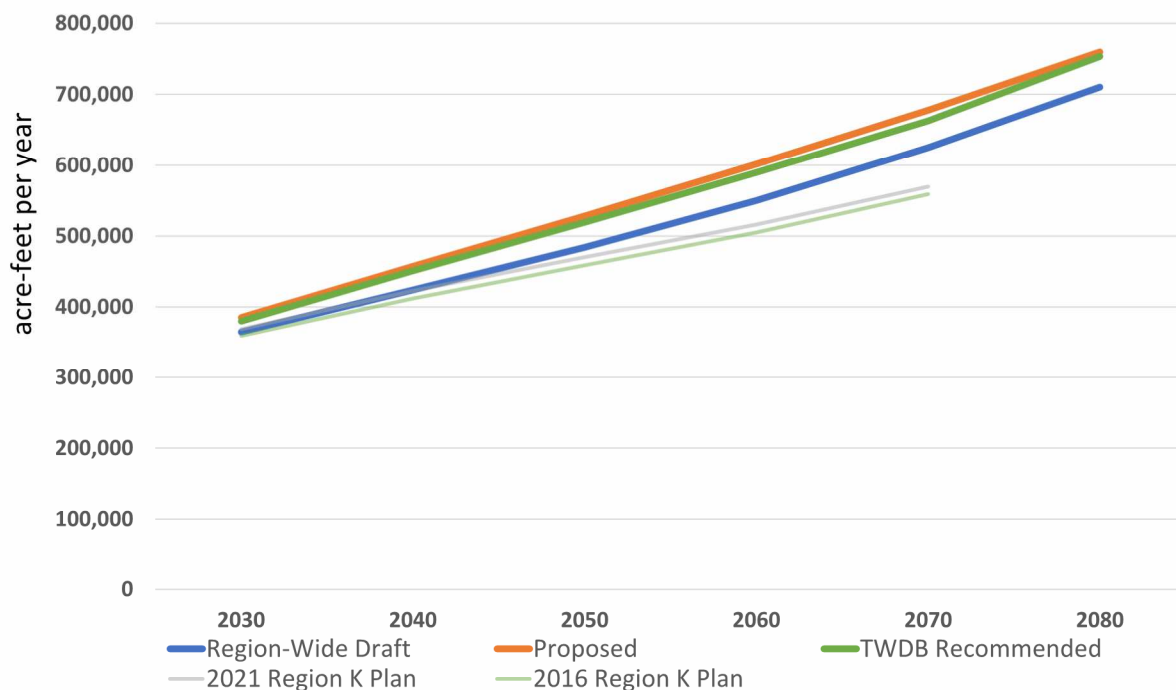
Municipal Population and Demand

Summary of Revision Requests – Region-Wide Demand



Municipal Population and Demand

Summary of Revision Requests – Region-Wide Demand



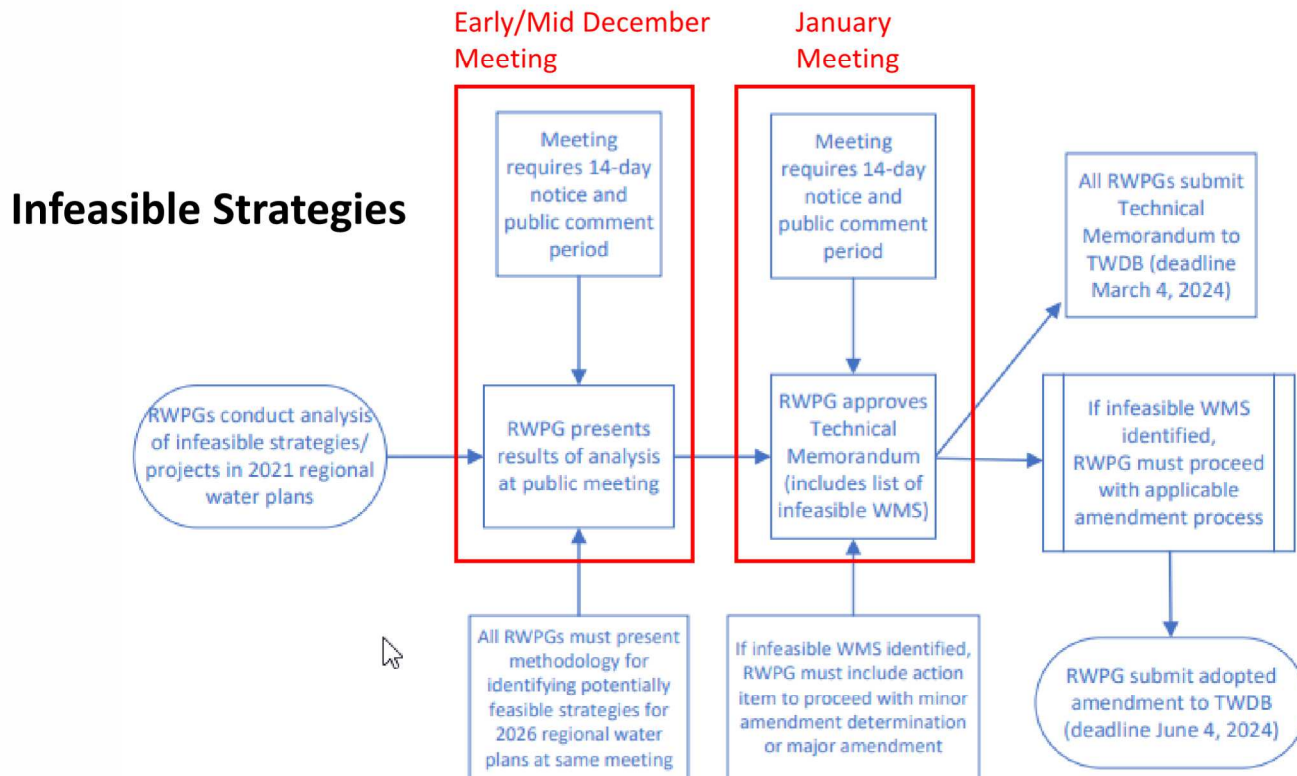
				2023					2024															
				Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
12	RWPG	Review draft projections and finalize adjustments with TWDB staff	2A, 2B	█	█	█	█																	
13	RWPG	Revision requests for draft non-municipal demands due	2A					█	Revision requests for draft non-municipal demands due 7/14/2023															
14	RWPG	Revision requests for draft population and municipal demands due	2B					█	Revision requests for draft population and municipal demands due 8/11/2023															
15	TWDB	TWDB Board adopts projections	2A, 2B							█														
16	TWDB	DB27 prepared for data entry ^{B,C}	NA	█	█																			
17	TWDB/RWPG	DB27 individualized training for consultants	NA					█											█					
18	TWDB	Updated MAGs released	3																					
19	RWPG	Evaluate water availability and existing water supplies	3	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
20	RWPG	Identify water needs	4A	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
21	RWPG	Identify infeasible WMSs in the 2021 RWPs	4B	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
22	RWPG	Technical Memo due	4C																					
23	RWPG	Amendments to 2021 RWPs to remove/revise infeasible WMSs	4B																					
24	RWPG	RWPG adopted amendments to 2021 RWPs to remove/revise infeasible WMSs due to TWDB	4B																					
25	RWPG	Identify potentially feasible WMSs	5A																					
26	TWDB/RWPG	Review and negotiate SOW submittals for WMS evaluations and issue notice-to-proceeds ^D	5B																					

Agenda Item 7d Key Dates and Upcoming Efforts



- Evaluate Supplies: Ongoing
- Evaluate Needs: Ongoing
- **Two RWPG meetings on WMS needed prior to Technical Memo (TWDB requirement – 14 day notice)**
- Technical Memo due March 4, 2024

