NOTICE OF OPEN MEETING

REGIONAL WATER PLANNING GROUP-NETRWPG

Wednesday, February 21, 2024 – 10:00 A.M.

Region 8 Education Service Center
4845 US 271 N
Pittsburg, TX 75686

In compliance with the Texas Open Meetings Act, Chapter 551, of the Texas Government Code, the Regional Water Planning Group D issues this public notice. On February 21, 2024, at 10:00 A.M., the North East Texas Regional Water Planning Group (NETRWPG) will meet in-person. Starting February 7th and running for a period of 14 days, the NETRWPG will be accepting written public comments on these agenda items. The comments may be mailed to Riverbend Water Resources District, 228 Texas Avenue, Suite A, New Boston, Texas 75570, or may be emailed to: kyledooley@rwrd.org. The meeting will be held at the Region 8 Education Service Center, 4845 US 271 N, Pittsburg, TX 75686. The NETRWPG will consider and act on the following items:

1. Recognitions. Roll call.
2. Public Comment/participation.
3. Review and approval of minutes for October 4, 2023 meeting.
4. Election of Officers for Regional Water Planning Group – D, pursuant to Article VIII, Section 2 of the NETRWPG Bylaws, and Committee Appointments for the Executive Committee (Officers and Two Members At-Large) and Liaisons to regional water planning groups and groundwater management areas.
5. Discussion and Action as appropriate: Consider appointment of successor to the board member position held by Cory Moose. The appointment will be for the remainder of the unexpired term.
6. Discussion and Action as appropriate: Consider amending the representation status of Jim Thompson and Fred Milton.
7. Reports from liaisons: TWDB Planner; GMA #8 & #11; Region C & I.
8. Report and discussion from Region D Technical Consultant on the process for identifying potentially feasible water management strategies for the purposes of the 2026 Region D Water Plan.
9. Public comment on the process for identifying potentially feasible water management strategies for the purposes of the 2026 Region D Water Plan.
10. Discussion and action as appropriate: Consider planning group and public comments and approve the process for identifying potentially feasible water management strategies.
11. Report and discussion from Region D Technical Consultant on the results of the analysis of infeasible water management strategies and/or projects.
12. Public comment on the results of the analysis of infeasible water management strategies and/or projects.
13. Discussion and action as appropriate: Consider NETRWPG and public comments and authorize the technical consultant to submit on behalf of the NETRWPG the results of the identification of infeasible strategies consistent with the information discussed in this meeting and approve for the consultant to work with the Chair and Administrator to submit further revisions and make responses to revision requests by the TWDB.

14. Report and discussion from Region D Technical Consultant providing a summary of information presented within the Technical Memorandum and other required supporting documentation.
15. Public comment on the information presented within the Technical Memorandum and other required supporting documentation.
16. Discussion and Action as appropriate: Consider NETRWPG and public comments, approve the Region D Technical Memorandum, authorize submittal of the Region D Technical Memorandum by the Region D Technical Consultant to the TWDB on behalf of the NETRWPG consistent with the information provided in this meeting, and approve for the consultant to work with the Chair and Administrator as needed to submit further revisions and make responses to revision requests by TWDB.
17. Discussion and Action as appropriate: Review, discuss, and consider taking action to adopt the list of Wholesale Water Providers and Major Water Providers for the purposes of the 2026 Region D Water Plan.
18. Report and discussion from Region D Technical Consultant summarizing scope of work for Task 5B.
19. Discussion and Action as appropriate: Approve the scope of work for Task 5B and authorize the political subdivision to submit a request to the TWDB for a notice to proceed with the scope of work for Task 5B.
20. Financial report by Administrator. Approval of invoices of consultant.
21. Further public comment/participation.
22. Adjourn.

Additional information may be obtained from the Administrative Agency for NETRWPG: Riverbend Water Resources District, 228 Texas Avenue, Suite A, New Boston, Texas 75570; Office Telephone: (903) 831-0091; Office Fax: (903) 831-0096; E-mail: kyledooley@rwrd.org; Website: https://rwrd.org/region-d/; Attn: Kyle Dooley, P.E., Executive Director

MEETING OF THE
North East Texas Regional Water Planning Group
WEDNESDAY, February 21, 2024

Agenda Item 3
October 4, 2023
Meeting Minutes

Minutes of the North East Texas Regional Water Planning Group
October 4, 2023 – 10:00 A.M.

The North East Texas Regional Water Planning Group (NETRWPG) – Region D met in an open meeting on Wednesday, October 4, 2023, at 10:00 A.M. The meeting was held at the Region 8 Education Service Center, 4845 US 271 N, Pittsburg, TX 75686. Notice of the meeting was legally posted.

Jim Thompson called the meeting to order at 10:01 A.M. and welcomed everyone. Introductions were made and a quorum was present. Twenty members of the planning group were present in person or represented by a designated alternate.

The following voting members were present:

David Aikin	Brandon Belcher	John Brooks	Joe Coats
Kevin Chumley	Andy Endsley	Nicolas Fierro	Richard Garza
Cindy Gwinn	Billy Henson	Conrad King	Richard LeTourneau
Janet McCoy	Fred Milton	Ned Muse	Sharron Nabors
George Otstott	Jim Thompson		

The following alternates were present:

Joel Murray	Greg Carter

The following voting members were absent:

Russell Acker	Allen Beeler	Joe Bumgarner	Donnie Duffie
Bob Tardiff	Harlton Taylor		

The public was provided with an opportunity for comment prior to any action being taken by the planning group. There were no public comments at this time.

Jim Thompson opened the discussion on replacing expiring voting member positions. Terms of each position are for 3 years, commencing on October 1, 2023. The selection process for positions will consider any additional nominations from voting members. Positions to be appointed include positions currently held by Janet McCoy, Donnie Duffie, Allen Beeler, Fred Milton, Russell Acker, George Otstott, Ned Muse, and Harlton Taylor. Donnie Duffie, current incumbent, nominates Greg Carter to take his position. Hattie Hackler and George Otstott are both nominated for the position currently held by Mr. Otstott. The Executive Committee met before this meeting to discuss a recommendation to make to the full board. The Executive Committee recommends the following list to positions on the board: Janet McCoy, Greg Carter, Robert Hurst, Fred Milton, Russell Acker, Hattie Hackler, Ned Muse, and Harlton Taylor. Greg Carter made the recommendation that Mr. Otstott keep his position. Sharon Nabors made a motion to accept the list as recommended by the Executive Committee. Billy Henson seconded the motion. Motion carries, with 17 voting aye, 2 voting nay.

Jim Thompson opened the discussion regarding appointment of successor for the unexpired term of voting member position currently held by Bob Tardiff. Mr. Tardiff has resigned, and the Mayor of Lindale has recommended Cory Moose to take his place. Sharon Nabors made a motion to accept the recommendation of Cory Moose to replace resigning board member Bob Tardiff. Kevin Chumley seconded the motion. Motion carried, all voting aye.

Fred Milton made a motion to approve the minutes from the July 12, 2023 meeting. Greg Carter seconded the motion. Motion carried, all voting aye.

Ron Ellis with the Texas Water Development Board (TWDB) provided an update. The Interregional Planning Council met on 11/9/22, 3/9/23, 5/30/2023, and 8/15/2023. They will meet again on 11/30/23. Resources are posted on TWDB IPC web page: http://www.twdb.texas.gov/waterplanning/rwp/ipc/index.asp. Upcoming critical deadlines and upcoming activities, prior to 3/4/2024 technical memo deadline, are to approve projections revision requests, assess availability and supplies, approve and submit hydrologic variance requests, present the process for identifying potentially feasible strategies for the 2026 regional water plan, and identify infeasible strategies and projects from 2021 regional water plan. There was a request for information published on September 29, 2023 regarding a review of the feasibility of the Marvin Nichols reservoir. Information can be found at https://www.twdb.texas.gov/waterplanning/rwp/feasibility/index.asp The deadline to submit responses is December 1, 2023. The identification of infeasible Water Management Strategies (WMSs) from the 2021 plan is a new process for everyone. This review was created by Senate Bill 1511 in 2017 in the 85th Legislative Session. The concept is that planning groups will look back at the previous plan and apply feasibility tests to certain strategies and projects in that plan to determine if the plan needs to be amended to change the online decade of a certain project because it is not on track to meet the timing laid out in the plan or if it needs to be removed and replaced by something else that is more feasible. Infeasible projects can be defined as those where the sponsors have not taken affirmative vote or other action to make expenditures necessary to construct or filed applications for permits required in connection with implementation of the project on a schedule in order for the project to be completed by the time the project is needed to address drought. Planning groups are to present the results of their 2021 infeasibility analysis at the same public meeting where the planning group also presents methodology for identifying potentially feasible projects in the 2026 Regional Water Plan. There is a 14-day notice required for that meeting. Analysis must be completed by March 4, 2024 when the technical memo is due because it must be included in that technical memo. The adopted 2021 Regional Water Plan must be turned in to TWDB by June 5, 2024. There will be a Marvin Nichols Feasibility Review completed with funds from this budget cycle. Out of funds appropriated in House Bill 1 of the 88th Legislative Session, the TWDB shall evaluate the feasibility of the proposed Marvin Nichols Reservoir project to be located on the Sulphur River and upstream of the confluence of the White Oak Creek in Franklin, Titus, and Red River Counties. The review, completed by agency staff, will analyze the implementation timeline, associated costs, land acquisition considerations, and the economic impact of the proposed project. A report regarding the findings of the review shall be prepared and submitted by TWDB to the Legislative Budget Board and Governor no later than January 5, 2025. Feasibility review information will be augmented by information received from stakeholders through a request for information that was posted in the Texas Register September 29, 2023, and is posted on the TWDB website. Relevant information must be submitted by December 1, 2023 to feasibility@twdb.texas.gov. The TWDB anticipates making the draft feasibility report

available for public comment prior to it being finalized and the approved report delivered to the Legislative Budget Board and the Governor. There was not a specific amount or a category of funds allotted to fund this feasibility review. The review will be completed with the existing TWDB staff and budget. This review will not have an impact on the Region D contract with TWDB nor the funds within this planning process. This will be a review of all available information. No new studies will be conducted. For more information, please visit the TWDB website and navigate to the 6th planning cycle page. The new webpage can be found here:
https://www.twdb.texas.gov/waterplanning/rwp/planningdocu/2026/index.asp
This page will be updated throughout the cycle with important documents, the working schedule, task organization, newsletters, as well as contract and administrative documents. No action taken.

There were no reports from GMA 8, or GMA 11.

There were no reports from Region C or Region I.

Jim Thompson opened the discussion regarding authorizing Riverbend to execute amendments to the TWDB contract. This item would authorize Riverbend to negotiate and execute any and all required amendments to the TWDB contract for the remainder of the 6th Cycle of Planning. Ned Muse made a motion to authorize Riverbend to execute amendments to the contract with TWDB. Fred Milton seconded the motion. Motion carried, all voting aye.

Jim Thompson opened the discussion regarding offering comments back to TWDB on the process of developing municipal population and demand projections. At the last meeting of the interregional planning committee, discussions were held regarding dissatisfaction with how the municipal populations were recently presented. Neighboring regions planned to come up with some language to address the concerns that weren't being addressed with respect to counties with more rural populations. Mr. Thompson suggests Region D waits to see what other regions come up with to comment on and then go from there. No action taken.

David Harkins, Carollo Engineers, provided an update on the current plan schedule and the planning budget process. Mr. Harkins also provided a summary of Hydrologic Variance Request for determining water availability for existing sources and WMSs as well as the methodology for determining water availability. They look at firm yield in a reservoir which is available 100% of the time as well as the run of the river which is the available monthly diversion during the driest period of record. Existing surface water supply in the regional planning process is based on current infrastructure and the assumption that all senior downstream water rights are being fully utilized. In the river basins of Cypress Creek, Red, Sabine, Sulphur, Neches, and the Trinity Rivers there are 35-40 surface water sources to be evaluated using TCEQ Water Availability Models. The Run 3 version of used for permitting surface water in Texas. It is all water rights fully utilizing all authorized amounts, all applicable permit conditions are met not including return flows, and it uses all original reservoir capacities. Regional Water Planning Groups can request a Hydrologic Variance to modify the WAM Run 3. The request is made for the use of alternative methodology, for any criteria that varies from base requirements, or is expected to have significant effects on existing supply estimates. The planning groups must ensure that any estimates are reasonable for drought planning purposes and that they will reflect conditions expected in the event of near-term, actual drought conditions. The modifications Region D is requesting is the inclusion of return flows for existing surface water rights utilizing return flows for evaluation of existing and strategy supplies. This will include evaluations of existing reuse and reuse strategies, consistent with TCEQ approach for evaluations of reuse permit applications. We will also be requesting modified WAM to reflect updates sedimentation effects on existing and strategy reservoir firm yields. Sedimentation levels should also be considered as a modification. Groundwater availability is determined by Modeled Available Groundwater (MAG) which is a joint planning process. It's based on Desired Future Conditions (DFC) through actions of Groundwater Conservation Districts (GCD) and Groundwater Management Areas (GMA). While Region D is required to align with MAGs for relevant Aquifers in adjacent areas regulated by a GCD, we are not regulated by GCDs. After the completion of the presentation, Sharron Nabors made a motion to authorize the technical consultant, Carollo Engineers, to submit a hydrologic variance request to the TWDB on behalf of Region D consistent with the information provided in this meeting and approve for the consultant to work with the Chair and Administrator to submit further revisions and make responses to revision requests by TWDB. Cindy Gwinn seconded the motion. Motion carried, all voting aye.

David Harkins, Carollo Engineers, provided a summary of identified Wholesale Water Providers (WWP) and Major Water Providers (MWP), the status of the identification of infeasible strategies, the preliminary process for identifying potentially feasible strategies, and ongoing engagement efforts for the purposes of the 2026 Region D Water Plan. He provided a list of previous WWPs and MWPs with 2026 additions. Potential feasible WMSs must follow TWC §16.053(e)(5) and 31 TAC §357.34(c). Planning Groups must consider but are not limited to 24 types of WMSs for all identified water needs. Technical Memorandum, IPP, and Final RWP must include the documented process used by the RWPG to identify potentially feasible WMS, the list or table of all identified WMSs that were considered potentially feasible, to date, for meeting a need in the region per 31 TAC §357.12(b) and if no potentially feasible WMSs are identified or recommended for an identified water need, then the RWP must document the reason. Our focus must be on reviewing 2021 plan strategies and projects that require a permit and or involve construction. In addition, the strategies must show to be online in the 2020 or 2030 decade, be related to new major reservoirs, seawater desalination, direct potable reuse, brackish groundwater, aquifer storage and recovery, and out of state water transfers. Those that are on plan for 60 years out may not be feasible for the 2026 water plan. The feasibility or infeasibility of some of the strategies may not be possible due to the lack of information. There are 64 potentially infeasible WMSs. Five of them are related to a reduction in demand, 59 of them are source related. Conservation strategies do not require construction or a permit. Strategies for county aggregates are excluded from a look-back. For those projects that do require construction or a permit, affirmative actions include project constructed, funding applications submitted, partial implementation, purchase of sites, permitting underway, feasibility/design underway, test wells constructed, redevelopment of existing wells to increase capacity at same source. Per 31 TAC §357.12(b) there must be a public meeting to determine the process for identifying potentially feasible WMSs. The process must be documented, and input received must be incorporated. A list of all potentially feasible WMSs must be made. When identifying and evaluating WMSs, TWDB allows for flexibility in selecting the method to determine feasibility meaning the criteria can be determined by the Planning Group. The Planning Group should receive public comment on the proposed process. The process should be equitable and consistent for all potentially feasible WMSs for each water supply need. The TWDB has guidelines for identifying feasible WMSs. They range from environmental impact to third party social and economic impacts resulting from voluntary redistribution of water. Feasible WMSs may include system optimization and conjunctive use of water resources or reallocation of reservoir storage to new uses, or development of new supply including brush control, rainwater harvesting or aquifer storage and recovery. For WMSs, Region D has historically used groundwater, surface water, advanced water conservation, and water reuse. The path forward is to identify the sources we have, engage on what those supplies are and how we use them, continue to look at infeasible strategies, database entry by Carollo, analyze our needs and then move forward with the preparation with the technical memorandum. No action taken.

Kyle Dooley presented invoices from Carollo Engineers for payment approval. The invoices are for work spanning from May of 2023 to July of 2023. The total for the invoices is $16,945.01. David Aikin made a motion to authorize Kyle Dooley to pay the invoices to Carollo. Greg Carter seconded the motion. Motion carried, all voting aye.

Kyle Dooley provided that no administrative expenses have been submitted. This agenda item is an annual placeholder in case any major expenses arise. Other than room rental and small amounts for printing and mailing notices we have not had any costs to submit. Riverbend has about $5000 in funds set aside for administrative costs for Region D. the plan is to look at those funds when we get to the last year of planning and see if there are funds available to reimburse Riverbend. Ned Muse made a motion to certify the administrative operations thus far. Janet McCoy seconded the motion. Motion carried, all voting aye.

The public was provided with a second opportunity to make comments. No public comments were made.

The next meeting is tentatively scheduled for February 21, 2024.

With no further business to discuss, Jim Thompson adjourned the meeting at 11:47 a.m.

Secretary Date

MEETING OF THE
North East Texas Regional Water Planning Group
WEDNESDAY, February 21, 2024

Agenda Item 4
Election of NETRWPG Officers

NORTHEAST TEXAS REGIONAL WATER PLANNING GROUP
NOTICE OF ELECTION OF OFFICERS
First Regular Meeting after January 1st, 2024

Notice is hereby given to the members of the Northeast Texas Regional Water Planning Group in accordance with the By-Laws of the Group that the annual election of officers will be held during the first regular meeting after January 1st, 2024.

The meeting will be held on February 21, 2024 at the Region 8 Education Service Center at 4845 US 271, Pittsburg, TX, 75686. Nominations will be made from the floor by voting members of the Group. Agreement of two-thirds of the voting members present is required for election of each officer.

Offices to be filled are:

1. Chair
2. Vice-Chair
3. Secretary/Treasurer

It will also be necessary to elect two (2) at-large members of the Executive Committee and to select designated members to each adjacent regional water planning group to serve as a liaison and liaisons to each Groundwater Management Area within the Northeast Texas Regional Water Planning Group Area.

Cindy Gwinn
Secretary/Treasurer

MEETING OF THE
North East Texas Regional Water Planning Group
WEDNESDAY, February 21, 2024

Agenda Item 6
Jim Thompson & Fred Milton
Stakeholder Group Amendment

Region D Voting Members

	Stakeholder Groups		Total Members
1	Public		3
2	Counties		3
3	Municipalities		2
4	Industry		3
5	Agriculture		3
6	Environmental		3
7	Small Business		1
8	Electric Generating Utilities		1
9	River Authorities		1
10	Water Districts		2
11	Water Utilities		1
12	Ground Water Management Areas		0
	Total:		23

	Counties		Total Members
1	Bowie		3
2	Cass		2
3	Camp		1
4	Delta		1
5	Gregg		2
6	Franklin		1
7	Harrison		2
8	Hopkins		1
9	Hunt		1
10	Lamar		1
11	Marion		1
12	Morris		1
13	Rains		0
14	Red River		1
15	Smith (partial)		0
16	Titus		1
17	Upshur		1
18	Van Zandt		1
19	Wood		2
	Total:		23

MEETING OF THE
North East Texas Regional Water Planning Group
WEDNESDAY, February 21, 2024

Agenda Item 7
Reports from Liaisons

Region D TWDB Update 2/21/2024

- **Technical Memorandum**– Due to TWDB **March 4th**
  - Electronic Submittal Folders will be provided by TWDB in **February**
- Water Use Survey is open until **March 1st**
- Water Service Boundary Editor is open until **July 1st**
- **Agricultural Water Conservation Grant** app period until **April 3rd**
  - Informational Webinars **March 6th and March 27th**
  - Register for webinars here: Ag Conservation Grant Webinars

RWPG Chairs Call was Held on January 16th

- Next Chairs Call will be scheduled for **April 2024**

Interregional Planning Council

- Last meeting: **February 8th**
- Review of Final Draft of IPC Report (due to TWDB **March 4th**)
- Resources posted on TWDB IPC web page

Region D TWDB Update 2/21/2024

Texas Water Fund

- TWDB seeking public input at Board meetings on **February 8th** and **March 10th** and at workshops in Austin (March TBD) and on **April 10th** in Lubbock
- Updated SB28 FAQ and Issues for Consideration and Request for Feedback document are on the TWDB Web Page

Upcoming Materials for RWPGs

- County-Specific Water Supply Planning Info & Resource Documents
  - Includes Rural Entities and At-Risk Suppliers (<7,500, SS, 180 Day)
- Conservation Resources
- Drought/Drought Preparedness Resources
  - List of Entities Required to Submit Drought Contingency Plans to TCEQ
  - Drought Preparedness Council Recommendations to RWPGs
  - Updated Drought Management Costing Information
- Updated Uniform Costing Model
- Updated One-pager: RWP Amendments

MEETING OF THE
North East Texas Regional Water Planning Group
WEDNESDAY, February 21, 2024

Agenda Item 8-19 Report & Discussion from Region D Technical Consultant on the Process for Identifying Potentially Feasible WMS, Analysis of Infeasible WMS, & Approving the Technical Memorandum

Region D Water Planning

Consultant Presentation

Tony L. Smith, P.E.
Stan Hayes, P.E.
James Beach, P.G.

Pittsburg, TX | February 21, 2024

Feasible and Infeasible Water Management Strategies

- Statutory and Rule Requirements
  - TWC §16.053(h)(10) and 31 TAC §357.12 (b)
- RWPG shall:

Looking Forward

  - Hold a public meeting to determine the process for identifying potentially feasible WMSs;
    - Process shall be documented, and
    - Shall include input received at the public meeting;
  - After reviewing the potentially feasible strategies using the documented process, the RWPG shall list all possible WMSs that are potentially feasible for meeting a water need in the region.

Looking Back

  - The public meeting shall also include a presentation of the results of the analysis of infeasible WMSs or WMSPs, as defined by Texas Water Code §16.053(h)(10), included in the most recently adopted RWP.
    - Include list of Infeasible WMSs and WMSPs in Technical Memorandum
    - Infeasible WMSs or WMSPs shall be identified based on:
      - Project sponsor provided information
      - Local knowledge, as acquired through plan development activities such as surveys, and as determined based on implementation schedules consistent with implementation by the project sponsors.
  - The group shall provide notice to all associated project sponsors and amend its adopted RWP as appropriate based upon the analysis.

Today’s Items Build Upon Information from previous meetings

Looking Forward

8 - 2026 Process

- 9 – Public comment
- 10 - Possible action on process

Looking Back

11 - Infeasible 2021 WMS Results

- 12 – Public comment
- 13 – Possible action on results

14. Technical Memorandum and Appendices

- 15 - Public comment
- 16 – Possible action on TM and Appendices

Looking Forward

17 - Wholesale Water Providers and Major Water Providers

18 - Task 5B Scope/Budget

19 - Administrator Notice to Proceed on Task 5B WMS Evaluation

Item 8

Report and discussion from Region D Technical Consultant on the process for identifying potentially feasible water management strategies for the purposes of the 2026 Region D Water Plan.

Looking Forward

Task for Today

- Review and approve recommendation relating to the process for identifying potentially feasible water management strategies.

- Information presented at previous Oct. 4, 2023, NETRWPG meeting.

31 TAC 357.12(b)

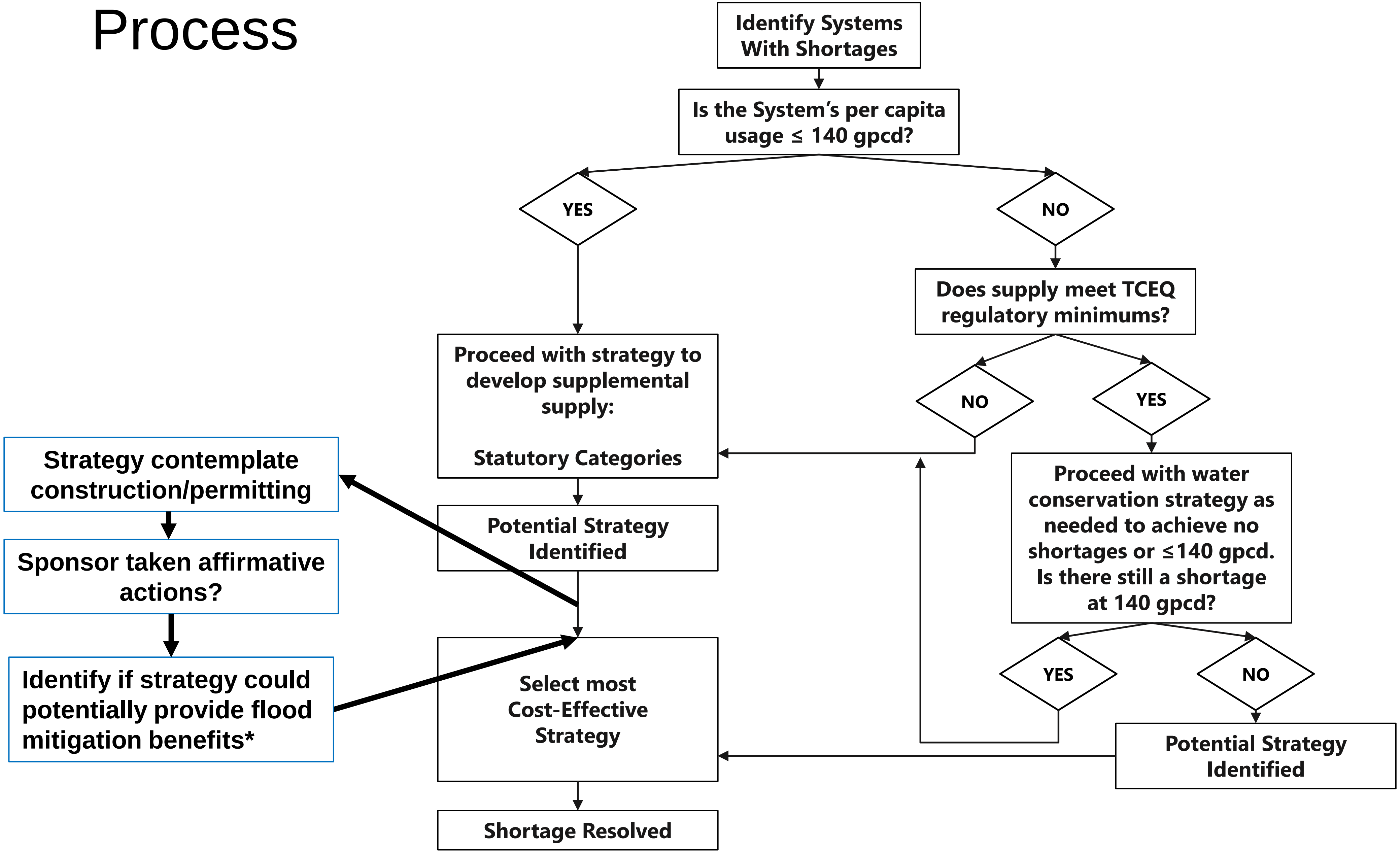
Public meeting to determine the process for identifying potentially feasible Water Management Strategies (WMSs)

Document process and incorporate input received

List all possible potentially feasible WMSs

Should be an equitable and consistent evaluation and application of all potentially feasible WMSs for each water supply need.

Water Management Strategy Evaluation Process



Includes:

- Evaluation of the net quantity, reliability, and cost of water delivered to users during drought conditions (not including distribution of water after treatment);
- Evaluation of environmental factors, including but not limited to:
  - Environmental water needs;
  - Wildlife habitat;
  - Cultural resources;
  - Adopted environmental flow standards;
- Potential impacts on other water resources of the State;
- Consideration of threats to agricultural and/or natural resources;
- Consideration of interbasin transfer(s);
- Consideration of third party social and economic impacts resulting from voluntary redistribution of water;
- Potential impacts on key water quality parameters;
- Consideration of existing infrastructure (pipelines, other facilities);
- Implementation status;
- Potential flood mitigation benefits;
- Any other factors as deemed relevant by the NETRWPG.

List of Potentially Feasible WMSs

1. Advanced Water Conservation
2. Drought Management
3. Water Reuse
4. Local Groundwater
5. Surface Water
6. Facilities Expansions
7. Regional Supply and Management
8. Voluntary or Emergency Transfers
9. Balancing Storage and/or Conjunctive Use

Suggested Action

"The North East Texas Regional Water Planning Group adopts the process for identifying potentially feasible water management strategies recommended by the Technical Consultant and the resultant list of potentially feasible strategies for the purposes of the 2026 Region D Regional Water Plan, consistent with the information discussed in this meeting, and approves for the consultant to work with the Administrator to submit further revisions and make responses to revision requests by the TWDB by the March 4, 2024, deadline."

9 – Public Comment

10 - Suggested Action

“The North East Texas Regional Water Planning Group adopts the process for identifying potentially feasible water management strategies recommended by the Technical Consultant for the purposes of the 2026 Region D Regional Water Plan, consistent with the information discussed in this meeting, and approves for the consultant to work with the Administrator to submit further revisions and make responses to revision requests by the TWDB by the March 4, 2024, deadline.”

Item 11

Report and discussion from Region D Technical Consultant on the results of the analysis of infeasible water management strategies and/or projects.

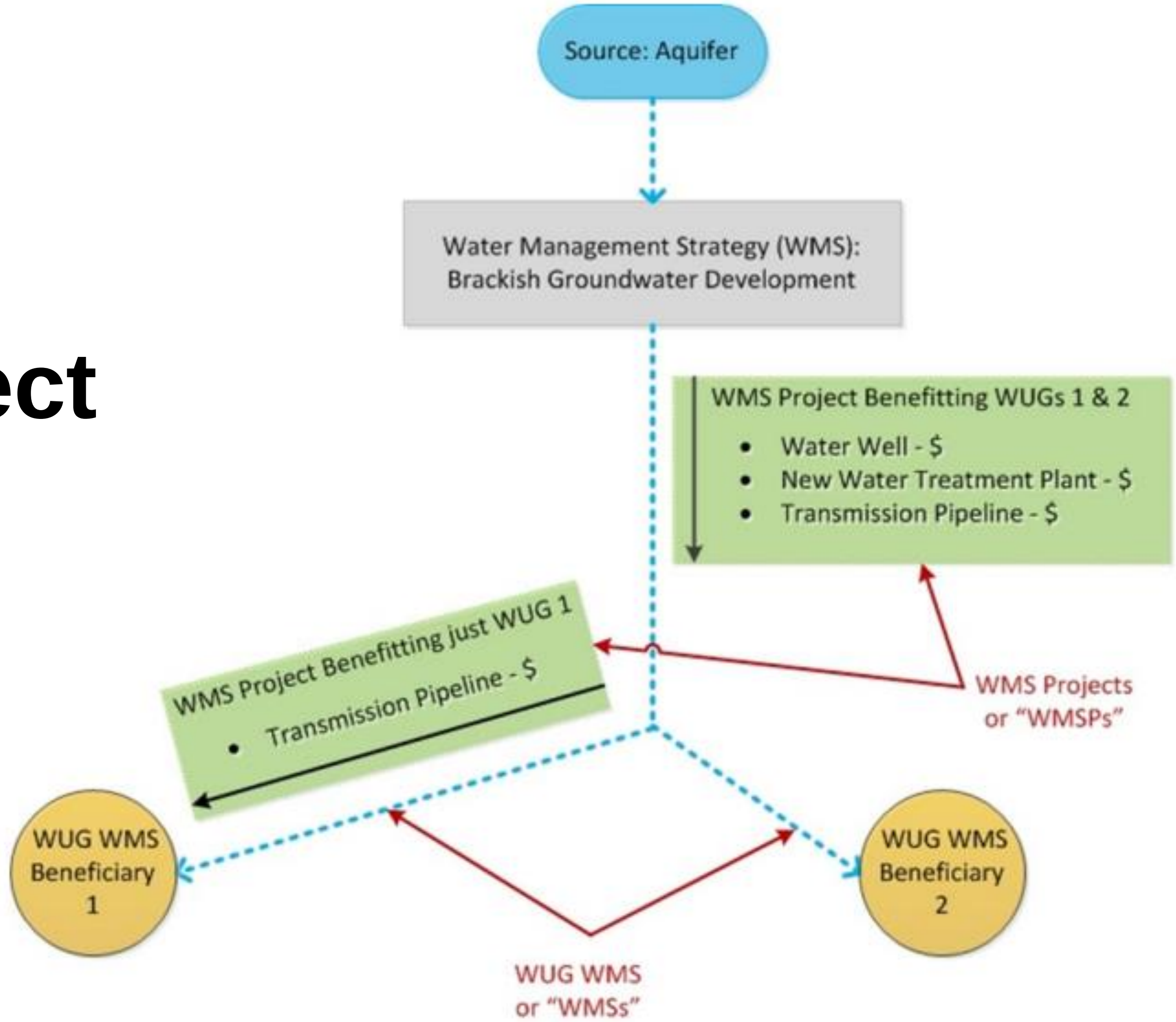
Looking Back

Task for Today

- Review and approve the results of the identification of infeasible water management strategies from the 2021 Region D Regional Water Plan.

Water Management Strategy Structure

WMS
&
WMS Project



“Infeasible WMSs include those WMSs where proposed sponsors have not taken an affirmative vote or other action to make expenditures necessary to construct or file applications for permits required in connection with implementation of the WMS on a schedule in order for the WMS to be completed by the time the WMS is needed to address drought in the plan.”

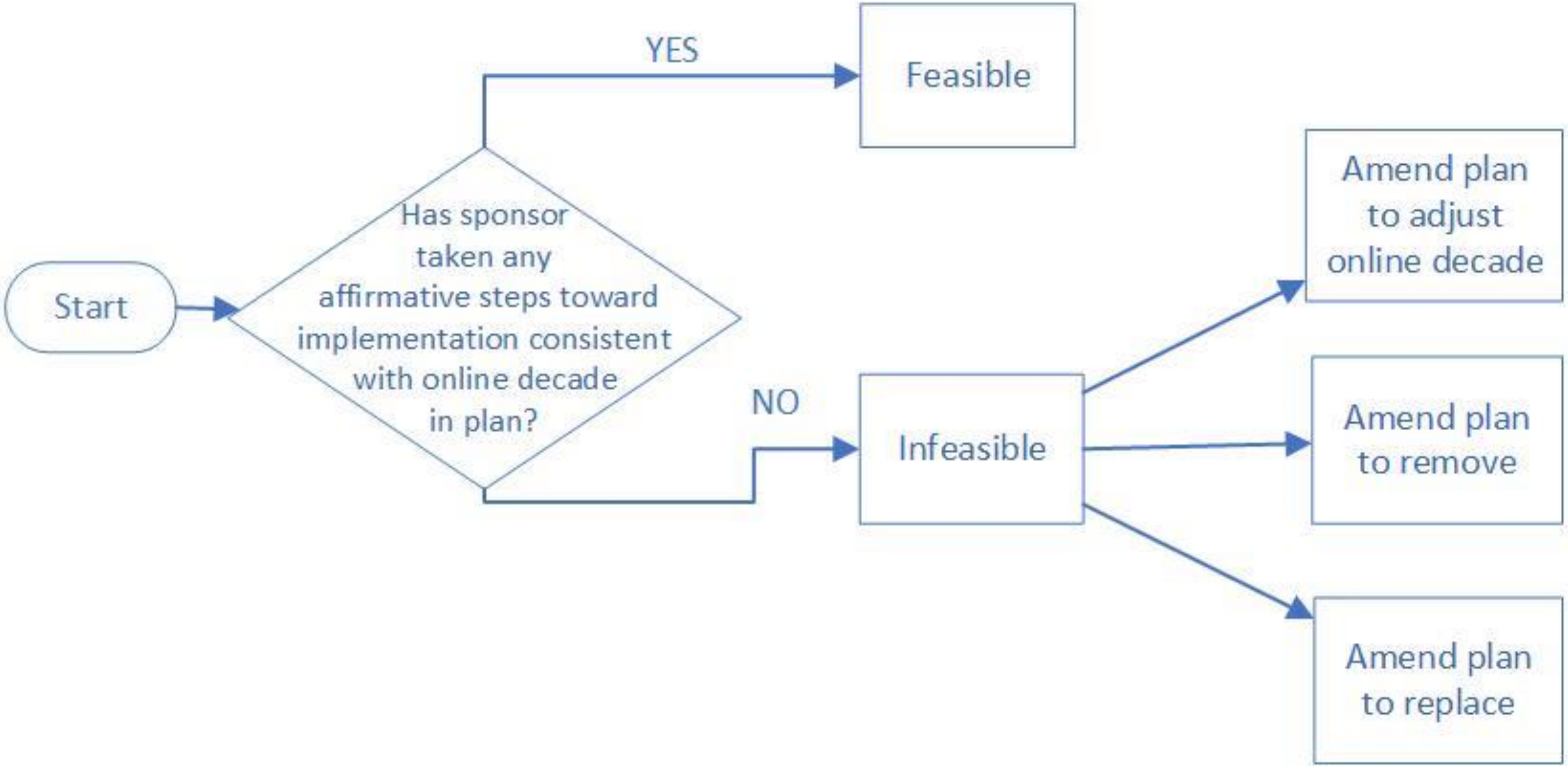
Statutory Language behind the New Requirement to Identify Infeasible WMSs

Infeasibility Review

Focus on reviewing 2021 Plan's strategies and projects **that require a permit and/or involve construction** and that:

- are shown to be online **by the 2020** or **2030 decade**,
- Related to:
  - new major reservoirs,
  - seawater desalination,
  - direct potable reuse,
  - brackish groundwater,
  - aquifer storage and recovery, and
  - out of state water transfers;
- Generally required for implementation either:
  - significant resources;
  - significant time.

Process



Start
Has sponsor taken any affirmative steps toward implementation consistent with online decade in plan?
YES
Feasible
NO
Infeasible
Amend plan to adjust online decade
Amend plan to remove
Amend plan to replace

Affirmative Steps

- Spending money on the strategy or project
- Voting to spend money on the strategy or project
- Applying for a federal or state permit for the strategy or project

Infeasibility Review

TWDB recognizes information may be difficult to obtain or may not be available for some WUG categories

- e.g., county-wide water user groups that are to be implemented by private parties

RWPG may therefore not be able to determine infeasibility for some strategies or projects.

- 39 in Region D

Engagement / Survey

- Project Name
- Project Sponsor
- Online Decade
- Date of Affirmative Action
- State Water Right Status
  - » Application filed?
  - » Admin complete?
  - » Draft released by TCEQ?
  - » Issued?
- Federal 404 Permit Status
  - » Applied for?
  - » Issued?

- Planning/Design/Construction Status
  - Type/Amount of study/testing/design performed to date (%)
  - Land Acquisition?
  - Started Construction?
  - Completed construction?
- Est. Funds Expended to Date
- Pertinent Details

Summary of Potential Infeasible 2020 WMS Investigated

64
Potentially Infeasible WMS

5
2020 Demand Reduction

59
2020 Source Related

	Number Identified as Infeasible	Remaining
2 Manufacturing Conservation (Bowie and Van Zandt)	0	-
3 Advanced Water Conservation (Caddo Basin SUD, Greenville, Poetry)	0	-
1 Reuse	0	-
48 Groundwater	0	-
6 Increase Existing Contract	0	-
4 Surface Water Infrastructure	0	-

*39 County Aggregate WUGs with no Point of Contact

WMS Projects online by 2020

55 WMS Projects

- None identified as infeasible

Identification of Infeasible Water Management Strategies from 2021 Region D Plan

Conservation strategies do not require construction or permit

Strategies for county aggregates excluded

For those requiring construction/permit, affirmative actions included:

- Project constructed
- Funding applications submitted
- Partial implementation
- Purchase of sites
- Permitting underway
- Planning/Feasibility/Design underway
- Test wells constructed
- Redevelopment of existing wells to increase capacity at same source

Suggested Action

"The North East Texas Regional Water Planning Group authorizes the technical consultant to submit on behalf of the NETRWPG the results of the evaluation of infeasible strategies, indicating that no WMSs or WMSPs from the 2021 Region D Regional Water Plan have been identified as infeasible, consistent with the information discussed in this meeting, and approves for the consultant to work with the Administrator to submit further revisions and make responses to revision requests by the TWDB by the March 4, 2024, deadline."

12 – Public Comment

13 - Suggested Action

“The North East Texas Regional Water Planning Group authorizes the technical consultant to submit on behalf of the NETRWPG the results of the evaluation of infeasible strategies, indicating that no WMSs or WMSPs from the 2021 Region D Regional Water Plan have been identified as infeasible, consistent with the information discussed in this meeting, and approves for the consultant to work with the Administrator to submit further revisions and make responses to revision requests by the TWDB by the March 4, 2024, deadline.”

Item 14

Report and discussion from Region D Technical Consultant providing a summary of information presented within the Technical Memorandum and other required supporting documentation.

Looking Forward

Task for Today

- Review and approve the Technical Consultant to submit the Technical Memorandum for use in the development of the 2026 Region D Regional Water Plan, updated with information received from public comments, and as necessarily modified during final coordination with other regions and TWDB.

The Technical Memorandum serves as a snapshot (mid-point summary)

- TAC 357.12(c) and TWDB guidelines require that a Technical Memorandum be submitted by the RWPG.
- Deadline March 4, 2024
- Specific requirements:
  - DB 27 Reports **(Appendices A – G)**
    - Water demand projections
    - Existing water supply allocations
    - Water needs
  - Water availability
    - Region D Hydrologic Variance Request including methodology for sedimentation rates for area-capacity rating curves and TWDB Approval **(Appendices H.1 and H.2)**
    - WAM Development and documentation with firm and safe yields with model files (**Appendices I and J**)
    - Documentation of groundwater availabilities, sources **(Appendix K)**
  - Documented process used by the RWPG to identify potentially feasible WMSs;
  - The potentially feasible WMSs identified as of the date of submittal of the Technical Memorandum **(Appendix L)**
  - A listing of the infeasible WMSs and WMSPs, or a statement that no infeasible WMSs or WMSPs were identified by the RWPG **(Appendix M)**
- A summary of the RWPG's interregional coordination efforts to date **(Appendix N)**;
- Public comments
- Digital formats as required by TWDB.

DB27 Reports

Appendix	DB27 Report Title	Description
A	WUG Population	Population projections by WUG, county, and river basin.
B	WUG Demand	Water demand projections by WUG, county, and river basin
C	Source Availability	Water availability by source
D	WUG Existing Water Supply	Existing water supplies by WUG, county, and river basin
E	WUG Needs/Surplus	Identified water needs by WUG, county, and river basin
F	WUG Data Comparison to 2021 RWP	Comparison of supply, demand, and needs between the 2021 and 2026 RWP at a county level
G	Source Data Comparison to 2021 RWP	Comparison of availability by source type between the 2021 and 2026 RWP at a county level

Surface Water

- Methodologies and assumptions presented at Oct. 4, 2023 NETRWPG meeting.
- Details submitted in Region D Hydrologic Variance Request submitted Oct. 27, 2023.
- Approved by TWDB on Jan. 4, 2024.

