2026 Plateau Water Plan
Handout 1 – TWDB Approved Population Revision Requests

	2030	2040	2050	2060	2070	2080
Bandera County - Guadalupe Basin						
County-Other	111	113	115	118	120	123
Guadalupe Basin Total Population	**111**	**113**	**115**	**118**	**120**	**123**
Bandera County - Nueces Basin						
County-Other	1,041	1,062	1,083	1,105	1,127	1,150
Nueces Basin Total Population	**1,041**	**1,062**	**1,083**	**1,105**	**1,127**	**1,150**
Bandera County - San Antonio Basin						
Bandera	1,949	1,988	2,028	2,069	2,111	2,152
Bandera County FWSD #1	1,074	1,095	1,117	1,140	1,163	1,186
County-Other	17,340	17,690	18,046	18,411	18,778	19,150
San Antonio Basin Total Population	**20,363**	**20,773**	**21,191**	**21,620**	**22,052**	**22,488**
Bandera County Total Population	**21,515**	**21,948**	**22,390**	**22,843**	**23,300**	**23,760**
Edwards County - Colorado Basin						
Rocksprings	416	333	267	227	187	147
County-Other	127	102	81	69	57	45
Colorado Basin Total Population	**543**	**434**	**348**	**296**	**244**	**192**
Edwards County - Nueces Basin						
Rocksprings	250	200	160	137	113	88
County-Other	313	251	201	171	141	111
Nueces Basin Total Population	**563**	**451**	**361**	**307**	**253**	**199**
Edwards County - Rio Grande Basin						
County-Other	61	49	39	33	27	21
Rio Grande Basin Total Population	**61**	**49**	**39**	**33**	**27**	**21**
Edwards County Total Population	**1,167**	**934**	**748**	**637**	**525**	**412**
Kerr County - Colorado Basin						
County-Other	591	618	637	667	698	727
Colorado Basin Total Population	**591**	**618**	**637**	**667**	**698**	**727**
Kerr County - Guadalupe Basin						
Kerrville	33,035	34,546	35,611	37,315	39,034	40,677
Kerrville South Water	3,599	3,764	3,880	4,065	4,253	4,432
County-Other	19,670	20,570	21,204	22,219	23,242	24,220
Guadalupe Basin Total Population	**56,304**	**58,880**	**60,695**	**63,599**	**66,529**	**69,329**
Kerr County - Nueces Basin						
County-Other	8	9	9	9	10	10
Nueces Basin Total Population	**8**	**9**	**9**	**9**	**10**	**10**
Kerr County - San Antonio Basin						
County-Other	236	247	254	266	279	290
San Antonio Basin Total Population	**236**	**247**	**254**	**266**	**279**	**290**
Kerr County Total Population	**57,139**	**59,753**	**61,595**	**64,542**	**67,515**	**70,357**
Kinney County - Nueces Basin						
County-Other	21	20	19	19	19	18
Nueces Basin Total Population	**21**	**20**	**19**	**19**	**19**	**18**
Kinney County - Rio Grande Basin						
Brackettville	1,077	1,020	983	960	937	914
Fort Clark Springs MUD	1,372	1,299	1,252	1,223	1,194	1,164
County-Other	481	455	439	428	418	408
Rio Grande Basin Total Population	**2,930**	**2,774**	**2,674**	**2,611**	**2,549**	**2,486**
Kinney County Total Population	**2,951**	**2,794**	**2,693**	**2,630**	**2,568**	**2,504**

2026 Plateau Water Plan
Handout 1 – (continued) TWDB Approved Population Revision Requests

	2030	2040	2050	2060	2070	2080
Real County - Colorado Basin						
County-Other	31	26	22	19	16	14
Colorado Basin Total Population	**31**	**26**	**22**	**19**	**16**	**14**
Real County - Nueces Basin						
Camp Wood	1,800	1,800	1,800	1,800	1,800	1,800
Leakey	1,744	1,751	1,758	1,766	1,773	1,780
County-Other	1,905	1,621	1,383	1,203	1,020	836
Nueces Basin Total Population	**5,449**	**5,172**	**4,941**	**4,769**	**4,593**	**4,416**
Real County Total Population	**5,480**	**5,198**	**4,963**	**4,788**	**4,609**	**4,430**
Val Verde County - Rio Grande Basin						
Del Rio Utilities Commission	35,932	36,018	36,105	36,191	36,278	36,365
Laughlin AFB	1,640	1,640	1,640	1,640	1,640	1,640
County-Other	17,639	17,915	18,144	18,229	18,315	18,402
Rio Grande Basin Total Population	**55,211**	**55,573**	**55,889**	**56,060**	**56,233**	**56,407**
Val Verde County Total Population	**55,211**	**55,573**	**55,889**	**56,060**	**56,233**	**56,407**
Region J Total Population	**143,463**	**146,200**	**148,278**	**151,500**	**154,750**	**157,870**

Approved WUG Historical Water Use Survey (2010-2020)
Modified by TWDB based on the 2020 Census group quarter pop.
Approved WUG WSP Survey Response

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October 26, 2023

This document is released for the purpose of information exchange review and planning only under the authority of Tony L. Smith, P.E., October 2, 2023, TX PE#92620.