Process Overview: Identification of Infeasible Water Management Strategies



Infeasible Strategies: Background

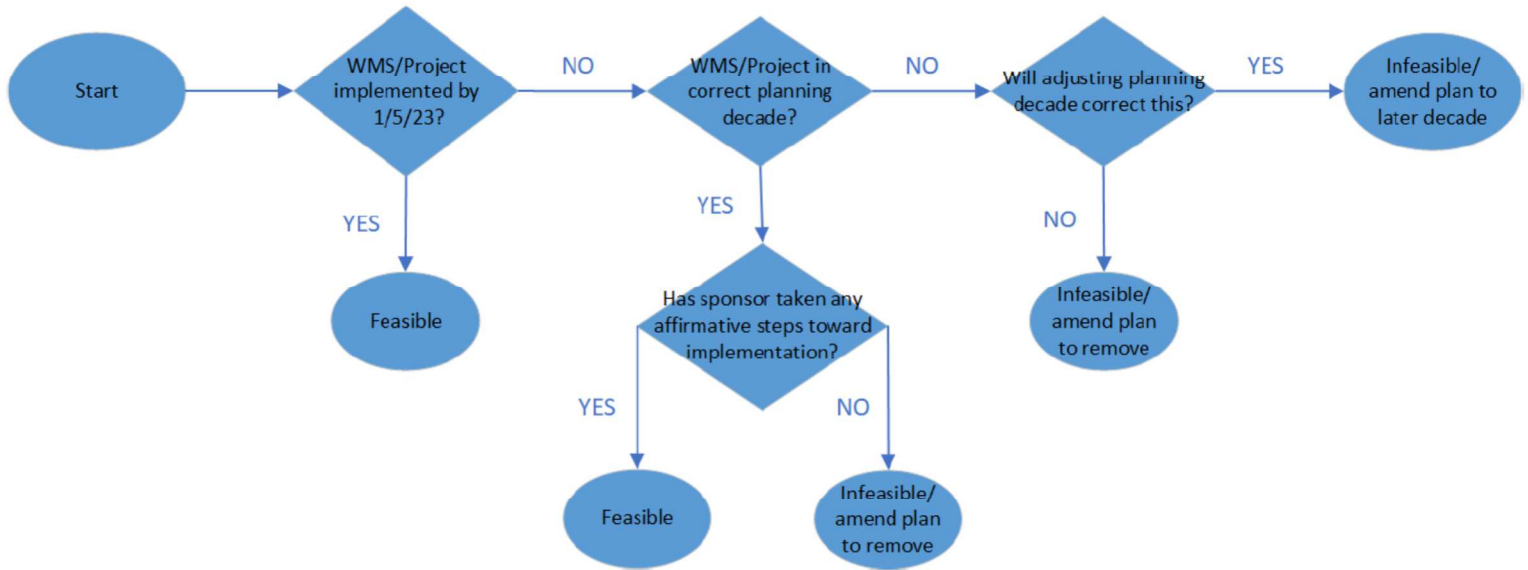


- A new ask for this cycle: “identify infeasible WMS in the 2021 RWP”
- At a minimum, review strategies/projects with an online decade of 2020
- Encouraged to review additional near-term WMS
- Recommended strategies/projects for 2020 decade must be online and delivering water by January 5, 2023
- Infeasible if:
 - Not currently implemented
 - Project sponsor not taken affirmative steps towards implementation (spending money, voting to spend money, applying for federal or state permits)
- Not required for strategies or projects that do not require a permit or involve construction (focus on reservoirs, desal, DPR, ASR, out of state transfers, etc)