Water Availability Models (WAMs)

Basin	Version	POR	Possible New Version?
Cypress Creek	June 18, 2015	1948-1998	*Yes*
Red River	Oct. 26, 2020	1948-2018	--
Sabine	Aug. 13, 2018	1940-1998	--
Sulphur	Oct. 11, 2019	1940-2017	--
Neches	Region I		
Trinity	Region C		

Sedimentation Effects on Reservoirs with Post-Impoundment Surveys

Reservoir	Basin	Year of Survey	Sed. Rate (ac-ft/yr)	2026 Plan Conservation Storage Capacity (ac-ft) 2030	2080
Bob Sandlin	Cypress	2018	249	189,960	177,515
Big Creek	Sulphur	2022	56	2,470	0
Chapman/Cooper	Sulphur	2022	830	287,856	246,659
Crook	Red	2003	28	8,441	7,018
Cypress Springs	Cypress	2007	168	58,529	50,268
Fork	Sabine	2009	1327	609,572	543,216
Gladewater	Sabine	2000	46	3,355	1,075
Lake O' The Pines	Cypress	2009	260	214,551	201,577
Langford	Sulphur	2008	38	516	0
Monticello	Cypress	1998	214	27,860	17,125
Pat Mayse	Red	2008	162	114,272	106,155
Tawakoni	Sabine	2009	1322	844,627	778,513
Welsh	Cypress	2001	129	15,904	9,469
Wright Patman	Sulphur	2018	824	294,121	245,887

Firm Yields for Large Reservoirs in Region D (1)

Water Right ID	Reservoir Name	Basin	Firm Yield 2030	Firm Yield 2080
4564	Bob Sandlin	Cypress	26,200	23,500
N/A	Caddo	Cypress	10,000	10,000
4560	Cypress Springs	Cypress	10,500	8,200
4582	Ellison Creek	Cypress	33,640	33,640
5272	Gilmer	Cypress	6,300	6,300
4588	Johnson Creek	Cypress	2,280	2,280
4563	Monticello	Cypress	5,000	2,800
4590	Lake O' The Pines	Cypress	159,000	151,500
4582	Peacock Site 1A Tailings Lake	Cypress	877	861
4565	Tankersley	Cypress	1,500	1,500
4576	Welsh	Cypress	2,900	1,500
3222	Rhines	Neches	1,400	1,400
4943	Crook	Red	5,000	4,000
4940	Pat Mayse	Red	50,490	49,300
4759	Big Sandy Creek	Sabine	2,680	2,680
4647	Brandy Branch	Sabine	19,889	19,889

Firm Yields for Large Reservoirs in Region D (2)

Water Right ID	Reservoir Name	Basin	Firm Yield 2030	Firm Yield 2080
4678	Edgewood City Lake	Sabine	160	160
4669	Fork	Sabine	168,966	159,730
4762	Gladewater	Sabine	4,540	1,560
4665	Greenville City Lake	Sabine	3,420	3,420
4758	Loma	Sabine	1,777	1,777
4675	Mill Creek	Sabine	1,190	1,190
4670	Tawakoni	Sabine	226,239	217,760
4395	Big Creek	Sulphur	940	0
5873	Caney Creek	Sulphur	792	792
4797, 4798, 4799	Chapman/Cooper	Sulphur	66,201	58,327
5873	Elliot	Sulphur	1,318	1,318
4809	Langford	Sulphur	130	0
4804	River Crest	Sulphur	5,300	5,300
4811	Sulphur Springs	Sulphur	7,730	7,730
4795	Turkey Creek	Sulphur	190	190
4836	Wright Patman	Sulphur	264,230	218,910

Groundwater

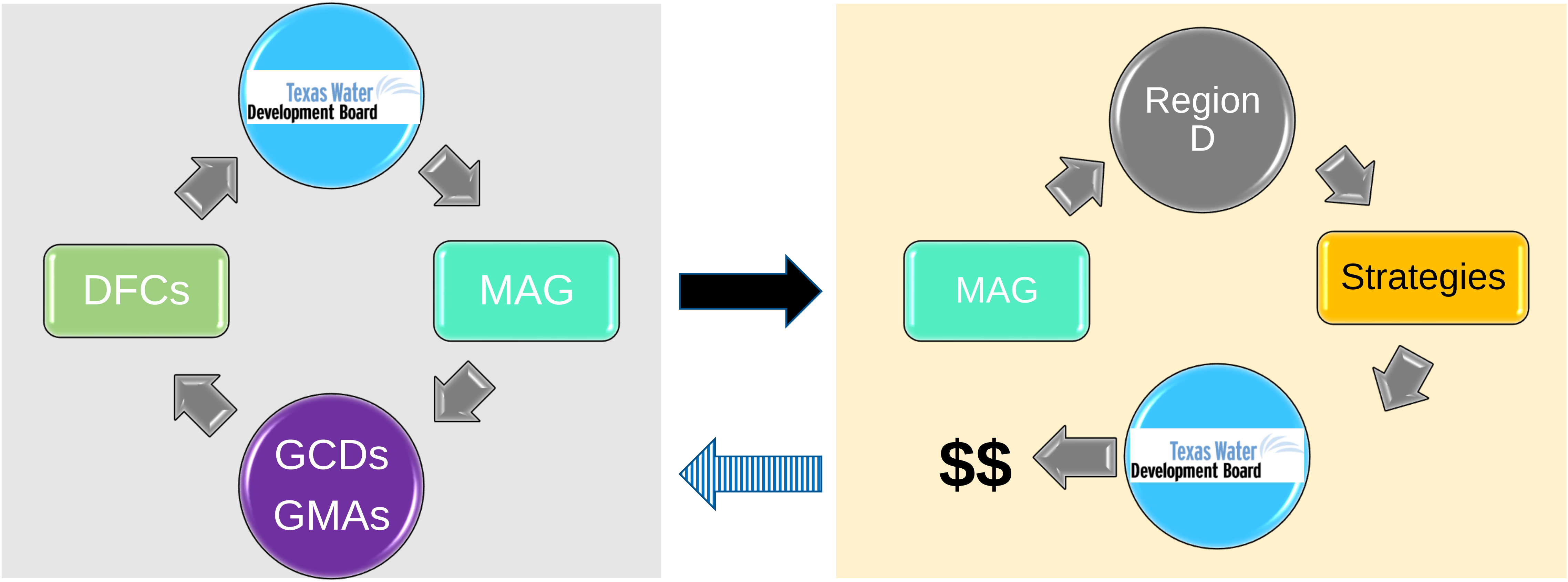
- Review joint groundwater planning and how it relates to regional water planning
- Review and compare current groundwater availability to the availability from the previous cycle
- Summarize overall groundwater availability in Region D and how it has changed from the previous cycle
- Recommended next steps

Joint Groundwater Planning and Region D

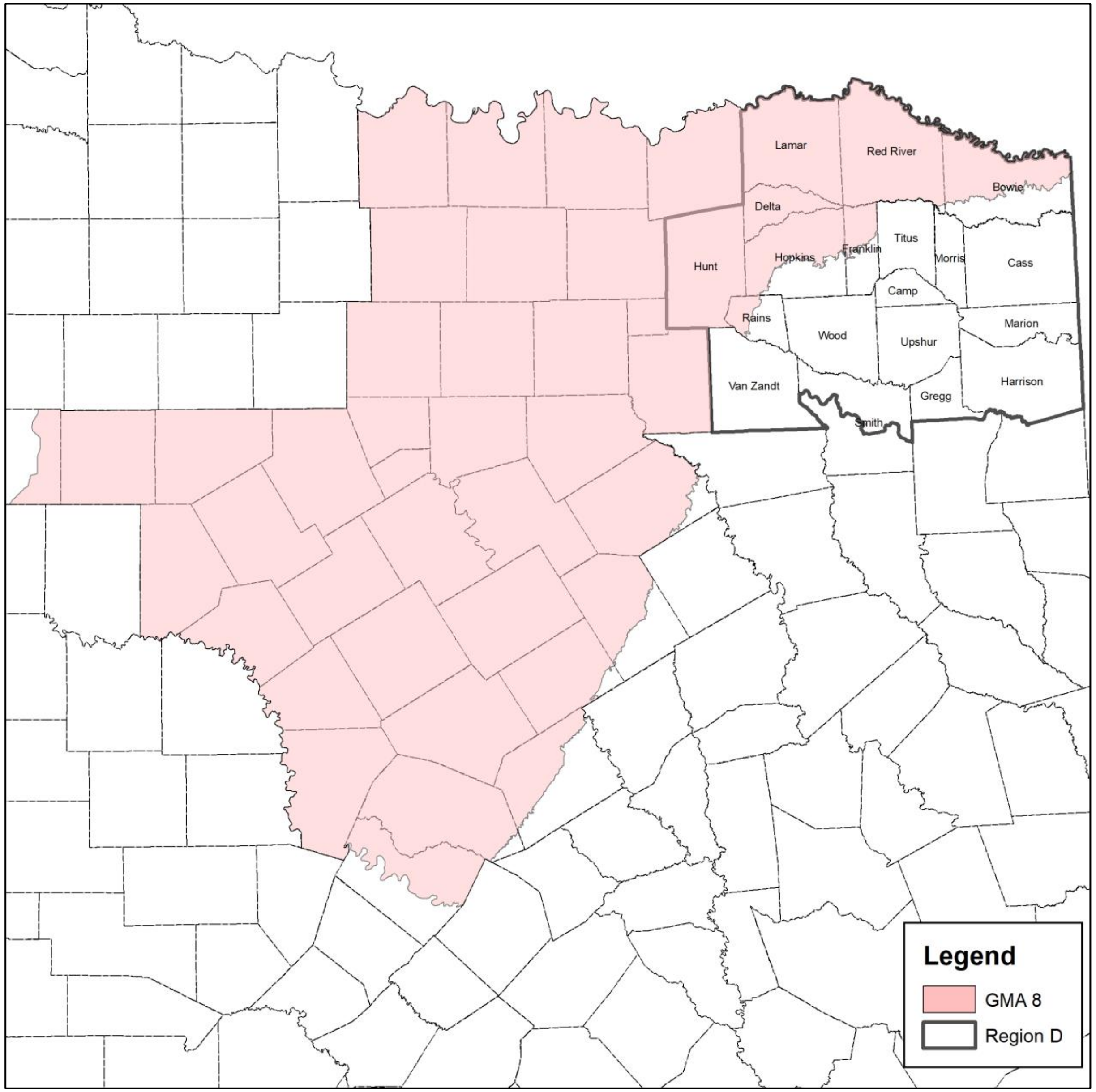
- Region D includes 2 GMAs: 8 and 11
- Region D has no Groundwater Conservation Districts (GCDs)
- Region D includes 2 major aquifers and 5 minor aquifers, and several “other” aquifers
- Groundwater accounts for less than 200,000 ac-ft/yr of availability for Region D, but is a significant supply for large number WUGs

The Groundwater Planning Cycle

Joint Groundwater Planning | **Regional Water Planning**

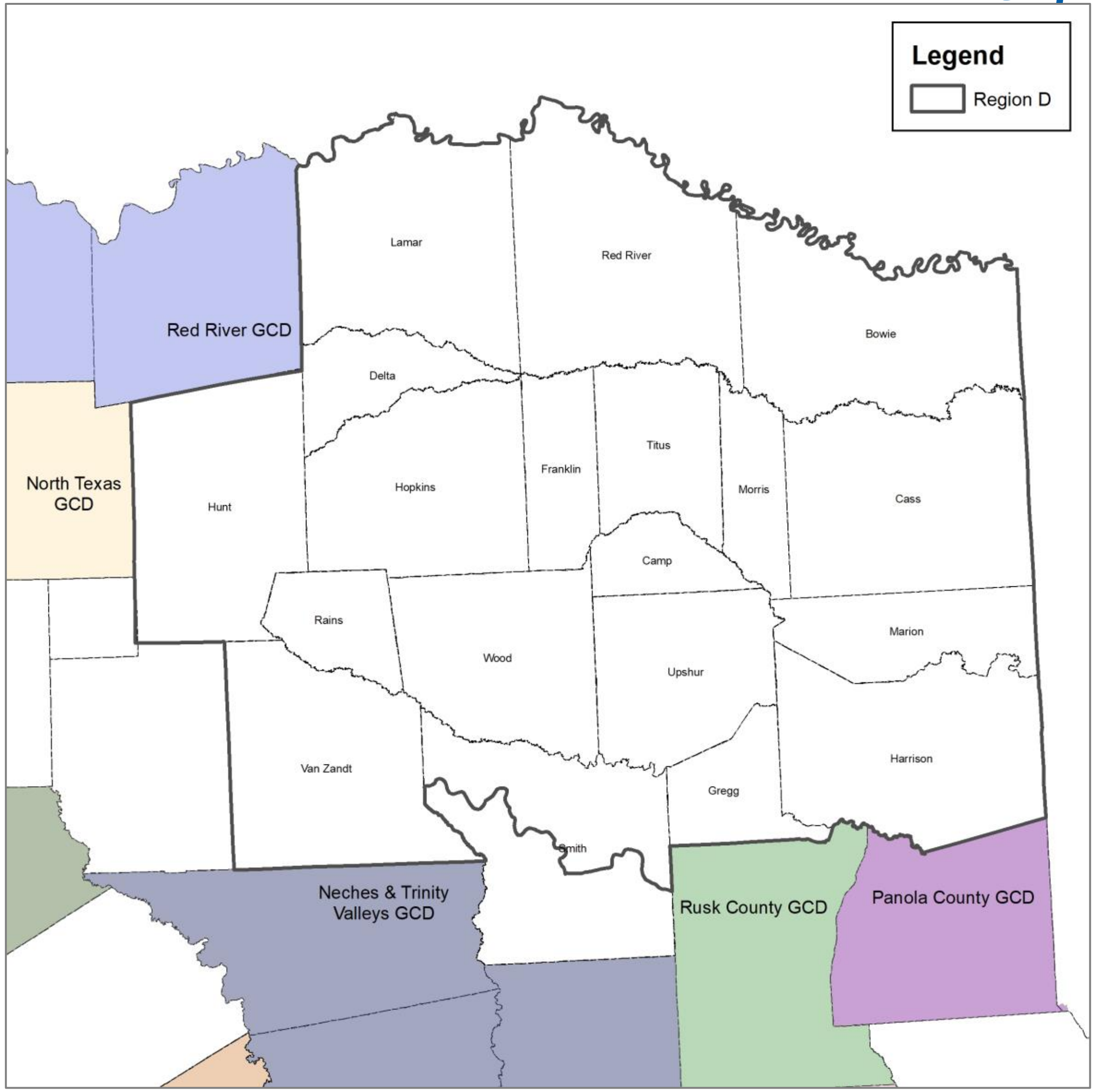


Groundwater Management Area #8



Groundwater Management Area #11

No Groundwater Conservation Districts in Region D



Because there are no GCDs in Region D, Region D is allowed (by law) to determine the groundwater availability for regional water planning purposes in coordination with TWDB.

Joint Groundwater Planning Status

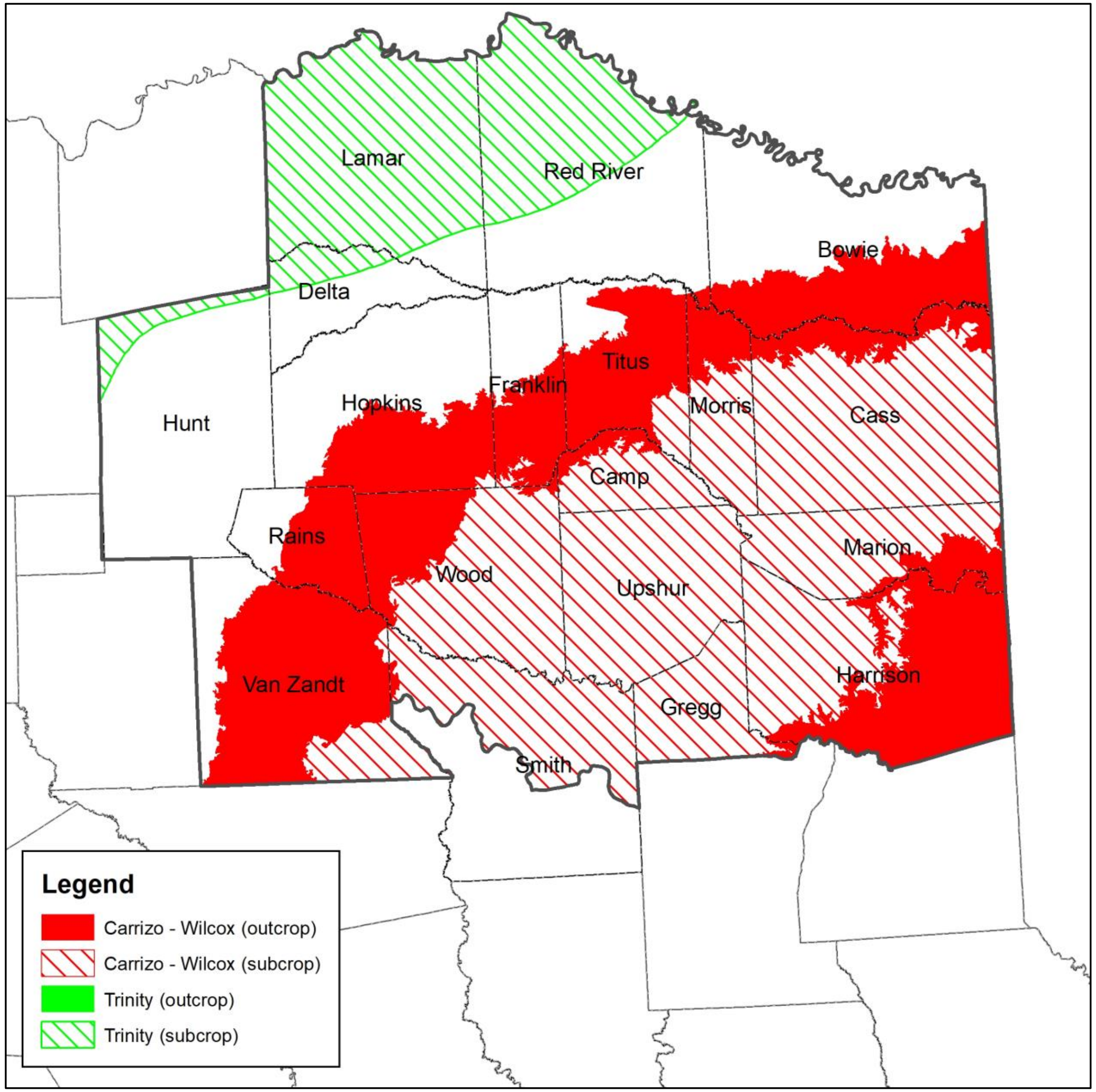
Groundwater Management Area 8			
Aquifer	**Major or Minor Aquifer?**	**Desired Future Conditions Status**	**Modeled Available Groundwater Status**
Trinity	Major	Adopted 7/26/2022	Submitted 11/1/2022, GR 21-013 MAG
Woodbine	Minor	Adopted 7/26/2022	Submitted 11/1/2022, GR 21-013 MAG
Blossom	Minor	No DFC adopted	-
Nacatoch	Minor	No DFC adopted	-
Groundwater Management Area 11			
Aquifer	**Major or Minor Aquifer?**	**Desired Future Conditions Status**	**Modeled Available Groundwater Status**
Carrizo-Wilcox	Major	Adopted 8/11/2022	Submitted 2/17/2022, GR 21-016 MAG
Queen City	Minor	Adopted 8/11/2022	Submitted 2/17/2022, GR 21-016 MAG

Groundwater Availability

- Groundwater produced from 2 major and 5 minor aquifers
- Groundwater availability in Region D is ~190,000 ac-ft/yr
- Groundwater availability has decreased about 40% from the previous cycle
- Comprised of “MAG” and “Non-MAG” availability
  - “MAG” = Modeled Available Groundwater
  - MAGs are determined by the TWDB based on desired future conditions (DFCs) adopted in the joint groundwater planning process (GMAs)
  - MAG = Availability
  - Non-MAG availability are established by the TWDB but not based on adopted DFCs
  - Both MAG and non-MAG availability may be adjusted by Region D

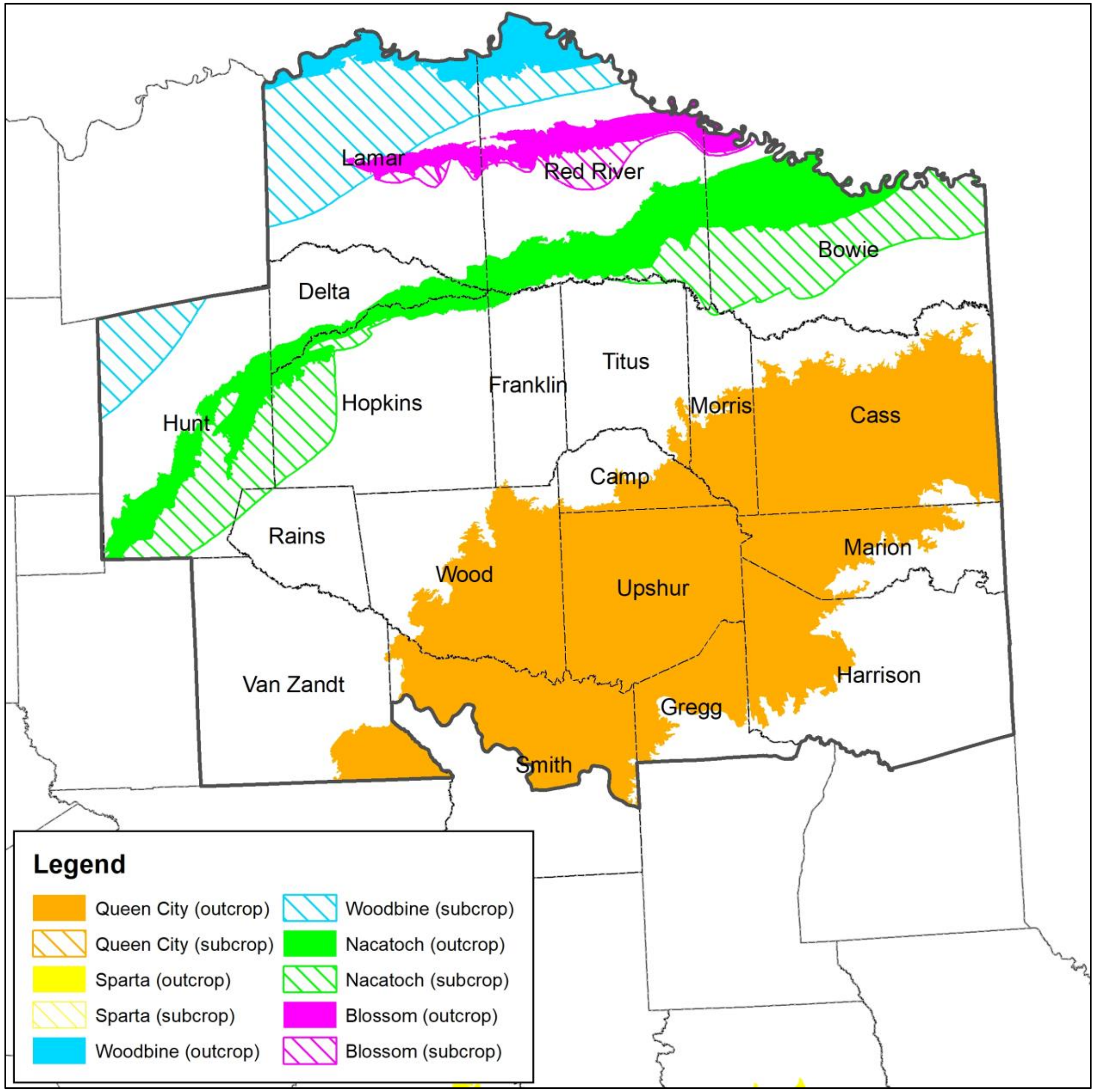
Major Aquifers in Region D

- *Carrizo-Wilcox*
  - Present in southern two-thirds of Region D
  - Significant availability
- *Trinity*
  - Present in northwestern portion of Region D
  - Moderate availability



Minor Aquifers in Region D

- *<u>Queen City</u>*- Present in the southeastern third of Region D; low to moderate availability
- <u>Sparta</u>- Not “officially” present in Region D, but Sparta wells are present; no availability
- <u>Woodbine</u>- Present in the northwestern portion of Region D; low availability
- <u>Nacatoch</u>- Present in the central portion of Region D; low to moderate availability
- <u>Blossom</u>- Small aquifer present in the northern portion of Region D; low availability



Notes on groundwater availability

Determined by MAGs

- Derived from Joint Planning Process
- Based on Desired Future Conditions (DFCs) through actions of Groundwater Conservation Districts (GCDs) and Groundwater Management Areas (GMAs)

Groundwater Hydrologic Variance Requests

- MAG reallocation w/written support of relevant GCDs and GMA
- MAG Peak Factor – adjustment for pumping variations between wet/dry conditions that accommodates annual MAG for planning purposes
- Must be consistent with relevant aquifer's MAG
- Limited to shifts within a county only

Region D unique capability

- While required to align with MAGs for relevant aquifers in adjacent areas regulated by a GCD
- RWPG has capability to establish groundwater availability for areas in the region where no GCD exists
- This process will occur after submittal of Technical Memorandum

Groundwater availability review

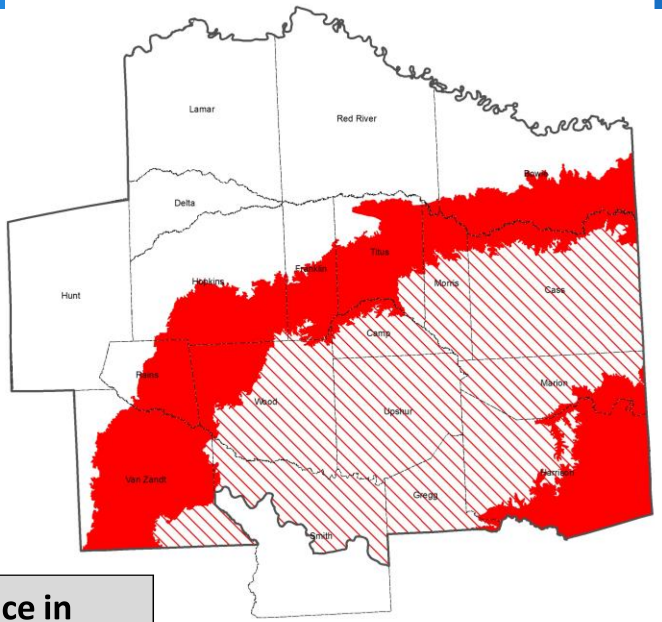
Region D availability

- Mostly based on MAGs
- Availability has decreased in most aquifers in Region D

Notes

- Aquifer availability often varies through the planning period
- If availability varies over the planning period, it may be shown as “5,000 to 4,000”, reflecting the availability from the beginning to end of the planning period
- 2022 availability for 2020 to 2070; 2027 availability for 2030 to 2080
- “NA” for 2022 availability means there was no availability during the last planning cycle

Carrizo-Wilcox Aquifer



- Present in southern two-thirds of Region D
- Decreased availability across entire aquifer

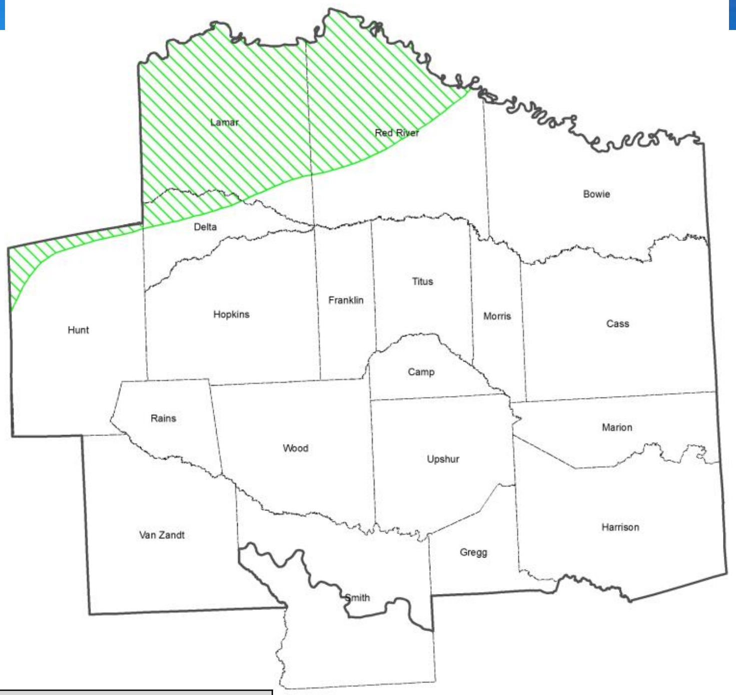
Aquifer Name	County	Basin	Type	2022 Total Availability (ac-ft/yr) [2020-2070]	2027 Total Availability (ac-ft/yr) [2030-2080]	Difference in Availability (ac-ft/yr) [2030-2070]
Carrizo-Wilcox	Bowie	Sulphur	MAG	9,872 to 8,999	9,645	+87 to +646
Carrizo-Wilcox	Camp	Cypress	MAG	4,050	3,862	**-188**
Carrizo-Wilcox	Cass	Cypress	MAG	15,159 to 15,094	12,865	**-2,267 to -2,229**
Carrizo-Wilcox	Cass	Sulphur	MAG	2,864 to 2,532	777	**-2,017 to -1,755**
Carrizo-Wilcox	Franklin	Cypress	MAG	7,765	5,334	**-2,431**
Carrizo-Wilcox	Franklin	Sulphur	MAG	2,021	398	**-1,623**
Carrizo-Wilcox	Gregg	Cypress	MAG	862	726	**-136**
Carrizo-Wilcox	Gregg	Sabine	MAG	7,179	5,346	**-1,833**
Carrizo-Wilcox	Harrison	Cypress	MAG	6,183 to 5,990	4,636	**-1,473 to -1,354**
Carrizo-Wilcox	Harrison	Sabine	MAG	4,851 to 4,837	4,460	**-391 to -377**
Carrizo-Wilcox	Hopkins	Cypress	MAG	313	309	**-4**
Carrizo-Wilcox	Hopkins	Sabine	MAG	2,842	2,426	**-416**

Carrizo-Wilcox Aquifer (cont.)

Aquifer Name	County	Basin	Type	2022 Total Availability (ac-ft/yr) [2020-2070]	2027 Total Availability (ac-ft/yr) [2030-2080]	Difference in Availability (ac-ft/yr) [2030-2070]
Carrizo-Wilcox	Hopkins	Sulphur	MAG	7,119 to 6,795	2,017	**-5,188 to -4,778**
Carrizo-Wilcox	Marion	Cypress	MAG	2,726	1,966	**-760**
Carrizo-Wilcox	Morris	Cypress	MAG	2,166	2,156	**-10**
Carrizo-Wilcox	Morris	Sulphur	MAG	402	415	13
Carrizo-Wilcox	Rains	Sabine	MAG	1,839 to 1,745	1,411	**-428 to -334**
Carrizo-Wilcox	Red River	Sulphur	Non-MAG	0	0	0
Carrizo-Wilcox	Smith	Sabine	MAG	13,246 to 13,196	7,939	**-5,281 to -5,257**
Carrizo-Wilcox	Titus	Cypress	MAG	7,215 to 7,194	5,594	**-1,470 to -1,600**
Carrizo-Wilcox	Titus	Sulphur	MAG	2,838	1,942	**-896**
Carrizo-Wilcox	Upshur	Cypress	MAG	5,442	5,107	**-335**
Carrizo-Wilcox	Upshur	Sabine	MAG	1,689	1,550	**-139**
Carrizo-Wilcox	Van Zandt	Neches	MAG	4,317	2,616	**-1,701**
Carrizo-Wilcox	Van Zandt	Sabine	MAG	4,767 to 4,370	3,286	**-1,443 to -1,084**
Carrizo-Wilcox	Van Zandt	Trinity	MAG	1,384	1,030	**-354**
Carrizo-Wilcox	Wood	Cypress	MAG	2,053	925	**-1,128**
Carrizo-Wilcox	Wood	Sabine	MAG	19,404 to 19,184	16,977	**-2,383 to -2,207**
	TOTAL			**140,568 to 137,985**	**105,715**	**-34,195 to -32,270**

Trinity Aquifer

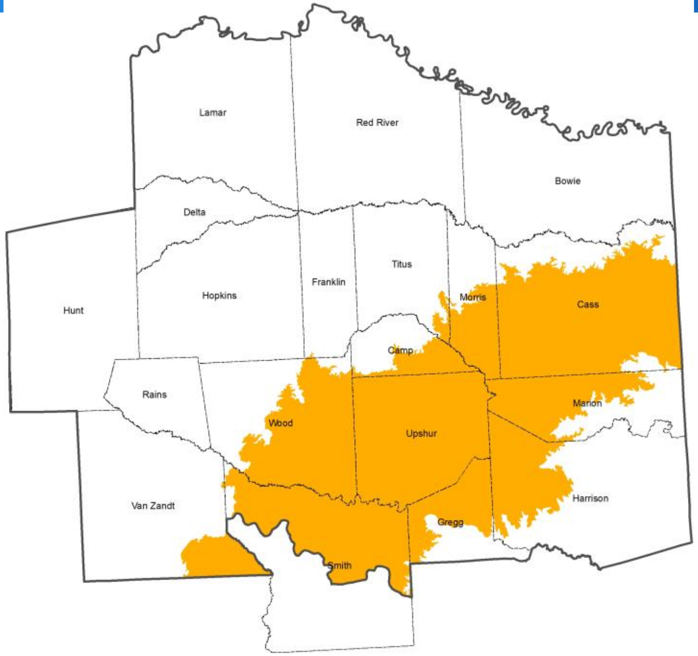
- Present in the northwestern portion of Region D
- Decreased availability in two counties



Aquifer Name	County	Basin	Type	2022 Total Availability (ac-ft/yr) [2020-2070]	2027 Total Availability (ac-ft/yr) [2030-2080]	Difference in Availability (ac-ft/yr) [2030-2070]
Trinity Aquifer	Delta	Sulphur	MAG	56	56	0
Trinity Aquifer	Hunt	Sabine	MAG	213	0	-213
Trinity Aquifer	Hunt	Sulphur	MAG	3	3	0
Trinity Aquifer	Hunt	Trinity	MAG	0	0	0
Trinity Aquifer	Lamar	Red	MAG	0	0	0
Trinity Aquifer	Lamar	Sulphur	MAG	8	8	0
Trinity Aquifer	Red River	Red	MAG	52	52	0
Trinity Aquifer	Red River	Sulphur	MAG	233	125	-108
TOTAL				**565**	**244**	**-321**

Queen City Aquifer

- Present in southeastern half of Region D
- Significant decrease in availability in all counties



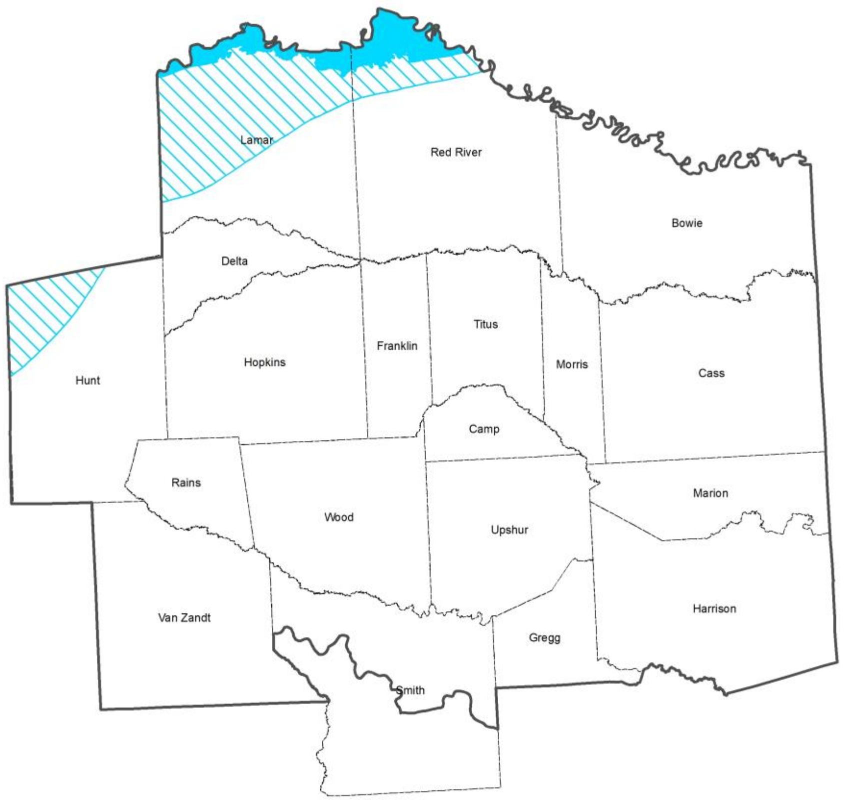
Aquifer Name	County	Basin	Type	2022 Total Availability (ac-ft/yr) [2020-2070]	2027 Total Availability (ac-ft/yr) [2030-2080]	Difference in Availability (ac-ft/yr) [2030-2070]
Queen City Aquifer	Camp	Cypress	MAG	4,306 to 4,150	1,594	**-2,712 to -2,556**
Queen City Aquifer	Cass	Cypress	MAG	35,499	15,855	**-19,644**
Queen City Aquifer	Cass	Sulphur	MAG	3,010	624	**-2,386**
Queen City Aquifer	Gregg	Cypress	MAG	1,359	456	**-903**
Queen City Aquifer	Gregg	Sabine	MAG	5,625	2,056	**-3,569**
Queen City Aquifer	Harrison	Cypress	MAG	7,762	2,976	**-4,786**
Queen City Aquifer	Harrison	Sabine	MAG	2,310	561	**-1,749**
Queen City Aquifer	Marion	Cypress	MAG	15,407 to 15,271	7,389	**-8,018 to -7,882**
Queen City Aquifer	Morris	Cypress	MAG	9,469 to 9,362	3,278	**-6,191 to -6,084**
Queen City Aquifer	Smith	Sabine	MAG	28,343 to 27,887	12,457	**-15,886 to -15,430**
Queen City Aquifer	Titus	Cypress	MAG	144	0	**-144**
Queen City Aquifer	Upshur	Cypress	MAG	19,642 to 19,396	6,215	**-13,427 to -13,181**
Queen City Aquifer	Upshur	Sabine	MAG	7,749	5,949	**-1,800**
Queen City Aquifer	Van Zandt	Neches	MAG	4,791	2,343	**-2,448**
Queen City Aquifer	Wood	Cypress	MAG	986	779	**-207**
Queen City Aquifer	Wood	Sabine	MAG	9,060	5,731	**-3,329**
TOTAL				**155,462 to 154,361**	**68,262**	**-87,199 to -86,098**

Sparta Aquifer

- Aquifer is not “officially” within Region D
- Sparta wells are present, and so availability option was added for this cycle
- No availability

Woodbine Aquifer

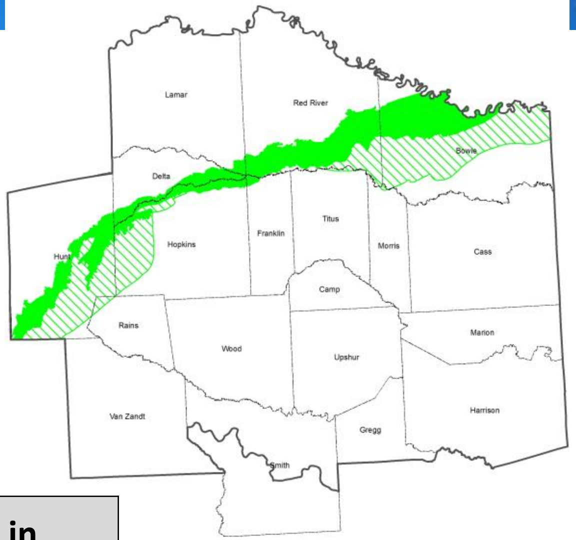
- Present in northwestern portion of Region D
- Low availability, mostly unchanged



Aquifer Name	County	Basin	Type	2022 Total Availability (ac-ft/yr) [2020-2070]	2027 Total Availability (ac-ft/yr) [2030-2080]	Difference in Availability (ac-ft/yr) [2030-2070]
Woodbine Aquifer	Hunt	Sabine	MAG	268	268	0
Woodbine Aquifer	Hunt	Sulphur	MAG	165	165	0
Woodbine Aquifer	Hunt	Trinity	MAG	329	330	1
Woodbine Aquifer	Lamar	Red	MAG	22	0	-22
Woodbine Aquifer	Lamar	Sulphur	MAG	49	49	0
Woodbine Aquifer	Red River	Red	MAG	2	2	0
TOTAL				**835**	**814**	**-21**

Nacatoch Aquifer

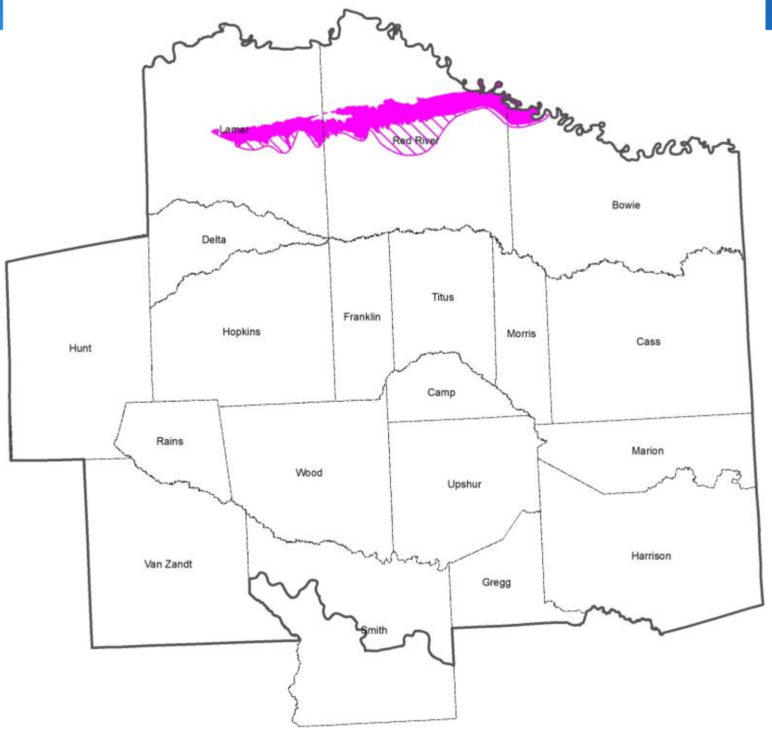
- Present in north-central portion of Region D
- Relatively unchanged availability



Aquifer Name	County	Basin	Type	2022 Total Availability (ac-ft/yr) [2020-2070]	2027 Total Availability (ac-ft/yr) [2030-2080]	Difference in Availability (ac-ft/yr) [2030-2070]
Nacatoch Aquifer	Bowie	Red	Non-MAG	3,071	3,071	0
Nacatoch Aquifer	Bowie	Sulphur	Non-MAG	1,942	1,942	0
Nacatoch Aquifer	Delta	Sulphur	Non-MAG	575	575	0
Nacatoch Aquifer	Franklin	Sulphur	Non-MAG	30	30	0
Nacatoch Aquifer	Hopkins	Sabine	Non-MAG	291	291	0
Nacatoch Aquifer	Hopkins	Sulphur	Non-MAG	916	916	0
Nacatoch Aquifer	Hunt	Sabine	Non-MAG	3,303	3,303	0
Nacatoch Aquifer	Hunt	Sulphur	Non-MAG	491 to 2,052	491 to 2,052	**0 to -705**
Nacatoch Aquifer	Lamar	Sulphur	Non-MAG	110	110	0
Nacatoch Aquifer	Rains	Sabine	Non-MAG	1	1	0
Nacatoch Aquifer	Red River	Red	Non-MAG	58	58	0
Nacatoch Aquifer	Red River	Sulphur	Non-MAG	2,923	2,923	0
TOTAL				**13,713 to 15,272**	**13,713 to 15,272**	**0 to -705**

Blossom Aquifer

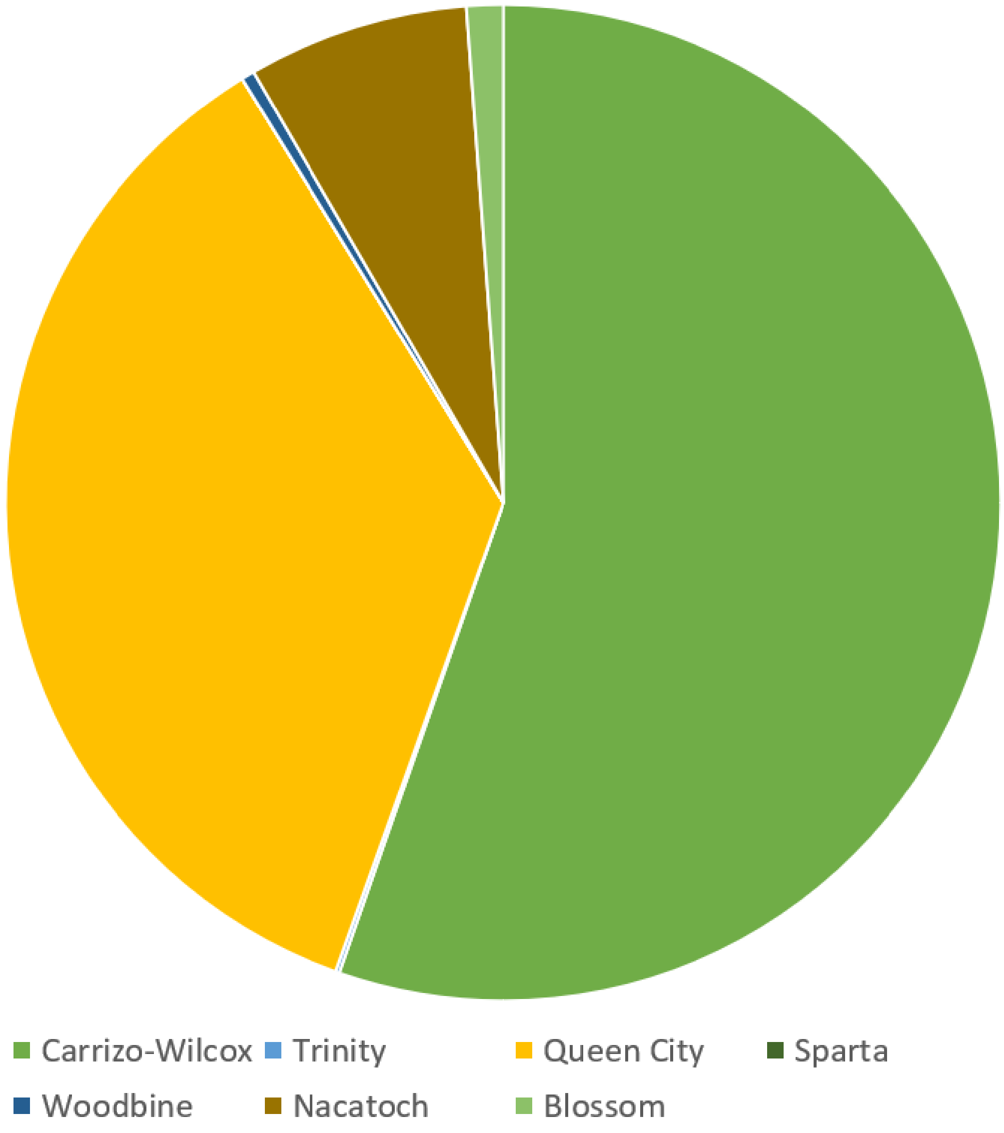
- Present in three counties in the northern portion of Region D
- Unchanged availability



Aquifer Name	County	Basin	Type	2022 Total Availability (ac-ft/yr) [2020-2070]	2027 Total Availability (ac-ft/yr) [2030-2080]	Difference in Availability (ac-ft/yr) [2030-2070]
Blossom Aquifer	Bowie	Red	Non-MAG	21	21	0
Blossom Aquifer	Bowie	Sulphur	Non-MAG	180	180	0
Blossom Aquifer	Lamar	Red	Non-MAG	323	323	0
Blossom Aquifer	Lamar	Sulphur	Non-MAG	71	71	0
Blossom Aquifer	Red River	Red	Non-MAG	665	665	0
Blossom Aquifer	Red River	Sulphur	Non-MAG	1,013	1,013	0
TOTAL				**2,273**	**2,273**	**0**

Summary of Groundwater Availability

Aquifer	Total Availability in 2030 (ac-ft/yr)	Total Availability in 2080 (ac-ft/yr)
MAJOR AQUIFERS		
Carrizo-Wilcox	105,715	105,715
Trinity	244	244
Total Major Aquifer Availability	***105,959***	***105,959***
MINOR AQUIFERS		
Queen City	68,263	68,263
Sparta	0	0
Woodbine	814	814
Nacatoch	13,712	15,272
Blossom	2,273	2,273
Total Minor Aquifer Availability	***85,062***	***86,622***
TOTAL GROUNDWATER AVAILABILITY	**191,021**	**192,581**



Summary of Groundwater Availability by Decade

Aquifer	Total Availability 2030	Total Availability 2040	Total Availability 2050	Total Availability 2060	Total Availability 2070	Total Availability 2080
MAJOR AQUIFERS						
Carrizo-Wilcox Aquifer	105,715	105,715	105,715	105,715	105,715	105,715
Trinity Aquifer	244	244	244	244	244	244
Major Aquifer Total	***105,959***	***105,959***	***105,959***	***105,959***	***105,959***	***105,959***
MINOR AND OTHER AQUIFERS						
Blossom Aquifer	2,273	2,273	2,273	2,273	2,273	2,273
Nacatoch Aquifer	13,712	13,711	13,733	14,088	14,567	15,272
Queen City Aquifer	68,263	68,263	68,263	68,263	68,263	68,262
Sparta Aquifer	0	0	0	0	0	0
Woodbine Aquifer	814	814	814	814	814	814
Minor Aquifer Total	***85,062***	***85,061***	***85,083***	***85,438***	***85,917***	***86,621***
TOTAL	**191,021**	**191,020**	**191,042**	**191,397**	**191,876**	**192,580**
Total in Last Planning Cycle	***312,757***	***311,734***	***311,767***	***311,570***	***311,291***	***NA***

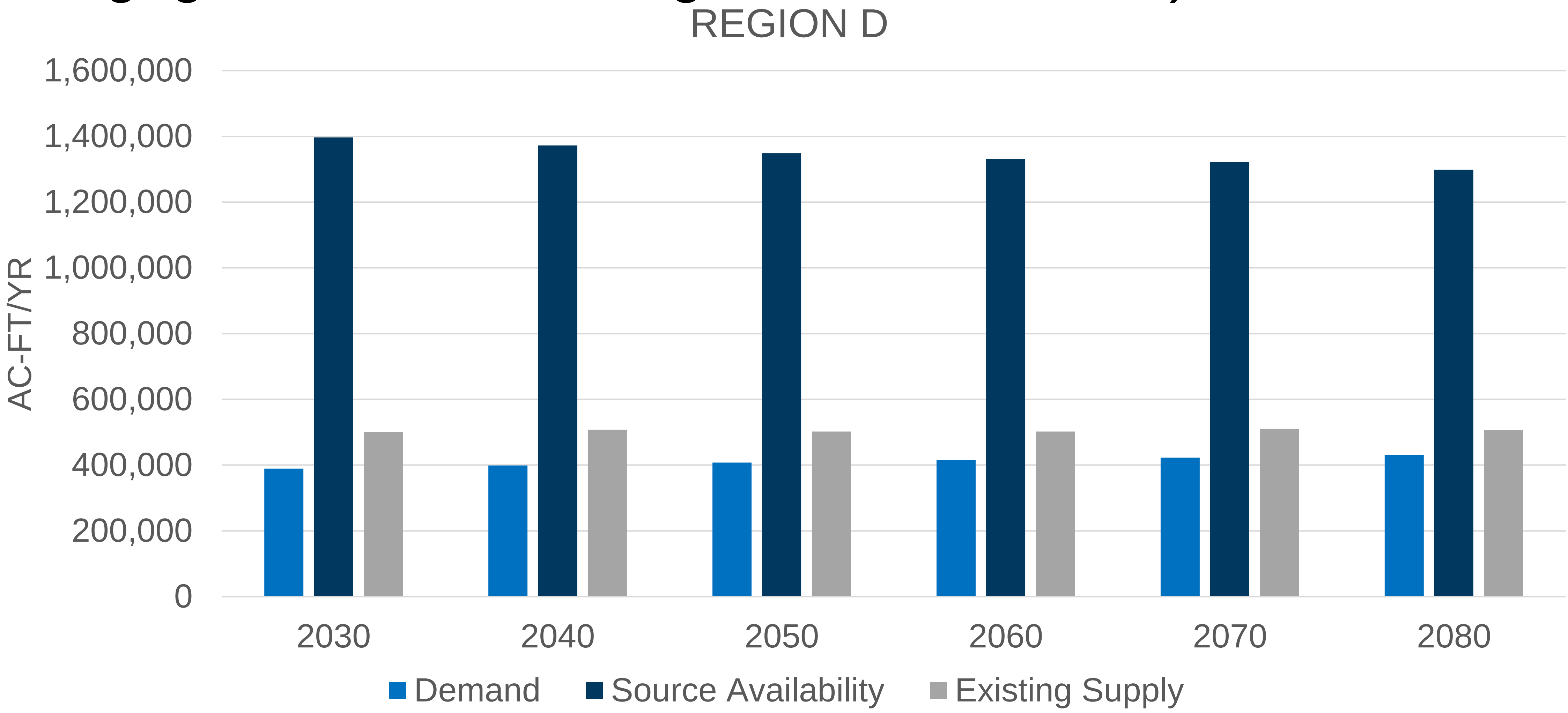
Summary of Groundwater Availability Changes

Aquifer	Total Availability 2030	Total Availability 2040	Total Availability 2050	Total Availability 2060	Total Availability 2070
MAJOR AQUIFERS					
Carrizo-Wilcox Aquifer	-34,195	-33,498	-33,309	-32,894	-32,270
Trinity Aquifer	-321	-322	-321	-322	-321
Major Aquifer Total	*-34,516*	*-33,820*	*-33,630*	*-33,216*	*-32,591*
MINOR AND OTHER AQUIFERS					
Blossom Aquifer	0	0	0	0	0
Nacatoch Aquifer	0	-22	-355	-479	-705
Queen City Aquifer	-87,199	-86,849	-86,719	-86,455	-86,098
Sparta Aquifer	0	0	0	0	0
Woodbine Aquifer	-21	-23	-21	-23	-21
Minor Aquifer Total	*-87,220*	*-86,894*	*-87,095*	*-86,957*	*-86,824*
TOTAL	-121,736	-120,714	-120,725	-120,173	-119,415

Recommended Next Steps on Groundwater

- Region D has the option to adjust *both* MAG and non-MAG availabilities
- Availability decreases for Region D almost entirely MAGs
- After submittal of Tech Memo, review availability decreases and impacts on allocated supplies and water management strategies from the last cycle
- Determine if Region D should adjust any of the MAG or non-MAG availabilities and initiate process with TWDB.