Mr. Lann Bookout
Region J Project Manager
Texas Water Development Board
P.O. Box 12321
Austin Texas

Subject: Hydrologic Variance Request for the Determination of Water Availability and Water Supplies for the 2026 Plateau Regional Water Plan (Region J)

Dear Mr. Ellis:

The Plateau Regional Water Planning Group (Region J) met on October 26, 2023, to discuss the process for determining the amount of surface water available from existing surface water sources and future water management strategies using the guidance provided by the Texas Water Development Board (TWDB) in the scope of work for the present cycle of Regional Water Planning. During this meeting, the RWPG discussed the approach for determining water availability within the region, noting where specific variances from the standard TWDB guidance will be employed towards development of the 2026 Plateau Regional Water Plan.

The RWPG approved submittal of this letter and the accompanying attachments, requesting that the TWDB allow the RWPG to use the approaches detailed herein throughout the regional planning process for analyses that determine surface water availability to existing rights and for analyses to determine the potential supplies available from new water management strategies and water management strategy projects.

Surface Water Supplies

In its guidelines for regional water planning, the TWDB requires that water availability be based on results derived from the official Texas Commission on Environmental Quality (TCEQ) Water Availability Models (WAMs). The TCEQ WAMs, which have been developed for all river basins in Texas, simulate the management and use of streamflow and reservoirs over a historical period of record, adhering to the prior appropriation doctrine, which governs the State of Texas water right priority system. The TCEQ WAMs are the fundamental tools used to determine surface water availability for water rights permitting and contain information about water rights in each respective river basin.

The Region J planning area includes the Rio Grande, Nueces, San Antonio, Colorado, and Guadalupe River Basins. For planning purposes, adjustments to these official WAMs are allowable to better reflect current and future surface water conditions in the Region. Such adjustments, as proposed herein, require the approval of the TWDB in order to be incorporated into the official TCEQ Rio Grande River Basin, Nueces River Basin, Colorado River Basin, and Guadalupe/San Antonio River Basin WAMs.

The TCEQ WAMs for these Plateau Region river basins contain information on all water rights in these basins. Embedded within the models are certain assumptions that the TCEQ specifies when analyzing water right reliabilities. Water supply availability under drought-of-record conditions is considered in the planning process to ensure that water demands can be met under critical conditions. For surface water supplies, drought-of-record

conditions relate to the quantity of water available to meet existing permits from the Rio Grande, Nueces, Colorado, Guadalupe, and San Antonio rivers and their tributaries as estimated by Run 3 of the official TCEQ WAMs.

There are several versions of each of these WAMs. TWDB guidance stipulates that regional water planning groups use the Full Authorization version that TCEQ employs to analyze applications for perpetual water rights. This scenario is often referred to as WAM "Run 3." The assumptions in the TCEQ WAM Run 3 are conservatively modeled for permitting purposes, allowing for consideration of water supply availability under drought-of-record conditions to ensure water demands can be met under critical circumstances.

For the purposes of the development of the 2026 Plateau Regional Water Plan, the "Run 3" WAMs for each of the aforementioned river basins will be updated to determine surface water availabilities in the region. To reflect the current and future conditions of the region, the following hydrologic variances are summarized below. Hydrologic variance request forms provided by the TWDB have been completed for each river basin, and are included in Attachment A. The methodology for estimating and modeling impacts of sedimentation on the surface water reservoirs are detailed in Attachment B.

Firm Yield

"Firm Yield" is defined in the Texas Administrative Code 31 TAC §357.10 (14) as the:

> "maximum amount of water that is physically and legally accessible from existing sources for immediate use by a Water User Group under a repeat of Drought of Record conditions."

In accordance with regional water planning rules and guidance, firm yields for existing reservoirs and water management strategies contemplating a reservoir within Region J will be reported within the 2026 Plateau Regional Water Plan based on the modeled results from the applicable WAM for the basin in which the reservoir is located.

Drought Worse than the Drought of Record

Per TWDB guidance, regional water plans must address water supply needs during a repeat of the drought of record. The generated values of supplies, demands, and population all have associated ranges of uncertainty. Although the limited regional planning resources may not support evaluating a range of or multiple scenarios and although assessments of the likelihood of droughts potentially worse than the drought of record (DWDOR) are not required, RWPGs may choose to consider scenarios and/or qualitatively address uncertainty and DWDOR in their region. Such assessments can be used to more explicitly recognize or acknowledge the relative uncertainties in the planning process and the potential risks without necessarily modifying the plan to mitigate those risks.

If evaluations performed by water providers within Region J include considerations of potential impacts of a DWDOR, these evaluations will be documented within Chapter 8 of the 2026 Plateau Regional Water Plan and considered for informing upon legislative and regional policy recommendations of the RWPG within that chapter.

General Hydrologic Assumptions

The Region J RWPG will assess surface water availability in a manner that accurately reflects water supplies that are available for use. The RWPG requests that the TWDB approve the following assumptions for use in representing existing supplies and potential future surface water supplies in the 2026 Plateau Regional Water Plan. The WAMs containing the necessary modifications to the TCEQ WAM that incorporate these assumptions will be referred to as the "Region J WAMs." A general summary of the models and assumptions to be employed for the evaluation of existing water supply and water management strategies (WMS's) is provided below.

