Region I
East Texas Regional
Water Planning Group

John Martin, Chair
P.O. Box 1407
Jasper, TX 75951
409-383-1577

October 13, 2023

Mr. Jeff Walker
Executive Administrator
Texas Water Development Board
1700 Congress Avenue
Austin, Texas, 78701

Re: Request for Modifications to Water Availability Models for Planning Purposes in the East Texas Regional Water Planning Area

Dear Mr. Walker:

On October 4, 2023, the East Texas Regional Water Planning Group (ETRWPG) considered and approved an approach to water availability modeling for surface water supplies for the current round of planning. The purpose of this letter is to inform the Texas Water Development Board (TWDB) of the approach approved at that time.

The East Texas Regional Water Planning Area (ETRWPA) uses supplies from four river basins, Trinity, Neches, Sabine, and Neches Trinity. As part of the 2026 planning efforts, the Full Authorization Water Availability Models (WAM[1]), also known as Run 3, for each of these basins will be updated to determine surface water availability in the region. Following are highlights of the four basin models and the changes made to the models to determine the available surface water supplies for the ETRWPA in this round of regional water planning. Completed hydrologic variance request forms for the Neches River Basin and Sabin River Basin are included in Attachment A.

- All models will incorporate updated area-capacity relationships to account for sedimentation in major reservoirs, as required by "Exhibit C: General Guidelines for Fifth Cycle of Regional Water Plan Development."

<u>Neches-Trinity Coastal Basin WAM</u>

- The ETRWPG will use the current Neches-Trinity Coastal Basin WAM run, as developed by TCEQ, for surface water supplies in that basin. No changes are proposed to the Neches-Trinity WAM.

<u>Trinity River Basin WAM</u>

- For surface water supplies located in the Trinity River Basin, the ETRWPG will use the updated Trinity Basin WAM developed for Region C.

[1] 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.

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Neches River Basin WAM

- Modifications to the Neches River WAM Full Authorization run (Run 3) as developed by TCEQ in 2021. The modifications will address the following:
    - Updated area-capacity relationships to account for sedimentation in major reservoirs (those with a capacity greater than 5,000 ac-ft), as required by "Exhibit C: General Guidelines for Fifth Cycle of Regional Water Plan Development."
    - Subordination of rights associated with Sam Rayburn Reservoir and Lake B.A. Steinhagen to upstream water rights as specified in Certificate of Adjudication 06-4411.
    - System operation of Lake Palestine and LNVA rights.
    - Minimum operating elevation in Sam Rayburn and B.A. Steinhagen Reservoirs The top elevation of the inactive pool for the Sam Rayburn Reservoir is 149 ft msl and the top elevation of the inactive pool for the BA. Steinhagen Reservoir is 81 ft msl.
    - Modeling Lake Tyler as a single reservoir.
    - Evaluate City of Beaumont supply based on a daily time-step analysis.

Sabine River WAM

- Modifications to the Sabine River WAM Full Authorization run (Run 3) as developed by TCEQ in 2012. The modifications will address the following:
    - Updated area-capacity relationships to account for sedimentation in major reservoirs (those with a capacity greater than 5,000 ac-ft), as required by "Exhibit C: General Guidelines for Fifth Cycle of Regional Water Plan Development."
    - Firm Yield of Toledo Bend Reservoir

As intended by Senate Bill 1, the assessment of surface water availability in the ETRWPA will be conducted to accurately reflect water supplies that are available for use. Should new information become available within the project timeline, this will be incorporated into the supply analyses. Examples of such changes include new water supply studies for specific sources, updates to the area-capacity relationships for reservoirs with new volumetric surveys, new water rights permit, and revised operating policies and/or contractual agreements.

Thank you for your attention to this matter. Please contact me if you have any questions regarding our request.

Sincerely,

John Martin

John Martin, Chair
East Texas Regional Water Planning Group

Enclosures

cc: Mr. Lann Bookout, Texas Water Development Board
Ms. Brigit Buff, P.E., Plummer Associates, Inc.
Mr. Jordan Skipwith, P.E., Freese and Nichols, Inc.

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: I

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.

   Neches 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.

   - Modifications to the Neches River WAM Full Authorization run (Run 3) as developed by TCEQ in 2021. The modifications will address the following:
     - Updated area-capacity relationships to account for sedimentation in major reservoirs (those with a capacity greater than 5,000 ac-ft), as required by "Exhibit C: General Guidelines for Fifth Cycle of Regional Water Plan Development."
     - Subordination of rights associated with Sam Rayburn Reservoir and Lake B.A. Steinhagen to upstream water rights as specified in Certificate of Adjudication 06-4411.
     - System operation of Lake Palestine and LNVA rights.
     - Minimum operating elevation in Sam Rayburn and B.A. Steinhagen Reservoirs The top elevation of the inactive pool for the Sam Rayburn Reservoir is 149 ft msl

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

and the top elevation of the inactive pool for the BA. Steinhagen Reservoir is 81 ft msl.
- Modeling Lake Tyler as a single reservoir.
- Evaluate City of Beaumont supply based on a daily time-step analysis.

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

   Modification requests are the same as in the previous cycle of planning (2021 RWP). Since the 2021 RWP was published, the Neches WAM Run 3 was updated and extended in 2021. Updates to the 2021 Neches WAM Run 3 resulted in removal of some requested modifications in the previous planning cycle related to dual simulation and output of Subordination of rights associated with Sam Rayburn Reservoir and Lake B.A. Steinhagen.