Technical Memorandum Data Snapshot (subject to change with continuing WUG/WWP engagement and interregional coordination)



Interregional Coordination

- RWPG meetings (liasons w/Regions C and I)
- Interregional Planning Council
- RWPG Chair conference calls
- Technical Consultant coordination (calls, email, memos)
  - Identification and engagement with WUGs
  - Consistency on projections
  - Source availability
  - Supply allocations
  - Data entry responsibilities
  - Reporting
- November 11, 2021, Region D letter to Region C (Appendix N)

15 – Public Comment

16 - Suggested Action

“The North East Texas Regional Water Planning Group approves the Technical Consultant to coordinate with TWDB staff and submit the Technical Memorandum for use in the development of the 2026 Region D Regional Water Plan, updated with information received from public comments, and as necessarily modified during final coordination with TWDB.”

Item 17

Discussion and Action as appropriate: Review, discuss, and consider taking action to adopt the list of Wholesale Water Providers and Major Water Providers for the purposes of the 2026 Region D Water Plan.

Task for Today

- Review and adopt the list of Wholesale Water Providers and Major Water Providers for the purposes of the 2026 Region D Regional Water Plan.

Wholesale Water Providers (WWP) and Major Water Providers (MWP)

WWP – Must sell or deliver (or plan to sell or deliver) wholesale water at some point in the 50-year planning horizon.

- RWPGs determine which WWPs to use in their plan development
- Specific analysis and reporting requirements

MWP are a subset of WUGs and WWPs

- Identified and designated by RWPG to be of particular significance to the region’s water supply.
- In 2021 Plan, MWPs were identified as WWPs (still required separate reporting).

Past WWP/MWPs with 2026 additions

WWP	Wholesale Customers
Bi County WSC	Manufacturing, Camp County Steam Electric Power, Titus County
Bright Star Salem SUD	South Rains SUD
Cash SUD	Lone Oak, City of Quinlan, City of
Cherokee Water Company	Longview, City of
	Southwestern Electric Power Company (SWEPCO)
Commerce, City of	Gafford Chapel WSC West Delta WSC
	Maloy WSC Texas A&M University
	North Hunt SUD
Cooper, City of	Delta County MUD, County-Other, Delta, County-Other, Hunt
Emory, City of	East Tawakoni, South Rains SUD
Franklin County Water District	Cypress Springs SUD Mt. Vernon, City of
	Winnsboro, City of
Gladewater, City of	County-Other, Gregg County-Other, Smith County-Other, Upshur
Golden WSC	Manufacturing, Van Zandt
Grand Saline, City of	Manufacturing, Van Zandt
Greenville, City of	Caddo Mills, City of Manufacturing
	Jacobia WSC Mining
	Shady Grove WSC
Hughes Springs, City of	Holly Springs WSC
Kilgore, City of	Cross Roads SUD County-Other, Gregg
Lamar County Water Supply District	410 WSC Pattonville WSC
	Blossom, City of Red River County WSC
	Deport, City of Reno, City of
	Detroit, City of Roxton, City of
	Manufacturing Toco, City of

WWP	Wholesale Customers
Longview, City of	Elderville WSC Manufacturing
	Gum Springs WSC White Oak, City of (raw water)
	Hallsville, City of
Marshall, City of	Cypress Valley WSC Manufacturing
	Gill WSC Talley WSC
	Leigh WSC
Mt. Pleasant, City of	Tri Water SUD Manufacturing
	Lake Bob Sandlin State Park Winfield, City of
Northeast Texas Municipal Water District	Avinger, City of Longview, City of Daingerfield, City of Marshall, City of Diana SUD, Mims WSC, Harleton WSC, City of Ore City, City of Hughes Springs, City of Pittsburg, City of Jefferson, SWEPCO, City of Lone Star, Luminant, Lone Star Steel, Tryon Road SUD
Paris, City of	Lamar County WSD
	Manufacturing Steam Electric
Point, City of	Maunfacturing, Rains County
Riverbend Water Resources District / Texarkana (TX), City of	City of Annona, Manufacturing – Bowie County, City of Atlanta, City of Maud, City of Avery, City of Nash, Central Bowie WSC, City of New Boston, Oak Grove WSC, City of Domino, City of Hooks
	Red River Water Corp., Macedonia Eylau MUD, City of Redwater, Manufacturing – Cass County, City of Wake Village, Federal Correctional Institution, TexAmericas Center
Sabine River Authority*	Ables Springs WSC Kilgore, City of
	Cash SUD Longview, City of
	Combined Consumers SUD Mac Bee SUD
	Commerce, City of Point, City of
	Eastman Chemicals Quitman, City of
	Edgewood, City of Release from TXU
	Emory, City of South Tawakoni WSC
	Greenville, City of West Tawakoni, City of
	Henderson, City of Wills Point, City of
	Bright Star-Salem
Sulphur River MWD	Sulphur Springs, City of
Sulphur Springs, City of	Brashear WSC North Hopkins WSC
	Brinker WSC Pleasant Hill WSC
	Gafford Chapel WSC Shady Grove WSC #2
	Martin Springs WSC Manufacturing
	Mining Livestock
Titus County FWD #1	Mt. Pleasant, City of Luminant
Tri SUD	Mining, Titus County
White Oak, City of	County-Other, Gregg County-Other, Upshur

17 - Suggested Action

“The North East Texas Regional Water Planning Group adopts the list of Wholesale Water Providers and Major Water Providers for the purposes of the 2026 Region D Regional Water Plan.”

Item 18

Report and discussion from Region D Technical Consultant summarizing scope of work for Task 5B.

Background

- TWDB prepared the Second Amended Scope of Work, Sept. 2023:
  - Task 5B – Evaluation and Recommendations of Water Management Strategies and Projects includes preparation of a separate chapter "…that identifies, evaluates, and recommends WMSs and WMSPs."
  - "Performance of work associated with any 5B subtasks will be contingent upon a written notice-to-proceed in the form of a contract amendment."
  - "Scope of Work to be amended based on specific Task 5B scope of work to be developed and negotiated with TWDB."
- TWDB has allocated $481,863 funds for Task 5B.
- Prior to evaluation of the Potentially Feasible WMSs identified, the NETRWPG must develop and submit a scope of work and associated budget and request notice-to-proceed.

Task for Today

- Consider any necessary revisions and possible action to approve submittal of list of strategies, scope, and budget for Task 5B. Ongoing coordination with TWDB staff will occur as needed.

Considerations (1)

- Target budget amount is $481,863.00.
- Not based on identified needs, but on recommended process including broad statutory categories.
- TWDB rules do not allow inclusion of WMS/WMSPs or costs associated with:
  1) Maintaining existing supplies;
  2) Replacing existing infrastructure;
  3) Expanding water distribution system capacity;
  4) Delivering more water within the distribution system to address increased system growth of new retail developments; or
  5) Delivering greater volumes of water within the distribution system for existing or future fire protection.

Considerations (2)

- Available supplies will be calculated based on approved methodologies.
- Estimated WMS and WMSP costs will be updated using the updated TWDB Unified Costing Model.
- Each strategy will be evaluated consistent with approved process and guidelines, including reliability, cost, environmental impacts, and other components adopted by the NETRWPG.

Considerations (3)

- GIS maps will be developed for all strategies, illustrating infrastructure improvements and supply sources
- WMS evaluation is aligned with statutory categories (e.g., conservation, reuse, etc.)
- The scope of work also includes:
  - Coordination with specific WUGs and WWPs as necessary
  - Database entry
  - Preparation of the associated chapter
  - Required digital TWDB-formatted workbook for all tasks

WMS	SubTask Budget ($)	WUG(s) &/or WWP Entities Potentially Served by WMS(s)	When was this WMS identified by RWPG as potentially feasible?	Was the WMS evaluated in any previous Regional Water Planning Cycles?
Advanced Water Conservation	$ 37,290	All Municipal WUGs and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 and recommended as WMS in 2016 and 2021 NETRWP.
Drought Management	$ 68,360	Municipal WUGs	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2016 and 2021 NETRWP.
Water Reuse	$ 16,780	WUGs and/or WWPs with a central wastewater collection and treatment system.	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.
Local Groundwater	$ 102,540	Small Rural Municipal WUGs	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Recommended WMS in 2011, 2016, and 2021 NETRWP.
Surface Water	$ 110,618	All Municipal WUGs and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Recommended WMS in 2011, 2016, and 2021 NETRWPs.
Facilities Expansions	$ 63,390	All Municipal WUGs (e.g., City of Greenville, City of Texarkana), WWPs, and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 NETRWP and recommended as a WMS in 2016 and 2021 NETRWPs.
Regional Supply and Management	$ 47,230	Municipal WUGs (e.g. RWRD, Cities of Texarkana, Annona, Avery, De Kalb, Hooks, Maud, Nash, New Boston, Redwater, Wake Village, Greenville, Mount Pleasant, Paris, Longview), WWPs (e.g., NETMWD, SRA) and Sub-WUG entities characterized as County-Other (e.g., Bowie and Hunt Counties).	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 NETRWP and recommended as a WMS in 2016 and 2021 NETRWP.
Voluntary or Emergency Transfers	$ 24,855	All Municipal WUGs, WWPs, and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.
Balancing Storage and/or Conjunctive Use	$ 10,800	All Municipal WUGs, (e.g., City of Clarksville) WWPs, and potentially other non-municipal WUGS (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.
Region-Specific Subtasks Total Budget	**$ 481,863**			

Working Schedule

- February 21, 2024 - NETRWPG meeting
  - Adopt Technical Memorandum
  - Approve SOW and budget for Task 5B
- March 4, 2024 – Technical Memorandum due
- March – Dec 2024
  - Negotiate Task 5B SOW and initiate
  - Develop plan
- March 3, 2025 – Initially Prepared Plan

18 - Suggested Action

“The North East Texas Regional Water Planning Group authorizes the technical consultant to submit on behalf of the NETRWPG the Draft Scope of Work and Budget for Task 5B for the Evaluation and Recommendation of Water Management Strategy and Projects, consistent with the information discussed in this meeting, and approves for the consultant to work with the Chair and Administrator to submit further revisions and make responses to revision requests by the TWDB as needed.”

Item 19

Discussion and Action as appropriate: Approve the scope of work for Task 5B and authorize the political subdivision to submit a request to the TWDB for a notice proceed with the scope of work for Task 5B.

19 - Suggested Action

“The North East Texas Regional Water Planning Group authorizes the Administrator to request notice to proceed from the TWDB to begin work on Task 5B. Evaluation and Recommendation of Water Management Strategies and Projects, upon finalization of the scope of work and budget by the Technical Consultant for the purposes of the 2026 Region D Regional Water Plan.”

MEETING OF THE
North East Texas Regional Water Planning Group
WEDNESDAY, February 21, 2024

Agenda Item 14
Copy of the Draft
Technical Memorandum

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February 21, 2024

Mr. Jeff Walker
Executive Administrator
Texas Water Development Board
1700 N. Congress Ave.
Austin, TX 78711-32331

This document is released for the purpose of preliminary review under the authority of Tony L. Smith, P.E., 92620 on February 5, 2024. It is not to be used for construction purposes.

Subject: DRAFT Technical Memorandum for the 2026 Region D Regional Water Plan

Dear Mr. Walker:

Carollo Engineers, Inc., is pleased to submit this Technical Memorandum on behalf of the North East Texas Regional Water Planning Group (NETRWPG) - Region D, in order to meet the contractual and TWDB requirements specified in the Scope of Work Task 4C, as referenced in Section 2.12.1 of the Second Amended General Guidelines for Development of the 2026 Regional Water Plans (September 2023). This Technical Memorandum was authorized for submittal by the NETRWPG at the February 21, 2023, meeting of the NETRWPG in Pittsburg, Texas.

The attached reports comprising the main body of this submittal are the preliminary output of Region D analyses from the Regional Water Planning Application (DB27), as prepared by the Region D technical consultants. Ongoing work and revisions by the consultants, and by the other regional water planning groups, will likely necessitate further modifications to the amounts reflected herein.

If any additional information is necessary, please feel free to reach out at your convenience. Thank you again for the opportunity to participate in this important process for the North East Texas Region.

Sincerely,

CAROLLO ENGINEERS, INC.

Tony L. Smith, P.E.
Technical Consultant Project Manager
Carollo Engineers, Inc.

tls

Enclosures: Appendices

cc: Mr. Jim Thompson
Mr. Kyle Dooley
Mr. Stan Hayes
Mr. James Beach

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Provided herein are descriptions of the reports and information comprising the contractually required content submitted by the NETRWPG. The TWDB has provided a "checklist" identifying those required elements, and this memorandum presents those elements identified in the checklist.

TWDB DB27 Reports

The TWDB has developed and utilizes the 2027 State Water Planning Database (DB27) as a tool that "will synthesize regions' data and provide data reports that must be incorporated into each Technical Memorandum and referenced by hyperlink in each Initially Prepared Plan (IPP) and final adopted Regional Water Plan (RWP)". The TWDB guidance document further states that RWPGs will complete and submit, via the DB27 interface, all data generated or updated during the current cycle of planning to the TWDB in accordance with TWDB specifications prior to submitting Technical Memorandums and IPPs.

The following TWDB DB27 reports required for the Technical Memorandum are presented in Appendices, as shown below:

- TWDB DB27 Report – 2026 RWP WUG Population (Appendix A) presenting population projections by WUG, county, and river basin);
- TWDB DB27 Report – WUG Demand (Appendix B) presenting water demand projections by WUG, county, and river basin;
- TWDB DB27 Report – Source Availability (Appendix C) presenting water availability by source;
- TWDB DB27 Report – WUG Existing Water Supply (Appendix D) presenting existing water supplies by WUG, county, and river basin;
- TWDB DB27 Report – WUG Needs/Surplus (Appendix E) presenting identified water needs by WUG, county, and river basin;
- TWDB DB27 Report – WUG Data Comparison to 2021 RWP (Appendix F) presenting a comparison of supply, demand, and needs between the 2021 and 2026 RWP at a county level;
- TWDB DB27 Report – Source Data Comparison to 2021 RWP (Appendix G) presenting a comparison of availability by source type between the 2021 and 2026 RWP at a county level.

As required, all data entered by the NETRWPG into DB27 are rounded to the nearest whole number to avoid cumulative data errors. Data are entered into DB27 such that the net water balance for each source is zero or greater than zero, except for those sources that may be over allocated initially due to conflicting data with another regional water planning area.

Surface Water Availability

The Region D planning area is located primarily within the Cypress Creek, Red River, Sabine, and Sulphur River Basins. Small areas of the region are in the Neches and Trinity River Basins. Surface waters in each of these river basins serve as a source of water to Region D. 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), unless a hydrologic variance request is submitted.

The TCEQ WAMs, which have been developed for all river basins in Texas, simulate the management, operation, and use of streamflow and reservoirs over a historical period of record, adhering to the prior appropriation doctrine that governs 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.

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 developing the 2026 Region D Regional Water Plan, the latest versions of the TCEQ WAMs for these basins have been used, with modifications as described below.

The Run 3 assumptions for the WAMs are not all appropriate for determining source availabilities and current water supplies. The NETRWPG submitted a hydrologic variance request modifying the standard surface water availability assumptions to make the WAMs more applicable for use in developing the 2026 Region D Regional Water Plan. This hydrologic variance request also includes documentation of the methodology utilized for calculating the anticipated sedimentation rate and revising the area-capacity rating curve for surface water reservoirs in the region. The hydrologic variance request is included in Appendix H.1, and the TWDB's response granting the requested variances is included in Appendix H.2.

A memorandum describing the development of these WAMs and their application to determine surface water source availabilities and supplies is included in Appendix I. Reservoir yield estimates and supplies from run-of-river water rights are also presented in the memorandum. Model versions, input, and output files are listed in Appendix J, which includes an electronic submittal of the files that is separate from this document.

Groundwater Availability

Presented in this section is documentation of the methodologies utilized for the NETRWPG's estimation of groundwater availabilities to date. As further information is developed, the methods employed herein are subject to revision as work progresses.

For planning purposes, the total source groundwater availability is the sum of Modeled Available Groundwater (MAGs) and non-MAG groundwater availability. MAGs are developed by the TWDB based on the Desired Future Conditions (DFCs) determined by the Groundwater Management Areas (GMAs). Region D utilized the Modeled Available Groundwater (MAG) estimates based on desired future conditions adopted by Groundwater Management Areas 8 and 11. MAGs have been provided by the TWDB and have been determined for all the major and most of the minor aquifer systems within the Region D planning area.

Per TWDB guidelines and in accordance with TAC §357.32(d)(2), a regional water planning group with no groundwater conservation districts (GCDs) within its planning area shall determine the availability of relevant aquifers for regional planning purposes. Region D qualifies as there are no GCDs within the planning area. If there is a greater need for groundwater than estimated by the MAG on a county/aquifer/basin basis, a more refined assessment of groundwater availability will be performed to evaluate if increasing availability can be justified hydrogeologically. For those WUGs/sellers wherein existing or planned pumpage exceeds MAG amounts, a more detailed analysis of the entity's pumping, typical production of the aquifer, and relevant information from applicable GMAs will be considered towards development of the available groundwater supply for the entity. Current infrastructure (number of wells, well field capacity, peaking factors, etc.) will also be considered when evaluating future water management strategies. These analyses, along with their accordant methodologies, will be submitted to TWDB for review and consideration of approval prior to incorporation into the IPP, per requirement.

Non-MAG availability is the availability in aquifers designated as non-relevant by GMAs. For aquifers or portions of aquifers without a MAG, the TWDB provided "non-MAG availability" values. These values may be based on results from groundwater modeling during the development of the MAGs for other aquifers or on other methodologies.

A table summarizing the groundwater availability determination methodology is included as Attachment K of this memorandum.

Process for Identification of Potentially Feasible Water Management Strategies

At the February 21, 2023, public meeting of the NETRWPG held in Pittsburg, Texas, the NETRWPG adopted a process for identifying potentially feasible Water Management Strategies (WMSs), as required by 31 TAC §357.12(b). The process was documented and incorporated input received, and all potentially feasible WMSs were listed. The criteria were determined by the NETRWPG and represent an equitable and consistent evaluation and application of all potentially feasible WMSs for each identified water supply need and is depicted in Figure 1.

The process, as adopted by the NETRWPG, further incorporates the following elements:

- Evaluation of the net quantity, reliability, and cost of water delivered to users during drought conditions (not including distribution of water after treatment);
- Evaluation of environmental factors, including but not limited to:
  - Environmental water needs;
  - Wildlife habitat;
  - Cultural resources;
  - Adopted environmental flow standards;
- Potential impacts on other water resources of the State;
- Consideration of threats to agricultural and/or natural resources;
- Consideration of interbasin transfer(s);
- Consideration of third party social and economic impacts resulting from voluntary redistribution of water;
- Potential impacts on key water quality parameters;
- Consideration of existing infrastructure (pipelines, other facilities);
- Any other factors as deemed relevant by the NETRWPG.

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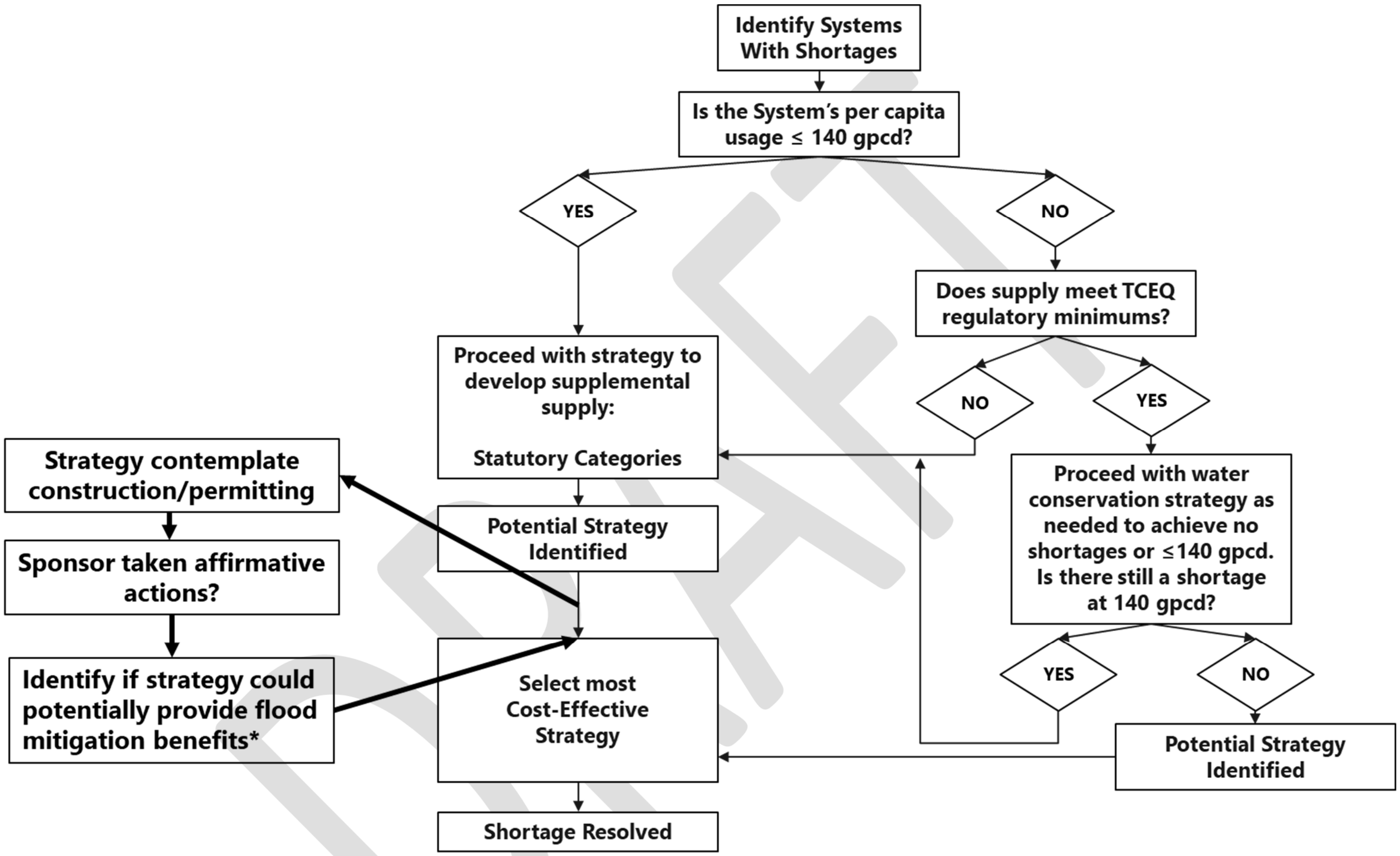

Figure 1 – Region D Adopted Water Management Strategy Evaluation Process

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As part of the process, an investigation is performed for potential infeasibility and implementation status, identifying:

- If strategy contemplates permitting and/or construction;
- If strategy is near-term or necessitates significant time for implementation;
- If the potential sponsor(s) have taken, or have indicated they will take, affirmative steps towards the strategy's implementation. Affirmative steps may include, but not be limited to:
    - Spending money on the strategy or project;
    - Voting to spend money on the strategy or project;
    - Applying for a federal or state permit for the strategy or project.

It is then identified if the strategy could potentially provide flood mitigation benefits.

Identification of Potentially Feasible Water Management Strategies

As required by statute and rules (TWC §16.053(e)(3), and 31 TAC §357.34(c)), the NETRWPG has considered the following types of WMSs for all identified water needs:

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 Texas Water Code (TWC) §16.060(b)(5);
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; and
24. rainwater harvesting.

Presented in Appendix L is the required tabular list of the potentially feasible WMSs identified by the NETRWPG for further analysis to date. A list is provided in the required TWDB spreadsheet format as a digital deliverable.

Identification of Infeasible Water Management Strategies and Water Management Strategy Projects from 2021 RWP

In accordance with Texas Water Code §16.053(h)(10), the NETRWPG performed an evaluation to determine if WMSs and/or WMSPs recommended in the 2021 Region D Regional Water Plan are infeasible. The NETRWPG met on February 21, 2024, to develop a list of infeasible WMSs and WMSPs from the 2021 Region D Regional Water Plan. No WMSs or WMSPs from the 2021 Region D Regional Water Plan have been identified as infeasible. The NETRWPG approved this finding at its regular meeting on February 21, 2024.

Information collected regarding potentially infeasible strategies has been collected into the required TWDB spreadsheet format and is included as a digital deliverable in Appendix M.

Summary of Interregional Coordination

At each regular meeting of the NETRWPG, updates from other regional water planning groups are communicated via members of the NETRWPG appointed as liaisons for Regions C and I. A representative of the NETRWPG serves on the Interregional Planning Council, and the Chair of the NETRWPG participates in regular RWPG Chairs conference calls. A letter was submitted by the NETRWPG to Region C early on November 11, 2021, to initiate discussions on planning between the regions early within the planning process for the 2026 Plans (see Appendix N).

Additionally, throughout the development of the 2026 Region D Regional Water Plan, the technical consultant for the NETRWPG has coordinated with the technical consultants for these RWPGs. This has included coordination on the identification and engagement with Water User Groups (WUGs), consistency in the development of recommended revisions to population and water demand projections, source availability determinations, supply allocation, responsibilities relating to data entry, and continued consistency in all reporting elements.

Summary of Public Comments

To date, no public comments have been received regarding the Technical Memorandum.

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Appendix A. TWDB DB27 Report – 2026 RWP WUG Population

DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Bowie County Total	**94,952**	**94,456**	**93,769**	**92,482**	**91,181**	**89,866**
Bowie County / Red Basin Total	**17,258**	**17,270**	**17,260**	**17,145**	**17,030**	**16,926**
Burns Redbank WSC	2,344	2,490	2,644	2,810	2,985	3,171
Central Bowie County WSC	1,517	1,530	1,544	1,557	1,571	1,585
De Kalb	254	253	251	247	243	240
Hooks	2,637	2,620	2,595	2,556	2,515	2,475
New Boston	1,657	1,646	1,631	1,606	1,580	1,555
Riverbend Water Resources District	223	221	219	216	212	209
Texarkana	4,574	4,548	4,512	4,448	4,383	4,318
County-Other	4,052	3,962	3,864	3,705	3,541	3,373
Bowie County / Sulphur Basin Total	**77,694**	**77,186**	**76,509**	**75,337**	**74,151**	**72,940**
Central Bowie County WSC	8,394	8,466	8,540	8,615	8,691	8,765
De Kalb	1,144	1,136	1,127	1,111	1,095	1,079
Macedonia Eylau MUD 1	8,447	8,392	8,310	8,184	8,055	7,925
Maud	787	782	774	761	750	738
Nash	4,160	4,133	4,093	4,031	3,968	3,905
New Boston	3,726	3,701	3,666	3,609	3,553	3,495
Redwater	2,964	2,944	2,916	2,870	2,826	2,780
Riverbend Water Resources District	178	177	175	172	169	166
Texarkana	32,286	32,103	31,848	31,396	30,939	30,477
Wake Village	5,831	5,793	5,737	5,649	5,561	5,470
County-Other	9,777	9,559	9,323	8,939	8,544	8,140
Camp County Total	**12,874**	**13,015**	**13,053**	**13,162**	**13,269**	**13,378**
Camp County / Cypress Basin Total	**12,874**	**13,015**	**13,053**	**13,162**	**13,269**	**13,378**
Bi County WSC	7,377	7,459	7,480	7,542	7,605	7,669
Cypress Springs SUD	60	60	61	61	62	62
Pittsburg	3,974	4,018	4,030	4,064	4,097	4,131
Sharon WSC	33	34	34	34	31	31
County-Other	1,430	1,444	1,448	1,461	1,474	1,485
Cass County Total	**27,472**	**26,187**	**24,777**	**23,650**	**22,525**	**21,400**
Cass County / Cypress Basin Total	**23,547**	**22,527**	**21,411**	**20,538**	**19,678**	**18,831**
Atlanta	5,012	4,787	4,540	4,342	4,144	3,945
Avinger	349	332	314	300	286	270
E M C WSC	507	483	456	435	413	393
Eastern Cass WSC	3,860	4,015	4,209	4,445	4,730	5,083

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Holly Springs WSC	899	855	807	771	733	696
Hughes Springs	2,108	2,013	1,909	1,825	1,741	1,659
Linden	1,742	1,667	1,586	1,519	1,453	1,387
Mims WSC	228	218	206	197	187	178
Queen City	827	796	772	754	743	739
Western Cass WSC	2,146	2,043	1,931	1,841	1,752	1,663
County-Other	5,869	5,318	4,681	4,109	3,496	2,818
Cass County / Sulphur Basin Total	**3,925**	**3,660**	**3,366**	**3,112**	**2,847**	**2,569**
Atlanta	19	18	17	16	15	15
Eastern Cass WSC	308	320	336	355	377	406
Queen City	469	451	438	428	421	419
Western Cass WSC	766	730	690	658	626	594
County-Other	2,363	2,141	1,885	1,655	1,408	1,135
Delta County Total	**5,284**	**5,256**	**5,220**	**5,152**	**5,082**	**5,012**
Delta County / Sulphur Basin Total	**5,284**	**5,256**	**5,220**	**5,152**	**5,082**	**5,012**
Cooper	2,067	2,058	2,045	2,019	1,993	1,967
Delta County MUD*	1,915	1,941	1,968	1,994	2,021	2,048
North Hunt SUD*	204	203	201	200	196	193
County-Other	1,098	1,054	1,006	939	872	804
Franklin County Total	**10,466**	**10,398**	**10,258**	**10,335**	**10,413**	**10,490**
Franklin County / Cypress Basin Total	**5,376**	**5,345**	**5,275**	**5,318**	**5,362**	**5,407**
Cornersville WSC	33	35	39	43	47	52
Cypress Springs SUD	4,564	4,535	4,472	4,506	4,541	4,575
Winnsboro	758	754	744	749	754	760
County-Other	21	21	20	20	20	20
Franklin County / Sulphur Basin Total	**5,090**	**5,053**	**4,983**	**5,017**	**5,051**	**5,083**
Cypress Springs SUD	2,325	2,310	2,278	2,296	2,314	2,331
Mount Vernon	2,444	2,429	2,397	2,415	2,432	2,449
County-Other	321	314	308	306	305	303
Gregg County Total	**126,860**	**128,531**	**129,120**	**128,404**	**127,669**	**126,995**
Gregg County / Cypress Basin Total	**5,244**	**5,284**	**5,223**	**5,106**	**4,989**	**4,871**
East Mountain Water System	198	200	199	194	191	189
Glenwood WSC	114	115	114	112	111	109
Tryon Road SUD	4,411	4,456	4,426	4,353	4,281	4,209

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
County-Other	521	513	484	447	406	364
Gregg County / Sabine Basin Total	**121,616**	**123,247**	**123,897**	**123,298**	**122,680**	**122,124**
Chalk Hill SUD*	20	20	21	20	20	19
Clarksville City	838	846	842	828	815	800
Cross Roads SUD*	430	438	448	459	471	483
East Mountain Water System	154	156	155	152	150	147
Elderville WSC*	4,908	4,958	4,923	4,843	4,762	4,683
Gladewater	3,912	3,951	3,924	3,859	3,796	3,732
Kilgore*	10,696	10,804	10,735	10,562	10,389	10,219
Liberty City WSC	4,735	4,784	4,750	4,673	4,596	4,518
Longview	80,372	81,572	82,484	82,526	82,548	82,630
Starrville-Friendship WSC	452	456	453	446	438	431
Tryon Road SUD	1,315	1,328	1,319	1,297	1,276	1,254
West Gregg SUD*	3,413	3,559	3,728	3,912	4,109	4,319
White Oak	6,421	6,486	6,441	6,335	6,230	6,125
County-Other	3,950	3,889	3,674	3,386	3,080	2,764
Harrison County Total	**71,617**	**73,196**	**73,568**	**73,623**	**73,688**	**73,681**
Harrison County / Cypress Basin Total	**26,499**	**26,849**	**26,936**	**26,589**	**26,246**	**25,915**
Blocker Crossroads WSC	156	160	161	162	163	164
Cypress Valley WSC	1,496	1,542	1,550	1,563	1,575	1,588
Diana SUD	394	411	413	423	432	440
Gum Springs WSC	2,476	2,680	2,711	2,897	3,079	3,254
Harleton WSC	3,456	3,577	3,597	3,649	3,701	3,751
Leigh WSC	1,476	1,326	1,307	1,073	847	627
Marshall	4,146	4,060	4,052	3,822	3,598	3,381
North Harrison WSC	1,453	1,522	1,533	1,575	1,616	1,655
Panola-Bethany WSC*	159	129	105	86	70	57
Scottsville	396	439	446	489	531	571
Talley WSC	1,098	1,118	1,122	1,115	1,107	1,100
Tryon Road SUD	2,031	2,473	2,535	3,037	3,523	3,997
Waskom	2,023	1,886	1,869	1,637	1,412	1,193
West Harrison WSC	405	459	467	523	578	631
County-Other	5,334	5,067	5,068	4,538	4,014	3,506
Harrison County / Sabine Basin Total	**45,118**	**46,347**	**46,632**	**47,034**	**47,442**	**47,766**
Blocker Crossroads WSC	1,416	1,456	1,462	1,470	1,478	1,485

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Elysian Fields WSC*	1,197	1,391	1,419	1,629	1,834	2,032
Gill WSC*	1,246	1,242	1,242	1,200	1,160	1,120
Gum Springs WSC	7,954	8,610	8,708	9,308	9,889	10,453
Hallsville	4,575	4,925	4,980	5,291	5,594	5,887
Longview	2,743	3,046	3,169	3,618	4,071	4,441
Marshall	19,187	18,785	18,753	17,687	16,652	15,645
Panola-Bethany WSC*	261	212	173	141	114	93
Scottsville	912	1,011	1,026	1,126	1,222	1,316
Talley WSC	785	799	802	797	792	787
West Harrison WSC	1,471	1,667	1,695	1,899	2,098	2,290
County-Other	3,371	3,203	3,203	2,868	2,538	2,217
Hopkins County Total	**42,832**	**44,267**	**45,327**	**46,304**	**47,242**	**48,242**
Hopkins County / Cypress Basin Total	**868**	**907**	**925**	**948**	**972**	**996**
Cornersville WSC	430	448	457	468	479	490
Cypress Springs SUD	438	459	468	480	493	506
Hopkins County / Sabine Basin Total	**9,659**	**10,027**	**10,270**	**10,543**	**10,770**	**11,054**
Brashear WSC	503	542	549	568	589	609
Cash SUD*	212	246	273	336	351	419
Como	609	608	608	608	608	608
Cornersville WSC	444	462	472	482	494	507
Cumby	658	640	665	663	659	656
Jones WSC	83	81	84	84	84	84
Lake Fork WSC	135	141	144	147	150	153
Martin Springs WSC	2,588	2,673	2,735	2,791	2,847	2,903
Miller Grove WSC	1,152	1,208	1,232	1,264	1,297	1,330
Shady Grove No 2 WSC	363	390	395	409	423	437
Shirley WSC	1,738	1,827	1,861	1,913	1,964	2,017
County-Other	1,174	1,209	1,252	1,278	1,304	1,331
Hopkins County / Sulphur Basin Total	**32,305**	**33,333**	**34,132**	**34,813**	**35,500**	**36,192**
Brashear WSC	492	530	537	556	576	596
Brinker WSC	2,591	2,753	2,799	2,886	2,976	3,066
Como	168	168	168	168	168	168
Cornersville WSC	53	55	56	58	59	60
Cumby	78	76	78	78	78	77
Cypress Springs SUD	683	718	732	751	771	791

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Gafford Chapel WSC	1,090	1,120	1,149	1,169	1,191	1,213
Martin Springs WSC	528	545	558	569	580	592
North Hopkins WSC	9,220	9,591	9,799	10,026	10,254	10,486
Shady Grove No 2 WSC	300	322	327	338	350	362
Sulphur Springs	16,070	16,393	16,829	17,091	17,350	17,611
County-Other	1,032	1,062	1,100	1,123	1,147	1,170
Hunt County Total	**141,169**	**154,138**	**167,439**	**176,811**	**183,183**	**193,165**
Hunt County / Sabine Basin Total	**124,151**	**136,909**	**150,021**	**159,423**	**165,852**	**175,925**
Ables Springs SUD*	619	670	715	753	792	830
B H P WSC	6,056	7,047	7,913	8,719	9,533	10,352
Caddo Basin SUD*	15,886	14,328	16,734	17,259	17,109	18,651
Caddo Mills	1,083	1,103	1,123	1,143	1,165	1,186
Cash SUD*	19,404	22,046	24,600	26,370	26,351	27,704
Celeste	826	870	908	937	967	996
Combined Consumers SUD	5,518	5,756	5,971	6,118	6,270	6,424
Greenville	54,617	61,479	65,416	68,708	72,042	75,417
Hickory Creek SUD*	1,633	1,872	2,146	2,461	2,821	3,234
Josephine*	155	180	204	225	245	267
MacBee SUD*	316	330	341	350	358	366
Poetry WSC*	2,011	2,306	2,547	2,719	2,267	2,281
Quinlan	1,785	1,936	2,071	2,184	2,299	2,416
Royse City*	4,136	5,910	7,450	8,967	10,495	12,034
Shady Grove SUD	1,628	2,074	2,643	3,369	4,293	5,471
West Tawakoni	2,874	3,165	3,420	3,643	3,870	4,098
County-Other	5,604	5,837	5,819	5,498	4,975	4,198
Hunt County / Sulphur Basin Total	**16,220**	**16,312**	**16,367**	**16,183**	**15,954**	**15,665**
Commerce	6,332	6,137	5,977	5,732	5,489	5,248
Hickory Creek SUD*	1,128	1,293	1,483	1,700	1,949	2,234
North Hunt SUD*	2,350	2,306	2,273	2,208	2,144	2,082
Shady Grove SUD	104	133	170	216	276	351
Texas A&M University Commerce	2,125	2,125	2,125	2,125	2,125	2,125
Wolfe City*	1,610	1,640	1,669	1,679	1,688	1,699
County-Other	2,571	2,678	2,670	2,523	2,283	1,926
Hunt County / Trinity Basin Total	**798**	**917**	**1,051**	**1,205**	**1,377**	**1,575**
Frognot WSC*	23	29	34	40	45	52

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Hickory Creek SUD*	738	846	970	1,112	1,275	1,462
West Leonard WSC*	36	41	46	52	56	60
County-Other	1	1	1	1	1	1
Lamar County Total	**51,278**	**51,417**	**51,179**	**50,940**	**50,700**	**50,460**
Lamar County / Red Basin Total	**23,555**	**23,618**	**23,507**	**23,400**	**23,289**	**23,179**
Bois D Arc MUD*	16	16	16	16	16	16
Lamar County WSD	12,587	12,621	12,559	12,503	12,445	12,387
Paris	10,537	10,566	10,519	10,469	10,418	10,368
Reno (Lamar)	182	182	181	181	180	179
County-Other	233	233	232	231	230	229
Lamar County / Sulphur Basin Total	**27,723**	**27,799**	**27,672**	**27,540**	**27,411**	**27,281**
Blossom	1,385	1,389	1,382	1,376	1,370	1,364
Lamar County WSD	5,005	5,019	4,994	4,971	4,949	4,926
Paris	16,301	16,347	16,274	16,197	16,119	16,041
Reno (Lamar)	2,572	2,580	2,568	2,555	2,543	2,532
County-Other	2,460	2,464	2,454	2,441	2,430	2,418
Marion County Total	**9,244**	**8,630**	**7,950**	**7,495**	**7,041**	**6,587**
Marion County / Cypress Basin Total	**9,244**	**8,630**	**7,950**	**7,495**	**7,041**	**6,587**
Diana SUD	507	425	362	302	255	214
E M C WSC	1,752	1,572	1,361	1,226	1,086	939
Harleton WSC	790	677	543	456	366	271
Jefferson	1,676	1,564	1,443	1,360	1,277	1,196
Kellyville-Berea WSC	977	956	939	924	913	906
Mims WSC	1,867	1,936	2,042	2,100	2,170	2,259
Ore City	109	139	181	207	235	265
County-Other	1,566	1,361	1,079	920	739	537
Morris County Total	**12,076**	**11,775**	**11,342**	**11,042**	**10,718**	**10,342**
Morris County / Cypress Basin Total	**10,217**	**9,940**	**9,529**	**9,251**	**8,947**	**8,589**
Bi County WSC	1,420	1,292	1,143	1,046	949	848
Daingerfield	2,179	2,239	2,318	2,358	2,400	2,445
Holly Springs WSC	627	565	496	450	404	357
Lone Star	1,294	1,195	1,083	1,010	936	860
Naples	715	710	707	702	698	693
Omaha	561	547	535	524	513	503

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	**2040**	**2050**	**2060**	**2070**	**2080**
Tri SUD	1,730	1,719	1,596	1,527	1,429	1,281
Western Cass WSC	58	57	57	56	56	55
County-Other	1,633	1,616	1,594	1,578	1,562	1,547
Morris County / Sulphur Basin Total	**1,859**	**1,835**	**1,813**	**1,791**	**1,771**	**1,753**
Naples	684	679	676	670	666	663
Omaha	440	430	419	411	402	394
Western Cass WSC	105	103	103	102	101	100
County-Other	630	623	615	608	602	596
Rains County Total	**13,570**	**14,398**	**15,177**	**16,172**	**17,133**	**18,137**
Rains County / Sabine Basin Total	**13,570**	**14,398**	**15,177**	**16,172**	**17,133**	**18,137**
Bright Star Salem SUD	2,430	2,609	2,741	2,929	3,122	3,317
Cash SUD*	917	1,010	1,196	1,472	1,707	1,978
East Tawakoni	817	826	846	842	836	829
Emory	1,745	1,780	1,831	1,844	1,856	1,865
Golden WSC	45	51	58	58	58	58
Miller Grove WSC	232	250	263	284	304	324
Point	1,092	1,112	1,142	1,147	1,150	1,152
Shirley WSC	821	893	943	1,021	1,102	1,183
South Rains SUD	2,797	3,007	3,160	3,381	3,606	3,836
County-Other	2,674	2,860	2,997	3,194	3,392	3,595
Red River County Total	**10,868**	**10,029**	**9,214**	**8,548**	**7,882**	**7,216**
Red River County / Red Basin Total	**2,252**	**2,106**	**1,969**	**1,856**	**1,745**	**1,638**
410 WSC	588	559	532	509	487	465
Red River County WSC	1,295	1,226	1,179	1,149	1,141	1,164
County-Other	369	321	258	198	117	9
Red River County / Sulphur Basin Total	**8,616**	**7,923**	**7,245**	**6,692**	**6,137**	**5,578**
410 WSC	768	729	694	665	636	608
Bogata	892	841	795	755	717	679
Clarksville	2,483	2,198	1,906	1,677	1,442	1,206
Red River County WSC	3,371	3,192	3,067	2,990	2,969	3,029
Talco	21	23	26	26	28	29
County-Other	1,081	940	757	579	345	27

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Smith County Total	**48,406**	**51,319**	**53,377**	**54,771**	**56,186**	**57,610**
Smith County / Sabine Basin Total	**48,406**	**51,319**	**53,377**	**54,771**	**56,186**	**57,610**
Carroll WSC*	428	446	456	461	465	470
Crystal Systems Texas*	4,643	4,848	4,994	5,070	5,150	5,232
East Texas MUD	2,934	3,414	3,750	4,062	4,376	4,690
Jackson WSC*	1,635	1,765	1,857	1,928	2,001	2,072
Liberty City WSC	206	231	249	266	281	297
Lindale Rural WSC*	10,049	11,096	11,830	12,454	13,080	13,707
Lindale*	3,717	3,838	3,925	3,954	3,985	4,018
Overton*	134	142	150	154	159	163
Pine Ridge WSC	1,617	1,809	1,944	2,062	2,181	2,299
Sand Flat WSC	4,067	4,217	4,325	4,370	4,419	4,468
Southern Utilities*	11,353	11,974	12,412	12,693	12,978	13,267
Star Mountain WSC	1,380	1,452	1,505	1,536	1,568	1,601
Starrville-Friendship WSC	1,113	1,108	1,106	1,085	1,064	1,044
Tyler*	796	718	666	594	524	456
West Gregg SUD*	1,012	1,072	1,114	1,143	1,171	1,200
Winona	597	660	704	743	781	818
County-Other*	2,725	2,529	2,390	2,196	2,003	1,808
Titus County Total	**36,045**	**38,565**	**40,257**	**41,949**	**43,552**	**45,080**
Titus County / Cypress Basin Total	**28,183**	**30,012**	**31,307**	**32,558**	**33,772**	**34,957**
Bi County WSC	525	644	829	971	1,128	1,305
Cypress Springs SUD	258	303	367	418	474	537
Mount Pleasant	15,777	16,202	16,449	16,654	16,880	17,129
Tri SUD	11,147	12,429	13,311	14,228	15,072	15,848
County-Other	476	434	351	287	218	138
Titus County / Sulphur Basin Total	**7,862**	**8,553**	**8,950**	**9,391**	**9,780**	**10,123**
Cypress Springs SUD	187	219	266	302	343	388
Talco	563	561	541	527	509	492
Tri SUD	6,344	7,073	7,575	8,098	8,577	9,020
County-Other	768	700	568	464	351	223
Upshur County Total	**42,212**	**42,590**	**42,433**	**41,825**	**41,214**	**40,591**
Upshur County / Cypress Basin Total	**28,545**	**28,936**	**28,992**	**28,781**	**28,579**	**28,391**
Bi County WSC	4,695	4,737	4,720	4,652	4,583	4,515
Diana SUD	5,393	5,914	6,485	7,112	7,799	8,553

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
East Mountain Water System	292	295	294	289	285	281
Gilmer	5,176	5,223	5,205	5,130	5,056	4,979
Glenwood WSC	2,694	2,719	2,707	2,669	2,630	2,590
Ore City	1,366	1,378	1,372	1,354	1,334	1,313
Pritchett WSC	2,160	2,180	2,171	2,140	2,109	2,077
Sharon WSC	2,009	2,027	2,019	1,991	1,962	1,933
Union Grove WSC	61	62	61	61	60	59
County-Other	4,699	4,401	3,958	3,383	2,761	2,091
Upshur County / Sabine Basin Total	**13,667**	**13,654**	**13,441**	**13,044**	**12,635**	**12,200**
Big Sandy	1,124	1,135	1,131	1,114	1,097	1,081
East Mountain Water System	1,132	1,142	1,138	1,122	1,106	1,089
Fouke WSC	73	73	73	72	72	72
Gladewater	2,416	2,437	2,429	2,393	2,359	2,323
Glenwood WSC	55	55	55	54	53	53
Pritchett WSC	5,274	5,320	5,301	5,224	5,149	5,070
Union Grove WSC	1,769	1,784	1,778	1,752	1,727	1,701
County-Other	1,824	1,708	1,536	1,313	1,072	811
Van Zandt County Total	**67,646**	**75,479**	**82,956**	**90,698**	**98,528**	**106,444**
Van Zandt County / Neches Basin Total	**15,055**	**16,579**	**17,817**	**18,894**	**19,724**	**20,280**
Ben Wheeler WSC*	2,836	3,237	3,620	4,029	4,444	4,861
Bethel Ash WSC*	1,368	1,505	1,637	1,769	1,902	2,039
Carroll WSC*	4	4	5	5	6	6
Edom WSC*	1,009	1,027	1,043	1,041	1,040	1,040
Little Hope Moore WSC	473	494	514	528	543	558
R P M WSC*	1,612	1,597	1,584	1,530	1,478	1,430
Van	1,952	1,987	2,020	2,015	2,014	2,016
County-Other	5,801	6,728	7,394	7,977	8,297	8,330
Van Zandt County / Sabine Basin Total	**35,838**	**39,085**	**42,278**	**45,544**	**48,964**	**52,482**
Ables Springs SUD*	35	37	39	42	44	46
Canton	5,415	6,041	6,673	7,298	7,982	8,644
Carroll WSC*	511	583	650	724	797	871
Combined Consumers SUD	1,116	1,175	1,231	1,278	1,324	1,371
Edgewood	1,536	1,585	1,632	1,654	1,678	1,707
Fruitvale WSC	3,467	3,794	4,107	4,416	4,730	5,049
Golden WSC	732	821	907	997	1,087	1,179