Assumption	Use for Existing Supplies	Use for Water Management Strategies
General		
Use most recent available versions of the TCEQ WAMs.	X	X
WAM Run 3 - full consumption of existing water rights with no (zero) return flows).	X	X
Modeling of reuse to include consideration of minimum and permitted return flows associated with WUG, including identified return flows from TCEQ WAM Run 8.	X	X
Channel losses based on factors employed within official TCEQ WAMs.	X	X
ASR evaluations will consider surface water availability as determined by the WAM compared to demand, with the firm supply being the maximum demand that could be met assuming a repetition of the period of record drought.		X
Adopted environmental flow standards will be used as incorporated into the applicable official TCEQ WAMs	X	X

Assumption	Use for Existing Supplies	Use for Water Management Strategies
For those basins lacking TCEQ adopted environmental flow standards, TWDB consensus planning criteria will be employed in a manner consistent with TWDB guidelines.		X
Subordination of water rights will be modeled in a manner consistent with modeled subordination within the official TCEQ WAMs.	X	X
For municipal and industrial users: Run of the river rights will be determined in accordance with TWDB guidelines which state that the use-appropriate monthly percentage of the annual firm diversion must be satisfied in each and every month of the simulation period for all surface water diversions. Reservoirs will use firm yield unless a change is specifically requested by a reservoir owner and approved by the RWPG and TWDB, as appropriate per TWDB guidelines. The calculated source availabilities will be compared against existing legal and infrastructure constraints (water treatment plants, pipelines, intakes, etc.) and will be constrained if the existing infrastructure or legal capability is not sufficient to facilitate full utilization of the source. The most constrained amount will be used as the firm supply.	X	X
For irrigation users, water supply will be determined using firm reliability (100%). In the absence of any supply information or justification of reliable supplies available in a drought of record, supply values will be set equal to zero.	X	X
For livestock, in the absence of any supply information or justification of reliable supplies available in a drought of record, supply values will be set to zero.	X	X

Assumption	Use for Existing Supplies	Use for Water Management Strategies
Sedimentation		
For reservoirs with available volumetric survey information, an annual sediment rate will be calculated, and loadings calculated for Year 2030 and Year 2080. Sediment distribution will be calculated using the Empirical Area-Reduction method and resultant 2030 and 2080 area-capacity curves developed and employed within WAM. Intervening decadal yields will be linearly interpolated.	X	X
The most recent volumetric survey information will be utilized. For reservoirs lacking volumetric surveys, original area-capacity relations within TCEQ WAM Run 3 will be assumed constant.	X	X

Rio Grande River Basin (including the Pecos and Devils River)

Portions of the Rio Grande River Basin, including its tributaries, are located in Val Verde, Edwards, and Kinney Counties in the Plateau Region. The Pecos River forms a portion of the boundary between Terrell County in the Far West Texas Region and Crockett County in Region F before reaching Langtry in Val Verde County in the Plateau Region. The Devils River originates in Sutton County and proceeds generally southward through Val Verde County before reaching Amistad International Reservoir. There are no surface water rights on the Pecos and Devils Rivers within the Plateau Region. Amistad International Reservoir is located in the Rio Grande River Basin on the border between the United States and Mexico near the City of Del Rio, and was constructed jointly by the two nations. It was completed in 1968, with a maximum capacity of 5.25 million acre-feet, with approximately 3.5 million acre-feet of storage used for conservation. Lake Amistad is not a present source of supply for the Plateau Region, as the City of Del Rio and downstream irrigators in Val Verde County obtain their supply primarily from San Felipe Springs and Creek.

For the Rio Grande River Basin, the most recently available official TCEQ WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1940-2018.

Nueces River Basin

Portions of the Nueces River Basin, including its tributaries, are located within Edwards, Kinney, Real, Kerr, and Bandera Counties within the Plateau Region, with the main stem Nueces forming a portion of the border between Real and Edwards Counties. Headwater tributaries of the Nueces River located in the Plateau Region

include the Sabinal River and Hondo Creek in Bandera County, the West Nueces River in Edwards and Kinney Counties, and the Frio, East Frio, and Dry Frio Rivers in Real County.

For the Nueces River Basin, the most recently available official TCEQ WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1934-1996.

Colorado River Basin

The headwaters of the South Llano River, a tributary of the Colorado River, lie within Edwards County, while other tributaries are within Kerr County and Real County. For the Colorado River Basin, the most recently available official TCEQ WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1940-2016.

San Antonio River Basin

The headwaters of the San Antonio River are within Bandera County. Medina Lake, located within the San Antonio River Basin, was constructed in 1911 to provide irrigation water for farmers to the southwest of San Antonio. Although commonly referred to as Medina Lake, the lake is actually a system consisting of Medina Lake and Diversion Lake (the latter being where diversions from this dual-lake system are authorized). Diversion Lake was impounded in 1913, and is located approximately 4 miles downstream of Medina Lake.

For the San Antonio River Basin, the most recently available official TCEQ Guadalupe/San Antonio WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1934-1989.

Guadalupe River Basin

The portion of the Guadalupe River Basin within the Plateau Region lies almost entirely within Kerr County. Three tributaries (Johnson Creek, North Fork, and South Fork) converge west of the City of Kerrville, forming the Guadalupe River course. Three recreational reservoirs permitted for non-consumptive, recreational uses are located in the basin near Kerrville. As noted in the 2021 Plateau Regional Water Plan, "Pursuant to a Memorandum of Understanding (MOU) between the Guadalupe-Blanco River Authority (GBRA) and the Commissioner's Court of Kerr County, the South Central Texas Water Planning Group (Region L) recognizes a potential commitment of approximately 2,000 acre-feet/year from the firm yield of Canyon Reservoir for the calendar years 2021 through 2050. GBRA's hydrology studies indicate that a commitment of about 2,000 acre-feet/year would be necessary to allow permits for 6,000 acre-feet/year to be issued by TCEQ for diversions in Kerr County."