Flowchart

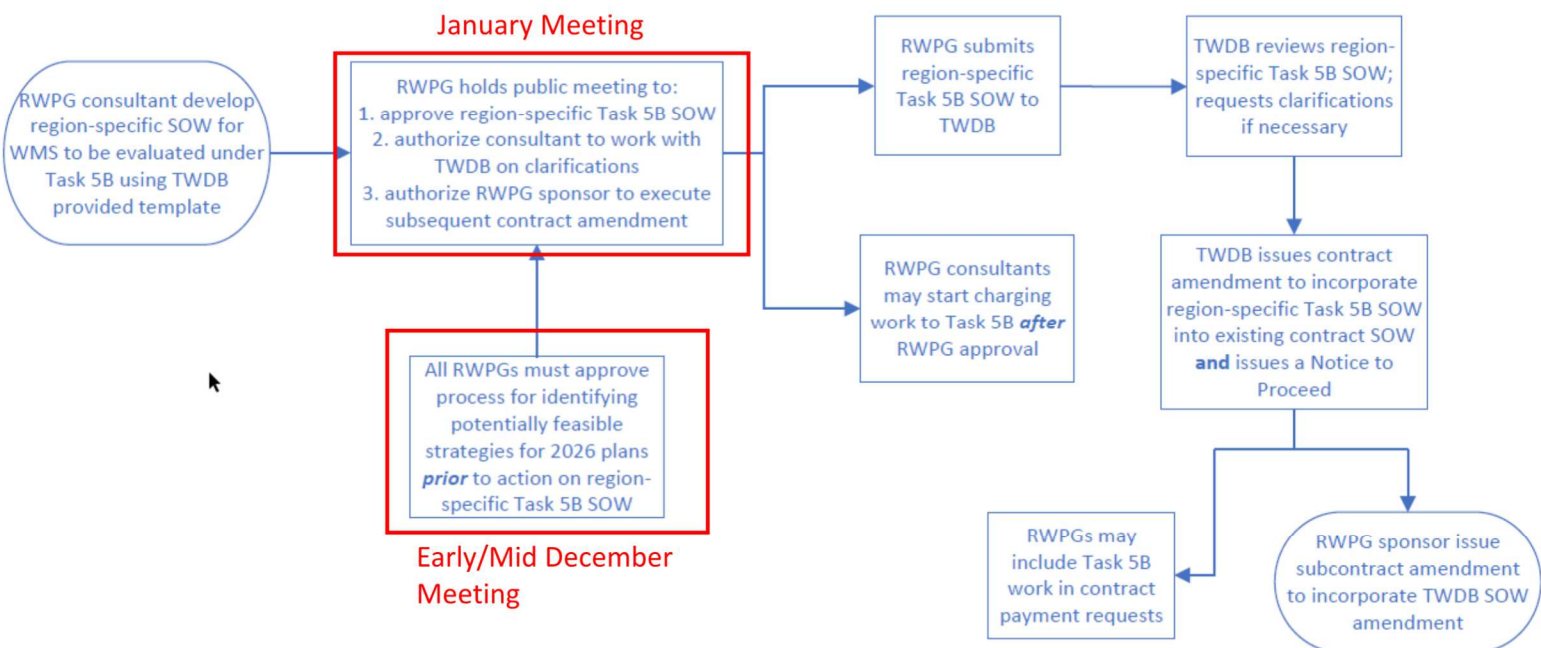


Figure 3 – Criteria of an infeasible WMS



Feasible Strategies

**Process for obtaining a Scope of Work Task 5B Notice to Proceed
2026 Regional Water Plans**



Agenda Item 7 Consultant Report



Thank you!
Neil Deeds
ndeeds@INTERA.com



Item 10. Financial Report

The Lower Colorado River Water Planning Group (Region K)

October 4, 2023

Region K Members Fund Balance 8/31/2023: \$2,391.64

Administrative Expenses for Region K Grant Fund approval:

Task 10 – Cycle 6 - Admin Expense Budget (Original) \$6,000.00

Prior approved expenses (1/26/22, 4/26/22)

8/31/2021 LCRA – Blue Host Domain Name \$17.99

8/24/2021 LCRA – Texas Press Invoice # 15355 \$4,396.50

8/24/2021 LCRA – Postage for mailout \$244.29

2/15/2022 LCRA – Squarespace Inc.
Region K web page \$233.82

3/29/2022 LCRA – EIG Bluehost.com
Three year – Domain name and email hosting
For Region K website \$453.86

Task 10 – Cycle 6 - Admin Expense Budget Increase (2022-23) \$22,000.00

Previous approved expenses (3/30/23)

2/14/2023 LCRA – Squarespace Inc.
Region K web page \$272.79

Task 10 – Cycle 6 - Admin Expense Budget Remaining \$22,380.75

Contractor Expenses for Region K Grant Fund:

Technical Consultant Contract Summary: INTERA Team PO#131282										
LABOR PER TASK		Budget	Jan-22	May-22	Oct-22	Feb-23	Mar-23	TOTAL	Remaining	% Complete
<i>Task Breakdown</i>										
Task 1	Planning Area Description	\$ 11,312.00	\$ 1,440.00	\$ 5,542.00	\$ -	\$ -	\$ 180.00	\$ 7,162.00	\$ 4,150.00	63%
Task 2A	Non-municipal Water Demand Projections	\$ 22,016.00	\$ 90.00	\$ 5,276.00	\$ 1,350.00	\$ 6,452.50	\$ 5,075.20	\$ 18,243.70	\$ 3,772.30	83%
Task 2B	Population & Municipal Water Demand Projections	\$ 35,116.00	\$ 180.00	\$ 7,191.48	\$ 5,164.21	\$ 4,577.55	\$ 12,191.85	\$ 29,305.09	\$ 5,810.91	83%
Task 3	Water Supply Analysis	\$ 86,830.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 86,830.00	0%
Task 4A	Water Needs Analysis	\$ 12,984.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 12,984.00	0%
Task 4B	Identification of Infeasible 2021 WMS	\$ 21,849.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 21,849.00	0%
Task 4C	Technical Memorandum	\$ 15,774.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 15,774.00	0%
Task 5A	Identification of Potentially Feasible WMS & WMP	\$ 17,200.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 17,200.00	0%
Task 5B	Evaluation & Recommendation of WMS & WMP	\$ 120,769.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 120,769.00	0%
Task 5C	Conservation Recommendations	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	N/A
Task 6	Impacts of RWP & Consistency with Protection of Resources	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	N/A
Task 7	Drought Response Information, Activities, & Recommendations	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	N/A
Task 8	Recommendations/Unique Stream Segments/Reservoir Sites and Legislatives/Regional Policy Issues	\$ 9,633.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9,633.00	0%
Task 9	Implementation & Comparison to the Previous Regional Water Plan	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	N/A
Task 10	Public Participation & Plan Adoption	\$ 96,826.00	\$ 4,620.32	\$ 9,152.71	\$ 3,420.00	\$ 11,004.06	\$ 900.00	\$ 29,097.09	\$ 67,728.91	30%
TOTAL		\$ 450,309.00	\$ 6,330.32	\$ 27,162.19	\$ 9,934.21	\$ 22,034.11	\$ 18,347.05	\$ 83,807.88	\$ 366,501.12	19%
<i>Budget Category Breakdown</i>										
Salaries & Wages		\$ 47,022.00	\$ 2,039.00	\$ 8,168.00	\$ 2,038.00	\$ 5,013.58	\$ 524.88	\$ 17,783.46	\$ 29,238.54	38%
Fringe		\$ 36,573.00	\$ 1,588.00	\$ 6,366.00	\$ 1,589.00	\$ 3,899.45	\$ 408.24	\$ 13,850.69	\$ 22,722.31	38%
Overhead		\$ 37,444.00	\$ 1,623.00	\$ 6,502.00	\$ 1,623.00	\$ 3,992.29	\$ 417.96	\$ 14,158.25	\$ 23,285.75	38%
Profit		\$ 24,092.00	\$ 1,050.00	\$ 4,206.00	\$ 1,050.00	\$ 2,568.68	\$ 268.92	\$ 9,143.60	\$ 14,948.40	38%
Travel		\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	--
Other Expenses		\$ -	\$ 30.32	\$ -	\$ -	\$ -	\$ -	\$ 30.32	\$ (30.32)	--
Subcontractor Services		\$ 305,178.00	\$ -	\$ 1,920.19	\$ 3,634.21	\$ 6,560.11	\$ 16,727.05	\$ 28,841.56	\$ 276,336.44	9%
TOTAL		\$ 450,309.00	\$ 6,330.32	\$ 27,162.19	\$ 9,934.21	\$ 22,034.11	\$ 18,347.05	\$ 83,807.88	\$ 366,501.12	19%