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Grand Saline	3,404	3,469	3,530	3,529	3,533	3,541
Little Hope Moore WSC	1,005	1,051	1,093	1,123	1,155	1,187
MacBee SUD*	3,304	4,088	5,058	6,258	7,744	9,581
Myrtle Springs WSC	969	1,194	1,409	1,654	1,900	2,146
Pine Ridge WSC	350	449	545	654	763	874
Pruitt Sandflat WSC	1,151	1,152	1,153	1,128	1,105	1,083
South Tawakoni WSC	2,619	2,114	1,709	1,348	1,067	846
Van	1,328	1,351	1,373	1,371	1,370	1,371
Wills Point	2,518	2,786	3,041	3,301	3,564	3,830
County-Other	6,378	7,395	8,128	8,769	9,121	9,156
Van Zandt County / Trinity Basin Total	**16,753**	**19,815**	**22,861**	**26,260**	**29,840**	**33,682**
Bethel Ash WSC*	352	387	420	454	489	524
Mabank*	330	371	410	451	493	536
MacBee SUD*	5,078	6,283	7,773	9,618	11,900	14,724
Myrtle Springs WSC	2,406	2,965	3,499	4,109	4,719	5,333
Wills Point	2,777	3,071	3,354	3,639	3,929	4,222
County-Other	5,810	6,738	7,405	7,989	8,310	8,343
Wood County Total	**48,562**	**50,809**	**52,132**	**54,488**	**56,874**	**59,285**
Wood County / Cypress Basin Total	**3,766**	**3,913**	**3,959**	**4,108**	**4,243**	**4,365**
Cypress Springs SUD	462	487	502	532	561	591
Sharon WSC	1,398	1,488	1,541	1,649	1,757	1,866
Winnsboro	1,257	1,299	1,324	1,359	1,395	1,432
County-Other	649	639	592	568	530	476
Wood County / Sabine Basin Total	**44,796**	**46,896**	**48,173**	**50,380**	**52,631**	**54,920**
Bright Star Salem SUD	1,797	1,979	2,087	2,333	2,579	2,823
Cornersville WSC	251	270	289	310	332	357
Fouke WSC	5,904	6,178	6,340	6,628	6,919	7,214
Golden WSC	2,747	2,854	2,918	3,019	3,123	3,229
Hawkins	1,334	1,358	1,373	1,378	1,385	1,393
Jones WSC	4,201	4,464	4,618	4,931	5,247	5,562
Lake Fork WSC	2,005	2,131	2,206	2,355	2,507	2,658
Liberty Utilities Silverleaf Water*	2,664	2,757	2,810	2,889	2,971	3,054
Mineola	6,281	6,595	6,779	7,122	7,468	7,817
New Hope SUD	2,984	2,966	2,954	2,847	2,743	2,644
Pritchett WSC	54	57	58	59	61	63

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DRAFT Region D Water User Group (WUG) Population

	WUG Population					
	2030	2040	2050	2060	2070	2080
Quitman	2,214	2,216	2,217	2,162	2,112	2,065
Ramey WSC	3,637	4,176	4,795	5,506	6,322	7,259
Sharon WSC	3,008	3,201	3,315	3,548	3,781	4,016
Shirley WSC	119	121	122	124	125	127
Winnsboro	1,322	1,366	1,391	1,429	1,466	1,506
County-Other	4,274	4,207	3,901	3,740	3,490	3,133
Region D Population Total	**873,433**	**904,455**	**928,548**	**947,851**	**964,080**	**983,981**

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Appendix B. TWDB DB27 Report – WUG Demand

DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Bowie County Total	**29,111**	**28,929**	**28,809**	**28,611**	**28,489**	**28,409**
Bowie County / Red Basin Total	**11,068**	**11,024**	**10,996**	**10,957**	**10,947**	**10,951**
Burns Redbank WSC	260	274	291	310	329	349
Central Bowie County WSC	118	118	119	120	121	122
De Kalb	48	48	47	47	46	45
Hooks	317	313	310	305	301	296
New Boston	403	399	396	389	383	377
Riverbend Water Resources District	211	209	206	203	200	196
Texarkana	840	832	825	813	802	790
County-Other	468	455	444	425	407	387
Manufacturing	295	306	317	329	341	354
Mining	753	760	794	823	846	864
Livestock	487	442	379	325	303	303
Irrigation	6,868	6,868	6,868	6,868	6,868	6,868
Bowie County / Sulphur Basin Total	**18,043**	**17,905**	**17,813**	**17,654**	**17,542**	**17,458**
Central Bowie County WSC	651	651	657	663	669	675
De Kalb	218	215	214	210	208	205
Macedonia Eylau MUD 1	710	705	698	688	677	666
Maud	164	162	161	158	156	153
Nash	314	309	306	302	297	292
New Boston	906	898	889	876	862	848
Redwater	403	399	395	389	383	377
Riverbend Water Resources District	169	166	165	162	159	157
Texarkana	5,929	5,870	5,824	5,741	5,657	5,572
Wake Village	649	641	635	625	615	605
County-Other	1,129	1,098	1,070	1,027	981	935
Manufacturing	1,540	1,597	1,657	1,718	1,782	1,848
Mining	1,228	1,238	1,294	1,341	1,379	1,408
Livestock	834	757	649	555	518	518
Irrigation	3,199	3,199	3,199	3,199	3,199	3,199
Camp County Total	**3,080**	**3,092**	**3,098**	**3,113**	**3,129**	**3,145**
Camp County / Cypress Basin Total	**3,080**	**3,092**	**3,098**	**3,113**	**3,129**	**3,145**
Bi County WSC	632	634	636	641	647	652
Cypress Springs SUD	10	10	10	10	10	10
Pittsburg	841	848	850	857	864	872
Sharon WSC	4	4	4	4	4	4

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
County-Other	96	97	97	98	99	100
Manufacturing	44	46	48	50	52	54
Livestock	1,448	1,448	1,448	1,448	1,448	1,448
Irrigation	5	5	5	5	5	5
Cass County Total	**40,437**	**41,597**	**42,807**	**44,102**	**45,453**	**46,858**
Cass County / Cypress Basin Total	**3,790**	**3,641**	**3,491**	**3,372**	**3,257**	**3,139**
Atlanta	977	931	882	844	805	766
Avinger	100	95	90	86	82	77
E M C WSC	37	36	34	32	31	29
Eastern Cass WSC	282	291	305	321	343	368
Holly Springs WSC	75	71	67	64	61	58
Hughes Springs	378	360	341	326	311	296
Linden	347	331	315	302	289	276
Mims WSC	15	14	14	13	12	12
Queen City	153	147	142	139	137	136
Western Cass WSC	209	197	186	178	169	161
County-Other	497	447	394	345	294	237
Manufacturing	14	15	15	16	17	17
Mining	35	35	35	35	35	35
Livestock	671	671	671	671	671	671
Cass County / Sulphur Basin Total	**36,647**	**37,956**	**39,316**	**40,730**	**42,196**	**43,719**
Atlanta	4	3	3	3	3	3
Eastern Cass WSC	23	23	24	26	27	29
Queen City	87	83	81	79	77	77
Western Cass WSC	74	71	67	63	60	57
County-Other	200	180	158	139	118	95
Manufacturing	36,138	37,475	38,862	40,299	41,790	43,337
Livestock	121	121	121	121	121	121
Delta County Total	**4,319**	**4,316**	**4,311**	**4,303**	**4,295**	**4,286**
Delta County / Sulphur Basin Total	**4,319**	**4,316**	**4,311**	**4,303**	**4,295**	**4,286**
Cooper	464	461	458	452	446	440
Delta County MUD*	191	194	196	199	201	204
North Hunt SUD*	30	30	29	29	29	28
County-Other	74	71	68	63	59	54
Livestock	511	511	511	511	511	511

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Irrigation	3,049	3,049	3,049	3,049	3,049	3,049
Franklin County Total	**3,293**	**3,273**	**3,249**	**3,261**	**3,275**	**3,286**
Franklin County / Cypress Basin Total	**1,550**	**1,542**	**1,530**	**1,536**	**1,544**	**1,550**
Cornersville WSC	3	4	4	4	5	5
Cypress Springs SUD	732	724	714	719	725	730
Winnsboro	150	149	147	148	149	150
County-Other	4	4	4	4	4	4
Livestock	615	615	615	615	615	615
Irrigation	46	46	46	46	46	46
Franklin County / Sabine Basin Total	**46**	**46**	**46**	**46**	**46**	**46**
Irrigation	46	46	46	46	46	46
Franklin County / Sulphur Basin Total	**1,697**	**1,685**	**1,673**	**1,679**	**1,685**	**1,690**
Cypress Springs SUD	373	369	364	367	369	372
Mount Vernon	481	475	469	472	476	479
County-Other	58	56	55	55	55	54
Livestock	739	739	739	739	739	739
Irrigation	46	46	46	46	46	46
Gregg County Total	**35,503**	**35,898**	**36,144**	**36,051**	**35,953**	**35,877**
Gregg County / Cypress Basin Total	**878**	**882**	**873**	**855**	**836**	**819**
East Mountain Water System	52	52	52	51	50	49
Glenwood WSC	14	14	14	14	13	13
Tryon Road SUD	710	715	710	698	686	675
County-Other	65	64	60	55	50	45
Mining	10	10	10	10	10	10
Livestock	27	27	27	27	27	27
Gregg County / Sabine Basin Total	**34,625**	**35,016**	**35,271**	**35,196**	**35,117**	**35,058**
Chalk Hill SUD*	2	2	2	2	2	2
Clarksville City	126	126	126	124	122	120
Cross Roads SUD*	45	46	47	48	49	50
East Mountain Water System	40	41	41	40	39	39
Elderville WSC*	528	533	529	521	512	504
Gladewater	851	856	850	836	823	809
Kilgore*	3,186	3,208	3,187	3,136	3,085	3,034

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Liberty City WSC	543	544	540	531	523	514
Longview	22,779	23,053	23,311	23,323	23,329	23,352
Starrville-Friendship WSC	64	64	64	63	62	61
Tryon Road SUD	212	213	212	208	205	201
West Gregg SUD*	350	363	380	399	419	440
White Oak	2,656	2,678	2,659	2,616	2,572	2,529
County-Other	494	482	456	420	382	343
Manufacturing	1,552	1,610	1,670	1,732	1,796	1,863
Mining	72	72	72	72	72	72
Steam Electric Power	940	940	940	940	940	940
Livestock	152	152	152	152	152	152
Irrigation	33	33	33	33	33	33
Harrison County Total	**64,682**	**65,873**	**66,970**	**68,058**	**69,194**	**70,307**
Harrison County / Cypress Basin Total	**5,188**	**5,221**	**5,247**	**5,200**	**5,160**	**5,095**
Blocker Crossroads WSC	15	15	15	15	16	16
Cypress Valley WSC	162	165	166	168	169	170
Diana SUD	38	39	39	40	41	42
Gum Springs WSC	398	429	434	464	493	521
Harleton WSC	284	292	293	298	302	306
Leigh WSC	399	357	352	289	228	169
Marshall	827	807	806	760	716	673
North Harrison WSC	163	170	171	175	180	184
Panola-Bethany WSC*	31	25	20	17	14	11
Scottsville	102	113	115	126	137	147
Talley WSC	75	76	76	76	75	75
Tryon Road SUD	327	397	407	487	565	641
Waskom	288	268	265	232	200	169
West Harrison WSC	42	47	48	54	60	65
County-Other	604	570	570	510	452	394
Manufacturing	12	12	13	13	14	14
Mining	732	732	732	732	732	732
Livestock	353	371	389	408	430	430
Irrigation	336	336	336	336	336	336
Harrison County / Sabine Basin Total	**59,494**	**60,652**	**61,723**	**62,858**	**64,034**	**65,212**
Blocker Crossroads WSC	137	139	140	141	141	142
Elysian Fields WSC*	165	191	195	224	252	279

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Gill WSC*	202	200	200	193	186	180
Gum Springs WSC	1,279	1,380	1,396	1,492	1,585	1,675
Hallsville	653	701	708	753	796	837
Longview	777	861	896	1,022	1,151	1,255
Marshall	3,829	3,737	3,730	3,518	3,312	3,112
Panola-Bethany WSC*	51	41	34	27	22	18
Scottsville	236	261	264	290	315	339
Talley WSC	54	54	55	54	54	53
West Harrison WSC	153	172	175	196	216	236
County-Other	382	360	360	323	285	249
Manufacturing	25,974	26,940	27,941	28,980	30,057	31,175
Mining	1,959	1,959	1,959	1,959	1,959	1,959
Steam Electric Power	23,145	23,145	23,145	23,145	23,145	23,145
Livestock	274	287	301	317	334	334
Irrigation	224	224	224	224	224	224
Hopkins County Total	**16,394**	**16,631**	**16,849**	**17,050**	**17,244**	**17,449**
Hopkins County / Cypress Basin Total	**432**	**436**	**439**	**443**	**446**	**449**
Cornersville WSC	45	46	47	49	50	51
Cypress Springs SUD	70	73	75	77	79	81
Livestock	308	308	308	308	308	308
Irrigation	9	9	9	9	9	9
Hopkins County / Sabine Basin Total	**2,839**	**2,887**	**2,922**	**2,962**	**2,995**	**3,037**
Brashear WSC	106	114	115	119	124	128
Cash SUD*	27	31	34	42	44	53
Como	88	87	87	87	87	87
Cornersville WSC	46	48	49	50	51	53
Cumby	88	85	89	89	88	87
Jones WSC	12	11	12	12	12	12
Lake Fork WSC	20	21	21	22	22	23
Martin Springs WSC	399	410	420	428	437	445
Miller Grove WSC	193	202	206	211	217	222
Shady Grove No 2 WSC	64	68	69	72	74	77
Shirley WSC	243	254	259	266	273	280
County-Other	134	137	142	145	147	151
Mining	2	2	2	2	2	2
Livestock	1,293	1,293	1,293	1,293	1,293	1,293

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Irrigation	124	124	124	124	124	124
Hopkins County / Sulphur Basin Total	**13,123**	**13,308**	**13,488**	**13,645**	**13,803**	**13,963**
Brashear WSC	104	111	113	117	121	125
Brinker WSC	425	450	458	472	487	501
Como	24	24	24	24	24	24
Cornersville WSC	6	6	6	6	6	6
Cumby	10	10	10	10	10	10
Cypress Springs SUD	110	115	117	120	123	126
Gafford Chapel WSC	130	133	136	139	141	144
Martin Springs WSC	81	83	85	87	89	91
North Hopkins WSC	1,152	1,192	1,218	1,246	1,275	1,304
Shady Grove No 2 WSC	53	57	57	59	61	63
Sulphur Springs	3,440	3,497	3,590	3,646	3,701	3,757
County-Other	117	120	124	127	130	132
Manufacturing	1,042	1,081	1,121	1,163	1,206	1,251
Livestock	2,652	2,652	2,652	2,652	2,652	2,652
Irrigation	3,777	3,777	3,777	3,777	3,777	3,777
Hunt County Total	**33,739**	**36,860**	**39,444**	**41,384**	**42,959**	**44,993**
Hunt County / Sabine Basin Total	**30,117**	**33,237**	**35,809**	**37,771**	**39,372**	**41,432**
Ables Springs SUD*	42	45	48	51	53	56
B H P WSC	568	656	736	811	887	963
Caddo Basin SUD*	1,989	1,786	2,086	2,152	2,133	2,325
Caddo Mills	153	155	158	161	164	167
Cash SUD*	2,448	2,769	3,090	3,312	3,310	3,480
Celeste	109	114	119	123	127	130
Combined Consumers SUD	726	754	783	802	822	842
Greenville	19,410	21,807	23,203	24,371	25,554	26,751
Hickory Creek SUD*	265	302	347	398	455	522
Josephine*	33	38	43	47	52	56
MacBee SUD*	37	38	40	41	42	43
Poetry WSC*	236	269	297	317	264	266
Quinlan	240	258	276	292	307	322
Royse City*	619	881	1,111	1,337	1,565	1,795
Shady Grove SUD	164	207	263	335	428	545
West Tawakoni	323	354	383	408	433	459

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
County-Other	675	700	697	659	596	503
Manufacturing	635	659	684	709	735	762
Steam Electric Power	373	373	373	373	373	373
Livestock	835	835	835	835	835	835
Irrigation	237	237	237	237	237	237
Hunt County / Sulphur Basin Total	**3,438**	**3,421**	**3,412**	**3,365**	**3,312**	**3,254**
Commerce	1,590	1,537	1,497	1,436	1,375	1,314
Hickory Creek SUD*	182	209	239	274	314	360
North Hunt SUD*	342	336	331	322	312	303
Shady Grove SUD	10	13	17	22	27	35
Texas A&M University Commerce	433	432	432	432	432	432
Wolfe City*	163	165	168	169	170	171
County-Other	310	321	320	302	274	231
Livestock	339	339	339	339	339	339
Irrigation	69	69	69	69	69	69
Hunt County / Trinity Basin Total	**184**	**202**	**223**	**248**	**275**	**307**
Frognot WSC*	2	3	3	4	4	5
Hickory Creek SUD*	119	136	156	179	206	236
West Leonard WSC*	5	5	6	7	7	8
County-Other	0	0	0	0	0	0
Livestock	48	48	48	48	48	48
Irrigation	10	10	10	10	10	10
Lamar County Total	**28,486**	**28,673**	**28,852**	**29,036**	**29,231**	**29,433**
Lamar County / Red Basin Total	**11,790**	**11,829**	**11,858**	**11,891**	**11,926**	**11,961**
Bois D Arc MUD*	2	2	2	2	2	2
Lamar County WSD	2,079	2,077	2,067	2,058	2,048	2,038
Paris	1,452	1,448	1,441	1,434	1,427	1,420
Reno (Lamar)	27	26	26	26	26	26
County-Other	35	35	34	34	34	34
Manufacturing	1,231	1,277	1,324	1,373	1,425	1,477
Steam Electric Power	386	386	386	386	386	386
Livestock	579	579	579	579	579	579
Irrigation	5,999	5,999	5,999	5,999	5,999	5,999

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Lamar County / Sulphur Basin Total	**16,696**	**16,844**	**16,994**	**17,145**	**17,305**	**17,472**
Blossom	137	136	136	135	134	134
Lamar County WSD	827	826	822	818	814	811
Paris	2,246	2,239	2,230	2,219	2,209	2,198
Reno (Lamar)	375	375	373	371	370	368
County-Other	367	365	364	362	361	359
Manufacturing	4,279	4,438	4,604	4,775	4,952	5,137
Steam Electric Power	5,320	5,320	5,320	5,320	5,320	5,320
Livestock	1,049	1,049	1,049	1,049	1,049	1,049
Irrigation	2,096	2,096	2,096	2,096	2,096	2,096
Marion County Total	**5,661**	**5,595**	**5,529**	**5,486**	**5,442**	**5,399**
Marion County / Cypress Basin Total	**5,661**	**5,595**	**5,529**	**5,486**	**5,442**	**5,399**
Diana SUD	49	40	34	29	24	20
E M C WSC	130	116	101	91	80	69
Harleton WSC	65	55	44	37	30	22
Jefferson	443	412	380	358	336	315
Kellyville-Berea WSC	125	122	119	117	116	115
Mims WSC	123	128	135	139	143	149
Ore City	15	19	25	29	33	37
County-Other	105	91	73	62	50	36
Manufacturing	151	157	163	169	175	181
Mining	24	24	24	24	24	24
Steam Electric Power	4,257	4,257	4,257	4,257	4,257	4,257
Livestock	169	169	169	169	169	169
Irrigation	5	5	5	5	5	5
Morris County Total	**29,856**	**30,845**	**31,863**	**32,935**	**34,046**	**35,193**
Morris County / Cypress Basin Total	**29,394**	**30,387**	**31,408**	**32,483**	**33,596**	**34,745**
Bi County WSC	122	110	97	89	81	72
Daingerfield	452	463	479	487	496	505
Holly Springs WSC	52	47	41	37	33	30
Lone Star	206	190	172	160	149	136
Naples	93	92	92	91	91	90
Omaha	87	85	82	81	79	77
Tri SUD	200	198	183	175	164	147
Western Cass WSC	6	5	5	5	5	5
County-Other	191	187	184	183	180	179

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Manufacturing	27,561	28,586	29,649	30,751	31,894	33,080
Steam Electric Power	50	50	50	50	50	50
Livestock	371	371	371	371	371	371
Irrigation	3	3	3	3	3	3
Morris County / Sulphur Basin Total	**462**	**458**	**455**	**452**	**450**	**448**
Naples	89	88	87	87	86	86
Omaha	68	66	65	63	62	61
Western Cass WSC	10	10	10	10	10	10
County-Other	73	72	71	70	70	69
Livestock	215	215	215	215	215	215
Irrigation	7	7	7	7	7	7
Rains County Total	**2,915**	**3,022**	**3,136**	**3,261**	**3,383**	**3,508**
Rains County / Sabine Basin Total	**2,915**	**3,022**	**3,136**	**3,261**	**3,383**	**3,508**
Bright Star Salem SUD	407	435	458	489	521	554
Cash SUD*	116	127	150	185	214	248
East Tawakoni	183	185	189	188	187	186
Emory	732	745	766	772	777	781
Golden WSC	5	6	6	6	6	6
Miller Grove WSC	39	42	44	47	51	54
Point	229	233	239	240	241	241
Shirley WSC	115	124	131	142	153	164
South Rains SUD	271	290	305	326	348	370
County-Other	254	271	284	302	321	340
Manufacturing	1	1	1	1	1	1
Livestock	503	503	503	503	503	503
Irrigation	60	60	60	60	60	60
Red River County Total	**7,208**	**7,055**	**6,907**	**6,789**	**6,670**	**6,547**
Red River County / Red Basin Total	**2,066**	**2,044**	**2,023**	**2,007**	**1,991**	**1,975**
410 WSC	153	145	138	132	127	121
Red River County WSC	140	132	126	123	122	125
County-Other	45	39	31	24	14	1
Manufacturing	3	3	3	3	3	3
Livestock	498	498	498	498	498	498
Irrigation	1,227	1,227	1,227	1,227	1,227	1,227

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Red River County / Sulphur Basin Total	**5,142**	**5,011**	**4,884**	**4,782**	**4,679**	**4,572**
410 WSC	200	190	180	173	165	158
Bogata	170	160	151	143	136	129
Clarksville	623	550	477	420	361	302
Red River County WSC	363	342	329	321	319	324
Talco	4	5	5	5	6	6
County-Other	132	114	92	70	42	3
Livestock	1,094	1,094	1,094	1,094	1,094	1,094
Irrigation	2,556	2,556	2,556	2,556	2,556	2,556
Smith County Total	**9,995**	**10,575**	**11,012**	**11,321**	**11,637**	**11,955**
Smith County / Sabine Basin Total	**9,995**	**10,575**	**11,012**	**11,321**	**11,637**	**11,955**
Carroll WSC*	48	50	51	52	52	53
Crystal Systems Texas*	1,489	1,552	1,599	1,623	1,649	1,675
East Texas MUD	1,328	1,541	1,693	1,834	1,976	2,118
Jackson WSC*	175	188	198	205	213	220
Liberty City WSC	24	26	28	30	32	34
Lindale Rural WSC*	1,302	1,430	1,525	1,605	1,686	1,767
Lindale*	865	889	909	916	923	931
Overton*	30	32	34	35	36	37
Pine Ridge WSC	199	222	239	253	268	282
Sand Flat WSC	319	331	339	343	346	350
Southern Utilities*	2,194	2,306	2,390	2,444	2,499	2,555
Star Mountain WSC	244	255	265	270	276	282
Starrville-Friendship WSC	158	156	156	153	150	147
Tyler*	233	209	194	173	153	133
West Gregg SUD*	104	109	114	116	119	122
Winona	180	199	212	224	235	246
County-Other*	308	284	269	247	225	203
Manufacturing*	19	20	21	22	23	24
Livestock*	465	465	465	465	465	465
Irrigation*	311	311	311	311	311	311
Titus County Total	**42,860**	**43,342**	**43,734**	**44,128**	**44,519**	**44,911**
Titus County / Cypress Basin Total	**40,287**	**40,697**	**41,049**	**41,395**	**41,745**	**42,103**
Bi County WSC	45	55	70	83	96	111
Cypress Springs SUD	41	48	59	67	75	86
Mount Pleasant	4,049	4,145	4,209	4,261	4,319	4,382

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Tri SUD	1,290	1,428	1,530	1,635	1,732	1,821
County-Other	73	66	54	44	33	21
Manufacturing	4,455	4,621	4,793	4,971	5,156	5,348
Steam Electric Power	29,541	29,541	29,541	29,541	29,541	29,541
Livestock	675	675	675	675	675	675
Irrigation	118	118	118	118	118	118
Titus County / Sulphur Basin Total	**2,573**	**2,645**	**2,685**	**2,733**	**2,774**	**2,808**
Cypress Springs SUD	30	35	42	48	55	62
Talco	119	118	114	111	107	103
Tri SUD	734	813	870	931	986	1,037
County-Other	118	107	87	71	54	34
Livestock	498	498	498	498	498	498
Irrigation	1,074	1,074	1,074	1,074	1,074	1,074
Upshur County Total	**7,098**	**7,119**	**7,092**	**7,006**	**6,917**	**6,827**
Upshur County / Cypress Basin Total	**4,455**	**4,476**	**4,474**	**4,439**	**4,404**	**4,366**
Bi County WSC	402	403	401	396	390	384
Diana SUD	517	563	618	677	743	815
East Mountain Water System	77	77	77	76	75	74
Gilmer	946	951	947	934	920	906
Glenwood WSC	327	328	327	322	318	313
Ore City	192	193	192	189	187	184
Pritchett WSC	255	256	255	252	248	244
Sharon WSC	230	231	230	227	224	221
Union Grove WSC	8	8	8	8	8	7
County-Other	517	481	432	370	302	228
Manufacturing	33	34	36	37	38	39
Livestock	808	808	808	808	808	808
Irrigation	143	143	143	143	143	143
Upshur County / Sabine Basin Total	**2,643**	**2,643**	**2,618**	**2,567**	**2,513**	**2,461**
Big Sandy	266	267	267	263	259	255
East Mountain Water System	297	299	298	294	289	285
Fouke WSC	10	10	10	10	10	10
Gladewater	525	528	526	519	511	503
Glenwood WSC	7	7	7	7	6	6
Pritchett WSC	623	626	623	614	605	596

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Union Grove WSC	224	226	225	221	218	216
County-Other	200	187	168	143	117	89
Manufacturing	52	54	55	57	59	62
Mining	139	139	139	139	139	139
Livestock	300	300	300	300	300	300
Van Zandt County Total	**12,140**	**13,130**	**14,125**	**15,147**	**16,207**	**17,286**
Van Zandt County / Neches Basin Total	**2,766**	**2,909**	**3,036**	**3,141**	**3,220**	**3,273**
Ben Wheeler WSC*	291	330	369	411	453	496
Bethel Ash WSC*	134	146	159	172	185	198
Carroll WSC*	0	0	1	1	1	1
Edom WSC*	134	136	138	138	137	137
Little Hope Moore WSC	43	44	46	47	49	50
R P M WSC*	244	241	239	231	223	216
Van	311	315	321	320	320	320
County-Other	575	663	729	787	818	821
Livestock	628	628	628	628	628	628
Irrigation	406	406	406	406	406	406
Van Zandt County / Sabine Basin Total	**6,891**	**7,397**	**7,916**	**8,444**	**9,010**	**9,584**
Ables Springs SUD*	2	2	3	3	3	3
Canton	1,735	1,931	2,133	2,333	2,552	2,763
Carroll WSC*	58	66	72	81	89	97
Combined Consumers SUD	147	154	161	167	174	180
Edgewood	322	332	341	346	351	357
Fruitvale WSC	332	361	391	421	451	481
Golden WSC	82	91	101	111	121	131
Grand Saline	466	473	481	481	482	483
Little Hope Moore WSC	90	94	97	100	103	106
MacBee SUD*	385	476	589	729	902	1,116
Myrtle Springs WSC	79	97	114	134	154	174
Pine Ridge WSC	43	55	67	80	94	107
Pruitt Sandflat WSC	125	125	125	122	120	117
South Tawakoni WSC	295	236	191	151	119	95
Van	212	215	218	218	218	218
Wills Point	495	546	596	647	698	750
County-Other	631	730	802	864	900	903
Manufacturing	556	577	598	620	643	667

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
Mining	6	6	6	6	6	6
Livestock	830	830	830	830	830	830
Van Zandt County / Trinity Basin Total	**2,483**	**2,824**	**3,173**	**3,562**	**3,977**	**4,429**
Bethel Ash WSC*	34	38	41	44	48	51
Mabank*	64	72	80	88	96	104
MacBee SUD*	591	732	906	1,120	1,386	1,715
Myrtle Springs WSC	196	240	283	333	382	432
Wills Point	546	602	657	713	770	828
County-Other	576	664	730	788	819	823
Livestock	476	476	476	476	476	476
Wood County Total	**12,773**	**13,200**	**13,537**	**14,012**	**14,503**	**15,009**
Wood County / Cypress Basin Total	**953**	**973**	**982**	**1,004**	**1,025**	**1,044**
Cypress Springs SUD	74	78	80	85	90	94
Sharon WSC	160	170	176	188	201	213
Winnsboro	249	256	261	269	275	283
County-Other	59	58	54	51	48	43
Livestock	346	346	346	346	346	346
Irrigation	65	65	65	65	65	65
Wood County / Sabine Basin Total	**11,820**	**12,227**	**12,555**	**13,008**	**13,478**	**13,965**
Bright Star Salem SUD	301	330	348	389	430	471
Cornersville WSC	26	28	30	32	35	37
Fouke WSC	783	815	837	875	913	952
Golden WSC	306	317	324	335	347	358
Hawkins	354	360	364	365	367	369
Jones WSC	590	625	646	690	734	778
Lake Fork WSC	297	315	326	348	370	392
Liberty Utilities Silverleaf Water*	704	729	743	764	785	807
Mineola	937	979	1,007	1,058	1,109	1,161
New Hope SUD	533	528	526	507	488	471
Pritchett WSC	6	7	7	7	7	7
Quitman	345	344	344	335	328	320
Ramey WSC	581	664	763	876	1,006	1,155
Sharon WSC	345	365	378	405	431	458
Shirley WSC	17	17	17	17	17	18
Winnsboro	262	270	275	282	290	297

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DRAFT Region D Water User Group (WUG) Demand

	WUG Demand (acre-feet per year)					
	2030	2040	2050	2060	2070	2080
County-Other	390	381	353	339	316	284
Manufacturing	2,912	3,020	3,132	3,248	3,368	3,493
Mining	347	349	351	352	353	353
Livestock	1,324	1,324	1,324	1,324	1,324	1,324
Irrigation	460	460	460	460	460	460
Region D Demand Total	**389,550**	**399,025**	**407,468**	**415,054**	**422,546**	**430,678**

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Appendix C.TWDB DB27 Report – Source Availability

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Groundwater Source Availability Total				**191,021**	**191,020**	**191,042**	**191,397**	**191,876**	**192,580**
Blossom Aquifer	Bowie	Red	Fresh	21	21	21	21	21	21
Blossom Aquifer	Bowie	Sulphur	Fresh	180	180	180	180	180	180
Blossom Aquifer	Lamar	Red	Fresh	323	323	323	323	323	323
Blossom Aquifer	Lamar	Sulphur	Fresh	71	71	71	71	71	71
Blossom Aquifer	Red River	Red	Fresh	665	665	665	665	665	665
Blossom Aquifer	Red River	Sulphur	Fresh	1,013	1,013	1,013	1,013	1,013	1,013
Carrizo-Wilcox Aquifer	Bowie	Sulphur	Fresh	9,645	9,645	9,645	9,645	9,645	9,645
Carrizo-Wilcox Aquifer	Camp	Cypress	Fresh	3,862	3,862	3,862	3,862	3,862	3,862
Carrizo-Wilcox Aquifer	Cass	Cypress	Fresh	12,865	12,865	12,865	12,865	12,865	12,865
Carrizo-Wilcox Aquifer	Cass	Sulphur	Fresh	777	777	777	777	777	777
Carrizo-Wilcox Aquifer	Franklin	Cypress	Fresh	5,334	5,334	5,334	5,334	5,334	5,334
Carrizo-Wilcox Aquifer	Franklin	Sulphur	Fresh	398	398	398	398	398	398
Carrizo-Wilcox Aquifer	Gregg	Cypress	Fresh	726	726	726	726	726	726
Carrizo-Wilcox Aquifer	Gregg	Sabine	Fresh	5,346	5,346	5,346	5,346	5,346	5,346
Carrizo-Wilcox Aquifer	Harrison	Cypress	Fresh	4,636	4,636	4,636	4,636	4,636	4,636
Carrizo-Wilcox Aquifer	Harrison	Sabine	Fresh	4,460	4,460	4,460	4,460	4,460	4,460
Carrizo-Wilcox Aquifer	Hopkins	Cypress	Fresh	309	309	309	309	309	309
Carrizo-Wilcox Aquifer	Hopkins	Sabine	Fresh	2,426	2,426	2,426	2,426	2,426	2,426
Carrizo-Wilcox Aquifer	Hopkins	Sulphur	Fresh	2,017	2,017	2,017	2,017	2,017	2,017
Carrizo-Wilcox Aquifer	Marion	Cypress	Fresh	1,966	1,966	1,966	1,966	1,966	1,966
Carrizo-Wilcox Aquifer	Morris	Cypress	Fresh	2,156	2,156	2,156	2,156	2,156	2,156

* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Carrizo-Wilcox Aquifer	Morris	Sulphur	Fresh	415	415	415	415	415	415
Carrizo-Wilcox Aquifer	Rains	Sabine	Fresh	1,411	1,411	1,411	1,411	1,411	1,411
Carrizo-Wilcox Aquifer	Red River	Sulphur	Fresh	0	0	0	0	0	0
Carrizo-Wilcox Aquifer	Smith	Sabine	Fresh	7,939	7,939	7,939	7,939	7,939	7,939
Carrizo-Wilcox Aquifer	Titus	Cypress	Fresh	5,594	5,594	5,594	5,594	5,594	5,594
Carrizo-Wilcox Aquifer	Titus	Sulphur	Fresh	1,942	1,942	1,942	1,942	1,942	1,942
Carrizo-Wilcox Aquifer	Upshur	Cypress	Fresh	5,107	5,107	5,107	5,107	5,107	5,107
Carrizo-Wilcox Aquifer	Upshur	Sabine	Fresh	1,550	1,550	1,550	1,550	1,550	1,550
Carrizo-Wilcox Aquifer	Van Zandt	Neches	Fresh	2,616	2,616	2,616	2,616	2,616	2,616
Carrizo-Wilcox Aquifer	Van Zandt	Sabine	Fresh	3,286	3,286	3,286	3,286	3,286	3,286
Carrizo-Wilcox Aquifer	Van Zandt	Trinity	Fresh	1,030	1,030	1,030	1,030	1,030	1,030
Carrizo-Wilcox Aquifer	Wood	Cypress	Fresh	925	925	925	925	925	925
Carrizo-Wilcox Aquifer	Wood	Sabine	Fresh	16,977	16,977	16,977	16,977	16,977	16,977
Nacatoch Aquifer	Bowie	Red	Fresh	3,071	3,071	3,071	3,071	3,071	3,071
Nacatoch Aquifer	Bowie	Sulphur	Fresh	1,942	1,942	1,942	1,942	1,942	1,942
Nacatoch Aquifer	Delta	Sulphur	Fresh	575	575	575	575	575	575
Nacatoch Aquifer	Franklin	Sulphur	Fresh	30	30	30	30	30	30
Nacatoch Aquifer	Hopkins	Sabine	Fresh	291	291	291	291	291	291
Nacatoch Aquifer	Hopkins	Sulphur	Fresh	916	916	916	916	916	916
Nacatoch Aquifer	Hunt	Sabine	Fresh	3,303	3,303	3,303	3,303	3,303	3,303
Nacatoch Aquifer	Hunt	Sulphur	Fresh	491	491	513	868	1,347	2,052
Nacatoch Aquifer	Lamar	Sulphur	Fresh	110	110	110	110	110	110

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Nacatoch Aquifer	Rains	Sabine	Fresh	1	1	1	1	1	1
Nacatoch Aquifer	Red River	Red	Fresh	58	58	58	58	58	58
Nacatoch Aquifer	Red River	Sulphur	Fresh	2,924	2,923	2,923	2,923	2,923	2,923
Queen City Aquifer	Camp	Cypress	Fresh	1,594	1,594	1,594	1,594	1,594	1,594
Queen City Aquifer	Cass	Cypress	Fresh	15,855	15,855	15,855	15,855	15,855	15,855
Queen City Aquifer	Cass	Sulphur	Fresh	624	624	624	624	624	624
Queen City Aquifer	Gregg	Cypress	Fresh	456	456	456	456	456	456
Queen City Aquifer	Gregg	Sabine	Fresh	2,056	2,056	2,056	2,056	2,056	2,055
Queen City Aquifer	Harrison	Cypress	Fresh	2,976	2,976	2,976	2,976	2,976	2,976
Queen City Aquifer	Harrison	Sabine	Fresh	561	561	561	561	561	561
Queen City Aquifer	Marion	Cypress	Fresh	7,389	7,389	7,389	7,389	7,389	7,389
Queen City Aquifer	Morris	Cypress	Fresh	3,278	3,278	3,278	3,278	3,278	3,278
Queen City Aquifer	Smith	Sabine	Fresh	12,457	12,457	12,457	12,457	12,457	12,457
Queen City Aquifer	Titus	Cypress	Fresh	0	0	0	0	0	0
Queen City Aquifer	Upshur	Cypress	Fresh	6,215	6,215	6,215	6,215	6,215	6,215
Queen City Aquifer	Upshur	Sabine	Fresh	5,949	5,949	5,949	5,949	5,949	5,949
Queen City Aquifer	Van Zandt	Neches	Fresh	2,343	2,343	2,343	2,343	2,343	2,343
Queen City Aquifer	Wood	Cypress	Fresh	779	779	779	779	779	779
Queen City Aquifer	Wood	Sabine	Fresh	5,731	5,731	5,731	5,731	5,731	5,731
Sparta Aquifer	Cass	Cypress	Fresh	0	0	0	0	0	0
Sparta Aquifer	Marion	Cypress	Fresh	0	0	0	0	0	0
Sparta Aquifer	Smith	Sabine	Fresh	0	0	0	0	0	0

* Salinity field indicates whether the source availability is considered 'fresh' (less than 1,000 mg/L), 'brackish' (1,000 to 10,000 mg/L), 'saline' (10,001 mg/L to 34,999 mg/L), or 'seawater' (35,000 mg/L or greater). Sources can also be labeled as 'fresh/brackish' or 'brackish/saline', if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sparta Aquifer	Upshur	Sabine	Fresh	0	0	0	0	0	0
Sparta Aquifer	Wood	Sabine	Fresh	0	0	0	0	0	0
Trinity Aquifer	Delta	Sulphur	Fresh	56	56	56	56	56	56
Trinity Aquifer	Hunt	Sabine	Fresh	0	0	0	0	0	0
Trinity Aquifer	Hunt	Sulphur	Fresh	3	3	3	3	3	3
Trinity Aquifer	Hunt	Trinity	Fresh	0	0	0	0	0	0
Trinity Aquifer	Lamar	Red	Fresh	0	0	0	0	0	0
Trinity Aquifer	Lamar	Sulphur	Fresh	8	8	8	8	8	8
Trinity Aquifer	Red River	Red	Fresh	52	52	52	52	52	52
Trinity Aquifer	Red River	Sulphur	Fresh	125	125	125	125	125	125
Woodbine Aquifer	Hunt	Sabine	Fresh	268	268	268	268	268	268
Woodbine Aquifer	Hunt	Sulphur	Fresh	165	165	165	165	165	165
Woodbine Aquifer	Hunt	Trinity	Fresh	330	330	330	330	330	330
Woodbine Aquifer	Lamar	Red	Fresh	0	0	0	0	0	0
Woodbine Aquifer	Lamar	Sulphur	Fresh	49	49	49	49	49	49
Woodbine Aquifer	Red River	Red	Fresh	2	2	2	2	2	2

Reuse Source Availability Total				**78,419**	**72,993**	**67,677**	**68,933**	**77,807**	**71,581**
Direct Reuse	Gregg	Sabine	Fresh	6,161	6,161	6,161	6,161	6,161	6,161
Direct Reuse	Lamar	Red	Fresh	12	12	12	12	12	12
Direct Reuse	Morris	Cypress	Fresh	72,086	66,660	61,344	62,600	71,474	65,248
Direct Reuse	Titus	Cypress	Fresh	160	160	160	160	160	160

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** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Surface Water Source Availability Total				**1,127,313**	**1,108,590**	**1,089,871**	**1,071,297**	**1,052,616**	**1,034,013**
Big Creek Lake/Reservoir	Reservoir**	Sulphur	Fresh	940	752	564	376	188	0
Big Sandy Creek Lake/Reservoir	Reservoir**	Sabine	Fresh	2,680	2,680	2,680	2,680	2,680	2,680
Bob Sandlin Lake/Reservoir	Reservoir**	Cypress	Fresh	26,200	25,660	25,120	24,580	24,040	23,500
Brandy Branch Lake/Reservoir	Reservoir**	Sabine	Fresh	19,889	19,889	19,889	19,889	19,889	19,889
Caddo Lake/Reservoir	Reservoir**	Cypress	Fresh	10,000	10,000	10,000	10,000	10,000	10,000
Caney Creek Lake/Reservoir	Reservoir**	Sulphur	Fresh	792	792	792	792	792	792
Chapman/Cooper Lake/Reservoir Non-System Portion	Reservoir**	Sulphur	Fresh	66,176	64,597	63,019	61,440	59,862	58,283
Crook Lake/Reservoir	Reservoir**	Red	Fresh	5,000	4,800	4,600	4,400	4,200	4,000
Cypress Livestock Local Supply	Camp	Cypress	Fresh	534	534	571	636	698	724
Cypress Livestock Local Supply	Cass	Cypress	Fresh	565	565	565	565	565	565
Cypress Livestock Local Supply	Franklin	Cypress	Fresh	291	291	291	291	291	291
Cypress Livestock Local Supply	Harrison	Cypress	Fresh	276	302	329	358	387	421
Cypress Livestock Local Supply	Hopkins	Cypress	Fresh	108	108	108	108	108	108
Cypress Livestock Local Supply	Morris	Cypress	Fresh	215	215	215	215	215	215
Cypress Livestock Local Supply	Upshur	Cypress	Fresh	975	975	975	975	975	975
Cypress Livestock Local Supply	Wood	Cypress	Fresh	271	271	271	271	271	271
Cypress Run-of-River	Camp	Cypress	Fresh	0	0	0	0	0	0
Cypress Run-of-River	Cass	Cypress	Fresh	150	150	150	150	150	150
Cypress Run-of-River	Gregg	Cypress	Fresh	10	10	10	10	10	10

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Cypress Run-of-River	Harrison	Cypress	Fresh	840	840	840	840	840	840
Cypress Run-of-River	Marion	Cypress	Fresh	145	145	145	145	145	145
Cypress Run-of-River	Morris	Cypress	Fresh	70	70	70	70	70	70
Cypress Run-of-River	Titus	Cypress	Fresh	412	412	412	412	412	412
Cypress Run-of-River	Upshur	Cypress	Fresh	22	22	22	22	22	22
Cypress Springs Lake/Reservoir	Reservoir**	Cypress	Fresh	10,500	10,040	9,580	9,120	8,660	8,200
Edgewood City Lake/Reservoir	Reservoir**	Sabine	Fresh	160	160	160	160	160	160
Elliot Creek Lake/Reservoir	Reservoir**	Sulphur	Fresh	1,318	1,318	1,318	1,318	1,318	1,318
Ellison Creek Lake/Reservoir	Reservoir**	Cypress	Fresh	33,640	33,640	33,640	33,640	33,640	33,640
Fork Lake/Reservoir	Reservoir**	Sabine	Fresh	168,966	167,119	165,272	163,424	161,577	159,730
Gilmer Lake/Reservoir	Reservoir**	Cypress	Fresh	6,180	6,180	6,180	6,180	6,180	6,180
Gladewater Lake/Reservoir	Reservoir**	Sabine	Fresh	4,540	3,944	3,348	2,752	2,156	1,560
Grays Creek Run-of-River	Harrison	Cypress	Fresh	10	10	10	10	10	10
Greenville City Lake/Reservoir	Reservoir**	Sabine	Fresh	3,420	3,420	3,420	3,420	3,420	3,420
Johnson Creek Lake/Reservoir	Reservoir**	Cypress	Fresh	2,280	2,280	2,280	2,280	2,280	2,280
Langford Lake/Reservoir	Reservoir**	Sulphur	Fresh	130	0	0	0	0	0
Loma Lake/Reservoir	Reservoir**	Sabine	Fresh	880	880	880	880	880	880
Mill Creek Lake/Reservoir	Reservoir**	Sabine	Fresh	1,190	1,190	1,190	1,190	1,190	1,190
Monticello Lake/Reservoir	Reservoir**	Cypress	Fresh	5,000	4,560	4,120	3,680	3,240	2,800
Neches Livestock Local Supply	Van Zandt	Neches	Fresh	1,136	1,136	1,136	1,136	1,136	1,136
Neches Run-of-River	Van Zandt	Neches	Fresh	115	115	115	115	115	115

* Salinity field indicates whether the source availability is considered ‘fresh’ (less than 1,000 mg/L), ‘brackish’ (1,000 to 10,000 mg/L), ‘saline’ (10,001 mg/L to 34,999 mg/L), or ‘seawater’ (35,000 mg/L or greater). Sources can also be labeled as ‘fresh/brackish’ or ‘brackish/saline’, if a combination of the salinity types is appropriate.
** Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
O' the Pines Lake/Reservoir	Reservoir**	Cypress	Fresh	159,000	157,500	156,000	154,500	153,000	151,500
Pat Mayse Lake/Reservoir	Reservoir**	Red	Fresh	50,490	50,252	50,014	49,776	49,538	49,300
Peacock Site 1A Tailings Lake/Reservoir	Reservoir**	Cypress	Fresh	877	874	871	867	864	861
Red Livestock Local Supply	Bowie	Red	Fresh	17	17	14	23	36	43
Red Livestock Local Supply	Lamar	Red	Fresh	0	0	0	0	0	0
Red Livestock Local Supply	Red River	Red	Fresh	474	474	474	474	474	474
Red Run-of-River	Bowie	Red	Fresh	1,237	1,237	1,237	1,237	1,237	1,237
Red Run-of-River	Lamar	Red	Fresh	1,423	1,423	1,423	1,423	1,423	1,423
Red Run-of-River	Red River	Red	Fresh	47	47	47	47	47	47
Rhines Lake/Reservoir	Reservoir**	Neches	Fresh	1,170	1,170	1,170	1,170	1,170	1,170
River Crest Lake/Reservoir	Reservoir**	Sulphur	Fresh	5,300	5,300	5,300	5,300	5,300	5,300
Sabine Livestock Local Supply	Franklin	Sabine	Fresh	1	1	1	1	1	1
Sabine Livestock Local Supply	Hopkins	Sabine	Fresh	1,208	1,208	1,208	1,208	1,208	1,208
Sabine Livestock Local Supply	Hunt	Sabine	Fresh	812	812	812	812	812	812
Sabine Livestock Local Supply	Rains	Sabine	Fresh	675	675	675	675	675	675
Sabine Livestock Local Supply	Upshur	Sabine	Fresh	352	352	352	352	352	352
Sabine Livestock Local Supply	Van Zandt	Sabine	Fresh	1,035	1,035	1,035	1,035	1,035	1,035
Sabine Livestock Local Supply	Wood	Sabine	Fresh	1,897	1,897	1,897	1,897	1,897	1,897
Sabine Other Local Supply	Gregg	Sabine	Fresh	2,500	2,500	2,500	2,500	2,500	2,500
Sabine Other Local Supply	Van Zandt	Sabine	Fresh	847	1,007	1,170	1,337	1,498	1,661

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DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sabine Run-of-River	Gregg	Sabine	Fresh	1,198	1,198	1,198	1,198	1,198	1,198
Sabine Run-of-River	Harrison	Sabine	Fresh	455	455	455	455	455	455
Sabine Run-of-River	Hopkins	Sabine	Fresh	19	19	19	19	19	19
Sabine Run-of-River	Hunt	Sabine	Fresh	27	27	27	27	27	27
Sabine Run-of-River	Rains	Sabine	Fresh	58	58	58	58	58	58
Sabine Run-of-River	Smith	Sabine	Fresh	305	305	305	305	305	305
Sabine Run-of-River	Upshur	Sabine	Fresh	20	20	20	20	20	20
Sabine Run-of-River	Van Zandt	Sabine	Fresh	249	249	249	249	249	249
Sabine Run-of-River	Wood	Sabine	Fresh	420	420	420	420	420	420
Sulphur Livestock Local Supply	Bowie	Sulphur	Fresh	625	625	559	465	385	353
Sulphur Livestock Local Supply	Cass	Sulphur	Fresh	114	114	114	115	115	115
Sulphur Livestock Local Supply	Delta	Sulphur	Fresh	231	231	231	231	231	231
Sulphur Livestock Local Supply	Franklin	Sulphur	Fresh	393	393	393	393	393	393
Sulphur Livestock Local Supply	Hopkins	Sulphur	Fresh	1,570	1,493	1,324	1,314	1,130	1,049
Sulphur Livestock Local Supply	Hunt	Sulphur	Fresh	300	300	300	300	300	300
Sulphur Livestock Local Supply	Lamar	Sulphur	Fresh	1,623	1,623	1,623	1,623	1,623	1,623
Sulphur Livestock Local Supply	Morris	Sulphur	Fresh	207	207	207	207	212	212
Sulphur Livestock Local Supply	Red River	Sulphur	Fresh	911	911	911	911	911	911
Sulphur Livestock Local Supply	Titus	Sulphur	Fresh	156	156	156	156	156	156
Sulphur Other Local Supply	Delta	Sulphur	Fresh	25	26	26	26	26	26
Sulphur Run-of-River	Bowie	Sulphur	Fresh	125	125	125	125	125	125

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DRAFT Region D Source Total Availability

				Source Availability (acre-feet per year)					
Source Name	**County**	**Basin**	**Salinity***	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Sulphur Run-of-River	Delta	Sulphur	Fresh	2,710	2,710	2,710	2,710	2,710	2,710
Sulphur Run-of-River	Franklin	Sulphur	Fresh	0	0	0	0	0	0
Sulphur Run-of-River	Hopkins	Sulphur	Fresh	146	146	146	146	146	146
Sulphur Run-of-River	Hunt	Sulphur	Fresh	0	0	0	0	0	0
Sulphur Run-of-River	Lamar	Sulphur	Fresh	0	0	0	0	0	0
Sulphur Run-of-River	Red River	Sulphur	Fresh	5,581	5,581	5,581	5,581	5,581	5,581
Sulphur Run-of-River	Titus	Sulphur	Fresh	1,035	1,035	1,035	1,035	1,035	1,035
Sulphur Springs Lake/Reservoir	Reservoir**	Sulphur	Fresh	7,730	7,730	7,730	7,730	7,730	7,730
Tankersley Lake/Reservoir	Reservoir**	Cypress	Fresh	1,500	1,500	1,500	1,500	1,500	1,500
Tawakoni Lake/Reservoir	Reservoir**	Sabine	Fresh	226,239	224,543	222,847	221,152	219,456	217,760
Trinity Livestock Local Supply	Hunt	Trinity	Fresh	34	34	34	34	35	35
Trinity Livestock Local Supply	Van Zandt	Trinity	Fresh	599	527	449	340	282	193
Turkey Creek Lake/Reservoir	Reservoir**	Sulphur	Fresh	190	190	190	190	190	190
Welsh Lake/Reservoir	Reservoir**	Cypress	Fresh	2,900	2,620	2,340	2,060	1,780	1,500
Wright Patman Lake/Reservoir	Reservoir**	Sulphur	Fresh	264,230	255,166	246,102	237,038	227,974	218,910

Region D Source Availability Total	**1,396,753**	**1,372,603**	**1,348,590**	**1,331,627**	**1,322,299**	**1,298,174**

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Appendix D.TWDB DB27 Report – WUG Existing Water Supply

DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Bowie County WUG Total			**5,077**	**5,146**	**5,103**	**4,890**	**4,726**	**4,675**
Bowie County / Red Basin WUG Total			**1,777**	**1,800**	**1,781**	**1,706**	**1,646**	**1,627**
Burns Redbank WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Central Bowie County WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
De Kalb	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Hooks	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
New Boston	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Riverbend Water Resources District	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Texarkana	D	Red Run-of-River	0	0	0	0	0	0
Texarkana	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
County-Other	D	Nacatoch Aquifer | Bowie County	1,105	1,128	1,149	1,130	1,119	1,119
County-Other	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Manufacturing	D	Red Run-of-River	7	7	7	7	7	7
Manufacturing	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Mining		No water supply associated with WUG	0	0	0	0	0	0
Livestock	D	Local Surface Water Supply	17	17	14	23	36	43
Livestock	D	Nacatoch Aquifer | Bowie County	418	418	381	316	254	228
Irrigation	D	Red Run-of-River	230	230	230	230	230	230
Bowie County / Sulphur Basin WUG Total			**3,300**	**3,346**	**3,322**	**3,184**	**3,080**	**3,048**
Central Bowie County WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
De Kalb	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Macedonia Eylau MUD 1	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Maud	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Nash	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
New Boston	D	Sulphur Run-of-River	0	0	0	0	0	0
New Boston	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Redwater	D	Carrizo-Wilcox Aquifer | Bowie County	66	66	66	66	66	66
Redwater	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Riverbend Water Resources District	D	Caney Creek Lake/Reservoir	0	0	0	0	0	0
Riverbend Water Resources District	D	Elliot Creek Lake/Reservoir	0	0	0	0	0	0
Riverbend Water Resources District	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Texarkana	D	Red Run-of-River	0	0	0	0	0	0
Texarkana	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Wake Village	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Bowie County	2,396	2,442	2,484	2,440	2,416	2,416
County-Other	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Manufacturing	D	Carrizo-Wilcox Aquifer | Bowie County	28	28	28	28	28	28
Manufacturing	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Mining		No water supply associated with WUG	0	0	0	0	0	0
Livestock	D	Carrizo-Wilcox Aquifer | Bowie County	672	672	610	502	396	354
Livestock	D	Local Surface Water Supply	49	49	45	59	85	95
Irrigation	D	Sulphur Run-of-River	89	89	89	89	89	89

*A single asterisk next to a WUG's name denotes that the WUG is split by two or more planning regions.

DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
Camp County WUG Total			**2,956**	**2,968**	**2,977**	**2,985**	**2,993**	**3,002**
Camp County / Cypress Basin WUG Total			**2,956**	**2,968**	**2,977**	**2,985**	**2,993**	**3,002**
Bi County WSC	D	Carrizo-Wilcox Aquifer | Camp County	937	937	937	937	937	937
Bi County WSC	D	Carrizo-Wilcox Aquifer | Morris County	50	50	50	50	50	50
Bi County WSC	D	Carrizo-Wilcox Aquifer | Titus County	100	100	100	100	100	100
Bi County WSC	D	Carrizo-Wilcox Aquifer | Upshur County	50	50	50	50	50	50
Cypress Springs SUD		No water supply associated with WUG	0	0	0	0	0	0
Pittsburg	D	Bob Sandlin Lake/Reservoir	0	0	0	0	0	0
Pittsburg	D	Carrizo-Wilcox Aquifer | Camp County	433	433	433	433	433	433
Sharon WSC		No water supply associated with WUG	0	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Camp County	432	444	453	461	469	478
Manufacturing	D	Bob Sandlin Lake/Reservoir	0	0	0	0	0	0
Manufacturing	D	Carrizo-Wilcox Aquifer | Camp County	2	2	2	2	2	2
Livestock	D	Carrizo-Wilcox Aquifer | Camp County	335	335	335	335	335	335
Livestock	D	Local Surface Water Supply	481	481	481	481	481	481
Livestock	D	Queen City Aquifer | Camp County	136	136	136	136	136	136
Irrigation		No water supply associated with WUG	0	0	0	0	0	0
Cass County WUG Total			**39,528**	**39,686**	**39,780**	**39,797**	**39,817**	**39,829**
Cass County / Cypress Basin WUG Total			**6,189**	**6,273**	**6,369**	**6,385**	**6,405**	**6,420**
Atlanta	D	Wright Patman Lake/Reservoir	1,071	1,131	1,205	1,202	1,202	1,201
Avinger	D	Ellison Creek Lake/Reservoir	0	0	0	0	0	0
Avinger	D	Monticello Lake/Reservoir	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Avinger	D	O' the Pines Lake/Reservoir	302	302	302	302	302	302
Avinger	D	Welsh Lake/Reservoir	0	0	0	0	0	0
E M C WSC	D	Carrizo-Wilcox Aquifer | Cass County	43	43	43	43	43	43
E M C WSC	D	Carrizo-Wilcox Aquifer | Marion County	20	20	20	20	20	20
Eastern Cass WSC	D	Carrizo-Wilcox Aquifer | Cass County	581	581	581	581	581	581
Holly Springs WSC	D	O' the Pines Lake/Reservoir	60	60	60	59	59	59
Hughes Springs	D	O' the Pines Lake/Reservoir	562	562	562	562	562	562
Linden	D	Carrizo-Wilcox Aquifer | Cass County	444	444	444	444	444	444
Mims WSC	D	O' the Pines Lake/Reservoir	133	133	133	133	133	133
Queen City	D	Carrizo-Wilcox Aquifer | Cass County	169	169	169	169	169	169
Western Cass WSC	D	Carrizo-Wilcox Aquifer | Cass County	895	895	895	895	895	895
County-Other	D	Carrizo-Wilcox Aquifer | Cass County	212	212	212	212	212	212
Manufacturing	D	Wright Patman Lake/Reservoir	244	245	245	245	245	245
Mining	D	Carrizo-Wilcox Aquifer | Cass County	33	33	33	20	20	20
Mining	D	Queen City Aquifer | Cass County	936	959	981	1,014	1,034	1,050
Livestock	D	Carrizo-Wilcox Aquifer | Cass County	19	19	19	19	19	19
Livestock	D	Cypress Run-of-River	7	7	7	7	7	7
Livestock	D	Local Surface Water Supply	458	458	458	458	458	458
Cass County / Sulphur Basin WUG Total			**33,339**	**33,413**	**33,411**	**33,412**	**33,412**	**33,409**
Atlanta	D	Wright Patman Lake/Reservoir	4	4	4	4	4	5
Eastern Cass WSC	D	Carrizo-Wilcox Aquifer | Cass County	38	38	38	38	38	38

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Queen City	D	Carrizo-Wilcox Aquifer | Cass County	100	100	100	100	100	100
Western Cass WSC	D	Carrizo-Wilcox Aquifer | Cass County	188	188	188	188	188	188
County-Other	D	Carrizo-Wilcox Aquifer | Cass County	80	80	80	80	80	80
County-Other	D	Wright Patman Lake/Reservoir	44	44	44	44	44	44
Manufacturing	D	Carrizo-Wilcox Aquifer | Cass County	51	50	48	47	47	46
Manufacturing	D	Wright Patman Lake/Reservoir	32,479	32,554	32,554	32,554	32,554	32,554
Livestock	D	Carrizo-Wilcox Aquifer | Cass County	20	20	20	20	20	20
Livestock	D	Local Surface Water Supply	221	221	221	222	222	222
Livestock	D	Queen City Aquifer | Cass County	114	114	114	115	115	112
Delta County WUG Total			**4,085**	**3,907**	**3,727**	**3,541**	**3,352**	**3,185**
Delta County / Sulphur Basin WUG Total			**4,085**	**3,907**	**3,727**	**3,541**	**3,352**	**3,185**
Cooper	D	Big Creek Lake/Reservoir	742	550	359	167	0	0
Delta County MUD*	D	Big Creek Lake/Reservoir	191	194	196	199	179	0
North Hunt SUD*	D	Tawakoni Lake/Reservoir	9	7	6	4	3	3
North Hunt SUD*	D	Woodbine Aquifer | Hunt County	4	3	2	2	1	1
County-Other	D	Big Creek Lake/Reservoir	0	0	0	0	0	0
County-Other	D	Nacatoch Aquifer | Delta County	84	85	86	86	86	86
County-Other	D	Trinity Aquifer | Delta County	28	16	16	16	16	16
Livestock	D	Local Surface Water Supply	231	231	231	231	231	231
Livestock	D	Nacatoch Aquifer | Delta County	20	20	20	20	20	20
Livestock	D	Trinity Aquifer | Delta County	28	40	40	40	40	40
Irrigation	D	Nacatoch Aquifer | Delta County	38	51	61	66	66	78
Irrigation	D	Sulphur Run-of-River	2,710	2,710	2,710	2,710	2,710	2,710

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
Franklin County WUG Total			**7,173**	**6,856**	**6,555**	**6,264**	**5,978**	**5,694**
Franklin County / Cypress Basin WUG Total			**2,896**	**2,754**	**2,615**	**2,488**	**2,367**	**2,245**
Cornersville WSC		No water supply associated with WUG	0	0	0	0	0	0
Cypress Springs SUD	D	Carrizo-Wilcox Aquifer | Franklin County	67	67	67	67	67	67
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	1,948	1,828	1,709	1,603	1,502	1,399
Winnsboro	D	Cypress Springs Lake/Reservoir	384	357	332	311	291	272
County-Other	D	Carrizo-Wilcox Aquifer | Franklin County	72	77	82	82	82	82
Livestock	D	Carrizo-Wilcox Aquifer | Franklin County	133	133	133	133	133	133
Livestock	D	Local Surface Water Supply	292	292	292	292	292	292
Irrigation	D	Sulphur Run-of-River	0	0	0	0	0	0
Franklin County / Sabine Basin WUG Total			**0**	**0**	**0**	**0**	**0**	**0**
Irrigation	D	Sulphur Run-of-River	0	0	0	0	0	0
Franklin County / Sulphur Basin WUG Total			**4,277**	**4,102**	**3,940**	**3,776**	**3,611**	**3,449**
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	993	932	871	818	764	713
Mount Vernon	D	Cypress Springs Lake/Reservoir	2,538	2,426	2,315	2,204	2,093	1,982
Mount Vernon	D	Sulphur Run-of-River	0	0	0	0	0	0
County-Other	D	Bob Sandlin Lake/Reservoir	14	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Franklin County	111	123	133	133	133	133
Livestock	D	Carrizo-Wilcox Aquifer | Franklin County	228	228	228	228	228	228
Livestock	D	Local Surface Water Supply	393	393	393	393	393	393
Irrigation	D	Sulphur Run-of-River	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Gregg County WUG Total			**58,383**	**70,880**	**70,872**	**70,738**	**70,629**	**70,824**
Gregg County / Cypress Basin WUG Total			**1,398**	**1,429**	**1,445**	**1,461**	**1,474**	**1,477**
East Mountain Water System		No water supply associated with WUG	0	0	0	0	0	0
Glenwood WSC	D	Carrizo-Wilcox Aquifer | Upshur County	25	24	25	25	25	25
Tryon Road SUD	D	Carrizo-Wilcox Aquifer | Gregg County	165	165	165	164	153	139
Tryon Road SUD	D	O' the Pines Lake/Reservoir	948	948	948	948	948	948
County-Other	D	Carrizo-Wilcox Aquifer | Gregg County	196	207	220	237	261	278
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	19	19	19	19	19	19
County-Other	D	Fork Lake/Reservoir	17	31	33	37	41	45
County-Other	D	O' the Pines Lake/Reservoir	3	2	2	3	3	3
Mining	D	Carrizo-Wilcox Aquifer | Gregg County	14	22	22	17	13	9
Livestock	D	Carrizo-Wilcox Aquifer | Gregg County	11	11	11	11	11	11
Gregg County / Sabine Basin WUG Total			**56,985**	**69,451**	**69,427**	**69,277**	**69,155**	**69,347**
Chalk Hill SUD*	I	Carrizo-Wilcox Aquifer | Rusk County	2	2	2	2	2	2
Clarksville City	D	Carrizo-Wilcox Aquifer | Gregg County	245	245	245	245	245	245
Cross Roads SUD*	I	Carrizo-Wilcox Aquifer | Rusk County	45	46	47	48	49	50
Cross Roads SUD*	D	Fork Lake/Reservoir	32	34	36	39	43	47
East Mountain Water System		No water supply associated with WUG	0	0	0	0	0	0
Elderville WSC*	D	Carrizo-Wilcox Aquifer | Gregg County	38	38	38	33	0	20
Elderville WSC*	I	Carrizo-Wilcox Aquifer | Rusk County	227	229	231	234	236	238
Elderville WSC*	I	Cherokee Lake/Reservoir	186	185	185	185	186	170
Elderville WSC*	D	Fork Lake/Reservoir	188	188	188	188	188	189
Gladewater	D	Gladewater Lake/Reservoir	982	987	999	1,013	1,030	966

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Kilgore*	D	Carrizo-Wilcox Aquifer | Gregg County	1,144	1,139	1,139	1,140	1,143	1,148
Kilgore*	D	Fork Lake/Reservoir	1,415	4,352	4,163	3,934	3,723	4,003
Liberty City WSC	D	Carrizo-Wilcox Aquifer | Gregg County	858	858	858	858	858	858
Longview	I	Cherokee Lake/Reservoir	7,463	7,467	7,471	7,472	7,474	7,475
Longview	D	Fork Lake/Reservoir	6,304	15,153	15,194	15,228	15,267	15,303
Longview	D	O' the Pines Lake/Reservoir	17,150	17,150	17,150	17,150	17,150	17,150
Longview	D	Sabine Run-of-River	11,164	11,129	11,118	11,060	11,002	10,956
Starrville-Friendship WSC	D	Carrizo-Wilcox Aquifer | Gregg County	60	60	60	60	60	60
Starrville-Friendship WSC	D	Carrizo-Wilcox Aquifer | Smith County	38	38	38	38	38	38
Tryon Road SUD	D	Carrizo-Wilcox Aquifer | Gregg County	128	128	128	128	128	128
Tryon Road SUD	D	O' the Pines Lake/Reservoir	740	740	740	740	740	740
West Gregg SUD*	D	Carrizo-Wilcox Aquifer | Gregg County	521	521	521	521	521	517
White Oak	D	Big Sandy Creek Lake/Reservoir	2,590	2,590	2,590	2,590	2,590	2,590
County-Other	D	Big Sandy Creek Lake/Reservoir	50	50	50	50	50	50
County-Other	D	Carrizo-Wilcox Aquifer | Gregg County	722	789	867	972	1,092	1,134
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	18	18	18	18	18	18
County-Other	D	Fork Lake/Reservoir	94	590	630	693	767	855
County-Other	D	Gladewater Lake/Reservoir	154	154	154	154	154	54
County-Other	D	O' the Pines Lake/Reservoir	47	48	48	47	47	47
Manufacturing	D	Carrizo-Wilcox Aquifer | Gregg County	30	30	30	30	30	30
Manufacturing	D	Local Surface Water Supply	450	450	450	450	450	450
Manufacturing	D	Sabine Run-of-River	1,092	1,092	1,092	1,092	1,092	1,092
Mining	D	Carrizo-Wilcox Aquifer | Gregg County	246	389	385	303	220	162
Mining	D	Sabine Run-of-River	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Steam Electric Power	D	Carrizo-Wilcox Aquifer | Gregg County	242	242	242	242	242	242
Steam Electric Power	I	Cherokee Lake/Reservoir	2,000	2,000	2,000	2,000	2,000	2,000
Livestock	D	Carrizo-Wilcox Aquifer | Gregg County	204	204	204	204	204	204
Irrigation	D	Cypress Run-of-River	10	10	10	10	10	10
Irrigation	D	Sabine Run-of-River	106	106	106	106	106	106
Harrison County WUG Total			**57,165**	**56,965**	**57,045**	**57,194**	**57,344**	**57,471**
Harrison County / Cypress Basin WUG Total			**6,594**	**6,649**	**6,709**	**6,773**	**6,825**	**6,880**
Blocker Crossroads WSC	D	Carrizo-Wilcox Aquifer | Harrison County	21	20	21	21	21	20
Cypress Valley WSC	D	Queen City Aquifer | Harrison County	151	151	151	151	151	151
Diana SUD	D	Carrizo-Wilcox Aquifer | Harrison County	47	47	47	47	47	47
Diana SUD	D	O' the Pines Lake/Reservoir	47	47	47	47	47	47
Gum Springs WSC	D	Carrizo-Wilcox Aquifer | Harrison County	300	300	300	300	300	300
Gum Springs WSC	I	Cherokee Lake/Reservoir	52	52	52	52	52	52
Gum Springs WSC	D	Fork Lake/Reservoir	201	200	200	200	200	201
Gum Springs WSC	D	O' the Pines Lake/Reservoir	538	536	536	537	536	538
Harleton WSC	D	Carrizo-Wilcox Aquifer | Harrison County	247	247	247	247	247	247
Harleton WSC	D	O' the Pines Lake/Reservoir	51	51	51	51	51	51
Leigh WSC	D	Carrizo-Wilcox Aquifer | Harrison County	357	357	357	357	357	357
Marshall	D	Cypress Run-of-River	2	2	2	2	2	2
Marshall	D	O' the Pines Lake/Reservoir	1,158	1,158	1,158	1,158	1,158	1,158
North Harrison WSC	D	Carrizo-Wilcox Aquifer | Harrison County	161	161	161	161	161	161
Panola-Bethany WSC*	I	Carrizo-Wilcox Aquifer | Panola County	31	25	20	17	14	11
Scottsville	D	Carrizo-Wilcox Aquifer | Harrison County	71	71	71	70	70	71

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Talley WSC	D	Carrizo-Wilcox Aquifer | Harrison County	114	114	114	114	112	112
Tryon Road SUD	D	Carrizo-Wilcox Aquifer | Gregg County	0	0	0	1	12	26
Tryon Road SUD	D	Carrizo-Wilcox Aquifer | Harrison County	20	20	20	20	20	20
Tryon Road SUD	D	O' the Pines Lake/Reservoir	134	134	134	134	134	134
Waskom	D	Carrizo-Wilcox Aquifer | Harrison County	339	339	339	339	339	339
West Harrison WSC	D	Carrizo-Wilcox Aquifer | Harrison County	87	88	88	86	86	87
County-Other	D	Carrizo-Wilcox Aquifer | Gregg County	15	15	15	15	15	15
County-Other	D	Carrizo-Wilcox Aquifer | Harrison County	472	472	472	472	472	472
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	30	30	30	30	30	30
County-Other	D	O' the Pines Lake/Reservoir	253	253	253	253	253	253
Manufacturing	D	Carrizo-Wilcox Aquifer | Harrison County	147	147	147	147	147	147
Manufacturing	D	Cypress Run-of-River	663	663	663	663	663	663
Mining	D	Carrizo-Wilcox Aquifer | Harrison County	217	233	241	250	257	267
Mining	D	Cypress Run-of-River	67	67	67	67	67	67
Mining	D	Queen City Aquifer | Harrison County	7	0	0	0	0	0
Livestock	D	Carrizo-Wilcox Aquifer | Harrison County	167	196	225	255	287	317
Livestock	D	Cypress Run-of-River	90	90	90	90	90	90
Livestock	D	Local Surface Water Supply	276	302	329	358	366	366
Livestock	D	Queen City Aquifer | Harrison County	26	26	26	26	26	26
Irrigation	D	Carrizo-Wilcox Aquifer | Harrison County	25	25	25	25	25	25
Irrigation	D	Cypress Run-of-River	10	10	10	10	10	10

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
Harrison County / Sabine Basin WUG Total			**50,571**	**50,316**	**50,336**	**50,421**	**50,519**	**50,591**
Blocker Crossroads WSC	D	Carrizo-Wilcox Aquifer | Harrison County	191	192	191	191	191	192
Elysian Fields WSC*		No water supply associated with WUG	0	0	0	0	0	0
Gill WSC*	D	Carrizo-Wilcox Aquifer | Harrison County	250	250	250	250	250	250
Gill WSC*	D	O' the Pines Lake/Reservoir	67	67	67	67	67	67
Gum Springs WSC	D	Carrizo-Wilcox Aquifer | Harrison County	127	127	127	127	127	127
Gum Springs WSC	I	Cherokee Lake/Reservoir	142	142	142	142	142	142
Gum Springs WSC	D	Fork Lake/Reservoir	545	546	546	546	546	545
Gum Springs WSC	D	O' the Pines Lake/Reservoir	1,462	1,464	1,464	1,463	1,464	1,462
Hallsville	D	Carrizo-Wilcox Aquifer | Harrison County	77	77	77	77	77	77
Hallsville	I	Cherokee Lake/Reservoir	403	403	403	403	403	403
Hallsville	D	Fork Lake/Reservoir	334	334	334	334	334	334
Longview	I	Cherokee Lake/Reservoir	174	170	166	165	163	162
Longview	D	Fork Lake/Reservoir	331	325	317	315	311	310
Longview	D	O' the Pines Lake/Reservoir	400	400	400	400	400	400
Longview	D	Sabine Run-of-River	381	416	427	485	543	589
Marshall	D	Cypress Run-of-River	8	8	8	8	8	8
Marshall	D	O' the Pines Lake/Reservoir	5,419	5,419	5,419	5,419	5,419	5,419
Panola-Bethany WSC*	I	Carrizo-Wilcox Aquifer | Panola County	51	41	34	27	22	18
Scottsville	D	Carrizo-Wilcox Aquifer | Harrison County	145	145	145	146	146	145
Talley WSC	D	Carrizo-Wilcox Aquifer | Harrison County	84	84	84	84	86	86
West Harrison WSC	D	Carrizo-Wilcox Aquifer | Harrison County	273	272	272	274	274	273
County-Other	D	Carrizo-Wilcox Aquifer | Harrison County	725	766	796	832	884	924
County-Other	D	O' the Pines Lake/Reservoir	70	70	70	70	70	70
Manufacturing	I	Cherokee Lake/Reservoir	5,524	5,524	5,524	5,524	5,524	5,524

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Manufacturing	D	Fork Lake/Reservoir	3,500	3,157	3,124	3,092	3,057	3,022
Manufacturing	D	Grays Creek Run-of-River	10	10	10	10	10	10
Manufacturing	D	O' the Pines Lake/Reservoir	2,400	2,400	2,400	2,400	2,400	2,400
Manufacturing	D	Sabine Run-of-River	35	35	35	35	35	35
Mining	D	Carrizo-Wilcox Aquifer | Harrison County	96	105	115	124	132	141
Mining	D	Sabine Run-of-River	300	300	300	300	300	300
Steam Electric Power	D	Brandy Branch Lake/Reservoir	2,347	2,347	2,347	2,347	2,347	2,347
Steam Electric Power	D	Direct Reuse	6,161	6,161	6,161	6,161	6,161	6,161
Steam Electric Power	D	O' the Pines Lake/Reservoir	18,000	18,000	18,000	18,000	18,000	18,000
Livestock	D	Carrizo-Wilcox Aquifer | Harrison County	405	425	447	469	492	514
Irrigation	D	Carrizo-Wilcox Aquifer | Harrison County	14	14	14	14	14	14
Irrigation	D	Sabine Run-of-River	120	120	120	120	120	120
Hopkins County WUG Total			**16,887**	**16,974**	**17,060**	**17,066**	**17,181**	**17,329**
Hopkins County / Cypress Basin WUG Total			**456**	**453**	**452**	**445**	**439**	**431**
Cornersville WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	90	88	87	88	86	85
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	186	184	180	172	164	155
Livestock	D	Carrizo-Wilcox Aquifer | Hopkins County	38	38	38	38	38	38
Livestock	D	Chapman/Cooper Lake/Reservoir Non-System Portion	33	34	38	38	42	44
Livestock	D	Local Surface Water Supply	108	108	108	108	108	108
Irrigation	D	Sabine Run-of-River	1	1	1	1	1	1
Hopkins County / Sabine Basin WUG Total			**4,202**	**4,237**	**4,291**	**4,258**	**4,302**	**4,329**
Brashear WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	67	70	74	77	82	87
Cash SUD*	D	Fork Lake/Reservoir	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Cash SUD*	C	North Texas MWD Lake/Reservoir System	4	4	4	3	3	2
Cash SUD*	D	Tawakoni Lake/Reservoir	7	6	4	5	6	1
Cash SUD*	C	Trinity Indirect Reuse	3	3	3	3	2	2
Como	D	Carrizo-Wilcox Aquifer | Hopkins County	97	97	97	97	97	97
Cornersville WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	92	92	91	89	88	88
Cumby	D	Nacatoch Aquifer | Hopkins County	109	109	109	109	109	109
Jones WSC	D	Carrizo-Wilcox Aquifer | Wood County	19	17	17	14	15	15
Lake Fork WSC	D	Carrizo-Wilcox Aquifer | Wood County	46	46	46	46	46	46
Martin Springs WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	375	374	376	377	377	377
Martin Springs WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	188	188	188	189	189	188
Miller Grove WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	163	162	162	160	159	158
Shady Grove No 2 WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	24	25	27	28	30	31
Shady Grove No 2 WSC	D	Sulphur Springs Lake/Reservoir	24	25	26	27	29	31
Shirley WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	232	230	228	224	221	217
Shirley WSC	D	Carrizo-Wilcox Aquifer | Rains County	102	102	101	99	97	96
County-Other	D	Carrizo-Wilcox Aquifer | Hopkins County	360	360	361	359	356	358
County-Other	D	Carrizo-Wilcox Aquifer | Rains County	112	112	112	112	112	112
County-Other	D	Carrizo-Wilcox Aquifer | Wood County	7	7	7	7	7	7
County-Other	D	Chapman/Cooper Lake/Reservoir Non-System Portion	48	53	50	15	0	0
Mining	D	Nacatoch Aquifer | Hopkins County	187	192	193	193	195	195

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Mining	D	Sulphur Springs Lake/Reservoir	62	68	74	81	88	96
Livestock	D	Carrizo-Wilcox Aquifer | Hopkins County	249	249	249	249	249	249
Livestock	D	Chapman/Cooper Lake/Reservoir Non-System Portion	399	420	466	469	519	541
Livestock	D	Local Surface Water Supply	1,208	1,208	1,208	1,208	1,208	1,208
Irrigation	D	Sabine Run-of-River	18	18	18	18	18	18
Hopkins County / Sulphur Basin WUG Total			**12,229**	**12,284**	**12,317**	**12,363**	**12,440**	**12,569**
Brashear WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	81	85	89	93	99	105
Brinker WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	251	251	251	252	253	253
Brinker WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	77	77	77	77	77	77
Como	D	Carrizo-Wilcox Aquifer | Hopkins County	27	27	27	27	27	27
Cornersville WSC		No water supply associated with WUG	0	0	0	0	0	0
Cumby	D	Nacatoch Aquifer | Hopkins County	11	11	11	11	11	11
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	293	290	280	268	255	242
Gafford Chapel WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	109	111	115	121	128	135
Gafford Chapel WSC	D	Nacatoch Aquifer | Hopkins County	52	52	52	52	52	52
Gafford Chapel WSC	D	Nacatoch Aquifer | Hunt County	3	3	3	3	3	3
Martin Springs WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	69	69	69	69	69	69
Martin Springs WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	35	35	35	34	34	35

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
North Hopkins WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	921	921	921	921	921	921
Shady Grove No 2 WSC	D	Chapman/Cooper Lake/Reservoir Non-System Portion	30	31	32	34	36	38
Shady Grove No 2 WSC	D	Sulphur Springs Lake/Reservoir	29	31	33	34	36	38
Sulphur Springs	D	Chapman/Cooper Lake/Reservoir Non-System Portion	4,567	4,567	4,567	4,567	4,567	4,567
Sulphur Springs	D	Sulphur Springs Lake/Reservoir	435	435	435	435	435	435
County-Other	D	Carrizo-Wilcox Aquifer | Hopkins County	435	438	439	436	433	431
County-Other	D	Chapman/Cooper Lake/Reservoir Non-System Portion	28	30	29	9	0	0
County-Other	D	Nacatoch Aquifer | Hopkins County	114	91	88	87	85	85
Manufacturing	D	Chapman/Cooper Lake/Reservoir Non-System Portion	1,526	1,561	1,592	1,611	1,701	1,802
Manufacturing	D	Sulphur Springs Lake/Reservoir	215	269	323	376	425	473
Livestock	D	Carrizo-Wilcox Aquifer | Hopkins County	130	130	130	130	131	131
Livestock	D	Chapman/Cooper Lake/Reservoir Non-System Portion	1,042	1,097	1,216	1,223	1,353	1,411
Livestock	D	Local Surface Water Supply	1,570	1,493	1,324	1,314	1,130	1,049
Livestock	D	Nacatoch Aquifer | Hopkins County	77	77	77	77	77	77
Irrigation	D	Carrizo-Wilcox Aquifer | Hopkins County	49	49	49	49	49	49
Irrigation	D	Sulphur Run-of-River	53	53	53	53	53	53
Hunt County WUG Total			**17,670**	**21,700**	**22,190**	**22,713**	**22,937**	**26,531**
Hunt County / Sabine Basin WUG Total			**14,822**	**15,645**	**16,057**	**17,002**	**18,743**	**21,888**
Ables Springs SUD*	D	Fork Lake/Reservoir	4	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Ables Springs SUD*	C	North Texas MWD Lake/Reservoir System	30	41	55	71	92	121
Ables Springs SUD*	D	Tawakoni Lake/Reservoir	3	2	3	3	5	6
Ables Springs SUD*	C	Trinity Indirect Reuse	21	32	45	60	77	102
B H P WSC	D	Fork Lake/Reservoir	0	0	0	0	0	0
B H P WSC	C	North Texas MWD Lake/Reservoir System	171	179	196	225	269	332
B H P WSC	D	Tawakoni Lake/Reservoir	11	12	13	15	19	19
B H P WSC	C	Trinity Indirect Reuse	146	166	196	230	278	301
Caddo Basin SUD*	D	Fork Lake/Reservoir	64	0	0	0	0	0
Caddo Basin SUD*	C	North Texas MWD Lake/Reservoir System	442	512	601	718	880	1,118
Caddo Basin SUD*	D	Tawakoni Lake/Reservoir	45	26	30	36	44	55
Caddo Basin SUD*	C	Trinity Indirect Reuse	314	395	493	600	738	941
Caddo Mills	C	North Texas MWD Lake/Reservoir System	0	0	0	0	0	0
Caddo Mills	D	Tawakoni Lake/Reservoir	178	186	201	242	309	319
Cash SUD*	D	Fork Lake/Reservoir	0	0	0	0	0	3,095
Cash SUD*	C	North Texas MWD Lake/Reservoir System	328	343	248	204	297	365
Cash SUD*	D	Tawakoni Lake/Reservoir	1,241	1,151	1,007	1,239	1,897	279
Cash SUD*	C	Trinity Indirect Reuse	465	569	648	690	625	579
Celeste	D	Woodbine Aquifer | Hunt County	95	95	95	95	95	95
Combined Consumers SUD	D	Tawakoni Lake/Reservoir	726	754	783	802	822	842
Greenville	D	Greenville City Lake/Reservoir	3,215	3,215	3,215	3,215	3,215	3,215
Greenville	D	Tawakoni Lake/Reservoir	2,537	2,338	2,123	1,932	1,735	1,735
Hickory Creek SUD*	D	Woodbine Aquifer | Hunt County	177	179	182	183	184	185
Josephine*	D	Fork Lake/Reservoir	3	0	0	0	0	0
Josephine*	C	North Texas MWD Lake/Reservoir System	20	31	45	62	55	51
Josephine*	D	Tawakoni Lake/Reservoir	2	2	2	3	3	2
Josephine*	C	Trinity Indirect Reuse	14	24	37	51	46	43
MacBee SUD*	D	Tawakoni Lake/Reservoir	23	29	37	47	62	84
Poetry WSC*	D	Fork Lake/Reservoir	20	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Poetry WSC*	C	North Texas MWD Lake/Reservoir System	129	143	160	183	220	272
Poetry WSC*	D	Tawakoni Lake/Reservoir	14	8	8	9	11	14
Poetry WSC*	C	Trinity Indirect Reuse	91	110	131	153	185	228
Quinlan	D	Tawakoni Lake/Reservoir	134	133	134	140	154	174
Royse City*	D	Fork Lake/Reservoir	3	0	0	0	0	0
Royse City*	C	North Texas MWD Lake/Reservoir System	22	24	27	31	37	46
Royse City*	D	Tawakoni Lake/Reservoir	2	1	1	2	2	2
Royse City*	C	Trinity Indirect Reuse	15	19	22	26	31	39
Shady Grove SUD	D	Tawakoni Lake/Reservoir	139	164	202	257	338	457
West Tawakoni	D	Tawakoni Lake/Reservoir	276	804	797	738	784	777
County-Other	D	Big Creek Lake/Reservoir	0	0	0	0	0	0
County-Other	D	Nacatoch Aquifer | Hunt County	443	444	445	445	445	445
County-Other	D	Tawakoni Lake/Reservoir	995	1,101	1,281	1,528	1,903	2,478
County-Other	D	Woodbine Aquifer | Hunt County	15	15	15	15	15	15
Manufacturing	D	Chapman/Cooper Lake/Reservoir Non-System Portion	50	50	50	50	50	50
Manufacturing	D	Greenville City Lake/Reservoir	103	103	103	103	103	103
Manufacturing	D	Nacatoch Aquifer | Hunt County	200	200	200	200	200	200
Manufacturing	D	Tawakoni Lake/Reservoir	598	747	928	1,101	1,220	1,406
Steam Electric Power	D	Tawakoni Lake/Reservoir	373	373	373	373	373	373
Livestock	D	Local Surface Water Supply	812	812	812	812	812	812
Irrigation	D	Nacatoch Aquifer | Hunt County	94	94	94	94	94	94
Irrigation	D	Sabine Run-of-River	19	19	19	19	19	19
Hunt County / Sulphur Basin WUG Total			**2,700**	**5,901**	**5,963**	**5,559**	**4,031**	**4,461**
Commerce	D	Nacatoch Aquifer | Delta County	122	122	122	122	122	122
Commerce	D	Nacatoch Aquifer | Hunt County	122	122	122	122	122	122
Commerce	D	Tawakoni Lake/Reservoir	1,427	4,586	4,609	4,249	2,694	3,078

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Hickory Creek SUD*	D	Woodbine Aquifer | Hunt County	109	112	113	114	114	114
North Hunt SUD*	D	Tawakoni Lake/Reservoir	120	124	128	132	135	137
North Hunt SUD*	D	Woodbine Aquifer | Hunt County	45	46	48	49	50	51
Shady Grove SUD		No water supply associated with WUG	0	0	0	0	0	0
Texas A&M University Commerce	D	Nacatoch Aquifer | Hunt County	157	157	157	157	157	157
Wolfe City*	D	Turkey Creek Lake/Reservoir	180	180	180	180	180	180
Wolfe City*	C	Woodbine Aquifer | Fannin County	71	72	72	73	72	72
County-Other	D	Nacatoch Aquifer | Hunt County	13	13	13	13	13	13
County-Other	D	Tawakoni Lake/Reservoir	34	67	99	48	72	115
Livestock	D	Local Surface Water Supply	300	300	300	300	300	300
Irrigation	D	Sulphur Run-of-River	0	0	0	0	0	0
Hunt County / Trinity Basin WUG Total			**148**	**154**	**170**	**152**	**163**	**182**
Frognot WSC*	C	Woodbine Aquifer | Collin County	6	6	6	6	6	6
Hickory Creek SUD*	D	Woodbine Aquifer | Hunt County	54	55	55	55	56	56
West Leonard WSC*	C	Woodbine Aquifer | Fannin County	14	13	16	18	20	21
County-Other	D	Nacatoch Aquifer | Hunt County	1	0	0	0	0	0
County-Other	D	Tawakoni Lake/Reservoir	0	12	30	20	31	49
County-Other	D	Trinity Aquifer | Hunt County	3	3	3	3	3	3
County-Other	D	Woodbine Aquifer | Hunt County	24	19	14	4	0	0
Livestock	D	Local Surface Water Supply	34	34	34	34	35	35
Livestock	D	Trinity Aquifer | Hunt County	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Irrigation	D	Nacatoch Aquifer | Hunt County	12	12	12	12	12	12
Lamar County WUG Total			**32,135**	**32,183**	**32,261**	**32,476**	**32,541**	**32,551**
Lamar County / Red Basin WUG Total			**9,669**	**9,575**	**9,505**	**9,508**	**9,544**	**9,532**
Bois D Arc MUD*		No water supply associated with WUG	0	0	0	0	0	0
Lamar County WSD	D	Pat Mayse Lake/Reservoir	5,334	5,278	5,229	5,193	5,159	5,108
Paris	D	Crook Lake/Reservoir	625	625	625	625	625	625
Paris	D	Pat Mayse Lake/Reservoir	982	888	816	809	802	795
Reno (Lamar)	D	Pat Mayse Lake/Reservoir	115	128	138	149	160	171
County-Other	D	Pat Mayse Lake/Reservoir	5	6	6	6	6	6
County-Other	D	Trinity Aquifer | Lamar County	0	0	0	0	0	0
County-Other	D	Woodbine Aquifer | Lamar County	0	0	0	0	0	0
Manufacturing	D	Direct Reuse	12	12	12	12	12	12
Manufacturing	D	Pat Mayse Lake/Reservoir	858	900	941	976	1,042	1,077
Steam Electric Power	D	Pat Mayse Lake/Reservoir	683	683	683	683	683	683
Livestock	D	Local Surface Water Supply	0	0	0	0	0	0
Livestock	D	Trinity Aquifer | Lamar County	0	0	0	0	0	0
Livestock	D	Woodbine Aquifer | Lamar County	0	0	0	0	0	0
Irrigation	D	Red Run-of-River	1,055	1,055	1,055	1,055	1,055	1,055
Lamar County / Sulphur Basin WUG Total			**22,466**	**22,608**	**22,756**	**22,968**	**22,997**	**23,019**
Blossom	D	Pat Mayse Lake/Reservoir	230	245	245	245	245	245
Lamar County WSD	D	Pat Mayse Lake/Reservoir	3,557	3,518	3,486	3,462	3,438	3,404
Paris	D	Crook Lake/Reservoir	967	967	967	967	967	967
Paris	D	Pat Mayse Lake/Reservoir	1,519	1,373	1,263	1,252	1,242	1,231
Reno (Lamar)	D	Pat Mayse Lake/Reservoir	513	571	616	665	713	764
County-Other	D	Pat Mayse Lake/Reservoir	269	274	279	277	275	273
County-Other	D	Trinity Aquifer | Lamar County	1	1	1	1	1	1
Manufacturing	D	Pat Mayse Lake/Reservoir	5,091	5,340	5,580	5,780	5,797	5,815

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Steam Electric Power	D	Pat Mayse Lake/Reservoir	8,278	8,278	8,278	8,278	8,278	8,278
Livestock	D	Local Surface Water Supply	1,623	1,623	1,623	1,623	1,623	1,623
Livestock	D	Trinity Aquifer | Lamar County	1	1	1	1	1	1
Irrigation	D	Red Run-of-River	368	368	368	368	368	368
Irrigation	D	Woodbine Aquifer | Lamar County	49	49	49	49	49	49
Marion County WUG Total			**8,408**	**8,599**	**8,984**	**9,451**	**10,021**	**10,410**
Marion County / Cypress Basin WUG Total			**8,408**	**8,599**	**8,984**	**9,451**	**10,021**	**10,410**
Diana SUD	D	Carrizo-Wilcox Aquifer | Marion County	27	27	27	27	27	27
Diana SUD	D	O' the Pines Lake/Reservoir	24	24	24	24	24	24
E M C WSC	D	Carrizo-Wilcox Aquifer | Marion County	243	243	243	243	243	243
Harleton WSC	D	Carrizo-Wilcox Aquifer | Harrison County	81	81	81	81	81	81
Harleton WSC	D	O' the Pines Lake/Reservoir	17	17	17	17	17	17
Jefferson	D	Cypress Run-of-River	0	0	0	0	0	0
Jefferson	D	O' the Pines Lake/Reservoir	1,509	1,509	1,509	1,509	1,509	1,509
Kellyville-Berea WSC	D	Carrizo-Wilcox Aquifer | Marion County	148	148	148	148	148	148
Mims WSC	D	O' the Pines Lake/Reservoir	763	763	763	763	763	763
Ore City		No water supply associated with WUG	0	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Marion County	451	451	451	451	451	451
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	35	35	35	35	35	35
County-Other	D	O' the Pines Lake/Reservoir	169	169	169	169	169	169
Manufacturing		No water supply associated with WUG	0	0	0	0	0	0
Mining	D	Carrizo-Wilcox Aquifer | Marion County	116	119	122	124	126	128

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Steam Electric Power	D	Carrizo-Wilcox Aquifer | Marion County	75	75	75	75	75	75
Steam Electric Power	D	Johnson Creek Lake/Reservoir	2,280	2,280	2,280	2,280	2,280	2,280
Steam Electric Power	D	O' the Pines Lake/Reservoir	1,902	2,090	2,472	2,937	3,505	3,892
Livestock	D	Carrizo-Wilcox Aquifer | Marion County	130	130	130	130	130	130
Livestock	D	Queen City Aquifer | Marion County	281	281	281	281	281	281
Irrigation	D	Carrizo-Wilcox Aquifer | Marion County	12	12	12	12	12	12
Irrigation	D	Cypress Run-of-River	145	145	145	145	145	145
Morris County WUG Total			**125,905**	**120,475**	**115,150**	**116,405**	**125,277**	**119,043**
Morris County / Cypress Basin WUG Total			**125,183**	**119,761**	**114,436**	**115,691**	**124,563**	**118,329**
Bi County WSC	D	Carrizo-Wilcox Aquifer | Morris County	132	132	132	132	132	132
Daingerfield	D	O' the Pines Lake/Reservoir	1,582	1,582	1,582	1,582	1,582	1,582
Holly Springs WSC	D	O' the Pines Lake/Reservoir	32	32	32	33	33	33
Lone Star	D	O' the Pines Lake/Reservoir	747	747	747	747	747	747
Naples	D	Carrizo-Wilcox Aquifer | Morris County	108	116	116	116	116	116
Omaha	D	Carrizo-Wilcox Aquifer | Morris County	165	165	165	165	165	165
Tri SUD	D	Bob Sandlin Lake/Reservoir	155	151	142	140	138	130
Western Cass WSC		No water supply associated with WUG	0	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Morris County	353	353	353	353	353	353
Manufacturing	D	Direct Reuse	72,086	66,660	61,344	62,600	71,474	65,248
Manufacturing	D	Ellison Creek Lake/Reservoir	13,037	13,037	13,037	13,037	13,037	13,037
Manufacturing	D	O' the Pines Lake/Reservoir	32,400	32,400	32,400	32,400	32,400	32,400
Manufacturing	D	Queen City Aquifer | Morris County	3,194	3,194	3,194	3,194	3,194	3,194

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Steam Electric Power	D	Ellison Creek Lake/Reservoir	820	820	820	820	820	820
Livestock	D	Carrizo-Wilcox Aquifer | Morris County	81	78	78	78	78	78
Livestock	D	Local Surface Water Supply	185	188	188	188	188	188
Livestock	D	Queen City Aquifer | Morris County	44	44	44	44	44	44
Irrigation	D	Carrizo-Wilcox Aquifer | Morris County	3	3	3	3	3	3
Irrigation	D	Cypress Run-of-River	59	59	59	59	59	59
Morris County / Sulphur Basin WUG Total			**722**	**714**	**714**	**714**	**714**	**714**
Naples	D	Carrizo-Wilcox Aquifer | Morris County	117	109	109	109	109	109
Omaha	D	Carrizo-Wilcox Aquifer | Morris County	125	125	125	125	125	125
Western Cass WSC		No water supply associated with WUG	0	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Morris County	187	187	187	187	187	187
Livestock	D	Carrizo-Wilcox Aquifer | Morris County	74	72	72	72	72	72
Livestock	D	Local Surface Water Supply	171	173	173	173	173	173
Livestock	D	Queen City Aquifer | Morris County	40	40	40	40	40	40
Irrigation	D	Carrizo-Wilcox Aquifer | Morris County	8	8	8	8	8	8
Rains County WUG Total			**3,628**	**4,111**	**4,105**	**4,105**	**4,104**	**4,063**
Rains County / Sabine Basin WUG Total			**3,628**	**4,111**	**4,105**	**4,105**	**4,104**	**4,063**
Bright Star Salem SUD	D	Carrizo-Wilcox Aquifer | Rains County	344	344	344	344	344	344
Bright Star Salem SUD	D	Fork Lake/Reservoir	354	758	750	742	734	725
Cash SUD*	D	Fork Lake/Reservoir	0	0	0	0	0	0
Cash SUD*	C	North Texas MWD Lake/Reservoir System	26	25	23	20	15	12
Cash SUD*	D	Tawakoni Lake/Reservoir	49	40	29	31	39	5
Cash SUD*	C	Trinity Indirect Reuse	18	19	19	17	13	10