For the Guadalupe River Basin, the most recently available official TCEQ Guadalupe/San Antonio WAM Run 3 (ver. Oct. 1, 2023) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1934-1989.

Simulation of Reservoir Conditions (Sedimentation)

As mentioned previously, the two reservoirs located within the Plateau Region are Amistad Reservoir (locatedin the Rio Grande River Basin) and Medina Lake (San Antonio River Basin). Canyon Reservoir (located in the Guadalupe River Basin) is located within Region L, and as mentioned above has been recognized in previous planning as a potential supply for Kerr County in the Plateau Region. Although these reservoirs do not presently provide supply to the region, each could do so in the future pending availability of firm supplies.

In the consideration of available firm supplies under existing and future conditions, reservoir sedimentation can reduce the storage capacity of a reservoir, impacting the beneficial uses of reservoirs such as water supply, flood control, hydropower, navigation, and recreation. Surveys of volumetric storage in a reservoir allow for the derivation of rates and loadings of sediment to the reservoir. The annual loading can then be distributed to determine a revised elevation-area-capacity curve which models the distribution of the total volume of sediment accumulated at the end of an analysis period. The resultant area-capacity relationship is then incorporated into the applicable WAM for the given reservoir.

For those reservoirs lacking volumetric surveys, original area-capacity relations employed within WAM Run 3 will be assumed constant. If a reservoir (or system) is calculated to have no firm yield, that result will be assumed for all decades in the 2030-2080 planning horizon. For reservoirs with available volumetric survey information, an annual sediment rate will be calculated, and loadings calculated for Year 2030 and Year 2080. Sediment distribution within the reservoir will be calculated using the use USACE Empirical Area Reduction Method (EARM) and employed within the applicable WAM to calculate 2030 and 2080 area/capacity relations and accordant firm yields. The intervening decadal firm yields will then be linearly interpolated.

Interregional Coordination

Major downstream water rights include those in Region L supplied by the GBRA out of Canyon Lake and by the Bexar-Medina-Atascosa WCID #1 out of the Medina/Diversion system. The firm yields of Canyon and Medina can limit the amount of water available for appropriation in both the Plateau Region and Region L. Major downstream water rights in Region M (i.e., cities and irrigators on the Rio Grande downstream from Amistad Reservoir) do not limit the amount of water available for appropriation in the Plateau Region because currently the Plateau Region does not depend on the Falcon-Amistad system. TCEQ's Lower Rio Grande Watermaster allocates water rights on the Rio Grande according to the supply in the Amistad Reservoir and in accordance with the 1944 International Treaty with Mexico.

For those instances where modeled surface water supply results can inform upon or impact determinations of surface water availability in the Plateau Region or other regions, modeled results and approaches will be shared and coordinated to ensure consistency between regions, in a manner consistent with TWDB guidelines and the assumptions described herein.

Conclusion

These assumptions are recommended to be used throughout the regional planning process for analyses that determine water availability for existing supplies, and also for analyses to determine the potential supplies available for new water management strategies. Specifics regarding surface water availability modeling of each river basin are presented by basin in the completed hydrologic variance forms provided in Attachment A. The assumptions described herein require the approval of the TWDB in order to be incorporated into the Plateau RWPG's analyses.

If you have any questions regarding this request, please contact me at your convenience. We appreciate the TWDB's consideration of this request.

Sincerely,

Jonathan Letz
Chair, Plateau Regional Water Planning Group

Enclosures: Attachment A

cc: Jody Grinstead, UGRA General Manager
Jennifer Herrera, WSP Technical Consultant
Tony Smith, P.E., Carollo Engineers, Technical Consultant

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules[1] 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: J

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.

   Rio Grande

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

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

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.

   Click or tap here to enter text.

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 preferrable for drought planning purposes.

   No

   Choose an item.

   Click or tap here to enter text.

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 preferrable 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 sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

No

Choose an item.

Click or tap here to enter text.

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

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    No

    Click or tap here to enter text.

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

    Not Applicable

[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.

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules[1] 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: J

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.

   Nueces

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

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

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.

   Click or tap here to enter text.

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 preferrable for drought planning purposes.

   No

   Choose an item.

   Click or tap here to enter text.

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 preferrable 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 sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

No

Choose an item.

Click or tap here to enter text.

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

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    No

    Click or tap here to enter text.

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

    Not Applicable

[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.

Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules[1] 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: J

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.

   Colorado

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

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

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.

   Click or tap here to enter text.

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 preferrable for drought planning purposes.

   No

   Choose an item.

   Click or tap here to enter text.

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 preferrable 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 sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

No

Choose an item.

Click or tap here to enter text.

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

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    No

    Click or tap here to enter text.

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

    Not Applicable

[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.

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Water Planning Region: J

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.

   San Antonio

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.

   - Request inclusion of return flows for evaluation of strategy supplies.

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

   The above requests were submitted in the 2021and 2016 planning cycles and are unchanged from the previous planning cycle request.

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

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.

   Click or tap here to enter text.

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 preferrable for drought planning purposes.

   No

   Choose an item.

   Click or tap here to enter text.

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 preferrable 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.