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.

   Yes

   Existing Supply

   An Excel-based daily analysis of supplies for the City of Beaumont based on historical data.

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.

   Yes

   Existing and Strategy Supply

   Area-Capacity Relationships. Exhibit C requires RWPGs to include anticipated sedimentation of all major reservoirs (those with a capacity greater than 5,000 ac-ft) in the WAM model runs. There are 12 such permitted reservoirs in the Neches Basin. For each of the 12 reservoirs, sedimentation conditions will be estimated based on an average annual sedimentation rate and the number of years since the last survey. Lake Columbia has not yet been constructed, so to be conservative, Lake Columbia's full design capacity and original area-capacity curve will be used when evaluating firm yields for all other reservoirs. Conversely, to estimate the yield from Lake Columbia, it will be assumed that the reservoir would be built in 2030 and begin collecting sediment at that time.

   Subordination of rights associated with Sam Rayburn Reservoir and Lake B.A. Steinhagen. Special conditions 5C and 5D of Certificate of Adjudication 06-4411 require subordination of LNVA's rights in the Rayburn-Steinhagen system to (a) water rights upstream of the proposed Weches and Ponta Dam sites and (b) intervening municipal rights above Sam Rayburn Reservoir.

   Changes will be implemented in the WAM related to output and the refilling of Rayburn and Steinhagen:

[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.

a) The 1963 rights for impoundment at Rayburn and Steinhagen will be reordered so that Rayburn, the upstream reservoir, would be filled from available streamflow before Steinhagen is refilled.

System Operations.

a) Lake Palestine and Rocky Point Dam
    a. The Upper Neches River Municipal Water Authority operates Lake Palestine in conjunction with its downstream dam on the Neches River in Anderson and Cherokee Counties. This set of rights will be modified so that downstream diversions would first be backed up by the subordination agreement at Steinhagen Lake, and any remaining shortages would be backed up by Lake Palestine.
b) Sam Rayburn Backup of Pine Island Bayou
    a. Operation of LNVA's water rights will be modeled as a system by including backup of LNVA's Pine Island water rights with storage from Sam Rayburn.

Minimum operating elevation in Sam Rayburn and B.A. Steinhagen Reservoirs. WS and OR records will be used to set inactive pool capacity for Sam Rayburn Reservoir. The top elevation of the inactive pool is 149 ft msl, and the inactive pool capacity will be updated each decade based on updated area-capacity-elevation curves. The City of Lufkin has a right to a lakeside diversion of up to 28,000 ac-ft/yr from Sam Rayburn Reservoir; no inactive pool capacity will be applied for this diversion. This diversion is lakeside, so it is not limited by the inlet elevation.

A dead pool capacity will also set for B. A. Steinhagen using an inactive pool elevation of 81 ft msl. Inactive pools were not applied to subordination-related backup rights for either reservoir.

Modeling Lake Tyler as a Single Reservoir. For the 2026 Region I WAM, Lake Tyler will be modeled as a single reservoir, and associated water rights will be adjusted accordingly. This is consistent with the development of the original Neches WAM, which treated this source as one reservoir.

City of Beaumont. Available supply will be evaluated based on daily time-step analysis based on historical data. The City of Beaumont is the only major municipal water user with a run-of-river water right. Other major users that receive water from run-of-river water rights either purchase water from the Lower Neches Valley Authority or use saline water. The purchased run-of-the-river water is backed up by stored water that is owned and operated by LNVA, making this supply less vulnerable to drought. This approach was applied in the development of supplies for the 2021 East Texas Regional Water Plan.

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.

    Click or tap here to enter text.

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

    Yes

    Region D and Region H.

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

    N/A

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: I

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.

   Sabine River Basin

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   - Modifications to the Sabine River WAM Full Authorization run (Run 3) as developed by TCEQ in 2012. The modifications will address the following:
     - Updated area-capacity relationships to account for sedimentation in major reservoirs (those with a capacity greater than 5,000 ac-ft), as required by "Exhibit C: General Guidelines for Fifth Cycle of Regional Water Plan Development."
     - Firm Yield of Toledo Bend Reservoir

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?

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

Yes

Modification request is the same as in the previous cycle of planning (2021 RWP).

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.

   Yes

   Existing and Strategy Supply

   Area-Capacity Relationships. Exhibit C requires RWPGs to include anticipated sedimentation of all major reservoirs (those with a capacity greater than 5,000 ac-ft) in the WAM model runs. There are 12 such permitted reservoirs in the Sabine Basin. For each of the 12 reservoirs, sedimentation conditions will be estimated based on an average annual sedimentation rate and the number of years since the last survey.

   Firm Yield of Toledo Bend Reservoir. Hydropower operations at Toledo Bend were excluded during the determination of total available supply from the lake. However, hydropower operations were included in the evaluation of supplies for all other reservoirs and run-of-river supplies. The canal water rights owned by Sabine River Authority (SRA) in the lower basin modeled as being subordinate to diversions from Toledo Bend Reservoir for the purposes of determining firm yield. The remainder of the yield of Toledo Bend was evaluated assuming all diversions were taken lakeside. Within the WAM, all diversions from the lake are shared equally between SRA-Texas and SRA-Louisiana, including the additional unpermitted yield.

   Supplies for Lake Center will be determined separately, based on a study completed in 2016 by the City of Center.

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.

   Click or tap here to enter text.

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.

[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.

Yes

Region C and Region D.

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

    N/A