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
East Tawakoni	D	Tawakoni Lake/Reservoir	237	246	247	247	248	248
Emory	D	Tawakoni Lake/Reservoir	791	829	837	842	845	847
Golden WSC	D	Carrizo-Wilcox Aquifer | Wood County	5	5	5	5	5	5
Miller Grove WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	33	34	34	36	37	38
Point	D	Tawakoni Lake/Reservoir	364	379	380	381	383	383
Shirley WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	110	112	115	120	124	127
Shirley WSC	D	Carrizo-Wilcox Aquifer | Rains County	48	50	51	53	55	56
South Rains SUD	D	Carrizo-Wilcox Aquifer | Rains County	90	90	90	90	90	90
South Rains SUD	D	Tawakoni Lake/Reservoir	190	192	188	187	187	188
County-Other	D	Carrizo-Wilcox Aquifer | Hopkins County	113	113	113	113	113	113
County-Other	D	Carrizo-Wilcox Aquifer | Rains County	204	217	220	218	215	215
County-Other	D	Carrizo-Wilcox Aquifer | Wood County	7	7	7	7	7	7
County-Other	D	Nacatoch Aquifer | Hopkins County	69	75	77	76	74	74
Manufacturing	D	Tawakoni Lake/Reservoir	12	12	12	12	12	12
Livestock	D	Local Surface Water Supply	506	506	506	506	506	506
Irrigation	D	Sabine Run-of-River	58	58	58	58	58	58
Red River County WUG Total			**9,056**	**9,054**	**9,050**	**9,050**	**9,050**	**9,050**
Red River County / Red Basin WUG Total			**6,310**	**6,292**	**6,291**	**6,292**	**6,290**	**6,288**
410 WSC	D	Pat Mayse Lake/Reservoir	67	66	64	64	63	63
Red River County WSC	D	Blossom Aquifer | Red River County	29	30	30	30	30	30
Red River County WSC	D	Pat Mayse Lake/Reservoir	184	184	184	184	184	184
Red River County WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
County-Other	D	Pat Mayse Lake/Reservoir	44	33	34	35	34	32
County-Other	D	Trinity Aquifer | Red River County	23	23	23	23	23	23

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
County-Other	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Manufacturing	D	Blossom Aquifer | Red River County	1	1	1	1	1	1
Manufacturing	D	Langford Lake/Reservoir	7	0	0	0	0	0
Manufacturing	D	Sulphur Run-of-River	5,330	5,330	5,330	5,330	5,330	5,330
Livestock	D	Blossom Aquifer | Red River County	94	94	94	94	94	94
Livestock	D	Local Surface Water Supply	474	474	474	474	474	474
Livestock	D	Nacatoch Aquifer | Red River County	8	8	8	8	8	8
Livestock	D	Woodbine Aquifer | Red River County	2	2	2	2	2	2
Irrigation	D	Red Run-of-River	47	47	47	47	47	47
Red River County / Sulphur Basin WUG Total			**2,746**	**2,762**	**2,759**	**2,758**	**2,760**	**2,762**
410 WSC	D	Pat Mayse Lake/Reservoir	157	152	149	148	148	148
Bogata	D	Nacatoch Aquifer | Red River County	510	510	510	510	510	510
Clarksville	D	Blossom Aquifer | Red River County	371	371	371	371	371	371
Red River County WSC	D	Blossom Aquifer | Red River County	212	223	223	223	223	223
Red River County WSC	D	Nacatoch Aquifer | Red River County	188	188	188	188	188	188
Red River County WSC	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Talco	D	Nacatoch Aquifer | Red River County	16	16	16	16	16	16
County-Other	D	Nacatoch Aquifer | Red River County	56	55	54	54	54	54
County-Other	D	Pat Mayse Lake/Reservoir	36	47	48	48	50	52
County-Other	D	Trinity Aquifer | Red River County	0	0	0	0	0	0
County-Other	D	Wright Patman Lake/Reservoir	0	0	0	0	0	0
Livestock	D	Local Surface Water Supply	911	911	911	911	911	911
Livestock	D	Nacatoch Aquifer | Red River County	38	38	38	38	38	38

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Irrigation	D	Sulphur Run-of-River	251	251	251	251	251	251
Smith County WUG Total			**9,550**	**9,565**	**9,531**	**9,464**	**9,438**	**9,421**
Smith County / Sabine Basin WUG Total			**9,550**	**9,565**	**9,531**	**9,464**	**9,438**	**9,421**
Carroll WSC*	I	Carrizo-Wilcox Aquifer | Smith County	57	59	63	67	71	70
Crystal Systems Texas*	D	Carrizo-Wilcox Aquifer | Smith County	959	924	903	889	884	886
Crystal Systems Texas*	I	Carrizo-Wilcox Aquifer | Smith County	375	361	353	347	346	346
East Texas MUD	D	Carrizo-Wilcox Aquifer | Smith County	887	887	887	887	887	887
East Texas MUD	D	Queen City Aquifer | Smith County	269	269	269	269	269	269
Jackson WSC*	D	Carrizo-Wilcox Aquifer | Smith County	175	188	198	205	213	220
Liberty City WSC	D	Carrizo-Wilcox Aquifer | Smith County	23	23	23	23	23	23
Lindale Rural WSC*	D	Carrizo-Wilcox Aquifer | Smith County	1,011	1,011	1,011	1,011	1,011	1,011
Lindale*	I	Carrizo-Wilcox Aquifer | Smith County	796	779	773	756	762	773
Overton*	I	Carrizo-Wilcox Aquifer | Rusk County	30	32	34	35	36	37
Pine Ridge WSC	D	Carrizo-Wilcox Aquifer | Smith County	272	271	272	271	271	271
Sand Flat WSC	D	Carrizo-Wilcox Aquifer | Smith County	546	546	546	546	546	546
Southern Utilities*	D	Carrizo-Wilcox Aquifer | Smith County	2,194	2,306	2,326	2,328	2,329	2,332
Star Mountain WSC	D	Carrizo-Wilcox Aquifer | Smith County	213	213	213	213	213	213
Starrville-Friendship WSC	D	Carrizo-Wilcox Aquifer | Gregg County	147	147	147	147	147	147
Starrville-Friendship WSC	D	Carrizo-Wilcox Aquifer | Smith County	92	92	92	92	92	92
Tyler*	I	Bellwood Lake/Reservoir	0	0	0	0	0	0
Tyler*	I	Carrizo-Wilcox Aquifer | Smith County	0	0	0	0	0	0
Tyler*	I	Palestine Lake/Reservoir	118	106	99	89	78	68

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Tyler*	I	Tyler Lake/Reservoir	115	103	95	84	75	65
West Gregg SUD*	D	Carrizo-Wilcox Aquifer | Gregg County	0	0	0	0	0	3
West Gregg SUD*	D	Carrizo-Wilcox Aquifer | Smith County	132	132	132	132	132	132
Winona	D	Carrizo-Wilcox Aquifer | Smith County	169	169	169	169	169	169
County-Other*	D	Carrizo-Wilcox Aquifer | Smith County	308	284	269	247	225	203
County-Other*	D	Gladewater Lake/Reservoir	23	23	23	23	23	23
Manufacturing*	I	Carrizo-Wilcox Aquifer | Smith County	7	8	2	2	2	2
Manufacturing*	I	Palestine Lake/Reservoir	6	6	6	7	7	7
Manufacturing*	I	Tyler Lake/Reservoir	6	6	6	5	7	6
Livestock*	D	Queen City Aquifer | Smith County	465	465	465	465	465	465
Irrigation*	D	Carrizo-Wilcox Aquifer | Smith County	47	47	47	47	47	47
Irrigation*	D	Queen City Aquifer | Smith County	108	108	108	108	108	108
Titus County WUG Total			**57,879**	**52,971**	**51,552**	**50,126**	**48,776**	**47,552**
Titus County / Cypress Basin WUG Total			**54,184**	**49,781**	**48,270**	**46,745**	**45,326**	**44,030**
Bi County WSC	D	Carrizo-Wilcox Aquifer | Titus County	76	76	76	76	76	76
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	109	121	141	149	155	165
Mount Pleasant	D	Bob Sandlin Lake/Reservoir	13,677	13,423	13,174	12,940	12,551	12,242
Mount Pleasant	D	Cypress Run-of-River	412	412	412	412	412	412
Mount Pleasant	D	Cypress Springs Lake/Reservoir	2,464	2,356	2,248	2,140	2,032	1,924
Mount Pleasant	D	Tankersley Lake/Reservoir	950	950	950	950	950	950
Tri SUD	D	Bob Sandlin Lake/Reservoir	1,002	1,088	1,192	1,313	1,453	1,606
County-Other	D	Bob Sandlin Lake/Reservoir	87	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Titus County	415	438	457	475	439	416

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Manufacturing	D	Bob Sandlin Lake/Reservoir	2,795	0	0	0	0	0
Manufacturing	D	Carrizo-Wilcox Aquifer | Titus County	1,887	2,027	2,150	2,140	1,881	1,751
Manufacturing	D	Direct Reuse	160	160	160	160	160	160
Manufacturing	D	Tankersley Lake/Reservoir	550	550	550	550	550	550
Steam Electric Power	D	Bob Sandlin Lake/Reservoir	7,300	6,760	6,220	5,680	5,140	4,600
Steam Electric Power	D	Carrizo-Wilcox Aquifer | Titus County	3	3	3	3	578	548
Steam Electric Power	D	Monticello Lake/Reservoir	4,462	3,862	3,262	2,762	2,239	2,200
Steam Electric Power	D	O' the Pines Lake/Reservoir	14,400	14,400	14,400	14,400	14,400	14,400
Steam Electric Power	D	Welsh Lake/Reservoir	2,900	2,620	2,340	2,060	1,780	1,500
Livestock	D	Carrizo-Wilcox Aquifer | Titus County	433	433	433	433	428	428
Irrigation	D	Cypress Run-of-River	0	0	0	0	0	0
Irrigation	D	Sulphur Run-of-River	102	102	102	102	102	102
Titus County / Sulphur Basin WUG Total			**3,695**	**3,190**	**3,282**	**3,381**	**3,450**	**3,522**
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	80	88	101	107	114	119
Talco	D	Nacatoch Aquifer | Red River County	467	467	467	467	467	467
Tri SUD	D	Bob Sandlin Lake/Reservoir	570	620	677	747	826	914
County-Other	D	Bob Sandlin Lake/Reservoir	600	0	0	0	0	0
County-Other	D	Carrizo-Wilcox Aquifer | Titus County	395	432	454	477	500	500
County-Other	D	Nacatoch Aquifer | Red River County	76	76	76	76	76	76
Livestock	D	Carrizo-Wilcox Aquifer | Titus County	418	418	418	418	378	357
Livestock	D	Local Surface Water Supply	156	156	156	156	156	156
Livestock	D	Sulphur Run-of-River	1	1	1	1	1	1
Irrigation	D	Sulphur Run-of-River	932	932	932	932	932	932

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Upshur County WUG Total			**11,704**	**11,848**	**11,945**	**11,897**	**11,870**	**11,727**
Upshur County / Cypress Basin WUG Total			**8,707**	**8,772**	**8,856**	**8,856**	**8,876**	**8,898**
Bi County WSC	D	Carrizo-Wilcox Aquifer | Upshur County	479	479	479	479	479	479
Diana SUD	D	Carrizo-Wilcox Aquifer | Upshur County	598	598	598	598	598	598
Diana SUD	D	O' the Pines Lake/Reservoir	524	524	524	524	524	524
East Mountain Water System	D	Carrizo-Wilcox Aquifer | Upshur County	85	85	85	85	85	85
Gilmer	D	Carrizo-Wilcox Aquifer | Upshur County	1,226	1,226	1,226	1,226	1,226	1,226
Glenwood WSC	D	Carrizo-Wilcox Aquifer | Upshur County	341	342	341	341	341	341
Ore City	D	Carrizo-Wilcox Aquifer | Upshur County	214	214	214	214	214	214
Ore City	D	O' the Pines Lake/Reservoir	1,504	1,504	1,504	1,504	1,504	1,504
Pritchett WSC	D	Carrizo-Wilcox Aquifer | Upshur County	441	441	441	441	441	441
Sharon WSC	D	Carrizo-Wilcox Aquifer | Upshur County	363	363	363	363	363	363
Union Grove WSC	D	Carrizo-Wilcox Aquifer | Upshur County	15	14	14	15	14	14
County-Other	D	Big Sandy Creek Lake/Reservoir	27	27	27	27	27	27
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	297	297	297	297	297	297
County-Other	D	Gladewater Lake/Reservoir	76	76	76	76	76	76
County-Other	D	Queen City Aquifer | Upshur County	721	786	871	870	891	913
Manufacturing	D	Carrizo-Wilcox Aquifer | Upshur County	6	6	6	6	6	6
Livestock	D	Carrizo-Wilcox Aquifer | Upshur County	183	183	183	183	183	183
Livestock	D	Local Surface Water Supply	975	975	975	975	975	975
Irrigation	D	Carrizo-Wilcox Aquifer | Upshur County	240	240	240	240	240	240
Irrigation	D	Cypress Run-of-River	22	22	22	22	22	22

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year) 2030	2040	2050	2060	2070	2080
Irrigation	D	Loma Lake/Reservoir	350	350	350	350	350	350
Irrigation	D	Sabine Run-of-River	20	20	20	20	20	20
Upshur County / Sabine Basin WUG Total			**2,997**	**3,076**	**3,089**	**3,041**	**2,994**	**2,829**
Big Sandy	D	Carrizo-Wilcox Aquifer | Upshur County	247	247	247	247	247	247
East Mountain Water System	D	Carrizo-Wilcox Aquifer | Upshur County	122	122	122	122	122	122
Fouke WSC	D	Carrizo-Wilcox Aquifer | Wood County	13	12	12	12	11	11
Gladewater	D	Gladewater Lake/Reservoir	597	592	580	566	549	405
Glenwood WSC	D	Carrizo-Wilcox Aquifer | Upshur County	10	10	10	10	10	10
Pritchett WSC	D	Carrizo-Wilcox Aquifer | Upshur County	577	577	577	577	577	577
Union Grove WSC	D	Carrizo-Wilcox Aquifer | Upshur County	361	362	362	361	362	362
County-Other	D	Big Sandy Creek Lake/Reservoir	13	13	13	13	13	13
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	54	54	54	54	54	54
County-Other	D	Gladewater Lake/Reservoir	36	36	36	36	36	36
County-Other	D	Loma Lake/Reservoir	400	400	400	400	400	400
County-Other	D	Queen City Aquifer | Upshur County	134	145	160	161	165	169
Manufacturing		No water supply associated with WUG	0	0	0	0	0	0
Mining	D	Queen City Aquifer | Upshur County	80	153	163	129	95	70
Mining	D	Sabine Run-of-River	0	0	0	0	0	0
Livestock	D	Carrizo-Wilcox Aquifer | Upshur County	60	60	60	60	60	60
Livestock	D	Local Surface Water Supply	293	293	293	293	293	293
Van Zandt County WUG Total			**13,948**	**14,280**	**14,601**	**14,941**	**15,179**	**15,371**
Van Zandt County / Neches Basin WUG Total			**4,105**	**4,099**	**4,109**	**4,119**	**4,125**	**4,135**
Ben Wheeler WSC*	D	Carrizo-Wilcox Aquifer | Van Zandt County	320	309	303	296	287	287

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Bethel Ash WSC*	I	Carrizo-Wilcox Aquifer | Henderson County	134	146	159	172	185	198
Carroll WSC*		No water supply associated with WUG	0	0	0	0	0	0
Edom WSC*	D	Carrizo-Wilcox Aquifer | Van Zandt County	92	89	87	84	82	82
Little Hope Moore WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	41	40	39	38	37	37
R P M WSC*	D	Carrizo-Wilcox Aquifer | Van Zandt County	95	94	92	89	87	86
R P M WSC*	D	Queen City Aquifer | Van Zandt County	116	118	118	118	117	117
Van	D	Carrizo-Wilcox Aquifer | Van Zandt County	397	376	361	343	324	324
County-Other	D	Carrizo-Wilcox Aquifer | Van Zandt County	1,377	1,414	1,440	1,471	1,504	1,504
Livestock	D	Carrizo-Wilcox Aquifer | Van Zandt County	46	44	43	42	41	41
Livestock	D	Local Surface Water Supply	1,108	1,108	1,108	1,108	1,108	1,108
Irrigation	D	Carrizo-Wilcox Aquifer | Van Zandt County	33	33	33	33	30	30
Irrigation	D	Neches Run-of-River	115	115	115	115	115	115
Irrigation	D	Sabine Run-of-River	47	47	47	47	47	47
Irrigation	D	Tawakoni Lake/Reservoir	184	166	164	163	161	159
Van Zandt County / Sabine Basin WUG Total			**7,320**	**7,514**	**7,751**	**7,969**	**8,117**	**8,351**
Ables Springs SUD*	D	Fork Lake/Reservoir	0	0	0	0	0	0
Ables Springs SUD*	C	North Texas MWD Lake/Reservoir System	1	1	1	1	1	1
Ables Springs SUD*	D	Tawakoni Lake/Reservoir	0	0	0	0	0	0
Ables Springs SUD*	C	Trinity Indirect Reuse	0	0	1	1	0	0
Canton	D	Carrizo-Wilcox Aquifer | Van Zandt County	282	282	294	298	262	270
Canton	D	Mill Creek Lake/Reservoir	1,190	1,190	1,190	1,190	1,190	1,190
Canton	D	Sabine Run-of-River	12	12	12	12	12	12
Carroll WSC*		No water supply associated with WUG	0	0	0	0	0	0
Combined Consumers SUD	D	Tawakoni Lake/Reservoir	147	154	161	167	174	180

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Edgewood	D	Edgewood City Lake/Reservoir	0	0	0	0	0	0
Edgewood	D	Tawakoni Lake/Reservoir	322	332	341	346	351	357
Fruitvale WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	358	358	373	378	375	386
Golden WSC	D	Carrizo-Wilcox Aquifer | Wood County	82	82	82	82	82	82
Grand Saline	D	Carrizo-Wilcox Aquifer | Van Zandt County	11	11	12	12	11	11
Little Hope Moore WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	86	84	82	80	78	78
MacBee SUD*	D	Carrizo-Wilcox Aquifer | Van Zandt County	66	58	60	61	60	62
MacBee SUD*	D	Tawakoni Lake/Reservoir	181	198	212	225	236	245
Myrtle Springs WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	42	42	44	44	44	45
Pine Ridge WSC	D	Carrizo-Wilcox Aquifer | Smith County	11	12	11	12	12	12
Pruitt Sandflat WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	226	226	235	238	237	244
South Tawakoni WSC	D	Tawakoni Lake/Reservoir	295	236	191	151	119	95
Van	D	Carrizo-Wilcox Aquifer | Van Zandt County	103	109	114	119	125	125
Van	D	Sabine Run-of-River	0	0	0	0	0	0
Wills Point	D	Sabine Run-of-River	0	0	0	0	0	0
Wills Point	D	Tawakoni Lake/Reservoir	495	546	596	647	698	750
County-Other	D	Carrizo-Wilcox Aquifer | Van Zandt County	407	411	362	344	400	362
County-Other	D	Sabine Run-of-River	0	0	0	0	0	0
Manufacturing	D	Carrizo-Wilcox Aquifer | Van Zandt County	154	154	161	163	153	157
Manufacturing	D	Sabine Run-of-River	21	21	21	21	21	21
Mining	D	Carrizo-Wilcox Aquifer | Van Zandt County	885	891	930	948	893	922
Mining	D	Local Surface Water Supply	842	1,003	1,162	1,325	1,483	1,642
Livestock	D	Carrizo-Wilcox Aquifer | Van Zandt County	66	66	68	69	65	67

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Livestock	D	Local Surface Water Supply	1,035	1,035	1,035	1,035	1,035	1,035
Van Zandt County / Trinity Basin WUG Total			**2,523**	**2,667**	**2,741**	**2,853**	**2,937**	**2,885**
Bethel Ash WSC*	I	Carrizo-Wilcox Aquifer | Henderson County	34	38	41	44	48	51
Mabank*	C	TRWD Lake/Reservoir System	31	31	32	31	31	31
MacBee SUD*	D	Tawakoni Lake/Reservoir	294	323	345	367	385	401
Myrtle Springs WSC	D	Carrizo-Wilcox Aquifer | Van Zandt County	103	103	108	109	108	112
Wills Point	D	Tawakoni Lake/Reservoir	546	602	657	713	770	828
County-Other	D	Carrizo-Wilcox Aquifer | Van Zandt County	878	933	921	952	994	905
Livestock	D	Carrizo-Wilcox Aquifer | Van Zandt County	38	110	188	297	319	364
Livestock	D	Local Surface Water Supply	599	527	449	340	282	193
Wood County WUG Total			**19,628**	**19,626**	**19,565**	**19,390**	**19,437**	**19,378**
Wood County / Cypress Basin WUG Total			**2,468**	**2,449**	**2,428**	**2,394**	**2,372**	**2,337**
Cypress Springs SUD	D	Cypress Springs Lake/Reservoir	197	197	191	189	186	180
Sharon WSC	D	Carrizo-Wilcox Aquifer | Wood County	159	159	159	159	159	159
Winnsboro	D	Cypress Springs Lake/Reservoir	637	614	590	565	537	512
County-Other	D	Carrizo-Wilcox Aquifer | Wood County	795	799	808	801	810	806
Livestock	D	Local Surface Water Supply	555	555	555	555	555	555
Irrigation	D	Carrizo-Wilcox Aquifer | Wood County	125	125	125	125	125	125
Wood County / Sabine Basin WUG Total			**17,160**	**17,177**	**17,137**	**16,996**	**17,065**	**17,041**
Bright Star Salem SUD	D	Carrizo-Wilcox Aquifer | Wood County	343	343	343	343	343	343
Cornersville WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	52	54	56	57	60	61

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Fouke WSC	D	Carrizo-Wilcox Aquifer | Wood County	1,011	1,012	1,012	1,012	1,013	1,013
Golden WSC	D	Carrizo-Wilcox Aquifer | Wood County	305	305	305	305	305	305
Hawkins	D	Carrizo-Wilcox Aquifer | Wood County	890	890	890	890	890	890
Jones WSC	D	Carrizo-Wilcox Aquifer | Wood County	938	940	940	833	942	942
Lake Fork WSC	D	Carrizo-Wilcox Aquifer | Wood County	690	690	690	690	690	690
Liberty Utilities Silverleaf Water*	D	Carrizo-Wilcox Aquifer | Wood County	373	374	373	373	373	373
Mineola	D	Carrizo-Wilcox Aquifer | Wood County	1,743	1,743	1,743	1,743	1,743	1,743
New Hope SUD	D	Carrizo-Wilcox Aquifer | Wood County	366	366	366	366	366	366
Pritchett WSC	D	Carrizo-Wilcox Aquifer | Upshur County	3	3	3	3	3	3
Pritchett WSC	D	Carrizo-Wilcox Aquifer | Wood County	5	5	5	5	5	5
Quitman	D	Fork Lake/Reservoir	1,010	1,000	989	978	967	967
Ramey WSC	D	Carrizo-Wilcox Aquifer | Wood County	591	591	591	591	591	591
Sharon WSC	D	Carrizo-Wilcox Aquifer | Wood County	471	471	471	471	471	471
Shirley WSC	D	Carrizo-Wilcox Aquifer | Hopkins County	16	15	15	14	14	14
Shirley WSC	D	Carrizo-Wilcox Aquifer | Rains County	7	7	7	6	6	6
Winnsboro	D	Cypress Springs Lake/Reservoir	671	647	622	593	567	537
County-Other	D	Carrizo-Wilcox Aquifer | Upshur County	2	2	2	2	2	2
County-Other	D	Carrizo-Wilcox Aquifer | Wood County	3,616	3,658	3,652	3,658	3,649	3,653
Manufacturing	D	Carrizo-Wilcox Aquifer | Wood County	1,502	1,502	1,502	1,502	1,502	1,502
Mining	D	Queen City Aquifer | Wood County	284	288	289	290	292	293
Livestock	D	Local Surface Water Supply	1,613	1,613	1,613	1,613	1,613	1,613

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DRAFT Region D Water User Group (WUG) Existing Water Supply

WUG Name	Source Region	Source Description	Existing Supply (acre-feet per year)					
			2030	2040	2050	2060	2070	2080
Livestock	D	Sabine Run-of-River	30	30	30	30	30	30
Irrigation	D	Carrizo-Wilcox Aquifer | Wood County	22	22	22	22	22	22
Irrigation	D	Queen City Aquifer | Wood County	226	226	226	226	226	226
Irrigation	D	Sabine Run-of-River	380	380	380	380	380	380
Region D WUG Existing Water Supply Total			**500,765**	**507,794**	**502,053**	**502,493**	**510,650**	**507,106**

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Appendix E. TWDB DB27 Report – WUG Needs/Surplus

DRAFT Region D Water User Group (WUG) Needs or Surplus

WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Needs/Surplus report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Surplus volumes are shown as positive values, and needs are shown as negative values in parentheses.

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Burns Redbank WSC	Bowie	Red	(260)	(274)	(291)	(310)	(329)	(349)
Central Bowie County WSC	Bowie	Red	(118)	(118)	(119)	(120)	(121)	(122)
De Kalb	Bowie	Red	(48)	(48)	(47)	(47)	(46)	(45)
Hooks	Bowie	Red	(317)	(313)	(310)	(305)	(301)	(296)
New Boston	Bowie	Red	(403)	(399)	(396)	(389)	(383)	(377)
Riverbend Water Resources District	Bowie	Red	(211)	(209)	(206)	(203)	(200)	(196)
Texarkana	Bowie	Red	(840)	(832)	(825)	(813)	(802)	(790)
County-Other	Bowie	Red	637	673	705	705	712	732
Manufacturing	Bowie	Red	(288)	(299)	(310)	(322)	(334)	(347)
Mining	Bowie	Red	(753)	(760)	(794)	(823)	(846)	(864)
Livestock	Bowie	Red	(52)	(7)	16	14	(13)	(32)
Irrigation	Bowie	Red	(6,638)	(6,638)	(6,638)	(6,638)	(6,638)	(6,638)
Central Bowie County WSC	Bowie	Sulphur	(651)	(651)	(657)	(663)	(669)	(675)
De Kalb	Bowie	Sulphur	(218)	(215)	(214)	(210)	(208)	(205)
Macedonia Eylau MUD 1	Bowie	Sulphur	(710)	(705)	(698)	(688)	(677)	(666)
Maud	Bowie	Sulphur	(164)	(162)	(161)	(158)	(156)	(153)
Nash	Bowie	Sulphur	(314)	(309)	(306)	(302)	(297)	(292)
New Boston	Bowie	Sulphur	(906)	(898)	(889)	(876)	(862)	(848)
Redwater	Bowie	Sulphur	(337)	(333)	(329)	(323)	(317)	(311)
Riverbend Water Resources District	Bowie	Sulphur	(169)	(166)	(165)	(162)	(159)	(157)
Texarkana	Bowie	Sulphur	(5,929)	(5,870)	(5,824)	(5,741)	(5,657)	(5,572)
Wake Village	Bowie	Sulphur	(649)	(641)	(635)	(625)	(615)	(605)
County-Other	Bowie	Sulphur	1,267	1,344	1,414	1,413	1,435	1,481
Manufacturing	Bowie	Sulphur	(1,512)	(1,569)	(1,629)	(1,690)	(1,754)	(1,820)
Mining	Bowie	Sulphur	(1,228)	(1,238)	(1,294)	(1,341)	(1,379)	(1,408)
Livestock	Bowie	Sulphur	(113)	(36)	6	6	(37)	(69)
Irrigation	Bowie	Sulphur	(3,110)	(3,110)	(3,110)	(3,110)	(3,110)	(3,110)
Bi County WSC	Camp	Cypress	505	503	501	496	490	485

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	County	Basin	2030	2040	2050	2060	2070	2080
Cypress Springs SUD	Camp	Cypress	(10)	(10)	(10)	(10)	(10)	(10)
Pittsburg	Camp	Cypress	(408)	(415)	(417)	(424)	(431)	(439)
Sharon WSC	Camp	Cypress	(4)	(4)	(4)	(4)	(4)	(4)
County-Other	Camp	Cypress	336	347	356	363	370	378
Manufacturing	Camp	Cypress	(42)	(44)	(46)	(48)	(50)	(52)
Livestock	Camp	Cypress	(496)	(496)	(496)	(496)	(496)	(496)
Irrigation	Camp	Cypress	(5)	(5)	(5)	(5)	(5)	(5)
Atlanta	Cass	Cypress	94	200	323	358	397	435
Avinger	Cass	Cypress	202	207	212	216	220	225
E M C WSC	Cass	Cypress	26	27	29	31	32	34
Eastern Cass WSC	Cass	Cypress	299	290	276	260	238	213
Holly Springs WSC	Cass	Cypress	(15)	(11)	(7)	(5)	(2)	1
Hughes Springs	Cass	Cypress	184	202	221	236	251	266
Linden	Cass	Cypress	97	113	129	142	155	168
Mims WSC	Cass	Cypress	118	119	119	120	121	121
Queen City	Cass	Cypress	16	22	27	30	32	33
Western Cass WSC	Cass	Cypress	686	698	709	717	726	734
County-Other	Cass	Cypress	(285)	(235)	(182)	(133)	(82)	(25)
Manufacturing	Cass	Cypress	230	230	230	229	228	228
Mining	Cass	Cypress	934	957	979	999	1,019	1,035
Livestock	Cass	Cypress	(187)	(187)	(187)	(187)	(187)	(187)
Atlanta	Cass	Sulphur	0	1	1	1	1	2
Eastern Cass WSC	Cass	Sulphur	15	15	14	12	11	9
Queen City	Cass	Sulphur	13	17	19	21	23	23
Western Cass WSC	Cass	Sulphur	114	117	121	125	128	131
County-Other	Cass	Sulphur	(76)	(56)	(34)	(15)	6	29
Manufacturing	Cass	Sulphur	(3,608)	(4,871)	(6,260)	(7,698)	(9,189)	(10,737)
Livestock	Cass	Sulphur	234	234	234	236	236	233
Cooper	Delta	Sulphur	278	89	(99)	(285)	(446)	(440)
Delta County MUD*	Delta	Sulphur	0	0	0	0	(22)	(204)
North Hunt SUD*	Delta	Sulphur	(17)	(20)	(21)	(23)	(25)	(24)
County-Other	Delta	Sulphur	38	30	34	39	43	48
Livestock	Delta	Sulphur	(232)	(220)	(220)	(220)	(220)	(220)
Irrigation	Delta	Sulphur	(301)	(288)	(278)	(273)	(273)	(261)
Cornersville WSC	Franklin	Cypress	(3)	(4)	(4)	(4)	(5)	(5)
Cypress Springs SUD	Franklin	Cypress	1,283	1,171	1,062	951	844	736

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Winnsboro	Franklin	Cypress	234	208	185	163	142	122
County-Other	Franklin	Cypress	68	73	78	78	78	78
Livestock	Franklin	Cypress	(190)	(190)	(190)	(190)	(190)	(190)
Irrigation	Franklin	Cypress	(46)	(46)	(46)	(46)	(46)	(46)
Irrigation	Franklin	Sabine	(46)	(46)	(46)	(46)	(46)	(46)
Cypress Springs SUD	Franklin	Sulphur	620	563	507	451	395	341
Mount Vernon	Franklin	Sulphur	2,057	1,951	1,846	1,732	1,617	1,503
County-Other	Franklin	Sulphur	67	67	78	78	78	79
Livestock	Franklin	Sulphur	(118)	(118)	(118)	(118)	(118)	(118)
Irrigation	Franklin	Sulphur	(46)	(46)	(46)	(46)	(46)	(46)
East Mountain Water System	Gregg	Cypress	(52)	(52)	(52)	(51)	(50)	(49)
Glenwood WSC	Gregg	Cypress	11	10	11	11	12	12
Tryon Road SUD	Gregg	Cypress	403	398	403	414	415	412
County-Other	Gregg	Cypress	170	195	214	241	274	300
Mining	Gregg	Cypress	4	12	12	7	3	(1)
Livestock	Gregg	Cypress	(16)	(16)	(16)	(16)	(16)	(16)
Chalk Hill SUD*	Gregg	Sabine	0	0	0	0	0	0
Clarksville City	Gregg	Sabine	119	119	119	121	123	125
Cross Roads SUD*	Gregg	Sabine	32	34	36	39	43	47
East Mountain Water System	Gregg	Sabine	(40)	(41)	(41)	(40)	(39)	(39)
Elderville WSC*	Gregg	Sabine	111	107	113	119	98	113
Gladewater	Gregg	Sabine	131	131	149	177	207	157
Kilgore*	Gregg	Sabine	(627)	2,283	2,115	1,938	1,781	2,117
Liberty City WSC	Gregg	Sabine	315	314	318	327	335	344
Longview	Gregg	Sabine	19,302	27,846	27,622	27,587	27,564	27,532
Starrville-Friendship WSC	Gregg	Sabine	34	34	34	35	36	37
Tryon Road SUD	Gregg	Sabine	656	655	656	660	663	667
West Gregg SUD*	Gregg	Sabine	171	158	141	122	102	77
White Oak	Gregg	Sabine	(66)	(88)	(69)	(26)	18	61
County-Other	Gregg	Sabine	591	1,167	1,311	1,514	1,746	1,815
Manufacturing	Gregg	Sabine	20	(38)	(98)	(160)	(224)	(291)
Mining	Gregg	Sabine	174	317	313	231	148	90
Steam Electric Power	Gregg	Sabine	1,302	1,302	1,302	1,302	1,302	1,302
Livestock	Gregg	Sabine	52	52	52	52	52	52

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Irrigation	Gregg	Sabine	83	83	83	83	83	83
Blocker Crossroads WSC	Harrison	Cypress	6	5	6	6	5	4
Cypress Valley WSC	Harrison	Cypress	(11)	(14)	(15)	(17)	(18)	(19)
Diana SUD	Harrison	Cypress	56	55	55	54	53	52
Gum Springs WSC	Harrison	Cypress	693	659	654	625	595	570
Harleton WSC	Harrison	Cypress	14	6	5	0	(4)	(8)
Leigh WSC	Harrison	Cypress	(42)	0	5	68	129	188
Marshall	Harrison	Cypress	333	353	354	400	444	487
North Harrison WSC	Harrison	Cypress	(2)	(9)	(10)	(14)	(19)	(23)
Panola-Bethany WSC*	Harrison	Cypress	0	0	0	0	0	0
Scottsville	Harrison	Cypress	(31)	(42)	(44)	(56)	(67)	(76)
Talley WSC	Harrison	Cypress	39	38	38	38	37	37
Tryon Road SUD	Harrison	Cypress	(173)	(243)	(253)	(332)	(399)	(461)
Waskom	Harrison	Cypress	51	71	74	107	139	170
West Harrison WSC	Harrison	Cypress	45	41	40	32	26	22
County-Other	Harrison	Cypress	166	200	200	260	318	376
Manufacturing	Harrison	Cypress	798	798	797	797	796	796
Mining	Harrison	Cypress	(441)	(432)	(424)	(415)	(408)	(398)
Livestock	Harrison	Cypress	206	243	281	321	339	369
Irrigation	Harrison	Cypress	(301)	(301)	(301)	(301)	(301)	(301)
Blocker Crossroads WSC	Harrison	Sabine	54	53	51	50	50	50
Elysian Fields WSC*	Harrison	Sabine	(165)	(191)	(195)	(224)	(252)	(279)
Gill WSC*	Harrison	Sabine	115	117	117	124	131	137
Gum Springs WSC	Harrison	Sabine	997	899	883	786	694	601
Hallsville	Harrison	Sabine	161	113	106	61	18	(23)
Longview	Harrison	Sabine	509	450	414	343	266	206
Marshall	Harrison	Sabine	1,598	1,690	1,697	1,909	2,115	2,315
Panola-Bethany WSC*	Harrison	Sabine	0	0	0	0	0	0
Scottsville	Harrison	Sabine	(91)	(116)	(119)	(144)	(169)	(194)
Talley WSC	Harrison	Sabine	30	30	29	30	32	33
West Harrison WSC	Harrison	Sabine	120	100	97	78	58	37
County-Other	Harrison	Sabine	413	476	506	579	669	745
Manufacturing	Harrison	Sabine	(14,505)	(15,814)	(16,848)	(17,919)	(19,031)	(20,184)
Mining	Harrison	Sabine	(1,563)	(1,554)	(1,544)	(1,535)	(1,527)	(1,518)

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Steam Electric Power	Harrison	Sabine	3,363	3,363	3,363	3,363	3,363	3,363
Livestock	Harrison	Sabine	131	138	146	152	158	180
Irrigation	Harrison	Sabine	(90)	(90)	(90)	(90)	(90)	(90)
Cornersville WSC	Hopkins	Cypress	45	42	40	39	36	34
Cypress Springs SUD	Hopkins	Cypress	116	111	105	95	85	74
Livestock	Hopkins	Cypress	(129)	(128)	(124)	(124)	(120)	(118)
Irrigation	Hopkins	Cypress	(8)	(8)	(8)	(8)	(8)	(8)
Brashear WSC	Hopkins	Sabine	(39)	(44)	(41)	(42)	(42)	(41)
Cash SUD*	Hopkins	Sabine	(13)	(18)	(23)	(31)	(33)	(48)
Como	Hopkins	Sabine	9	10	10	10	10	10
Cornersville WSC	Hopkins	Sabine	46	44	42	39	37	35
Cumby	Hopkins	Sabine	21	24	20	20	21	22
Jones WSC	Hopkins	Sabine	7	6	5	2	3	3
Lake Fork WSC	Hopkins	Sabine	26	25	25	24	24	23
Martin Springs WSC	Hopkins	Sabine	164	152	144	138	129	120
Miller Grove WSC	Hopkins	Sabine	(30)	(40)	(44)	(51)	(58)	(64)
Shady Grove No 2 WSC	Hopkins	Sabine	(16)	(18)	(16)	(17)	(15)	(15)
Shirley WSC	Hopkins	Sabine	91	78	70	57	45	33
County-Other	Hopkins	Sabine	393	395	388	348	328	326
Mining	Hopkins	Sabine	247	258	265	272	281	289
Livestock	Hopkins	Sabine	563	584	630	633	683	705
Irrigation	Hopkins	Sabine	(106)	(106)	(106)	(106)	(106)	(106)
Brashear WSC	Hopkins	Sulphur	(23)	(26)	(24)	(24)	(22)	(20)
Brinker WSC	Hopkins	Sulphur	(97)	(122)	(130)	(143)	(157)	(171)
Como	Hopkins	Sulphur	3	3	3	3	3	3
Cornersville WSC	Hopkins	Sulphur	(6)	(6)	(6)	(6)	(6)	(6)
Cumby	Hopkins	Sulphur	1	1	1	1	1	1
Cypress Springs SUD	Hopkins	Sulphur	183	175	163	148	132	116
Gafford Chapel WSC	Hopkins	Sulphur	34	33	34	37	42	46
Martin Springs WSC	Hopkins	Sulphur	23	21	19	16	14	13
North Hopkins WSC	Hopkins	Sulphur	(231)	(271)	(297)	(325)	(354)	(383)
Shady Grove No 2 WSC	Hopkins	Sulphur	6	5	8	9	11	13
Sulphur Springs	Hopkins	Sulphur	1,562	1,505	1,412	1,356	1,301	1,245

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
County-Other	Hopkins	Sulphur	460	439	432	405	388	384
Manufacturing	Hopkins	Sulphur	699	749	794	824	920	1,024
Livestock	Hopkins	Sulphur	167	145	95	92	39	16
Irrigation	Hopkins	Sulphur	(3,675)	(3,675)	(3,675)	(3,675)	(3,675)	(3,675)
Ables Springs SUD*	Hunt	Sabine	16	30	55	83	121	173
B H P WSC	Hunt	Sabine	(240)	(299)	(331)	(341)	(321)	(311)
Caddo Basin SUD*	Hunt	Sabine	(1,124)	(853)	(962)	(798)	(471)	(211)
Caddo Mills	Hunt	Sabine	25	31	43	81	145	152
Cash SUD*	Hunt	Sabine	(414)	(706)	(1,187)	(1,179)	(491)	838
Celeste	Hunt	Sabine	(14)	(19)	(24)	(28)	(32)	(35)
Combined Consumers SUD	Hunt	Sabine	0	0	0	0	0	0
Greenville	Hunt	Sabine	(13,658)	(16,254)	(17,865)	(19,224)	(20,604)	(21,801)
Hickory Creek SUD*	Hunt	Sabine	(88)	(123)	(165)	(215)	(271)	(337)
Josephine*	Hunt	Sabine	6	19	41	69	52	40
MacBee SUD*	Hunt	Sabine	(14)	(9)	(3)	6	20	41
Poetry WSC*	Hunt	Sabine	18	(8)	2	28	152	248
Quinlan	Hunt	Sabine	(106)	(125)	(142)	(152)	(153)	(148)
Royse City*	Hunt	Sabine	(577)	(837)	(1,061)	(1,278)	(1,495)	(1,708)
Shady Grove SUD	Hunt	Sabine	(25)	(43)	(61)	(78)	(90)	(88)
West Tawakoni	Hunt	Sabine	(47)	450	414	330	351	318
County-Other	Hunt	Sabine	778	860	1,044	1,329	1,767	2,435
Manufacturing	Hunt	Sabine	316	441	597	745	838	997
Steam Electric Power	Hunt	Sabine	0	0	0	0	0	0
Livestock	Hunt	Sabine	(23)	(23)	(23)	(23)	(23)	(23)
Irrigation	Hunt	Sabine	(124)	(124)	(124)	(124)	(124)	(124)
Commerce	Hunt	Sulphur	81	3,293	3,356	3,057	1,563	2,008
Hickory Creek SUD*	Hunt	Sulphur	(73)	(97)	(126)	(160)	(200)	(246)
North Hunt SUD*	Hunt	Sulphur	(177)	(166)	(155)	(141)	(127)	(115)
Shady Grove SUD	Hunt	Sulphur	(10)	(13)	(17)	(22)	(27)	(35)
Texas A&M University Commerce	Hunt	Sulphur	(276)	(275)	(275)	(275)	(275)	(275)
Wolfe City*	Hunt	Sulphur	88	87	84	84	82	81
County-Other	Hunt	Sulphur	(263)	(241)	(208)	(241)	(189)	(103)
Livestock	Hunt	Sulphur	(39)	(39)	(39)	(39)	(39)	(39)
Irrigation	Hunt	Sulphur	(69)	(69)	(69)	(69)	(69)	(69)
Frognot WSC*	Hunt	Trinity	4	3	3	2	2	1

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Hickory Creek SUD*	Hunt	Trinity	(65)	(81)	(101)	(124)	(150)	(180)
West Leonard WSC*	Hunt	Trinity	9	8	10	11	13	13
County-Other	Hunt	Trinity	28	34	47	27	34	52
Livestock	Hunt	Trinity	(14)	(14)	(14)	(14)	(13)	(13)
Irrigation	Hunt	Trinity	2	2	2	2	2	2
Bois D Arc MUD*	Lamar	Red	(2)	(2)	(2)	(2)	(2)	(2)
Lamar County WSD	Lamar	Red	3,255	3,201	3,162	3,135	3,111	3,070
Paris	Lamar	Red	155	65	0	0	0	0
Reno (Lamar)	Lamar	Red	88	102	112	123	134	145
County-Other	Lamar	Red	(30)	(29)	(28)	(28)	(28)	(28)
Manufacturing	Lamar	Red	(361)	(365)	(371)	(385)	(371)	(388)
Steam Electric Power	Lamar	Red	297	297	297	297	297	297
Livestock	Lamar	Red	(579)	(579)	(579)	(579)	(579)	(579)
Irrigation	Lamar	Red	(4,944)	(4,944)	(4,944)	(4,944)	(4,944)	(4,944)
Blossom	Lamar	Sulphur	93	109	109	110	111	111
Lamar County WSD	Lamar	Sulphur	2,730	2,692	2,664	2,644	2,624	2,593
Paris	Lamar	Sulphur	240	101	0	0	0	0
Reno (Lamar)	Lamar	Sulphur	138	196	243	294	343	396
County-Other	Lamar	Sulphur	(97)	(90)	(84)	(84)	(85)	(85)
Manufacturing	Lamar	Sulphur	812	902	976	1,005	845	678
Steam Electric Power	Lamar	Sulphur	2,958	2,958	2,958	2,958	2,958	2,958
Livestock	Lamar	Sulphur	575	575	575	575	575	575
Irrigation	Lamar	Sulphur	(1,679)	(1,679)	(1,679)	(1,679)	(1,679)	(1,679)
Diana SUD	Marion	Cypress	2	11	17	22	27	31
E M C WSC	Marion	Cypress	113	127	142	152	163	174
Harleton WSC	Marion	Cypress	33	43	54	61	68	76
Jefferson	Marion	Cypress	1,066	1,097	1,129	1,151	1,173	1,194
Kellyville-Berea WSC	Marion	Cypress	23	26	29	31	32	33
Mims WSC	Marion	Cypress	640	635	628	624	620	614
Ore City	Marion	Cypress	(15)	(19)	(25)	(29)	(33)	(37)
County-Other	Marion	Cypress	550	564	582	593	605	619
Manufacturing	Marion	Cypress	(151)	(157)	(163)	(169)	(175)	(181)
Mining	Marion	Cypress	92	95	98	100	102	104
Steam Electric Power	Marion	Cypress	0	188	570	1,035	1,603	1,990

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Livestock	Marion	Cypress	242	242	242	242	242	242
Irrigation	Marion	Cypress	152	152	152	152	152	152
Bi County WSC	Morris	Cypress	10	22	35	43	51	60
Daingerfield	Morris	Cypress	1,130	1,119	1,103	1,095	1,086	1,077
Holly Springs WSC	Morris	Cypress	(20)	(15)	(9)	(4)	0	3
Lone Star	Morris	Cypress	541	557	575	587	598	611
Naples	Morris	Cypress	15	24	24	25	25	26
Omaha	Morris	Cypress	78	80	83	84	86	88
Tri SUD	Morris	Cypress	(45)	(47)	(41)	(35)	(26)	(17)
Western Cass WSC	Morris	Cypress	(6)	(5)	(5)	(5)	(5)	(5)
County-Other	Morris	Cypress	162	166	169	170	173	174
Manufacturing	Morris	Cypress	93,156	86,705	80,326	80,480	88,211	80,799
Steam Electric Power	Morris	Cypress	770	770	770	770	770	770
Livestock	Morris	Cypress	(61)	(61)	(61)	(61)	(61)	(61)
Irrigation	Morris	Cypress	59	59	59	59	59	59
Naples	Morris	Sulphur	28	21	22	22	23	23
Omaha	Morris	Sulphur	57	59	60	62	63	64
Western Cass WSC	Morris	Sulphur	(10)	(10)	(10)	(10)	(10)	(10)
County-Other	Morris	Sulphur	114	115	116	117	117	118
Livestock	Morris	Sulphur	70	70	70	70	70	70
Irrigation	Morris	Sulphur	1	1	1	1	1	1
Bright Star Salem SUD	Rains	Sabine	291	667	636	597	557	515
Cash SUD*	Rains	Sabine	(23)	(43)	(79)	(117)	(147)	(221)
East Tawakoni	Rains	Sabine	54	61	58	59	61	62
Emory	Rains	Sabine	59	84	71	70	68	66
Golden WSC	Rains	Sabine	0	(1)	(1)	(1)	(1)	(1)
Miller Grove WSC	Rains	Sabine	(6)	(8)	(10)	(11)	(14)	(16)
Point	Rains	Sabine	135	146	141	141	142	142
Shirley WSC	Rains	Sabine	43	38	35	31	26	19
South Rains SUD	Rains	Sabine	9	(8)	(27)	(49)	(71)	(92)
County-Other	Rains	Sabine	139	141	133	112	88	69
Manufacturing	Rains	Sabine	11	11	11	11	11	11
Livestock	Rains	Sabine	3	3	3	3	3	3
Irrigation	Rains	Sabine	(2)	(2)	(2)	(2)	(2)	(2)
410 WSC	Red River	Red	(86)	(79)	(74)	(68)	(64)	(58)