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   No

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include adding subordination agreements, contracts, updated water rights, modified spring flows, updated lake evaporation, updated sedimentation[2], system or reservoir operations, or special operational procedures into the WAM.

No

Choose an item.

Click or tap here to enter text.

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

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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.

    Unknown

    Click or tap here to enter text.

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

    Not Applicable

[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.

Surface Water Hydrologic Variance Request Checklist

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Water Planning Region: J

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.

   Guadalupe

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.

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

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.

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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 preferrable for drought planning purposes.

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   Choose an item.

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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 preferrable 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.

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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.

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   Strategy Supply

   Evaluations of reuse strategies will use the return flows from TCEQ WAM Run 8. This approach is consistent with the methods employed by TCEQ in their evaluations of reuse during their permitting process where the permitted, minimum historical, and present discharges relevant to a particular WUG are all considered in the evaluation of a reuse permit.

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    No

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    Not Applicable

[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.

DESIRED FUTURE CONDITIONS

Adopted Desired Future Conditions for Relevant Aquifers GMA-7		
County	**Aquifer**	**Desired Future Condition (DFC)**
Kinney	Edwards-Trinity (Plateau)	Total net drawdown in Kinney County in 2070, as compared with 2010 aquifer levels, shall be consistent with maintenance of an annual average flow of 23.9 cfs and an annual median flow of 23.9 cfs at Las Moras Springs
Val Verde	Edwards-Trinity (Plateau)	Total net drawdown in Val Verde County in 2070, as compared with 2010 aquifer levels, shall be consistent with maintenance of an average annual flow of 73-75 mgd at San Felipe Springs
Edwards	Edwards-Trinity (Plateau), Pecos Valley and Trinity	Total net drawdown not to exceed 2 feet in 2070 as compared to 2010 aquifer levels
Real	Edwards-Trinity (Plateau), Pecos Valley and Trinity	Total net drawdown not to exceed 4 feet in 2070 as compared to 2010 aquifer levels

Adopted Desired Future Conditions for Relevant Aquifers GMA-9		
County	**Aquifer**	**Desired Future Condition (DFC)**
Bandera	Edwards Group of the Edwards-Trinity (Plateau)	No net increase in average drawdown in Kendall and Bandera counties through 2080 (no average water level decline in 2080, as compared to 1997 water levels)
	Trinity	Increase of average drawdown of approximately 30 feet through 2080 (no more than 30 feet of average water level decline in 2016, as compared to 2008 water levels)
Kerr	Trinity	Increase of average drawdown of approximately 30 feet through 2080 (no more than 30 feet of average water level decline in 2016, as compared to 2008 water levels)

Adopted Desired Future Conditions for Non-Relevant Aquifers GMA-10		
County	**Aquifer**	**Desired Future Condition (DFC)**
Kinney	Edwards (Balcones Fault Zone) Aquifer	Relate to levels in Index Well J-17 in the Uvalde Pool of the Edwards Aquifer as mandated in Edwards Aquifer Authority Legislation

Note: Other aquifers within GMA boundaries are classified as non-relevant.

Plateau Region – 2026 RWP
Groundwater Source Availability

County	Aquifer	Basin	2030	2040	2050	2060	2070	2080	Source Availability Comments
Bandera	Edwards-Trinity (Plateau) Aquifer	Guadalupe	81	81	81	81	81	81	
		Nueces	38	38	38	38	38	38	
		San Antonio	1890	1890	1890	1890	1890	1890	
	Trinity Aquifer	Guadalupe	76	76	76	76	76	76	
		Nueces	903	903	903	903	903	903	
		San Antonio	6,305	6,305	6,305	6,305	6,305	6,305	
Edwards	Edwards-Trinity (Plateau), Pecos Valley, and Trinity Aquifers	Colorado	2,305	2,305	2,305	2,305	2,305	2,305	
		Nueces	1,631	1,631	1,631	1,631	1,631	1,631	
		Rio Grande	1,740	1,740	1,740	1,740	1,740	1,740	
	Nueces River Alluvium	Nueces	1,787	1,787	1,787	1,787	1,787	1,787	Carry-over from the 2021 Plan
Kerr	Edwards-Trinity (Plateau) Aquifer	Colorado	17	17	17	17	17	17	TWDB modeling note: non-relevant DFC-compatible modeled pumping values. Modeled availability is 17 acre-feet/year for all planning decades. GMA(s): 9 | GAM Run: GR21-014_MAG
		Guadalupe	962	962	962	962	962	962	TWDB modeling note: non-relevant DFC-compatible modeled pumping values. Modeled availability is 962 acre-feet/year for all planning decades. GMA(s): 9 | GAM Run: GR21-014_MAG
		Nueces	5	5	5	5	5	5	
		San Antonio	3	3	3	3	3	3	TWDB modeling note: non-relevant DFC-compatible modeled pumping values. Modeled availability is 3 acre-feet/year for all planning decades. GMA(s): 9 | GAM Run: GR21-014_MAG
	Trinity Aquifer	Colorado	318	318	318	318	318	318	
		Guadalupe	14,056	13,767	13,450	13,434	13,434	13,434	
		San Antonio	471	471	471	471	471	471	

