

# REGION C WATER PLANNING GROUP

Senate Bill One Sixth Round of Regional Water Planning - Texas Water Development Board

## **Board Members**

Kevin Ward , Chair  
Russell Laughlin, Vice-Chair  
Jenna Covington , Secretary  
John Paul Dineen III  
G.K. Maenius  
Ryan Bayle  
Grace Darling  
Bob Riley  
Doug Shaw  
Harold Latham  
Gary Douglas  
David Bailey  
Stephen Gay  
Chris Harder  
Rick Shaffer  
Denis Qualls  
Jay Barksdale  
John Lingenfelder  
Steve Mundt  
Paul Sigle  
Dan Buhman  
Chris Boyd  
Connie Standridge

August 2023

Jeff Walker  
Texas Water Development Board  
1700 North Congress  
Austin, Texas 78711-3231

RE: Region C Request for Modifications to TCEQ Water Availability Models for Planning Purposes

Dear Mr. Walker:

Region C is located primarily within the Trinity and Red River Basins. Small areas of the region are in the Sabine, Sulphur and Brazos River Basins. Reservoirs in each of these river basins and the Neches River Basin supply water to Region C. As part of the 2026 planning efforts, the Full Authorization Water Availability Models (WAM<sup>1</sup>), also known as Run 3, for each of these basins will be updated to determine surface water availability in the region. To reflect the current conditions and operations of the region, the following hydrologic variances are summarized below. Completed hydrologic variance request forms for each river basin are included in Attachment A.

### Safe Yield

Based on requests from Tarrant Regional Water District (TRWD) and Dallas Water Utilities (DWU), Region C requests the use of safe yield for the allocation and distribution of surface water supplies from reservoirs owned and operated by these two wholesale water providers. In accordance with the TWDB planning rules, firm yields will also be determined and reported in the plan. Firm yield will be used for other surface water reservoirs.

### Drought Worse than the Drought of Record

The Texas Legislature authorized the regional water planning groups to consider droughts worse than the drought of record in its planning efforts, which can reflect expected climate uncertainties and trends in water availability. Several water providers in Region C consider such conditions in their long-term water planning. NTMWD has recently completed a Long-Range Water Supply Plan that did a detailed evaluation on the potential impacts of a drought worse than the drought of record on its water supplies. Region C requests the use of the results of this analysis for the allocation and distribution of surface water supplies from reservoirs owned and operated by NTMWD. DWU is also considering the potential impacts of climatic uncertainties in the update of its Long-Range Water Supply Plan, but this update is not available at this time. Therefore, Region C has requested the use of safe yield as discussed above.

---

<sup>1</sup> The term WAM refers throughout this document to TCEQ's Full Authorization Scenario, also known as Run 3, with modifications as proposed in this letter.

If the DWU update becomes available prior to the completion of the 2026 Region C Water Plan, Region C respectfully requests the option to use these results for the allocation and distribution of surface water supplies from reservoirs owned and operated by DWU.

#### Trinity River WAM

Multiple changes are requested for the Trinity WAM to account for current operating conditions, including:

- Subordination agreements,
- System operations, where appropriate, and
- Other corrections noted during review of the models.

#### Red River WAM

Water supplies from the Red River Basin include supplies from Lake Texoma, several small lakes, and run of the river supplies. Hydrologic variance requests for the Red River WAM include changes to Lake Texoma and associated water rights to avoid potential double counting of supply and more accurately define the firm yields of the Region C reservoirs.

#### Sulphur WAM

The only reservoir in the Sulphur Basin currently used by Region C is Lake Chapman. This reservoir is used by multiple providers and is modeled in the WAM as individual water rights. Region C requests modeling Lake Chapman as a single pool to assess the firm yield, and then assign supplies proportionally based on each provider's water right.

#### Other WAMs

For the 2026 Region C Water Plan, we request to use the Neches and Sabine River WAM models as modified by the Region I Planning Group with the approval of the Texas Water Development Board. For supplies in the Brazos River Basin, we request to use the Brazos G WAM as modified by the Brazos G Planning Group with the approval of the Texas Water Development Board.

As intended by Senate Bill 1, the assessment of surface water availability in Region C will be conducted to accurately reflect water supplies that are available for use.