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Red River County WSC	Red River	Red	73	82	88	91	92	89
County-Other	Red River	Red	22	17	26	34	43	54
Manufacturing	Red River	Red	5,335	5,328	5,328	5,328	5,328	5,328
Livestock	Red River	Red	80	80	80	80	80	80
Irrigation	Red River	Red	(1,180)	(1,180)	(1,180)	(1,180)	(1,180)	(1,180)
410 WSC	Red River	Sulphur	(43)	(38)	(31)	(25)	(17)	(10)
Bogata	Red River	Sulphur	340	350	359	367	374	381
Clarksville	Red River	Sulphur	(252)	(179)	(106)	(49)	10	69
Red River County WSC	Red River	Sulphur	37	69	82	90	92	87
Talco	Red River	Sulphur	12	11	11	11	10	10
County-Other	Red River	Sulphur	(40)	(12)	10	32	62	103
Livestock	Red River	Sulphur	(145)	(145)	(145)	(145)	(145)	(145)
Irrigation	Red River	Sulphur	(2,305)	(2,305)	(2,305)	(2,305)	(2,305)	(2,305)
Carroll WSC*	Smith	Sabine	9	9	12	15	19	17
Crystal Systems Texas*	Smith	Sabine	(155)	(267)	(343)	(387)	(419)	(443)
East Texas MUD	Smith	Sabine	(172)	(385)	(537)	(678)	(820)	(962)
Jackson WSC*	Smith	Sabine	0	0	0	0	0	0
Liberty City WSC	Smith	Sabine	(1)	(3)	(5)	(7)	(9)	(11)
Lindale Rural WSC*	Smith	Sabine	(291)	(419)	(514)	(594)	(675)	(756)
Lindale*	Smith	Sabine	(69)	(110)	(136)	(160)	(161)	(158)
Overton*	Smith	Sabine	0	0	0	0	0	0
Pine Ridge WSC	Smith	Sabine	73	49	33	18	3	(11)
Sand Flat WSC	Smith	Sabine	227	215	207	203	200	196
Southern Utilities*	Smith	Sabine	0	0	(64)	(116)	(170)	(223)
Star Mountain WSC	Smith	Sabine	(31)	(42)	(52)	(57)	(63)	(69)
Starrville-Friendship WSC	Smith	Sabine	81	83	83	86	89	92
Tyler*	Smith	Sabine	0	0	0	0	0	0
West Gregg SUD*	Smith	Sabine	28	23	18	16	13	13
Winona	Smith	Sabine	(11)	(30)	(43)	(55)	(66)	(77)
County-Other*	Smith	Sabine	23	23	23	23	23	23
Manufacturing*	Smith	Sabine	0	0	(7)	(8)	(7)	(9)
Livestock*	Smith	Sabine	0	0	0	0	0	0
Irrigation*	Smith	Sabine	(156)	(156)	(156)	(156)	(156)	(156)
Bi County WSC	Titus	Cypress	31	21	6	(7)	(20)	(35)

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Cypress Springs SUD	Titus	Cypress	68	73	82	82	80	79
Mount Pleasant	Titus	Cypress	13,454	12,996	12,575	12,181	11,626	11,146
Tri SUD	Titus	Cypress	(288)	(340)	(338)	(322)	(279)	(215)
County-Other	Titus	Cypress	429	372	403	431	406	395
Manufacturing	Titus	Cypress	937	(1,884)	(1,933)	(2,121)	(2,565)	(2,887)
Steam Electric Power	Titus	Cypress	(476)	(1,896)	(3,316)	(4,636)	(5,404)	(6,293)
Livestock	Titus	Cypress	(242)	(242)	(242)	(242)	(247)	(247)
Irrigation	Titus	Cypress	(16)	(16)	(16)	(16)	(16)	(16)
Cypress Springs SUD	Titus	Sulphur	50	53	59	59	59	57
Talco	Titus	Sulphur	348	349	353	356	360	364
Tri SUD	Titus	Sulphur	(164)	(193)	(193)	(184)	(160)	(123)
County-Other	Titus	Sulphur	953	401	443	482	522	542
Livestock	Titus	Sulphur	77	77	77	77	37	16
Irrigation	Titus	Sulphur	(142)	(142)	(142)	(142)	(142)	(142)
Bi County WSC	Upshur	Cypress	77	76	78	83	89	95
Diana SUD	Upshur	Cypress	605	559	504	445	379	307
East Mountain Water System	Upshur	Cypress	8	8	8	9	10	11
Gilmer	Upshur	Cypress	280	275	279	292	306	320
Glenwood WSC	Upshur	Cypress	14	14	14	19	23	28
Ore City	Upshur	Cypress	1,526	1,525	1,526	1,529	1,531	1,534
Pritchett WSC	Upshur	Cypress	186	185	186	189	193	197
Sharon WSC	Upshur	Cypress	133	132	133	136	139	142
Union Grove WSC	Upshur	Cypress	7	6	6	7	6	7
County-Other	Upshur	Cypress	604	705	839	900	989	1,085
Manufacturing	Upshur	Cypress	(27)	(28)	(30)	(31)	(32)	(33)
Livestock	Upshur	Cypress	350	350	350	350	350	350
Irrigation	Upshur	Cypress	489	489	489	489	489	489
Big Sandy	Upshur	Sabine	(19)	(20)	(20)	(16)	(12)	(8)
East Mountain Water System	Upshur	Sabine	(175)	(177)	(176)	(172)	(167)	(163)
Fouke WSC	Upshur	Sabine	3	2	2	2	1	1
Gladewater	Upshur	Sabine	72	64	54	47	38	(98)
Glenwood WSC	Upshur	Sabine	3	3	3	3	4	4
Pritchett WSC	Upshur	Sabine	(46)	(49)	(46)	(37)	(28)	(19)
Union Grove WSC	Upshur	Sabine	137	136	137	140	144	146

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
County-Other	Upshur	Sabine	437	461	495	521	551	583
Manufacturing	Upshur	Sabine	(52)	(54)	(55)	(57)	(59)	(62)
Mining	Upshur	Sabine	(59)	14	24	(10)	(44)	(69)
Livestock	Upshur	Sabine	53	53	53	53	53	53
Ben Wheeler WSC*	Van Zandt	Neches	29	(21)	(66)	(115)	(166)	(209)
Bethel Ash WSC*	Van Zandt	Neches	0	0	0	0	0	0
Carroll WSC*	Van Zandt	Neches	0	0	(1)	(1)	(1)	(1)
Edom WSC*	Van Zandt	Neches	(42)	(47)	(51)	(54)	(55)	(55)
Little Hope Moore WSC	Van Zandt	Neches	(2)	(4)	(7)	(9)	(12)	(13)
R P M WSC*	Van Zandt	Neches	(33)	(29)	(29)	(24)	(19)	(13)
Van	Van Zandt	Neches	86	61	40	23	4	4
County-Other	Van Zandt	Neches	802	751	711	684	686	683
Livestock	Van Zandt	Neches	526	524	523	522	521	521
Irrigation	Van Zandt	Neches	(27)	(45)	(47)	(48)	(53)	(55)
Ables Springs SUD*	Van Zandt	Sabine	(1)	(1)	(1)	(1)	(2)	(2)
Canton	Van Zandt	Sabine	(251)	(447)	(637)	(833)	(1,088)	(1,291)
Carroll WSC*	Van Zandt	Sabine	(58)	(66)	(72)	(81)	(89)	(97)
Combined Consumers SUD	Van Zandt	Sabine	0	0	0	0	0	0
Edgewood	Van Zandt	Sabine	0	0	0	0	0	0
Fruitvale WSC	Van Zandt	Sabine	26	(3)	(18)	(43)	(76)	(95)
Golden WSC	Van Zandt	Sabine	0	(9)	(19)	(29)	(39)	(49)
Grand Saline	Van Zandt	Sabine	(455)	(462)	(469)	(469)	(471)	(472)
Little Hope Moore WSC	Van Zandt	Sabine	(4)	(10)	(15)	(20)	(25)	(28)
MacBee SUD*	Van Zandt	Sabine	(138)	(220)	(317)	(443)	(606)	(809)
Myrtle Springs WSC	Van Zandt	Sabine	(37)	(55)	(70)	(90)	(110)	(129)
Pine Ridge WSC	Van Zandt	Sabine	(32)	(43)	(56)	(68)	(82)	(95)
Pruitt Sandflat WSC	Van Zandt	Sabine	101	101	110	116	117	127
South Tawakoni WSC	Van Zandt	Sabine	0	0	0	0	0	0
Van	Van Zandt	Sabine	(109)	(106)	(104)	(99)	(93)	(93)
Wills Point	Van Zandt	Sabine	0	0	0	0	0	0
County-Other	Van Zandt	Sabine	(224)	(319)	(440)	(520)	(500)	(541)
Manufacturing	Van Zandt	Sabine	(381)	(402)	(416)	(436)	(469)	(489)
Mining	Van Zandt	Sabine	1,721	1,888	2,086	2,267	2,370	2,558
Livestock	Van Zandt	Sabine	271	271	273	274	270	272
Bethel Ash WSC*	Van Zandt	Trinity	0	0	0	0	0	0

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DRAFT Region D Water User Group (WUG) Needs or Surplus

			Water Supply Needs or Surplus (acre-feet per year)					
WUG Name	**County**	**Basin**	**2030**	**2040**	**2050**	**2060**	**2070**	**2080**
Mabank*	Van Zandt	Trinity	(33)	(41)	(48)	(57)	(65)	(73)
MacBee SUD*	Van Zandt	Trinity	(297)	(409)	(561)	(753)	(1,001)	(1,314)
Myrtle Springs WSC	Van Zandt	Trinity	(93)	(137)	(175)	(224)	(274)	(320)
Wills Point	Van Zandt	Trinity	0	0	0	0	0	0
County-Other	Van Zandt	Trinity	302	269	191	164	175	82
Livestock	Van Zandt	Trinity	161	161	161	161	125	81
Cypress Springs SUD	Wood	Cypress	123	119	111	104	96	86
Sharon WSC	Wood	Cypress	(1)	(11)	(17)	(29)	(42)	(54)
Winnsboro	Wood	Cypress	388	358	329	296	262	229
County-Other	Wood	Cypress	736	741	754	750	762	763
Livestock	Wood	Cypress	209	209	209	209	209	209
Irrigation	Wood	Cypress	60	60	60	60	60	60
Bright Star Salem SUD	Wood	Sabine	42	13	(5)	(46)	(87)	(128)
Cornersville WSC	Wood	Sabine	26	26	26	25	25	24
Fouke WSC	Wood	Sabine	228	197	175	137	100	61
Golden WSC	Wood	Sabine	(1)	(12)	(19)	(30)	(42)	(53)
Hawkins	Wood	Sabine	536	530	526	525	523	521
Jones WSC	Wood	Sabine	348	315	294	143	208	164
Lake Fork WSC	Wood	Sabine	393	375	364	342	320	298
Liberty Utilities Silverleaf Water*	Wood	Sabine	(331)	(355)	(370)	(391)	(412)	(434)
Mineola	Wood	Sabine	806	764	736	685	634	582
New Hope SUD	Wood	Sabine	(167)	(162)	(160)	(141)	(122)	(105)
Pritchett WSC	Wood	Sabine	2	1	1	1	1	1
Quitman	Wood	Sabine	665	656	645	643	639	647
Ramey WSC	Wood	Sabine	10	(73)	(172)	(285)	(415)	(564)
Sharon WSC	Wood	Sabine	126	106	93	66	40	13
Shirley WSC	Wood	Sabine	6	5	5	3	3	2
Winnsboro	Wood	Sabine	409	377	347	311	277	240
County-Other	Wood	Sabine	3,228	3,279	3,301	3,321	3,335	3,371
Manufacturing	Wood	Sabine	(1,410)	(1,518)	(1,630)	(1,746)	(1,866)	(1,991)
Mining	Wood	Sabine	(63)	(61)	(62)	(62)	(61)	(60)
Livestock	Wood	Sabine	319	319	319	319	319	319
Irrigation	Wood	Sabine	168	168	168	168	168	168

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Appendix F. TWDB DB27 Report – WUG Data Comparison to 2021 RWP

DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Bowie County| Municipal WUG Type						
Existing WUG supply total	3,636	3,567	-1.9%	3,601	3,601	0.0%
Projected demand total	14,496	13,907	-4.1%	15,858	13,253	-16.4%
Water supply needs total**	13,144	12,244	-6.8%	14,992	11,799	-21.3%
Bowie County| Manufacturing WUG Type						
Existing WUG supply total	35	35	0.0%	35	35	0.0%
Projected demand total	2,047	1,835	-10.4%	2,047	2,123	3.7%
Water supply needs total**	2,014	1,800	-10.6%	2,014	2,088	3.7%
Bowie County| Mining WUG Type						
Projected demand total	0	1,981	100.0%	0	2,225	100.0%
Water supply needs total**	0	1,981	100.0%	0	2,225	100.0%
Bowie County| Livestock WUG Type						
Existing WUG supply total	1,156	1,156	0.0%	720	771	7.1%
Projected demand total	1,825	1,321	-27.6%	1,136	821	-27.7%
Water supply needs total**	669	165	-75.3%	416	50	-88.0%
Bowie County| Irrigation WUG Type						
Existing WUG supply total	7,161	319	-95.5%	7,161	319	-95.5%
Projected demand total	10,373	10,067	-2.9%	10,373	10,067	-2.9%
Water supply needs total**	4,134	9,748	135.8%	4,134	9,748	135.8%
Camp County| Municipal WUG Type						
Existing WUG supply total	3,258	2,002	-38.6%	3,292	2,039	-38.1%
Projected demand total	1,763	1,583	-10.2%	2,211	1,624	-26.5%
Water supply needs total**	0	422	100.0%	0	445	100.0%
Camp County| Manufacturing WUG Type						
Existing WUG supply total	102	2	-98.0%	102	2	-98.0%
Projected demand total	52	44	-15.4%	52	52	0.0%

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DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Water supply needs total**	0	42	100.0%	0	50	100.0%
Camp County| Mining WUG Type						
Existing WUG supply total	23	0	-100.0%	23	0	-100.0%
Projected demand total	11	0	-100.0%	7	0	-100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Camp County| Livestock WUG Type						
Existing WUG supply total	952	952	0.0%	952	952	0.0%
Projected demand total	4,914	1,448	-70.5%	4,914	1,448	-70.5%
Water supply needs total**	3,962	496	-87.5%	3,962	496	-87.5%
Camp County| Irrigation WUG Type						
Projected demand total	0	5	100.0%	0	5	100.0%
Water supply needs total**	0	5	100.0%	0	5	100.0%
Cass County| Municipal WUG Type						
Existing WUG supply total	4,946	4,946	0.0%	5,076	5,076	0.0%
Projected demand total	3,422	3,458	1.1%	3,348	2,819	-15.8%
Water supply needs total**	400	376	-6.0%	246	84	-65.9%
Cass County| Manufacturing WUG Type						
Existing WUG supply total	32,849	32,774	-0.2%	32,845	32,846	0.0%
Projected demand total	32,799	36,152	10.2%	32,799	41,807	27.5%
Water supply needs total**	0	3,608	100.0%	0	9,189	100.0%
Cass County| Mining WUG Type						
Existing WUG supply total	862	969	12.4%	952	1,054	10.7%
Projected demand total	58	35	-39.7%	20	35	75.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Cass County| Livestock WUG Type						
Existing WUG supply total	839	839	0.0%	841	841	0.0%

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DRAFT Region D 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	2,657	792	-70.2%	2,657	792	-70.2%
Water supply needs total**	1,818	187	-89.7%	1,816	187	-89.7%
Delta County| Municipal WUG Type						
Existing WUG supply total	1,296	1,058	-18.4%	1,291	285	-77.9%
Projected demand total	664	759	14.3%	653	735	12.6%
Water supply needs total**	9	17	88.9%	15	493	3186.7%
Delta County| Livestock WUG Type						
Existing WUG supply total	291	279	-4.1%	291	291	0.0%
Projected demand total	541	511	-5.5%	541	511	-5.5%
Water supply needs total**	250	232	-7.2%	250	220	-12.0%
Delta County| Irrigation WUG Type						
Existing WUG supply total	9,176	2,748	-70.1%	9,203	2,776	-69.8%
Projected demand total	2,396	3,049	27.3%	2,396	3,049	27.3%
Water supply needs total**	0	301	100.0%	0	273	100.0%
Franklin County| Municipal WUG Type						
Existing WUG supply total	6,799	6,127	-9.9%	5,790	4,932	-14.8%
Projected demand total	1,450	1,801	24.2%	1,513	1,783	17.8%
Water supply needs total**	0	3	100.0%	0	5	100.0%
Franklin County| Manufacturing WUG Type						
Existing WUG supply total	7	0	-100.0%	7	0	-100.0%
Projected demand total	7	0	-100.0%	7	0	-100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Franklin County| Mining WUG Type						
Existing WUG supply total	1,016	0	-100.0%	954	0	-100.0%
Projected demand total	5	0	-100.0%	2	0	-100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%

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DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Franklin County| Livestock WUG Type						
Existing WUG supply total	1,046	1,046	0.0%	1,046	1,046	0.0%
Projected demand total	2,850	1,354	-52.5%	2,850	1,354	-52.5%
Water supply needs total**	1,804	308	-82.9%	1,804	308	-82.9%
Franklin County| Irrigation WUG Type						
Existing WUG supply total	314	0	-100.0%	314	0	-100.0%
Projected demand total	103	138	34.0%	103	138	34.0%
Water supply needs total**	0	138	100.0%	0	138	100.0%
Gregg County| Municipal WUG Type						
Existing WUG supply total	66,659	53,978	-19.0%	67,182	66,251	-1.4%
Projected demand total	33,068	32,717	-1.1%	47,865	32,923	-31.2%
Water supply needs total**	0	785	100.0%	11	89	709.1%
Gregg County| Manufacturing WUG Type						
Existing WUG supply total	1,574	1,572	-0.1%	1,574	1,572	-0.1%
Projected demand total	1,517	1,552	2.3%	1,517	1,796	18.4%
Water supply needs total**	0	0	0.0%	0	224	100.0%
Gregg County| Mining WUG Type						
Existing WUG supply total	414	260	-37.2%	174	233	33.9%
Projected demand total	433	82	-81.1%	180	82	-54.4%
Water supply needs total**	19	0	-100.0%	6	0	-100.0%
Gregg County| Steam Electric Power WUG Type						
Existing WUG supply total	2,242	2,242	0.0%	2,242	2,242	0.0%
Projected demand total	940	940	0.0%	940	940	0.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Gregg County| Livestock WUG Type						
Existing WUG supply total	215	215	0.0%	215	215	0.0%

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DRAFT Region D 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	210	179	-14.8%	210	179	-14.8%
Water supply needs total**	0	16	100.0%	0	16	100.0%
Gregg County| Irrigation WUG Type						
Existing WUG supply total	192	116	-39.6%	192	116	-39.6%
Projected demand total	40	33	-17.5%	40	33	-17.5%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Harrison County| Municipal WUG Type						
Existing WUG supply total	26,019	16,558	-36.4%	26,522	16,814	-36.6%
Projected demand total	11,327	11,673	3.1%	15,442	11,963	-22.5%
Water supply needs total**	263	515	95.8%	1,113	928	-16.6%
Harrison County| Manufacturing WUG Type						
Existing WUG supply total	108,029	12,279	-88.6%	107,894	11,836	-89.0%
Projected demand total	27,940	25,986	-7.0%	27,940	30,071	7.6%
Water supply needs total**	0	14,505	100.0%	0	19,031	100.0%
Harrison County| Mining WUG Type						
Existing WUG supply total	810	687	-15.2%	880	756	-14.1%
Projected demand total	2,077	2,691	29.6%	855	2,691	214.7%
Water supply needs total**	1,267	2,004	58.2%	129	1,935	1400.0%
Harrison County| Steam Electric Power WUG Type						
Existing WUG supply total	26,508	26,508	0.0%	26,508	26,508	0.0%
Projected demand total	21,112	23,145	9.6%	21,112	23,145	9.6%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Harrison County| Livestock WUG Type						
Existing WUG supply total	1,039	964	-7.2%	1,313	1,261	-4.0%
Projected demand total	669	627	-6.3%	815	764	-6.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%

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DRAFT Region D 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Harrison County| Irrigation WUG Type						
Existing WUG supply total	169	169	0.0%	169	169	0.0%
Projected demand total	701	560	-20.1%	701	560	-20.1%
Water supply needs total**	532	391	-26.5%	532	391	-26.5%
Hopkins County| Municipal WUG Type						
Existing WUG supply total	10,064	9,922	-1.4%	9,949	9,796	-1.5%
Projected demand total	5,766	7,187	24.6%	6,978	7,873	12.8%
Water supply needs total**	43	455	958.1%	254	687	170.5%
Hopkins County| Manufacturing WUG Type						
Existing WUG supply total	1,830	1,741	-4.9%	2,275	2,126	-6.5%
Projected demand total	968	1,042	7.6%	968	1,206	24.6%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hopkins County| Mining WUG Type						
Existing WUG supply total	841	249	-70.4%	938	283	-69.8%
Projected demand total	1,124	2	-99.8%	1,577	2	-99.9%
Water supply needs total**	283	0	-100.0%	639	0	-100.0%
Hopkins County| Livestock WUG Type						
Existing WUG supply total	4,854	4,854	0.0%	4,856	4,855	0.0%
Projected demand total	5,498	4,253	-22.6%	5,498	4,253	-22.6%
Water supply needs total**	1,090	129	-88.2%	1,219	120	-90.2%
Hopkins County| Irrigation WUG Type						
Existing WUG supply total	144	121	-16.0%	144	121	-16.0%
Projected demand total	4,769	3,910	-18.0%	4,769	3,910	-18.0%
Water supply needs total**	4,627	3,789	-18.1%	4,627	3,789	-18.1%
Hunt County| Municipal WUG Type						
Existing WUG supply total	19,214	15,075	-21.5%	23,906	19,719	-17.5%

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DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Projected demand total	20,669	31,193	50.9%	52,645	40,313	-23.4%
Water supply needs total**	5,749	17,171	198.7%	29,024	24,896	-14.2%
Hunt County| Manufacturing WUG Type						
Existing WUG supply total	1,282	951	-25.8%	1,941	1,573	-19.0%
Projected demand total	672	635	-5.5%	672	735	9.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hunt County| Mining WUG Type						
Existing WUG supply total	54	0	-100.0%	50	0	-100.0%
Projected demand total	118	0	-100.0%	47	0	-100.0%
Water supply needs total**	64	0	-100.0%	0	0	0.0%
Hunt County| Steam Electric Power WUG Type						
Existing WUG supply total	373	373	0.0%	373	373	0.0%
Projected demand total	373	373	0.0%	373	373	0.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Hunt County| Livestock WUG Type						
Existing WUG supply total	1,146	1,146	0.0%	1,147	1,147	0.0%
Projected demand total	1,095	1,222	11.6%	1,095	1,222	11.6%
Water supply needs total**	2	76	3700.0%	1	75	7400.0%
Hunt County| Irrigation WUG Type						
Existing WUG supply total	125	125	0.0%	125	125	0.0%
Projected demand total	355	316	-11.0%	355	316	-11.0%
Water supply needs total**	230	193	-16.1%	230	193	-16.1%
Lamar County| Municipal WUG Type						
Existing WUG supply total	37,607	14,117	-62.5%	36,344	13,633	-62.5%
Projected demand total	6,455	7,547	16.9%	6,719	7,425	10.5%
Water supply needs total**	204	129	-36.8%	244	115	-52.9%

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DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Lamar County| Manufacturing WUG Type						
Existing WUG supply total	6,252	5,961	-4.7%	7,475	6,851	-8.3%
Projected demand total	5,137	5,510	7.3%	5,137	6,377	24.1%
Water supply needs total**	0	361	100.0%	0	371	100.0%
Lamar County| Steam Electric Power WUG Type						
Existing WUG supply total	8,961	8,961	0.0%	8,961	8,961	0.0%
Projected demand total	5,511	5,706	3.5%	5,511	5,706	3.5%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Lamar County| Livestock WUG Type						
Existing WUG supply total	1,624	1,624	0.0%	1,624	1,624	0.0%
Projected demand total	1,469	1,628	10.8%	1,469	1,628	10.8%
Water supply needs total**	617	579	-6.2%	617	579	-6.2%
Lamar County| Irrigation WUG Type						
Existing WUG supply total	8,658	1,472	-83.0%	8,658	1,472	-83.0%
Projected demand total	10,126	8,095	-20.1%	10,126	8,095	-20.1%
Water supply needs total**	1,468	6,623	351.2%	1,468	6,623	351.2%
Marion County| Municipal WUG Type						
Existing WUG supply total	4,717	3,467	-26.5%	4,717	3,467	-26.5%
Projected demand total	1,029	1,055	2.5%	1,010	812	-19.6%
Water supply needs total**	18	15	-16.7%	56	33	-41.1%
Marion County| Manufacturing WUG Type						
Projected demand total	0	151	100.0%	0	175	100.0%
Water supply needs total**	0	151	100.0%	0	175	100.0%
Marion County| Mining WUG Type						
Existing WUG supply total	119	116	-2.5%	128	126	-1.6%
Projected demand total	764	24	-96.9%	393	24	-93.9%

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DRAFT Region D 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Water supply needs total**	645	0	-100.0%	265	0	-100.0%
Marion County| Steam Electric Power WUG Type						
Existing WUG supply total	4,445	4,257	-4.2%	6,247	5,860	-6.2%
Projected demand total	4,257	4,257	0.0%	4,257	4,257	0.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Marion County| Livestock WUG Type						
Existing WUG supply total	411	411	0.0%	411	411	0.0%
Projected demand total	188	169	-10.1%	188	169	-10.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Marion County| Irrigation WUG Type						
Existing WUG supply total	321	157	-51.1%	321	157	-51.1%
Projected demand total	12	5	-58.3%	12	5	-58.3%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Morris County| Municipal WUG Type						
Existing WUG supply total	3,727	3,703	-0.6%	3,737	3,687	-1.3%
Projected demand total	1,705	1,649	-3.3%	1,797	1,506	-16.2%
Water supply needs total**	24	81	237.5%	20	41	105.0%
Morris County| Manufacturing WUG Type						
Existing WUG supply total	116,480	120,717	3.6%	115,068	120,105	4.4%
Projected demand total	25,743	27,561	7.1%	25,743	31,894	23.9%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Morris County| Steam Electric Power WUG Type						
Existing WUG supply total	820	820	0.0%	820	820	0.0%
Projected demand total	50	50	0.0%	50	50	0.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Morris County| Livestock WUG Type						

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DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Existing WUG supply total	626	595	-5.0%	626	595	-5.0%
Projected demand total	1,605	586	-63.5%	1,605	586	-63.5%
Water supply needs total**	979	61	-93.8%	979	61	-93.8%
Morris County| Irrigation WUG Type						
Existing WUG supply total	70	70	0.0%	70	70	0.0%
Projected demand total	11	10	-9.1%	11	10	-9.1%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Rains County| Municipal WUG Type						
Existing WUG supply total	3,523	3,052	-13.4%	3,450	3,528	2.3%
Projected demand total	2,145	2,351	9.6%	2,164	2,819	30.3%
Water supply needs total**	2	29	1350.0%	65	233	258.5%
Rains County| Manufacturing WUG Type						
Existing WUG supply total	12	12	0.0%	12	12	0.0%
Projected demand total	12	1	-91.7%	12	1	-91.7%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Rains County| Livestock WUG Type						
Existing WUG supply total	506	506	0.0%	506	506	0.0%
Projected demand total	428	503	17.5%	428	503	17.5%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Rains County| Irrigation WUG Type						
Existing WUG supply total	211	58	-72.5%	211	58	-72.5%
Projected demand total	65	60	-7.7%	65	60	-7.7%
Water supply needs total**	0	2	100.0%	0	2	100.0%
Red River County| Municipal WUG Type						
Existing WUG supply total	1,882	1,893	0.6%	1,878	1,894	0.9%
Projected demand total	1,482	1,830	23.5%	1,392	1,292	-7.2%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs

**WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Data Comparison to 2021 RWP report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG county and category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the water supply needs totals.

DRAFT Region D 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Water supply needs total**	231	421	82.3%	219	81	-63.0%
Red River County| Manufacturing WUG Type						
Existing WUG supply total	8,527	5,338	-37.4%	8,520	5,331	-37.4%
Projected demand total	3	3	0.0%	3	3	0.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Red River County| Mining WUG Type						
Existing WUG supply total	4	0	-100.0%	3	0	-100.0%
Projected demand total	4	0	-100.0%	3	0	-100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Red River County| Livestock WUG Type						
Existing WUG supply total	1,527	1,527	0.0%	1,527	1,527	0.0%
Projected demand total	1,532	1,592	3.9%	1,532	1,592	3.9%
Water supply needs total**	184	145	-21.2%	184	145	-21.2%
Red River County| Irrigation WUG Type						
Existing WUG supply total	2,523	298	-88.2%	2,523	298	-88.2%
Projected demand total	3,867	3,783	-2.2%	3,867	3,783	-2.2%
Water supply needs total**	2,154	3,485	61.8%	2,154	3,485	61.8%
Smith County| Municipal WUG Type						
Existing WUG supply total	9,118	8,911	-2.3%	11,513	8,802	-23.5%
Projected demand total	8,020	9,200	14.7%	13,664	10,838	-20.7%
Water supply needs total**	265	730	175.5%	2,526	2,383	-5.7%
Smith County| Manufacturing WUG Type						
Existing WUG supply total	5	19	280.0%	5	16	220.0%
Projected demand total	5	19	280.0%	5	23	360.0%
Water supply needs total**	0	0	0.0%	0	7	100.0%
Smith County| Mining WUG Type						

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs

**WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Data Comparison to 2021 RWP report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG county and category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the water supply needs totals.

DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Existing WUG supply total	465	0	-100.0%	697	0	-100.0%
Projected demand total	309	0	-100.0%	497	0	-100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Smith County| Livestock WUG Type						
Existing WUG supply total	514	465	-9.5%	514	465	-9.5%
Projected demand total	514	465	-9.5%	514	465	-9.5%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Smith County| Irrigation WUG Type						
Existing WUG supply total	324	155	-52.2%	324	155	-52.2%
Projected demand total	324	311	-4.0%	324	311	-4.0%
Water supply needs total**	0	156	100.0%	0	156	100.0%
Titus County| Municipal WUG Type						
Existing WUG supply total	20,265	21,380	5.5%	19,520	20,051	2.7%
Projected demand total	6,561	6,499	-0.9%	9,775	7,457	-23.7%
Water supply needs total**	0	452	100.0%	0	459	100.0%
Titus County| Manufacturing WUG Type						
Existing WUG supply total	2,737	5,392	97.0%	2,461	2,591	5.3%
Projected demand total	4,155	4,455	7.2%	4,155	5,156	24.1%
Water supply needs total**	1,418	0	-100.0%	1,694	2,565	51.4%
Titus County| Mining WUG Type						
Existing WUG supply total	4,807	0	-100.0%	4,666	0	-100.0%
Projected demand total	1,775	0	-100.0%	2,392	0	-100.0%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Titus County| Steam Electric Power WUG Type						
Existing WUG supply total	31,065	29,065	-6.4%	28,848	24,137	-16.3%
Projected demand total	61,931	29,541	-52.3%	61,931	29,541	-52.3%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs

**WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Data Comparison to 2021 RWP report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG county and category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the water supply needs totals.

DRAFT Region D 2026 Regional Water Plan (RWP)
Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Water supply needs total**	30,866	476	-98.5%	33,083	5,404	-83.7%
Titus County| Livestock WUG Type						
Existing WUG supply total	1,008	1,008	0.0%	942	963	2.2%
Projected demand total	2,947	1,173	-60.2%	2,947	1,173	-60.2%
Water supply needs total**	1,939	242	-87.5%	2,005	247	-87.7%
Titus County| Irrigation WUG Type						
Existing WUG supply total	1,468	1,034	-29.6%	1,468	1,034	-29.6%
Projected demand total	1,053	1,192	13.2%	1,053	1,192	13.2%
Water supply needs total**	0	158	100.0%	0	158	100.0%
Upshur County| Municipal WUG Type						
Existing WUG supply total	9,899	9,475	-4.3%	10,025	9,626	-4.0%
Projected demand total	5,187	5,623	8.4%	6,189	5,430	-12.3%
Water supply needs total**	0	240	100.0%	206	207	0.5%
Upshur County| Manufacturing WUG Type						
Existing WUG supply total	6	6	0.0%	6	6	0.0%
Projected demand total	76	85	11.8%	76	97	27.6%
Water supply needs total**	70	79	12.9%	70	91	30.0%
Upshur County| Mining WUG Type						
Existing WUG supply total	831	80	-90.4%	438	95	-78.3%
Projected demand total	726	139	-80.9%	333	139	-58.3%
Water supply needs total**	0	59	100.0%	0	44	100.0%
Upshur County| Livestock WUG Type						
Existing WUG supply total	1,511	1,511	0.0%	1,511	1,511	0.0%
Projected demand total	1,651	1,108	-32.9%	1,651	1,108	-32.9%
Water supply needs total**	140	0	-100.0%	140	0	-100.0%
Upshur County| Irrigation WUG Type						

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs

**WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Data Comparison to 2021 RWP report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG county and category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the water supply needs totals.

DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Existing WUG supply total	713	632	-11.4%	713	632	-11.4%
Projected demand total	170	143	-15.9%	170	143	-15.9%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Van Zandt County| Municipal WUG Type						
Existing WUG supply total	12,594	9,124	-27.6%	12,495	9,791	-21.6%
Projected demand total	7,050	9,238	31.0%	8,380	13,218	57.7%
Water supply needs total**	66	1,460	2112.1%	340	4,409	1196.8%
Van Zandt County| Manufacturing WUG Type						
Existing WUG supply total	264	175	-33.7%	253	174	-31.2%
Projected demand total	757	556	-26.6%	757	643	-15.1%
Water supply needs total**	493	381	-22.7%	504	469	-6.9%
Van Zandt County| Mining WUG Type						
Existing WUG supply total	3,493	1,727	-50.6%	4,154	2,376	-42.8%
Projected demand total	319	6	-98.1%	470	6	-98.7%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Van Zandt County| Livestock WUG Type						
Existing WUG supply total	2,928	2,892	-1.2%	2,923	2,850	-2.5%
Projected demand total	1,889	1,934	2.4%	1,889	1,934	2.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Van Zandt County| Irrigation WUG Type						
Existing WUG supply total	439	379	-13.7%	432	353	-18.3%
Projected demand total	500	406	-18.8%	500	406	-18.8%
Water supply needs total**	61	27	-55.7%	68	53	-22.1%
Wood County| Municipal WUG Type						
Existing WUG supply total	14,774	14,891	0.8%	14,435	14,692	1.8%
Projected demand total	5,183	7,319	41.2%	5,257	8,587	63.3%

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**WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Data Comparison to 2021 RWP report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG county and category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the water supply needs totals.

DRAFT Region D 2026 Regional Water Plan (RWP) Water User Group (WUG) Data Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Water supply needs total**	0	500	100.0%	0	1,120	100.0%
Wood County| Manufacturing WUG Type						
Existing WUG supply total	1,502	1,502	0.0%	1,502	1,502	0.0%
Projected demand total	3,085	2,912	-5.6%	3,085	3,368	9.2%
Water supply needs total**	1,583	1,410	-10.9%	1,583	1,866	17.9%
Wood County| Mining WUG Type						
Existing WUG supply total	313	284	-9.3%	328	292	-11.0%
Projected demand total	25	347	1288.0%	19	353	1757.9%
Water supply needs total**	0	63	100.0%	0	61	100.0%
Wood County| Livestock WUG Type						
Existing WUG supply total	2,198	2,198	0.0%	2,198	2,198	0.0%
Projected demand total	3,224	1,670	-48.2%	3,224	1,670	-48.2%
Water supply needs total**	1,098	0	-100.0%	1,098	0	-100.0%
Wood County| Irrigation WUG Type						
Existing WUG supply total	1,374	753	-45.2%	1,374	753	-45.2%
Projected demand total	489	525	7.4%	489	525	7.4%
Water supply needs total**	0	0	0.0%	0	0	0.0%
Region D Total						
Existing WUG supply total	687,729	501,114	-27.1%	692,647	511,015	-26.2%
Projected demand total	415,399	389,550	-6.2%	479,321	422,546	-11.8%
Water supply needs total**	86,898	90,617	4.3%	117,022	121,820	4.1%

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**WUG supplies and projected demands are entered for each of a WUG's region-county-basin divisions. The needs shown in the WUG Data Comparison to 2021 RWP report are calculated by first deducting the WUG split's projected demand from its total existing water supply volume. If the WUG split has a greater existing supply volume than projected demand in any given decade, this amount is considered a surplus volume. Before aggregating the difference between supplies and demands to the WUG county and category level, calculated surpluses are updated to zero so that only the WUGs with needs in the decade are included with the water supply needs totals.

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Appendix G. TWDB DB27 Report – Source Data Comparison to 2021 RWP

DRAFT Region D 2026 Regional Water Plan (RWP) Source Availability Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Bowie County						
Groundwater availability total	14,772	14,859	0.6%	14,213	14,859	4.5%
Surface Water availability total	10,066	2,004	-80.1%	9,820	1,783	-81.8%
Camp County						
Groundwater availability total	8,356	5,456	-34.7%	8,200	5,456	-33.5%
Surface Water availability total	535	534	-0.2%	725	698	-3.7%
Cass County						
Groundwater availability total	56,435	30,121	-46.6%	56,135	30,121	-46.3%
Surface Water availability total	854	829	-2.9%	855	830	-2.9%
Delta County						
Groundwater availability total	631	631	0.0%	631	631	0.0%
Surface Water availability total	9,445	2,966	-68.6%	9,445	2,967	-68.6%
Franklin County						
Groundwater availability total	9,816	5,762	-41.3%	9,816	5,762	-41.3%
Surface Water availability total	1,159	685	-40.9%	1,159	685	-40.9%
Gregg County						
Groundwater availability total	15,025	8,584	-42.9%	15,025	8,584	-42.9%
Reuse availability total	6,161	6,161	0.0%	6,161	6,161	0.0%
Surface Water availability total	15,333	15,253	-0.5%	15,333	15,253	-0.5%
Harrison County						
Groundwater availability total	21,032	12,633	-39.9%	20,899	12,633	-39.6%
Surface Water availability total	105,057	1,581	-98.5%	105,176	1,692	-98.4%
Hopkins County						
Groundwater availability total	11,567	5,959	-48.5%	11,157	5,959	-46.6%
Surface Water availability total	3,012	3,051	1.3%	2,568	2,611	1.7%
Hunt County						
Groundwater availability total	4,772	4,560	-4.4%	6,333	5,416	-14.5%
Surface Water availability total	1,165	1,173	0.7%	1,166	1,174	0.7%
Lamar County						
Groundwater availability total	583	561	-3.8%	583	561	-3.8%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs.

**Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

DRAFT Region D 2026 Regional Water Plan (RWP) Source Availability Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Reuse availability total	12	12	0.0%	12	12	0.0%
Surface Water availability total	10,232	3,046	-70.2%	10,232	3,046	-70.2%
Marion County						
Groundwater availability total	18,133	9,355	-48.4%	17,997	9,355	-48.0%
Surface Water availability total	1,072	145	-86.5%	1,072	145	-86.5%
Morris County						
Groundwater availability total	12,037	5,849	-51.4%	11,930	5,849	-51.0%
Reuse availability total	66,660	72,086	8.1%	65,248	71,474	9.5%
Surface Water availability total	481	492	2.3%	486	497	2.3%
Rains County						
Groundwater availability total	1,840	1,412	-23.3%	1,746	1,412	-19.1%
Surface Water availability total	886	733	-17.3%	886	733	-17.3%
Red River County						
Groundwater availability total	4,947	4,839	-2.2%	4,946	4,838	-2.2%
Surface Water availability total	12,427	7,013	-43.6%	12,427	7,013	-43.6%
Reservoir County**						
Surface Water availability total	1,202,533	1,089,532	-9.4%	1,117,950	1,014,894	-9.2%
Smith County						
Groundwater availability total	41,563	20,396	-50.9%	41,083	20,396	-50.4%
Surface Water availability total	994	305	-69.3%	994	305	-69.3%
Titus County						
Groundwater availability total	10,046	7,536	-25.0%	10,176	7,536	-25.9%
Reuse availability total	160	160	0.0%	160	160	0.0%
Surface Water availability total	2,029	1,603	-21.0%	2,029	1,603	-21.0%
Upshur County						
Groundwater availability total	34,522	18,821	-45.5%	34,276	18,821	-45.1%
Surface Water availability total	1,556	1,369	-12.0%	1,556	1,369	-12.0%
Van Zandt County						
Groundwater availability total	15,221	9,275	-39.1%	14,862	9,275	-37.6%
Surface Water availability total	4,586	3,981	-13.2%	4,906	4,315	-12.0%
Wood County						

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs.

**Since reservoir sources can exist across multiple counties, the county field value, 'reservoir' is applied to all reservoir sources.

DRAFT Region D 2026 Regional Water Plan (RWP) Source Availability Comparison to 2021 RWP

Water Volumes Shown in Acre-Feet per year

	2030 Planning Decade*			2070 Planning Decade*		
	2021 RWP	2026 RWP	Difference (%)	2021 RWP	2026 RWP	Difference (%)
Groundwater availability total	31,459	24,412	-22.4%	31,283	24,412	-22.0%
Surface Water availability total	3,199	2,588	-19.1%	3,199	2,588	-19.1%
Region D Total						
Groundwater availability total	312,757	191,021	-38.9%	311,291	191,876	-38.4%
Reuse availability total	72,993	78,419	7.4%	71,581	77,807	8.7%
Surface Water availability total	1,386,621	1,138,883	-17.9%	1,301,984	1,064,201	-18.3%

*The 2030 and 2070 planning decades are used in this comparison because they represent the earliest and latest planning decades in both the 2021 and 2026 RWPs.

**Since reservoir sources can exist across multiple counties, the county field value, ‘reservoir’ is applied to all reservoir sources.

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Appendix H.1. Region D Hydrologic Variance Request

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October 27, 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 27, 2023, TX PE#92620.

Mr. Ron Ellis
Region D 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 North East Texas Regional Water Plan (Region D)

Dear Mr. Ellis:

The North East Texas Regional Water Planning Group (NETRWPG; Region D) met on October 4, 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 NETRWPG 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 North East Texas Regional Water Plan.

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

Surface Water Supplies

The Region D planning area is located primarily within the Cypress Creek, Red River, Sabine, and Sulphur River Basins. Small areas of the region are in the Neches and Trinity River Basins. Surface waters in each of these river basins serve as a source of water to Region D. 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), unless a hydrologic variance request is submitted.

The TCEQ WAMs, which have been developed for all river basins in Texas, simulate the management, operation, and use of streamflow and reservoirs over a historical period of record, adhering to the prior appropriation doctrine that governs 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.

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 Region D 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 D will be reported within the 2026 Region D 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 D include considerations of potential impacts of a DWDOR, these evaluations will be documented within Chapter 8 of the 2026 Region D Plan and considered for informing upon legislative and regional policy recommendations of the NETRWPG within that chapter.

General Hydrologic Assumptions

The NETRWPG will assess surface water availability in a manner that accurately reflects water supplies that are available for use. The NETRWPG requests that the TWDB approve the following assumptions for use in representing existing supplies and potential future surface water supplies in the 2026 Region D Water Plan. The WAMs containing the necessary modifications to the TCEQ WAM that incorporate these assumptions will be referred to as the "Region D 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
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

Assumption	Use for Existing Supplies	Use for Water Management Strategies
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, 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 (more detail on this approach presented in Attachment B) and resultant 2030 and 2080 area-capacity curves developed and employed within WAM. Intervening decadal yields will be linearly interpolated. Evaluations of WMSs will assume original capacities in a conservative manner consistent with TCEQ permitting and TWDB guidelines. This will ensure the use of conservative estimates of availability.	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
Groundwater Supplies		
Groundwater availability will be determined using the adopted Modeled Available Groundwater (MAG) numbers. Local hydrogeologic conditions will be considered when establishing each entity's portion of the MAG. For those WUGs/sellers wherein existing or planned pumpage exceeds MAG amounts, amounts derived and adopted for the purposes of the 2021 Region D Plan will formulate the basis for any necessary detailed analysis of the entity's pumping, typical production of the aquifer, and relevant information from applicable GMAs will be considered towards development of the available groundwater supply for the entity. The capability of current infrastructure's (number of wells, well field capacity, peaking factors, etc.) ability to produce annual supply during drought-of-record conditions will also be considered when evaluating future water management strategies. This information will be based upon information	X	X

Assumption	Use for Existing Supplies	Use for Water Management Strategies
developed for the purposes of the 2021 Region D Plan, and similarly coordinated with TWDB subsequent to submittal of the Technical Memorandum.		

Cypress Creek Basin WAM

For the Cypress Creek River Basin, the most recently available official TCEQ WAM Run 3 (ver. June 18, 2015) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1948-1998.

An updated WAM reflecting an extended hydrologic period has been under development by TCEQ and others but has not yet been made publicly available by TCEQ. If the updated official WAM for the Cypress Creek River Basin becomes available prior to the completion of the source water availability modeling task for the purposes of the 2026 Region D Water Plan, the NETRWPG respectfully requests the option to use this updated model for the calculation of water availabilities for existing sources and future strategies within the Cypress Creek River Basin.

Red River Basin WAM

For the Red River Basin, the most recently available official TCEQ WAM Run 3 (ver. Oct. 26, 2021) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1948-2018.

Sabine River Basin WAM

For the Sabine River Basin, the most recently available official TCEQ WAM Run 3 (ver. August 13, 2018) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1940-1998.

Regarding depictions of sedimentation in Lake Fork and Lake Tawakoni, the area/capacity relations reflecting sedimentation effects will be consistent with those employed by the Region C and Region I RWPGs. This will ensure interregional consistency in reporting. Details on the methodology are described in Attachment B.

<u>Sulphur River Basin WAM</u>

For the Sulphur River Basin, the most recently available official TCEQ WAM Run 3 (ver. Oct. 11, 2019) will be employed for all availability analyses in the basin using the modeled hydrologic period of 1940-2017.

Lake Chapman is currently used by water providers in Region D and Region C and is represented within the official WAM by individual water rights. To assess the firm yield of Lake Chapman, the NETRWPG requests to model the reservoir as a single pool, with supplies then assigned proportionally based on each providers' water rights. This will be done in a coordinated matter with Region C to ensure a consistent representation of the reservoir and supply availability.

The TCEQ WAM Run3 will be modified to correct an error in drainage area for control point C10 (Sulphur River near Talco) as identified by FNI (2012) (see Attachment C):

> "In the original TCEQ WAM, primary control point C10, the Sulphur River near Talco (USGS 07343200, aka Sulphur River below Talco 07343210), had a drainage area that was smaller than the next upstream point C20. This results in a flow discontinuity which may impact water availability. Apparently the USGS moved the gage downstream just after the naturalized flows were developed for the Sulphur WAM. For this model, we are using a drainage area for C10 of 1,365 square miles, the drainage area of the gage for the period of the naturalized flows. This is the drainage area used in the original Sulphur WAM."

It has been confirmed that this difference remains in the latest TCEQ Sulphur WAM (October 11, 2019); thus, this correction will be made to all Region D evaluations employing the Sulphur WAM.

<u>Other WAMs</u>

For the purposes of the 2026 Region D Water Plan, for the Neches River Basin the NETRWPG requests use of the Neches WAM model as modified by the Region I RWPG as approved by the TWDB for all availability analyses in the basin. For the Trinity River Basin, the NETRWPG requests use of the Trinity WAM model as modified by the Region C RWPG and approved by the TWDB for all availability analyses in the basin.

Specifics regarding surface water availability modeling of each river basin are presented by basin in the completed hydrologic variance forms provided in Attachment A. Considerations regarding the simulation of reservoir conditions with respect to sedimentation effects are then subsequently detailed in Attachment B. Supporting documentation is provided within Attachment C.

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

Sincerely,
CAROLLO ENGINEERS, INC.

Tony L. Smith, P.E.
Project Manager

tls

Enclosures: Attachments A, B, C

cc: Jim Thompson
Kyle Dooley
Stan Hayes

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: D

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.

   Cypress Creek 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.

   - Request inclusion of return flows for existing surface water rights utilizing return flows for evaluation of existing and strategy reuse supplies. This variance will allow for the evaluation of reuse strategies in the WAM in a manner consistent with present permitting approaches, and thus provides a better basis for planning availabilities of such strategies to WUGs and WWPs.