(continued) Plateau Region – 2026 RWP
Groundwater Source Availability

County	Aquifer	Basin	2030	2040	2050	2060	2070	2080	Source Availability Comments
Kerr	Trinity Aquifer ASR	Guadalupe	453	453	453	453	453	453	Carry-over from the 2021 Plan
	Ellenburger-San Saba Aquifer	Colorado	200	200	200	200	200	200	Carry-over from the 2021 Plan
	Ellenburger-San Saba Aquifer	Guadalupe	1,802	1,802	1,802	1,802	1,802	1,802	Carry-over from the 2021 Plan
Kinney	Austin Chalk Aquifer	Nueces	875	875	875	875	875	875	TWDB modeling note: Not an official TWDB aquifer and not modeled. Total availability values of 875 acre-feet/year are from RWP22 database with a source description based on Robert Bradley's analysis of the number of wells in the TWDB Groundwater Database. GMA(s): 10
	Austin Chalk Aquifer	Rio Grande	1,894	1,894	1,894	1,894	1,894	1,894	Carry-over from the 2021 Plan
	Edwards-BFZ Aquifer	Nueces	6,319	6,319	6,319	6,319	6,319	6,319	
		Rio Grande	2	2	2	2	2	2	
	Edwards-Trinity (Plateau), Pecos Valley, and Trinity Aquifers	Nueces	12	12	12	12	12	12	
		Rio Grande	70,329	70,329	70,329	70,329	70,329	70,329	
Real	Edwards-Trinity (Plateau), Pecos Valley, and Trinity Aquifers	Colorado	277	277	277	277	277	277	
		Guadalupe	3	3	3	3	3	3	
		Nueces	7,243	7,243	7,243	7,243	7,243	7,243	
	Nueces River Alluvium	Nueces	1,787	1,787	1,787	1,787	1,787	1,787	Carry-over from the 2021 Plan
	Frio River Alluvium	Nueces	2,145	2,145	2,145	2,145	2,145	2,145	Carry-over from the 2021 Plan
Val Verde	Edwards-Trinity (Plateau), Pecos Valley, and Trinity Aquifers	Rio Grande	50,000	50,000	50,000	50,000	50,000	50,000	
Total			**175,929**	**175,640**	**175,323**	**175,307**	**175,307**	**175,307**	

Carry-Over from 2021 Plan

Plateau Region – 2026 RWP
Groundwater Source Availability Methodology

Source Supply	County	Basin	Methodology
Austin Chalk Aquifer	Kinney	Rio Grande	0.6% (0.006) of average annual rainfall (22 in) over the aquifer outcrop (189,377 acres) as recharge. Calculated by Planning Group consultant (WSP).
		Nueces	Based on Robert Bradley's analysis of the number of wells in the TWDB Groundwater Database. GMA10
Nueces River Alluvium Aquifer	Edwards	Nueces	Recharge plus 0.1 volume of water in storage. See Plateau Region Report: Occurrence of Significant River Alluvium Aquifers in the Plateau Region (2010). www.ugra/plateau-water-planning-group
	Real	Nueces	
Frio River Alluvium Aquifer	Real	Nueces	
Ellenburger/San Saba Aquifer	Kerr	Colorado	Annual availability of 0.007 acre-feet/acre/year over 286,000 acres of prime production zone in eastern Kerr County. See Sec 3.1.8 of the 2021 Plan.
		Guadalupe	
Edwards-BFZ Aquifer	Kinney	Nueces	GMA10 MAG
		Rio Grande	
Edwards Group of the Edwards-Trinity (Plateau) Aquifer	Kerr	Colorado	GMA9 Non-Relavant, TWDB modeled run compatible with DFC, which was provided to PWPG.
		Guadalupe	
		Nueces	
		San Antonio	
	Bandera	Guadalupe	GMA9 MAG
		Nueces	
		San Antonio	
Edwards-Trinity (Plateau), Pecos Valley, Trinity Aquifer	Edwards	Colorado	GMA7 MAG
		Nueces	
		Rio Grande	
	Kinney	Nueces	
		Rio Grande	
	Real	Colorado	
		Nueces	
		Guadalupe	
	Val Verde	Rio Grande	
Trinity Aquifer	Bandera	Guadalupe	GMA9 MAG
		Nueces	
		San Antonio	
	Kerr	Colorado	
		Guadalupe	
		Nueces	
		San Antonio	

PWPG
2021 RWP - Water Management Strategies
2020 & 2030 Online Decades

County	Water User Group	Strategy	Strategy ID	Strategy Supply (Acre-Feet Per Year)					
				2020	2030	2040	2050	2060	2070
Bandera	City of Bandera	Reuse treated wastewater effluent for irrigation of public spaces	J-1	0	310	310	310	310	310
		Promote, design & install rainwater harvesting systems on public buildings	J-2	0	1	1	1	1	1
		Additional Lower Trinity well and lay necessary pipeline **ALTERNATE**	J-3	0	403	403	403	403	403
		Additional Middle Trinity wells within City water infrastructure area	J-4	161	161	161	161	161	161
		Surface water acquisition, treatment, and ASR	J-5	0	1,500	1,500	1,500	1,500	1,500
	*Bandera County FWSD #1	Public conservation education	J-6	2	2	2	2	2	2
		Additional groundwater well	J-7	100	100	100	100	100	100
	*Bandera County Other - Bandera River Ranch #1	Water loss audit and main-line repair for	J-8	4	4	4	4	4	4
	*Bandera County Other - Lake Medina Shores	Public conservation education	J-9	3	3	3	3	3	3
		Additional groundwater wells **ALTERNATE**	J-10	251	251	251	251	251	251
	*Bandera County Other - Medina WSC	Public conservation education	J-11	1	1	1	1	1	1
		Additional groundwater well	J-12	55	55	55	55	55	55
	Bandera County Other	Drought management (BCRAGD)	J-14	441	491	516	525	533	537
	Bandera County Other - Volunteer Fire Dept.	Additional groundwater wells to provide emergency supply **ALTERNATE**	J-16	189	189	189	189	189	189
	Bandera County Other - Enchanted River Estates	Water loss audit and main-line repair	J-17	1	1	1	1	1	1
	Bandera County Other	Drought management (BCRAGD)	J-18	23	26	27	28	28	28
	*Bandera County Irrigation	Irrigation scheduling	J-20	36	36	36	36	36	36
		Additional groundwater wells	J-21	75	75	75	75	75	75
	*Bandera County Livestock	Livestock conservation	J-22	1	1	1	1	1	1
		Additional groundwater well	J-23	2	2	2	2	2	2
		Livestock conservation	J-24	1	1	1	1	1	1
		Additional groundwater well	J-25	3	3	3	3	3	3