Please call me if you have any questions regarding our request.

Sincerely,

Kevin Ward  
Chair, Region C Water Planning Group

**Attachment A**

**Hydrologic Variance Request Forms**

## Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules<sup>1</sup> 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:** C

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.

Trinity River Basin

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 C requests to use the posted TCEQ Trinity WAM for use in the 2021 Region C Plan with the following variances for all water supply analyses:

- Inclusion of any new water rights that are not currently included in the posted TCEQ WAM.
- Modeling of Lake Jacksboro and Lost Creek Reservoir as a system. System modeling includes subordination of Lake Bridgeport.
- Use of the full storage for Forest Grove Reservoir with an annual depletion limit (inflow for storage, diversion, and evaporation) of 16,348 acre-feet per year. The TCEQ WAM incorrectly uses the 16,348 acre-feet as the storage of the reservoir rather than the authorized storage of 20,038 acre-feet.

---

<sup>1</sup> 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)

- Modeling of Corsicana’s rights from Richland-Chambers Reservoir as a system with Lake Halbert, reflecting how these rights are actually used.

The following variances are required only for modeling the yields of these supplies. When calculating the firm yield of other sources, the modeling will be identical to Run 3.

- Modeling of Tarrant Regional Water District’s West Fork reservoirs (Bridgeport, Eagle Mountain, and Worth) as a system.
- Modeling of Dallas’ water rights in the Elm Fork of the Trinity River as a system with Lakes Grapevine, Lewisville and Ray Roberts.
- Modeling of Lake Benbrook as one pool instead of multiple pools to facilitate calculation of yields. The current modeling incorrectly assigns evaporation to the dead pool of the reservoir which does not refill because it is modeled as non-priority. In actual operation, TRWD cannot use water from the reservoir unless this dead storage is full. This modeling respects the USACE minimum elevation for water supply.

These adjustments to the WAMs are requested to reflect the water rights and agreements more accurately for water supply sources in Region C.

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 same hydrologic variance requests were implemented in the 2021 Region C Water Plan. This request only differs in the inclusion of any new water rights that are not currently in the WAM.

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 preferable for drought planning purposes.

Yes

Existing Supply

Based on requests from Tarrant Regional Water District (TRWD) and Dallas Water Utilities, Region C requests the use of safe yield for the allocation and distribution of surface water supplies from reservoirs owned and operated by these two wholesale water providers. The TRWD reservoirs include Lake Bridgeport, Eagle Mountain Lake, Lake Worth, Lake Benbrook, Lake Arlington, Richland-Chambers Reservoir and Cedar Creek Reservoir. Dallas reservoirs include Lake Ray Roberts, Lake Lewisville, Lake Grapevine, Lake Ray Hubbard, Lake Tawakoni, and Lake Fork. For some of these lakes, Dallas holds only a portion of the water rights. Supply for the other water right holders in these lakes will continue to be calculated using firm yield.

Safe yield is the amount of water that can be used during the critical drought while leaving a minimum supply in reserve. Safe yield is consistent with the current operations of these two surface water suppliers and previous regional water planning. In accordance with the TWDB planning rules, firm yields will also be determined and reported in the plan.

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.

Yes

#### Existing Supply

The Texas Legislature authorized the regional water planning groups to consider droughts worse than the drought of record in its planning efforts, which can reflect expected climate uncertainties and trends in water availability. Several water providers in Region C consider such conditions in their long-term water planning. NTMWD has recently completed a Long-Range Water Supply Plan that did a detailed evaluation on the potential impacts of a drought worse than the drought of record on its water supplies. Region C requests the use of the results of this analysis for the allocation and distribution of surface water supplies from reservoirs owned and operated by NTMWD. DWU is also considering the potential impacts of climatic uncertainties in the update of its Long-Range Water Supply Plan, but this update is not available at this time. Therefore, Region C has requested the use of safe yield as discussed above.

If the DWU update becomes available prior to the completion of the 2026 Region C Water Plan, Region C respectfully requests the option to use these results for the allocation and distribution of surface water supplies from reservoirs owned and operated by DWU.

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<sup>2</sup>, system or reservoir operations, or special operational procedures into the WAM.