PWPG
(continued) 2021 RWP - Water Management Strategies
2020 & 2030 Online Decades

County	Water User Group	Strategy	Strategy ID	Strategy Supply (Acre-Feet Per Year)					
				2020	2030	2040	2050	2060	2070
Edwards	City of Rocksprings	Public conservation education	J-26	1	1	1	1	1	1
		Additional groundwater well	J-27	121	121	121	121	121	121
	Edwards County Other - (Barksdale WSC)	Additional well in the Nueces River Alluvium Aquifer and RO wellhead treatment	J-28	54	54	54	54	54	54
	*Edwards County Mining	Additional groundwater well	J-31	16	16	16	16	16	16
		Additional groundwater well	J-33	12	12	12	12	12	12
		Additional groundwater wells	J-35	31	31	31	31	31	31
Kerr	*City of Kerrville	Increase wastewater reuse	J-36	2,500	2,500	2,500	2,500	2,500	2,500
		Water loss audit and main-line repair	J-37	134	134	134	134	134	134
		Explore and develop new Ellenburger Aquifer well supply	J-39	1,156	1,156	1,156	1,156	1,156	1,156
		Increased water treatment and ASR capacity	J-41	0	3,360	3,360	3,360	3,360	3,360
	Kerr County Other - Eastern Kerr County Regional Water Supply Project	Project 1. Construction of an Ellenburger Aquifer water supply well	J-45	0	108	108	108	108	108
		Project 2. Construction of off-channel surface water storage		0	1,121	1,121	1,121	1,121	1,121
		Project 2. Construction of surface water treatment facilities and transmission lines							
		Project 3. Construction of ASR facility		0	1,124	1,124	1,124	1,124	1,124
		Project 4. Construction of Trinity Aquifer wellfield for dense, rural areas		0	860	860	860	860	860
		Project 4. Construction of desalination plant							
	Kerr County Other - *Center Point	Public conservation education	J-54	1	1	1	1	1	1
		Purchase water from EKCRWSP	J-46	11	11	11	11	11	11
	Kerr County Other - *Center Point Taylor System	Public conservation education	J-55	1	1	1	1	1	1

PWPG
(continued) 2021 RWP - Water Management Strategies
2020 & 2030 Online Decades

County	Water User Group	Strategy	Strategy ID	Strategy Supply (Acre-Feet Per Year)					
				2020	2030	2040	2050	2060	2070
Kerr	Kerr County Other - *Center Point Taylor System	Purchase water from EKCRWSP	J-47	43	43	43	43	43	43
	Kerr County Other - Verde Park Estates	Water loss audit and main-line repair	J-42	1	1	1	1	1	1
	*Kerr County Other	Public conservation education	J-43	1	1	1	1	1	1
	*Kerr County Livestock	Livestock conservation	J-56	24	24	24	24	24	24
		Additional groundwater wells **ALTERNATE**	J-57	119	119	119	119	119	119
		Livestock conservation	J-58	35	35	35	35	35	35
		Additional groundwater wells **ALTERNATE**	J-59	173	173	173	173	173	173
		Livestock conservation	J-60	5	5	5	5	5	5
		Additional groundwater well **ALTERNATE**	J-61	27	27	27	27	27	27
		Livestock conservation	J-62	1	1	1	1	1	1
		Additional groundwater well **ALTERNATE**	J-63	6	6	6	6	6	6
	*Kerr County Mining	Additional groundwater wells	J-65	19	19	19	19	19	19
Kinney	City of Brackettville	Increase supply to Spofford with new water line	J-66	0	3	3	3	3	3
		Increase storage facility	J-67	0	3	3	3	3	3
	Fort Clark Springs MUD	Water loss audit and main-line repair	J-68	79	79	79	79	79	79
		Increase storage facility	J-69	0	620	620	620	620	620
Real	*City of Camp Wood	Public conservation education	J-72	1	1	1	1	1	1
		Additional groundwater wells	J-73	143	143	143	143	143	143
	City of Leakey	Additional groundwater well	J-75	91	91	91	91	91	91
		Develop interconnections between wells within the City	J-76	0	81	81	81	81	81
	Real County Other - Real WSC	Water loss audit and main-line repair	J-77	2	2	2	2	2	2
	Real County Other - Oakmont Saddle Mountain WSC	Additional groundwater well	J-79	54	54	54	54	54	54

PWPG
(continued) 2021 RWP - Water Management Strategies
2020 & 2030 Online Decades

County	Water User Group	Strategy	Strategy ID	Strategy Supply (Acre-Feet Per Year)					
				2020	2030	2040	2050	2060	2070
Val Verde	*City of Del Rio	Water loss audit and main-line repair	J-80	12	12	12	12	12	12
		Additional groundwater well	J-81	7,191	7,191	7,191	7,191	7,191	7,191
		Water treatment plant expansion	J-82	0	943	943	943	943	943
		Develop a wastewater reuse program	J-83	0	3,092	3,092	3,092	3,092	3,092
	Laughlin Air Force Base	Purchase water from City of Del Rio	J-87	87	183	284	346	345	345
	Val Verde County Other - Val Verde County WCID Comstock	Water loss audit and main-line repair	J-84	1	1	1	1	1	1
	Val Verde County Other - San Pedro Canyon Upper Subdivision	Water loss audit and main-line repair	J-85	7	7	7	7	7	7
	Val Verde County Other - Tierra Del Lago	Water loss audit and main-line repair	J-86	4	4	4	4	4	4
	*Val Verde County Mining	Additional groundwater wells	J-89	242	242	242	242	242	242

Alternate WMS
Purchase Water Strategies
County Aggregate Strategies
Conservation Strategies
No Supply in 2020

PROCESS FOR IDENITIFYING AND SELECTING POTENTIALLY FEASIBLE WATER MANAGEMENT STRATEGIES TO BE EVALUATED FOR THE 2026 PLATEAU WATER PLAN

Strategy Types

As required by TWC §16.053(c)(5) and TAC §357.34(c) the regional water plan shall consider, **but not be limited to**, the following potentially feasible water management strategies:

1. Conservation
2. Drought management
3. Reuse
4. Management of existing water supplies
5. Conjunctive use
6. Acquisition of available existing water supplies
7. Development of new water supplies
8. Developing regional water supply facilities or providing regional management of water supply facilities
9. Developing large-scale desalination facilities for seawater or brackish groundwater that serve local or regional brackish groundwater production zones identified and designated under TWC §16.060(b)(5)34
10. Developing large-scale desalination facilities for marine seawater that serve local or regional entities
11. Voluntary transfer of water within the region using, but not limited to, contracts, water marketing, regional water banks, sales, leases, options, subordination agreements, and financing agreements
12. Emergency transfer of water under TWC §11.139
13. Interbasin transfers of surface water
14. System optimization
15. Reallocation of reservoir storage to new uses
16. Enhancements of yields
17. Improvements to water quality
18. New surface water supply
19. New groundwater supply
20. Brush control
21. Precipitation enhancement
22. Aquifer storage and recovery
23. Cancellation of water rights
24. Rainwater harvesting

Other potential projects considered for the initial list included:

- appropriate strategies from the *2021 Plan*
- water-loss audits and line replacement
- projects suggested by municipalities through a survey
- projects that are currently or have recently applied to the TWDB for funding

Needs Analysis

1. Receive a *Needs Analysis Report* from the TWDB, which provides a comparison of existing water supplies and projected water demands for each water user group (WUG) and wholesale water provider (WWP) in the Region. Based on this comparison, the report identifies WUGs and WWPs that are expected to experience needs for additional water supplies within the 50-year time frame of the regional water plan.

Identification and Selection Process

2. Review and consider recommended water management strategies adopted by the water planning group for the *2021 Far West Texas Water Plan*.
3. Review and consider any issues identified in the most current TWDB Water Loss Audit Report, including leak detection and supply side analysis.
4. Solicit current water planning information, including specific water management strategies of interest from WUGs and WWPs with identified needs.
5. Review and consider the most recent Water Supply Management, Water Conservation, and/or Drought Contingency Plans, where available, from WUGs and WWPs with identified needs.
6. Consider potentially feasible water management strategies that may include, but are not limited to (Chapter 357 Subchapter C §357.34):
    - Extended use of existing supplies including:
        a. System optimization and conjunctive use of water resources
        b. Reallocation of reservoir storage to new uses
        c. Voluntary redistribution of water resources including contracts, water marketing, regional water banks, sales, leases, options, subordination agreements, and financing agreements
        d. Subordination of existing water rights through voluntary agreements
        e. Enhancement of yields of existing sources
        f. Improvement of water quality including control of naturally occurring chlorides
        g. Drought management
    - New supply development including:
        a. Construction and improvement of surface water and groundwater resources
        b. Brush control
        c. Precipitation enhancement
        d. Desalination
        e. Water supply that could be made available by cancellation of water rights
        f. Rainwater harvesting

g. Aquifer storage and recovery

- Conservation and drought management measures including demand management
- Reuse of wastewater
- Interbasin transfers of surface water
- Emergency transfers of surface water

7. Consider other *potentially feasible water management strategies* suggested by planning group members, stakeholders, and the public.
8. Based on the above reviews and considerations, establish a preliminary list of *potentially feasible water management strategies*. At a discussion level, consider the following feasibility concerns for each strategy:
    - Water supply source availability during drought-of-record conditions
    - Cost/benefit
    - Water quality
    - Threats to agriculture and natural resources
    - Impacts to the environment, other water resources, and basin transfers
    - Socio-economic impacts
9. Based on the above discussion level analysis, select a final list of *potentially feasible water management strategies* for further technical evaluation using detailed analysis criteria.