Yes

Existing Supply

Multiple changes are requested for the Trinity WAM to account for current operating conditions, including:

- Subordination agreements,
- System operations, and
- Other corrections noted during review of the models.

These changes are detailed in Question 2.

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.

No

Choose an item.

Only return flows authorized in existing surface water rights and modeled in the existing WAM Run 3 will be included in the analysis.

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

Each of the river basins modeled by Region C are also used by other regions. It is unknown whether the other regions will adopt the modifications made by Region C in the analysis of

---

<sup>2</sup> 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.

the supplies for each respective region. We do not expect our modifications to affect the supplies for these regions.

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.](#)



## Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules<sup>1</sup> 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:** C

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.

Red River Basin

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 C requests to use the posted TCEQ Red River WAM for use in the 2021 Region C Plan with the following variances;

- Modeling of Lake Randell and Valley Lake as stand-alone reservoirs without Lake Texoma backups for the firm yield calculation of these two reservoirs. Backup supply for these reservoirs from Lake Texoma is included in the supplies from Lake Texoma. This prevents double counting of the makeup water from Lake Texoma. For firm yield calculations for reservoirs other than Lake Randell, Valley Lake and Lake Texoma, the backups for Lake Randell and Valley Lake were retained.
- Lake Texoma is located on the Texas-Oklahoma border, and in accordance with the Red River Compact, water in Lake Texoma is equally shared by Texas and Oklahoma. There are three distinct water storage pools in Lake Texoma: 1) water supply, 2) hydropower, and 3) sediment storage (dead pool). Use of water from Lake Texoma is authorized by

---

<sup>1</sup> 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)

multiple Texas water rights and Oklahoma water rights, as well as authorizations by the US Congress and contracts with the Corps. To assess the firm yield of the reservoir for Region C, the total firm yield for both the water supply and hydropower pools will be modeled. This total yield is equally split between Texas and Oklahoma. The reliable supplies from the lake are limited to the Texas water rights and associated storage contracts with the Corps.

- Removal of diversion backups of individual Texas water rights in Lake Texoma from the hydropower pool. All Texas water rights are 100% reliable in the WAM, so these backups are not invoked in the WAM. The code was removed because it made the modeling unnecessarily complicated.

These adjustments to the WAMs are requested to reflect the water rights and agreements more accurately for water supply sources in Region C.

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 same hydrologic variance requests were implemented in the 2021 Region C Water Plan.

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 preferable 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 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 sedimentation<sup>2</sup>, system or reservoir operations, or special operational procedures into the WAM.

Yes

Existing Supply

Multiple changes are requested for the Red River WAM to account for current operating conditions, as detailed in the response to Question 2

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.

No

Choose an item.

---

<sup>2</sup> 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.

Only return flows authorized in existing surface water rights and modeled in the existing WAM Run 3 will be included in the analysis.

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.

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

## Surface Water Hydrologic Variance Request Checklist

Texas Water Development Board (TWDB) rules<sup>1</sup> 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:** C

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.

Sulphur River Basin

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 C requests to use the approved TCEQ Sulphur WAM for use in the 2021 Region C Plan with the following variances for all water supply analyses:

- Inclusion of any new water rights granted that are not currently included in the approved TCEQ WAM.

The following variance is requested for modeling existing supplies from Lake Chapman.

- Modeling of Lake Chapman as one pool instead of multiple pools to facilitate calculation of the firm yield. All authorizations have the same priority date, and a single pool correctly distributes inflows among the water right holders. This modeling respects the USACE minimum elevation for water supply.

---

<sup>1</sup> 31 Texas Administrative Code (TAC) §§ 357.10(14) and 357.32(c)

These adjustments to the WAMs are requested to reflect the water rights and agreements more accurately for water supply sources in Region C.

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 same hydrologic variance requests were implemented in the 2021 Region C Water Plan. This request only differs in the inclusion of any new water rights that are not currently in the WAM.

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 preferable 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 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.

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<sup>2</sup>, system or reservoir operations, or special operational procedures into the WAM.

Yes

Existing Supply

Changes are requested for the Sulphur WAM are in Question 2.

- 

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.

No

Choose an item.

Only return flows authorized in existing surface water rights and modeled in the existing WAM Run 3 will be included in the analysis.

---

<sup>2</sup> 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.

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.

Click or tap here to enter text.