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

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

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

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

   Updated sedimentation will be represented within the WAM for the determination of reservoir firm yields for existing and strategy supply. A description of the sedimentation methodology to be employed is provided in Attachment B. In the evaluation of a surface water WMS, original reservoir capacities will be used to represent other reservoirs such that the most conservative representation of availability is determined for a WMS (where other reservoirs have full legal access to their storage).

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

   Existing and Strategy Supply

   Evaluations of reuse strategies will use the minimum monthly return flows from the most recent 10-yr historical discharge data of the WUG for which consideration of a reuse water management strategy is evaluated. 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.

[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.

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

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. <u>Please complete a separate checklist for each river basin in which variances are being requested.</u>

Water Planning Region: D

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.

   - Request inclusion of return flows for existing surface water rights utilizing return flows for evaluation of existing and strategy reuse supplies. This variance will allow for the evaluation of reuse strategies in the WAM in a manner consistent with present permitting approaches, and thus provides a better basis for planning availabilities of such strategies to WUGs and WWPs.

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

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

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

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

   Updated sedimentation will be represented within the WAM for the determination of reservoir firm yields for existing and strategy supply. A description of the sedimentation methodology to be employed is provided in Attachment B. In the evaluation of a surface water WMS, original reservoir capacities will be used to represent other reservoirs such that the most conservative representation of availability is determined for a WMS (where other reservoirs have full legal access to their storage).

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

   Existing and Strategy Supply

   Evaluations of reuse strategies will use the minimum monthly return flows from the most recent 10-yr historical discharge data of the WUG for which consideration of a reuse water management strategy is evaluated. 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.

[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.

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.

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. <u>Please complete a separate checklist for each river basin in which variances are being requested.</u>

Water Planning Region: D

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

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 existing surface water rights utilizing return flows for evaluation of existing and strategy reuse supplies. This variance will allow for the evaluation of reuse strategies in the WAM in a manner consistent with present permitting approaches, and thus provides a better basis for planning availabilities of such strategies to WUGs and WWPs.

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

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

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

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

   Updated sedimentation will be represented within the WAM for the determination of reservoir firm yields for existing and strategy supply. A description of the sedimentation methodology to be employed is provided in Attachment B. In the evaluation of a surface water WMS, original reservoir capacities will be used to represent other reservoirs such that the most conservative representation of availability is determined for a WMS (where other reservoirs have full legal access to their storage).

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

   Existing and Strategy Supply

   Evaluations of reuse strategies will use the minimum monthly return flows from the most recent 10-yr historical discharge data of the WUG for which consideration of a reuse water management strategy is evaluated. 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.

    Yes

[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.

Modeling of the Sabine WAM will be consistent between Region D and Region I. Information from this modeling will also be consistently reported in coordination with Region C.

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

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: D

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.

   - Request to correct the TCEQ WAM Run3 for the Sulphur River Basin for the drainage area at Control Point C10. This will increase model accuracy and thus provides an improved basis for planning.

   - Request inclusion of return flows for existing surface water rights utilizing return flows for evaluation of existing and strategy reuse supplies. This variance will allow for the evaluation of reuse strategies in the WAM in a manner consistent with present permitting approaches, and thus provides a better basis for planning availabilities of such strategies to WUGs and WWPs.

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

- Request modeling of Lake Chapman as one pool instead of multiple pools to facilitate calculation of the firm yield. This will increase model accuracy and thus provides an improved basis for planning.

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 2021 and 2016 planning cycles and are unchanged from the previous planning cycle request.

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

The TCEQ WAM Run3 will be modified to correct an error in drainage area for control point C10 (Sulphur River near Talco) as identified by FNI (2012) (see Attachment C):

> "In the original TCEQ WAM, primary control point C10, the Sulphur River near Talco (USGS 07343200, aka Sulphur River below Talco 07343210), had a drainage area that was smaller than the next upstream point C20. This results in a flow discontinuity which may impact water availability. Apparently the USGS moved the gage downstream just after the naturalized flows were developed for the Sulphur WAM. For this model, we are using a drainage area for C10 of 1,365 square miles, the drainage area of the gage for the period of the naturalized flows. This is the drainage area used in the original Sulphur WAM."

It has been confirmed that this difference remains in the latest TCEQ Sulphur WAM (October 11, 2019); thus, this correction will be made to all Region D evaluations employing the Sulphur WAM. Specifically, the .DIS file will be modified as follows:

```
** FNI Change - Changed the drainage area for C10 to match USGS drainage area at Sulphur
River Near Talco (1,365 mi2) prior to May 21, 1997.
WP   C10    1365    69.6    43.4
**WP   C10 1353.24    69.6    43.4
```

Lake Chapman is currently used by water providers in Region D and Region C and is represented within the official WAM by individual water rights. To assess the firm yield of Lake Chapman, the NETRWPG requests to model the reservoir as a single pool, with supplies then assigned proportionally based on each providers' water rights. This will be done in a

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

coordinated matter with Region C to ensure a consistent representation of the reservoir and supply availability.

Click or tap here to enter text.

Updated sedimentation will be represented within the WAM for the determination of reservoir firm yields for existing and strategy supply. A description of the sedimentation methodology to be employed is provided in Attachment B. In the evaluation of a surface water WMS, original reservoir capacities will be used to represent other reservoirs such that the most conservative representation of availability is determined for a WMS (where other reservoirs have full legal access to their storage).

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

   Existing and Strategy Supply

   Evaluations of reuse strategies will use the minimum monthly return flows from the most recent 10-yr historical discharge data of the WUG for which consideration of a reuse water management strategy is evaluated. 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.

ATTACHMENT B

NORTH EAST TEXAS REGIONAL WATER PLANNING GROUP

2026 Region D Water Plan

Project No.:	200343
Date:	October 4, 2023
Prepared By:	Michael Pinckney, P.E. and Tony Smith P.E.
Reviewed By:	
Subject:	Methodology to Estimate Revised Reservoir Storage Volume Capacity and Surface Area Curves for Use in Estimating Existing and Strategy Reservoir Source Availabilities for Future Planning Decades for the purposes of 2026 Texas Regional Water Plan

This document is released for the purpose of information exchange review and planning only under the authority of Tony L. Smith, P.E., 9/21/2023, Texas, PE #92620.

SIMULATION OF RESERVOIR CONDITIONS (SEDIMENTATION)

Reservoir sedimentation reduces 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 reflects the distribution of the total volume of sediment accumulated at the end of an analysis period. The resultant area-capacity relationship can then be incorporated into an applicable Water Availability Model (WAM) for a given reservoir.

Generally, for the purposes of the 2026 Region D Plan, if a reservoir is calculated to have no firm yield, that result will be assumed for all decades in the 2030-2080 planning horizon. For those reservoirs lacking volumetric surveys, original area-capacity relations employed within WAM Run 3 will be assumed constant. If original area-capacity-elevation relations are not available, the most recent area-capacity-elevation relation for a reservoir will be used as a baseline for future projections. For reservoirs with available volumetric survey information, an annual sediment rate will be calculated or cited from available information, and loadings calculated for Year 2030 and Year 2080. Sediment distribution within the reservoir will be calculated using the Empirical Area Reduction Method (described below), and resultant 2030 and 2080 area-capacity curves will be developed and employed within the applicable WAM to calculate 2030 and 2080 firm yields. The intervening decadal firm yields will then be linearly interpolated.

Empirical Area-Reduction Method

USACE (1989) describes methods for estimating the distribution of sediment deposits in reservoirs. It is noted that empirical methods offer a simple approach useful as a "first approximation," but that their use sacrifices consideration of unique interactions between numerous factors affecting the distribution of sediment deposits in a given reservoir. Such factors include a reservoir's size, shape, sediment quantities and characteristics, sediment sources, progressive vegetative growth on frequently exposed deposits, consolidation of deposits, basin hydrology, and regulation of the reservoir (USACE, 1989).

While five empirical methods are considered in USACE (1989), two are noted as being the most widely used: the Area-Increment Method and the Empirical Area Reduction Method. For the Area-Increment Method, USACE (1989) notes that, "under extreme reservoir operation conditions, or unusual reservoir shape, the Empirical Area Reduction Method should be used," but also notes that both the Area-Increment method and Empirical Area Reduction method, "tend to overpredict the volume of deposits in the conservation pool."

Such a tendency is considered in the present context as being reasonably conservative, as such an overprediction in the volume of sediment deposits would limit the volume available in the conservation pool. More detailed information and modeling beyond the present scope of the regional planning process would be necessary to provide a more detailed characterization of sediment distribution for individual reservoirs in Region D. Given these considerations, it has been assumed that the Empirical Area Reduction Method is sufficient for the purposes of the 2026 Region D Plan. A brief summary of the Empirical Area Reduction Method to be employed for distribution of sediment is provided below.

The Empirical Area-Reduction Method for calculating the distribution of sediment deposits in a reservoir was developed by Borland and Miller (1958) for the Bureau of Reclamation. The basic equation of the empirical area-reduction method is expressed as

$$S = \int_{o}^{y_0} A d_y + \int_{y_0}^{H} K a_p d_y$$

Where,

S = Total sediment volume distributed in the reservoir, typically the volume anticipated to occur in a planning period, e.g. 100-years

o = The original zero elevation of the dam

y_o = The zero elevation of the dam after sediment inflow

A = Reservoir surface area at depth y

d_y = incremental depth

H = Total depth of reservoir commonly determined by the normal water surface

K = a constant of proportionality for converting relative areas to actual areas for a given reservoir

a_p = relative area

p = relative depth

The equation for relative area is expressed as:

$$a_p = Cp^m(1-p)^n$$

Where, C, m and n are coefficients for four standard reservoir types, summarized in Table 1 as reported by the Sedimentation Section of the Bureau of Reclamation (1962). Values were originally developed by Borland & Miller (1958) and have since been refined by Lara (1962).

Table 1: Reservoir types and values of M, C, m, and n

Reservoir Type	Standard Classification	M	C	m	n
Lake	I	3.5-4.5	5.074	1.85	0.35
Flood Plain Foothill	II	2.5-3.5	2.487	0.57	0.41
Hill	III	1.5-2.5	16.967	1.15	2.32
Gorge	IV	1.0-1.5	1.486	-0.25	1.34

Per Borland and Miller (1958), reservoirs are classified based on a shape factor (M). The shape factor is found by plotting reservoir depth as the ordinate against reservoir capacity as the abscissa, on a log-log plot. The reciprocal of the slope of the line passing through the data points is defined as M. The Sedimentation Section of the Bureau of Reclamation (1962) developed a computational procedure employing the empirical area-reduction methodology.

In the 2016 Region D Plan, the most significant impacts to reservoir storage due to sedimentation were observed in Lake Wright Patman. Given the significance of known sedimentation issues for the lake, specific application of the above approach is demonstrated below in the context of the available information base. The approach described below, where determined to be relevant in Region D reservoirs, will be employed for those reservoirs where consideration of significant sedimentation effects is warranted.

Lake Wright Patman

Lake Wright Patman (originally known as Lake Texarkana) was authorized in 1946 as a part of a comprehensive plan for flood control in the Red River Basin (TWDB 2003). The deliberate impoundment of Lake Wright Patman began June 27, 1956, the reservoir water level reached conservation pool elevation in February 1957. The reported original volumetric capacity of the reservoir is 158,000 ac-ft (TWDB, 2010). Two volumetric surveys of the reservoir have been performed by TWDB over the last several decades, described below:

1997 Hydrographic Survey

The Texas Water Development Board conducted a hydrographic survey of Wright Patman Lake during the period December 16 – January 16, 1997 to determine the capacity of the lake at the conservation pool and when the lake was in the flood pool (TWDB 2003). The results of this TWDB survey indicate that the lake's capacity at the conservation pool elevation of 220.6 ft. mean sea level (msl) was 110,900 acre-feet and the area was 18,994 acres. At elevation 230 ft. (msl) the volume was determined to be 392,740 acre-feet with an area of 34,882 acres (TWDB 2003). The estimated reduction in storage capacity at elevation 220.6 ft. (msl) since 1956 was 34,400 acre-ft or 1,147 acre-ft per year. At elevation 230 ft. (msl), the reduction in storage calculated was 44,510 acre-feet or 1,483.7 acre-feet per year (TWDB 2003).

2010 Hydrographic Survey

The Texas Water Development Board conducted a hydrographic survey of Lake Wright Patman during the period between March 26 – June 7, 2010 to determine the volumetric capacity of the lake. The results of the TWDB's 2010 survey indicate that the lake's 2010 capacity at the conservation pool elevation of 220.6 ft. (msl) was 97,927 acre-feet, with an area of 18,247 acres. Additionally, refinements in the methodology for calculating reservoir capacity from collected bathymetry prompted the TWDB to re-analyze the 1997 volumetric survey data (TWDB 2010). This re-analysis of the 1997 TWDB volumetric survey resulted in an updated 1997 capacity estimate at 220.6 ft. (msl) of 115,715 acre-feet using the 1997 survey data.

TWDB then calculated sediment rates at 220.6 ft (msl) for three scenarios:

1. The difference between the 2010 surveyed capacity and the original design capacity estimate;
2. The difference between the 2010 surveyed capacity and an estimation of the pre-impoundment capacity performed in 2010; and
3. The difference between the 2010 surveyed capacity and the revised 1997 surveyed capacity estimate.

These calculations and supporting data are presented in Table 2.

Table 2 - Capacity loss comparisons for Lake Wright Patman (recreated from TWDB 2010)

	Comparisons @ 220.6		
	Volume (acre-ft)		Pre-impoundment (acre-ft)
Survey	**Comparison #1**	**Comparison #2**	**Comparison #3**
Original design estimate[a]	158,000	< >	< >
TWDB pre-impoundment estimate based on 2010 survey	< >	< >	137,336[b]
1997 TWDB volumetric survey (revised)	< >	115,638	< >
2010 volumetric survey	97,927	97,927	97,927
Volume difference (acre-ft)	60,073 (38%)	17,711 (15.3%)	39,409 (28.7%)
Number of years	54	13	54
Capacity loss rate (acre-ft/year)	1,112	1,362	730

[a] Source: (TWDB, 1974), note: Wright Patman Dam was completed on May 19, 1954, and deliberate impoundment began on June 27, 1956.

[b] 2010 TWDB surveyed capacity of 97,927 acre-feet plus 2010 TWDB surveyed sediment volume of 39,409 acre-feet.

In July 2018, Riverbend Water Resources District contracted a volumetric and sedimentation survey of Lake Wright Patman, which was conducted between July 17, 2018 and August 23, 2018 by Arroyo Environmental Consultants, LLC and partner firm Aqua Strategies Inc. The results of Arroyo's survey indicate that the lake's capacity at the conservation pool elevation of 220.6 ft. (msl) was 96,430 acre-feet and the area was 17,907 acres. At elevation 224 ft. (msl) the volume was determined to be 168,736 acre-feet with an area of 24,343 acres (Arroyo 2019).

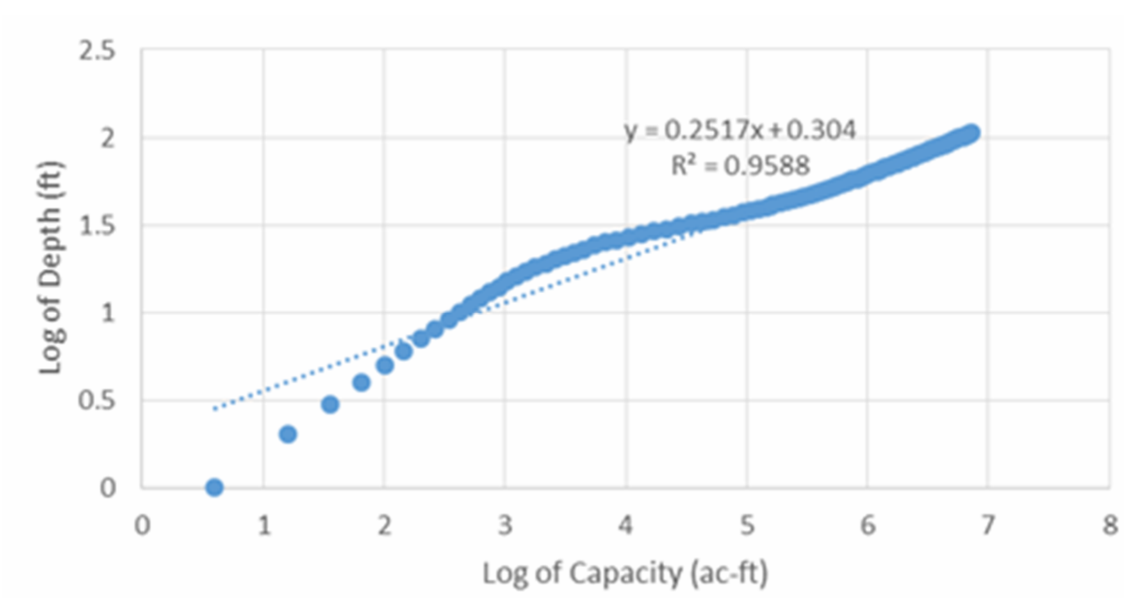
Based on the data collected in the survey, Arroyo estimated the pre-impoundment volume to be 126,752 ac-ft at elevation 220.6 ft. (msl) and 205,121 ac-ft at elevation 224 ft. (msl). The estimated reduction in storage capacity at elevation 220.6 ft. (msl) since 1956, based on the estimated pre-impoundment volume, was 30,322 acre-ft or 489 acre-ft per year. At elevation 224 ft. (msl), the reduction in storage calculated was 36,385 acre-ft or 587 acre-ft per year. Relative to the original design volume estimates, at elevation 220.6 ft. (msl) there is an estimated capacity loss of 61,570 ac-ft and at elevation 224.0 ft. (msl) a capacity loss of 71,459 ac-ft (Arroyo 2019).

Arroyo (2019) estimates annual losses in Lake Wright Patman's capacity ranges between 187 and 993 acre-feet (based on the original, re-analyzed 1997, and 2010 capacities, respectively) at 220.6 ft (msl) due to sedimentation below the conservation pool elevation. Given that Lake Wright Patman is a flood control reservoir, it is thus necessary to derive an overall sedimentation rate for the entire reservoir (i.e., from bottom elevation up to the top of dam elevation) to develop overall area-capacity relations.

To develop the overall sedimentation rate for use in projecting future reservoir sedimentation, the rate of capacity loss due to sedimentation at 220.6 ft (msl) has been assumed as 714 ac-ft/yr, as this loss rate derives from an average of the comparison of the Arroyo 2018 surveyed capacity of 96,430 ac-ft compared to the original estimated design capacity of 158,000 ac-ft, 2010 estimated pre-impoundment volume of 137,366 ac-ft, and the 2018 estimated pre-impoundment volume of 126,752 ac-ft. This estimated rate is not as aggressive a loss rate as the 1,362 ac-ft/yr rate derived from comparing the 2010 to the 1997 TWDB surveys, but represents the longer term effects of sediment deposition in the reservoir at 220.6 ft. (msl).

Using the original design elevation-area-capacity relationship as a basis, the shape factor (M) is calculated using the previously described log-log plot of reservoir depth vs. capacity (Borland and Miller, 1958), as shown in Figure 1 for Lake Wright Patman.

Figure 1 - Log-Log Plot of Reservoir Depth vs. Capacity with Best Fit Regression for Lake Wright Patman



The resultant shape factor is the reciprocal of the slope of the best fit regression (i.e. M = 1/.2517 = 3.97). The standards classification for this shape factor for Lake Wright Patman is a "Type I" reservoir. Thus, the equation for the calculation of relative area to be used in the Empirical Area Reduction Method for Lake Wright Patman is as follows:

$$a_p = 5.074p^{1.85}(1-p)^{0.35} \qquad \text{(Eq. 1)}$$

With an equation for relative area and the original design relationship between elevation, area, and capacity for the reservoir, a calculated sedimentation volume at a known elevation to be distributed from the original design capacity curve to the surveyed capacity curve, and a sedimentation rate for future sedimentation, area-capacity relationships at future decadal times over the planning horizon (2030 - 2080) can be developed.

Per the Riverbend Water Resource District's request during the development of the 2021 RWP, the new Elevation Area Capacity data developed by Arroyo in 2018-2019 and given the operating characteristics of the conservation pool of Wright Patman, a pair of sedimentation rates were identified for planning use. The first sedimentation rate of 714 ac-ft/yr is applied to all elevations equal to or below 220.6 ft. (msl) and a sedimentation rate of 824 ac-ft per year is utilized for elevations below 224.9 ft. (msl). Given that the use of K is for modeling the area of sedimentation, more than one K value could be used in the EARM wherein a K value applies at specific elevation ranges. Thus, a single application of the EARM can be derived that meets the observed sedimentation volumes at elevations 220.6 ft. (msl) and 224.9 ft. (msl).

Thus, using the reported sedimentation volume between 1956 and 2018, the original design area capacity curve is adjusted to reflect the distribution of the sediment present in 2018. Using the assumed rate of capacity loss in Lake Wright Patman of 714 ac-ft/yr at elevation 220.6 ft. (msl) and 824 ac-ft/yr at elevation 224.9 ft (msl) for 2018 through the planning decades and the Empirical Area Reduction Method results in new elevation-area-capacity relations for 2030 - 2080 (see Figures 2 and 3). These decadal relations of reservoir area and capacity are then incorporated as inputs to the Sulphur WAM.

Figure 2 - Decadal Relations of Volume to Water Surface Elevation for Lake Wright Patman from Application of Empirical Area Reduction Method for Distribution of Sediment Deposits using Annual Capacity Loss Rate of 714 ac-ft/yr for elevation 220.6 ft. (msl) and below and 824 ac-ft/yr for elevations above 220.6 ft. (msl).

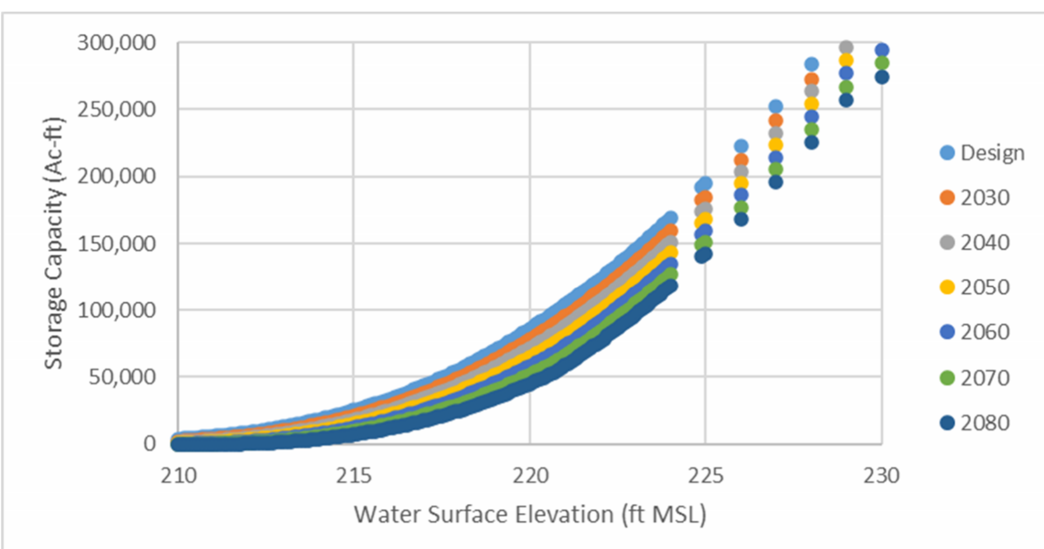
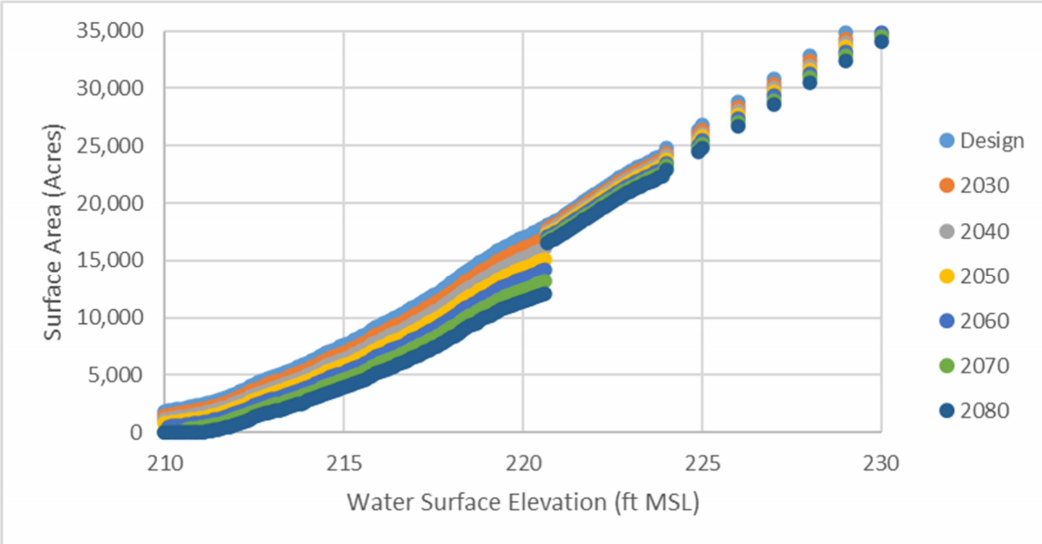


Figure 3: Decadal Relations of Area to Water Surface Elevation for Lake Wright Patman from Application of Empirical Area Reduction Method for Distribution of Sediment Deposits using Annual Capacity Loss Rate of 714 ac-ft/yr for elevation 220.6 ft. (msl) and below and 824 ac-ft/yr for elevations above 220.6 ft. (msl).



Lake Fork and Lake Tawakoni

In coordination with Region C and Region I, the area/capacity relations to be utilized within the WAM reflecting the effects of sedimentation will be the same. The latest volumetric survey information will be utilized to determine sedimentation rates, then the trapezoidal and conical methods for sediment distribution will be used to determine the area/capacity relation for each method. These will be compared to the observed area/capacity relation, and the root mean squared error (RMSE) calculated for each approach. The area/capacity relation resulting from the approach with the least RMSE will then be adopted.

References

Arroyo Environmental Consultants (2019). Volumetric And Sedimentation Study on Wright Patman Lake, prepared for Riverbend Water Resources District.

Borland, W.M., & Miller, C.R.(1960). Distribution of sediment in large reservoirs. Transactions, American Society of Civil Engineers, v. 125, p. 166-180.

Cristofano, E.A. (1953). Area increment method for distributing sediment in a reservoir. U.S. Bureau of Reclamation. Albuquerque, N.M.

Lara, J.M., (1962). "Revision of the Procedure to Compute Sediment Distribution in Large Reservoirs," US Bureau of Reclamation, Denver, CO.

TWDB (Texas Water Development Board), 2003. Volumetric Survey of Wright Patman Lake, prepared for U.S. Army Corps of Engineers, Fort Worth District. Austin, TX.

TWDB (Texas Water Development Board), 2010. Volumetric and Sedimentation Survey of Wright Patman Lake, March - June 2010 Survey, prepared for U.S. Army Corps of Engineers, Fort Worth District, in cooperation with the City of Texarkana. Austin, TX.

USACE (U.S. Army Corps of Engineers), December 15, 1989, changed October 1995. Engineering and Design - Sedimentation Investigations of Rivers and Reservoirs. EM 1110-2-4000, Appendix H, Washington, DC.

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TO: File

CC: Becky Griffith, Tony Smith (Espey)

FROM: Jon Albright and Jeremy Rice

SUBJECT: Modifications to the Sulphur WAM and Preliminary Yields

DATE: July 16, 2012

PROJECT: MHP11453

Freese and Nichols Inc. (FNI) has developed an updated version of the Sulphur Water Availability Model (WAM). This model will be used as the basis for all WAM modeling in the Sulphur Basin Watershed Overview Project. These modifications are primarily based on the Texas Water Development Board's Site Protection Study. The following changes were made to the Sulphur WAM:

- Use of current Storage-Area relationships for Lakes Wright Patman and Jim Chapman
- Use of one pool to model Lake Jim Chapman (this facilitates analyzing the impact of changes on the performance of the reservoir).
- Addition of Lake Ralph Hall based on code from TCEQ.
- Addition of Marvin Nichols Site 1a, Parkhouse I, Parkhouse II and Talco sites.
- Manual input of naturalized flows at the Marvin Nichols and Parkhouse I and II sites to correct for problems with drainage areas in the original Sulphur WAM.
- Changes to correct errors in drainage area for control point C10 (Sulphur River near Talco)

Each of these changes is discussed in more detail below.

Preliminary Reservoir Yields

We have used this model to calculate preliminary firm yields of Marvin Nichols 1a and Parkhouse I and II assuming current sediment conditions, with Lake Ralph Hall in place (see Table 1). Note that these yields are slightly different than the Site Protection Study. There are several reasons for this. First, we are assuming current sediment conditions at Lake Wright Patman and Lake Chapman, where the Site Protection Study used original sediment conditions (Run 3). Second, we are assuming overdraft operation of Lake Ralph Hall without environmental bypass, while the Site Protection Study assumed firm yield operation of Ralph Hall with

Consensus Bypass. Third, the Site Protection Study yields in Table 1 are the yields without environmental bypass from the Site Protection Study with the estimated impact of Lake Ralph Hall subtracted from the yield. Since the operation of Lake Ralph Hall is different in the Site Protection Study than in the current study, the impact on yield may be a little different. Finally, the Site Protection Study had the flow discontinuity at control point C10, which may have slightly impacted yields.

Table 1: Preliminary Firm Yields

Proposed Reservoir	**Calculated Firm Yield** (acre-feet per year)	**Site Protection Study Firm Yield** (acre-feet per year)	**Difference** (acre-feet per year)
Marvin Nichols 1a	595,000	596,900	-1,900
Parkhouse I	124,600	124,400	200
Parkhouse II	121,800	119,900	1,900

Future yields calculated for the Sulphur Watershed Overview will assume different sediment conditions for Patman, Chapman and Ralph Hall. However, specific sediment scenarios have not been identified at this time.

Yields of the Talco site will be developed at a later date.

Modifications to Sulphur WAM

Lake Chapman

In the TCEQ WAM, Lake Chapman is modeled with three individual pools, reflecting the three water rights in the reservoir. For this study Lake Chapman is modeled as a single pool. This change facilitates analyzing impacts of other projects on the overall performance of Lake Chapman. The instream flow requirements and diversion were also combined into a single IF and WR record. The model for this study uses the 2007 TWDB Volumetric Survey of Lake Chapman rather than the original storage and area characteristics in the TCEQ WAM.

Changes to DAT File

Change instream flow so that it comes from one pool instead of being divided among 3 pools. This release is continuous and not limited to inflow as in the TCEQ code.

```
**IF   A40      951        19651119       3                  IF4797
**WSRCHAP1   81470                                                1
**IF   A40     2285        19651119       3                  IF4798
```

```
**WSRCHAP2  114265                                              1      -1
**IF   A40    3619        19651119       3                  IF4799
**WSRCHAP3  114265                                              1      -1
**
**
** FNI change: since we are using one pool, we need to change to one IF (5 cfs)
**
IF   A40    3619        19651119       3              IF_Chapman
WSRCHAP1  298930
OR   A40                          -1
```

Change from three pools (corresponding to the three water rights in the lake) to a single pool. Redistribute amounts among the various users reflecting current conditions. EA, EF and AF records no longer needed so they are commented out.

```
**WR   A40   38520   4797M19651119   1                                   4797AM_1       A    4797
**WSRCHAP1   81470                                              1
**
** North Texas Municipal Water District
**WR   A40   54000    479819651119                                         4798_1       A    4798
**WSRCHAP2  114265                                              1      -1
** City of Irving
**WR   A40   54000   4799M19651119                                        4799M_1       A    4799
**WSRCHAP3  114265                                              1      -1
```

```
**
** Upper Trinity Regional Water District
WR   A40   16106   4797M19651119   1                            4797M_UTRWD Chapman    4797
WSRCHAP1  298930                           38598
**
** Local demand (Sulphur Spr and Cooper)
WR   A40   19200   4797M19651119   1                            4797M_SSPRS Chapman    4797
WSRCHAP1  298930                           38598
```

```
**
** North Texas Municipal Water District
WR   A40    3214    479819651119                                          4797_NTMWD Chapman    4797
WSRCHAP1  298930                           38598
**
WR   A40   54000    479819651119                                              4798_1 Chapman    4798
WSRCHAP1  298930                           38598
**
** City of Irving
WR   A40   54000   4799M19651119                                             4799M_1 Chapman    4799
WSRCHAP1  298930                           38598
**WSRCHAP1  304101                           31101
**


** Original TCEQ WAM.  Since we are using one pool we do not need
**EA     1       3  RCHAP1  RCHAP2  RCHAP3
**EF     0       0     .26     .37
**AF     0       0     .26     .60       1
**
```

Storage and area relationships from 2007 TWDB survey.

```
**SVRCHAP1       0    2000    8000   20000   45000   63000   85000  132000  194000  239000  255000  310000
**SA             0     850    1925    2920    5625    6525    8100   10800   13800   16400   17200   19305
**
**FNI Change Based on 2007 Volumetric Survery
**ELEV (ft)  396     402     408     414     420     424     428     432     436     438     439     440
SVRCHAP1       0     901   10189   31426   64164   92257  128478  175115  232754  264866  281565  298930
SA             0     746    2471    4549    6349    7851   10412   12908   15668   16457   16976   17958
**
```

Lake Wright Patman

Lake Wright Patman is operated by the Corps of Engineers. The Corps uses seasonally varying conservation storage, defined by a rule curve. There are two rule curves for the reservoir:

- Interim Curve – the curve used for current operation of the reservoir.

- Ultimate Curve – the curve in the Texas Water Right (and the WAM) and certain contracts with the Corps.

Note that there are no downstream releases in the setup. At this time we are planning to include any downstream releases in the yield of the reservoir. This model also uses current area and storage relationships from the draft 2010 volumetric survey.

Changes to DAT File

```
** FNI Change: Update storage numbers for Patman: 2010 Survey, 297505 af is capacity at 228.6 ft, 87300
af is capacity at 220 ft

** FNI Change - add group identified for Patman

**

WR   F60   14572   4836M19510305                                         4836M1  PATMAN    4836

**  Interim Curve - Texarkana Contract Minimum (220 ft)

**WSPATMAN  262808                           87300   98162

**

**  Ultimate Curve - Texarkana Contract Minimum (220 ft)

WSPATMAN  298084                           87300  200411

**

WR   F60   10428   4836M19570217                                         4836M2  PATMAN    4836

WSPATMAN  298084                           87300

**

WR   F60   20000   4836M19670919                                         4836M3  PATMAN    4836

**  WR 4836I -  maximize out of basin transfers for full paper right runs (1,2,3,4,6), transfers
deducted from most junior WR fo

WSPATMAN  298084                           87300

**

WR   F60   35000   4836I19570217                                         4836I1  PATMAN    4836

WSPATMAN  298084                           87300

**

WR   F60  100000   4836I19670919                                         4836I2  PATMAN    4836

WSPATMAN  298084                           87300
```

The Sulphur WAM was also modified to use the Draft 2010 TWDB Volumetric Survey of Lake Wright Patman. This survey was extended to higher elevations using previous surveys

```
**SVPATMAN        0     6670   64795  108195  166445  213845  240195  268445  298495  330345  364095  399695

**SA              0     1350   12100   16900   22000   25400   27300   29200   30900   32800   34700   36500
```

```
** FNI change: update SVSA to 2010 survey
**Elev       194     214     219     222     224     226     230     235     241     248     255     260
SVPATMAN       0   18531   70925  125611  171069  220465  340658  542648  858115 1338792 1950548 2473806
SA             0    6243   15397   21231   23924   25435   34882   45924   59567   77777   97430  111880
**
```

Interim and Ultimate curves using 2010 survey

```
**  Monthly Storage Variable Limits
**
** Wright Patman
**
** FNI change - based on Interim Rule Curve and 2010 survey
**Month      JAN     FEB     MAR     APR     MAY     JUN     JUL     AUG     SEP     OCT     NOV     DEC
**Elev    220.60  220.60  220.60  224.90  227.44  226.92  226.29  225.67  225.06  220.60  220.60  220.60
**MSPATMAN   98162   98162   98162  192965  262808  246994  227884  212193  196902   98162   98162   98162
**
** FNI change - based on Ultimate Rule Curve and 2010 survey
**Month      JAN     FEB     MAR     APR     MAY     JUN     JUL     AUG     SEP     OCT     NOV     DEC
**Elev    224.90  224.90  224.90  226.80  228.60  228.60  228.50  227.80  226.80  226.10  225.50  225.20
MSPATMAN  192965  192965  192965  243345  298084  298084  295043  273755  243345  223023  207932  200411
**
```

Ralph Hall

TCEQ provided a version of the DAT file for the Sulphur WAM with Lake Ralph on October 6, 2011. This code is for overdraft operation of the reservoir. Typical instream flow bypass criteria are not proposed for this reservoir. The following changes were made to the FNI Sulphur WAM.

Changes to DAT file

```
** FNI Change - Added used pattern for Ralph Hall
UC  HALL  0.0730  0.0650  0.0590  0.0850  0.0690  0.0880
UC        0.1230  0.1470  0.1130  0.0870  0.0520  0.0390
**
```

```
** FNI Change - Added in Ralph Hall
CP158211     B10                    7            A70                0
**
```

```
** FNI Change - Added Ralph Hall
WR158211   45000    HALL20040813       1                                   15821F          15821F
WS158211  180000
**
```

```
** FNI Change - Added Ralph Hall
** ELEVATION 460     470     480     490     500     510     520     530     540     550     560     564
SV158211       0      57     397    1027    2357    7521   21849   47989   90104  152630  238693  280506
SA             0    17.9    49.6    79.1     208     941    2003    3307    5189    7345    9914   10985
**
```

Changes to DIS file

TCEQ did not provide a copy of the DIS file. Thus the drainage area was taken from the 2007 TWDB Reservoir Site Protection Study. Memos from TCEQ associated with the draft permit give the drainage area as 102.74 square miles.

```
** FNI change - Added lake Ralph Hall
FD158211     B10       0
** Drainage area based on 2007 Reservoir Site Protection Study
WP158211     101
```

Marvin Nichols 1a, Parkhouse I and Parkhouse II

Code for Marvin Nichols 1a and Parkhouse I and II are from the Reservoir Site Protection Study. The Site Protection Study model used manually calculated naturalized flows for each of these projects rather than using the model to calculate the flows. The drainage areas in the Sulphur WAM do not match USGS drainage areas. In our opinion, USGS drainage areas are more likely to be accurate. The manually calculated flows are based on the USGS drainage areas. These flows were input at new primary control points. The new flows are included with the setup files that accompany this memo.

The Reservoir Site Protection Study model also included evaporation rates for the new projects. Unlike other evaporation data in the Sulphur WAM, these evaporation rates include corrections for effective runoff based on the naturalized flow at the new primary control points. WRAP does not allow evaporation adjustments at primary control points. The new evaporation files are included with the setup files that accompany this memo.

Changes to DAT file

```
** FNI Change - Municipal Use for Marvin Nichols and Parkhouse (I and II) from Site Protection Study
UC   MUN  0.0651  0.0607  0.0648  0.0697  0.0802  0.0951
UC        0.1161  0.1176  0.1034  0.0905  0.0715  0.0653
**


** FNI Change - Parkhouse South (I) new primary conntrol point C200
**    additional control points A,B and C for application of instream flows
**CP   A10     C60                       1            D120      -3       0
CP   A10    C200                       1            D120      -3       0
CP  C200   C200A                       1                      -3
CP C200A   C200B                       2    C200    NONE
CP C200B   C200C                       2    C200    NONE
CP C200C     C60                       2    C200    NONE
**CP  C110     C60                       7            D120               0
CP  C110    C200                       7            D120               0


** FNI Change - Parkhouse North (II) new primary control point C105
**    additional control points A,B and C for application of instream flows
** CP   B10     C90                       1            D120      -3       0
**
CP   B10    C105                       1             A70      -3       0
CP  C105   C105A                       1                      -3       0
CP C105A   C105B                       2    C105    NONE      -3       0
CP C105B     C90                       2    C105    NONE      -3       0
**



** FNI Change - Marvin Nichols new primary control point E175
**    additional control points A,B for application of instream flows
**CP  E250     E10                       7             E60               0
**CP  E240     E10                       7             E60               0
CP  E250    E175                       7             E60               0
CP  E240    E175                       7             E60               0
CP  E175   E175A                       1                      -3       0
CP E175A   E175B                       2    E175    NONE      -3       0
CP E175B     E10                       2    E175    NONE      -3       0
**
**  FNI change - CPs E190, E200, E210, and E220 used to flow into E180, which has been eliminated.
**    change to flow into Marvin Nichols
**CP  E220     E10                       7             E60               0
**CP  E210     E10                       7             E60               0
**CP  E200     E10                       7             E60               0
**CP  E190     E10                       7             E60               0
CP  E220    E175                       7             E60               0
CP  E210    E175                       7             E60               0
CP  E200    E175                       7             E60               0
CP  E190    E175                       7             E60               0
**CP  D120     D40                       7                               0
```

```
**CP  D110     D40                      7           D120              0
**CP  D100     D40                      7           D120              0



*****************************************************************
**  PROPOSED PROJECTS FOR STUDY
**
** FNI Change added Parkhouse I
WR  C200  143600     MUN30000105                                      PARKHOUSE I
WSPARK I  651712
**
** FNI Change added Parkhouse II
WR  C105  148700     MUN30000105   1   0       0                     PARKHOUSE II
WSPARKII  330871
**
** FNI Change - added Marvin Nichols
WR  E175  600900     MUN30000105   1   0       0                   MARVIN_NICHOLS
WSMARVIN 1562669                               0
**



**  FNI Change - Marvin Nichols
**  Area-Capacity Relationship from Site Protection Study:
SVMARVIN       0   23155   42283  101593  229008  483319  614963  765728 1087776 1309166 1562669 1701463
SA             0    5381    7480   12295   20072   30778   35047   40681   51337   59365   67392   71406
** FNI Change - Parkhouse I from Site Protectoin Study
SVPARK I       0   12600   49057  121267  204814  265446  357065  466684  567951  680825  802444  932332
SA             0    2925    6168   10120   13752   16566   20084   23808   26828   29372   31439   33506
** FNI Change - Parkhouse II from Site Protection Study
SVPARKII       0     595    2113    7440   17983   34004   55512   83780  144687  215361  263249  330871
SA             0     111     226    1556    2660    3750    4916    6392    8919   11282   12662   14387
**
```

Changes to DIS file

```
** FNI Change - New control point for Parkhouse I:
WP  C200   655.0
```

```
WP C200A   655.0
FD C200A    C200      -1
WP C200B   655.0
FD C200B    C200      -1
WP C200C   655.0
FD C200C    C200      -1
**
** FNI Change - New Control Point for Parkhouse II
**
WP  C105   421.0
WP C105A   421.0
FD C105A    C105      -1
WP C105B   421.0
FD C105B    C105      -1
**
** FNI Change - New control point for Marvin Nichols
WP  E175  1889.0
WP E175A  1889.0
FD E175A    E175      -1
WP E175B  1889.0
FD E175B    E175      -1
```

Talco Site

At this time the setup for the Talco site is under development. The project will be at control point C10, which is a primary control point.

Correction to Drainage Areas

In the original TCEQ WAM, primary control point C10, the Sulphur River near Talco (USGS 07343200, aka Sulphur River below Talco 07343210), had a drainage area that was smaller than the next upstream point C20. This results in a flow discontinuity which may impact water availability. Apparently the USGS moved the gage downstream just after the naturalized flows were developed for the Sulphur WAM. For this model, we are using a drainage area for C10 of 1365 square miles, the drainage area of the gage for the period of the naturalized flows. This is the drainage area used in the original Sulphur WAM.

Changes to DIS file

```
** FNI Change - Changed the drainage area for C10 to match USGS drainage area at Sulphur River Near
Talco (1,365 mi2) prior to May 21, 1997.

WP   C10    1365    69.6    43.4

**WP   C10 1353.24    69.6    43.4

**
```

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Appendix H.2. TWDB Response to Region D Hydrologic Variance Request

Texas Water Development Board

P.O. Box 13231, 1700 N. Congress Ave.
Austin, TX 78711-3231, www.twdb.texas.gov
Phone (512) 463-7847, Fax (512) 475-2053

January 4, 2024

Jim Thompson
Region D Chair
Ward Timber
1101 US 59
Linden, TX 75563

Dear Chair Thompson:

I have reviewed Region D's request dated October 27, 2023, for approval of alternative water supply assumptions to be used in determining existing and future surface water availability. This letter confirms that the TWDB approves the following assumptions that require a variance:

1. Model Lake Chapman in the Sulphur Basin as one pool instead of multiple pools to facilitate calculation of the firm yield for existing and strategy supplies.
2. Correct the Texas Commission on Environmental Quality (TCEQ) WAM Run3 for the Sulphur River Basin for the drainage area at Control Point C10 (Sulphur River near Talco) for existing and strategy supplies.
3. Include return flows for existing surface water rights utilizing return flows for evaluation of existing and strategy reuse supplies in the Cypress, Red, Sabine, and Sulphur Basins.
4. For the Neches River Basin, use of the Neches WAM model as modified by the Region I RWPG and approved by the TWDB for all availability analyses in the basin.
5. For the Trinity River Basin, use of the Trinity WAM model as modified by the Region C RWPG and approved by the TWDB for existing supply analyses in the basin. If Region C submits a variance for future strategy supplies and that is approved by the TWDB, the TWDB will inform Region D they are approved to apply that variance for future supplies. Otherwise, Region D will need to use TCEQ's WAM RUN3.

While the use of these modified conditions may be reasonable for planning purposes, WAM RUN3 would be utilized by the TCEQ for analyzing permit applications. It is acceptable to use the modified conditions for WMS supply evaluations only if the yield produced is more conservative (less) for surface water appropriations than WAM RUN3.

While the TWDB authorizes these modification to evaluate existing and future water supplies for development of the 2026 Region D RWP, it is the responsibility of the RWPG to ensure that the resulting estimates of water availability are reasonable for drought planning purposes and will reflect conditions expected in the event of actual drought conditions; and in all other regards will be evaluated in accordance with the most recent version of regional water planning contract Exhibit C, *General Guidelines for Development of the 2026 Regional Water Plans.*

Please do not hesitate to contact Ron Ellis of our Regional Water Planning staff at 512-463-4146 or Ron.Ellis@twdb.texas.gov, if you have any questions.

Sincerely,

Matt Nelson
Deputy Executive Administrator

c: Kyle Dooley, Riverbend Regional Water District
Tony Smith, Carollo Engineers
Abigail Gardner, P.E., Freese and Nichols, Inc. (Region C)
Brigit Buff, P.E., Plummer Associates, Inc. (Region I)
Ron Ellis, Water Supply Planning
Sarah Lee, Water Supply Planning
Nelun Fernando, Ph.D., Surface Water

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Appendix I. Development of the Region D WAMs for Determining Surface Water Supplies

PROJECT MEMORANDUM

NORTH EAST TEXAS REGIONAL WATER PLANNING GROUP

2026 Regional Water Plan

Project No.:	200343
Date:	
Prepared By:	Michael Pinckney, PE
Reviewed By:	Tony Smith, PE
Subject:	Determination of Surface Water Availability using 2026 Region D WAMs

This document is released for the purpose of preliminary review under the authority of Tony L. Smith, P.E., 92620 on January 31, 2024. It is not to be used for construction purposes.

1.0 MODIFIED TCEQ WATER AVAILABILITY MODELS (REGION D WAMS)

A Water Availability Model (WAM) is a computer-based simulation predicting the amount of water that would be in a river or stream under a specified set of conditions. [1] The Texas Commission on Environmental Quality (TCEQ) uses WAMs to evaluate water rights applications to help determine if surface water would be available for a newly requested water right or amendment, or if an amendment might affect other water rights. If water is determined to be available, the WAMs facilitate the estimation of how often water would be available. Water providers and users can further use a WAM to evaluate the reliability of existing water rights, firm supplies available, and/or in preparation for a new water right or amendment.

WAMs are maintained by the TCEQ for each major river basin in the State of Texas. Each WAM contains information on all water rights in the respective river basins. The model inputs reflect certain assumptions used by the TCEQ that may not be the most appropriate to apply for the purposes of regional water planning. For example, the TCEQ WAM utilizes permitted storage capacities for all reservoirs, whereas water supply planning is based upon current and future sedimentation conditions in the reservoirs.

The North East Texas Regional Water Planning Group (Region D) has approved, and the TWDB has authorized, a hydrologic variance request with detailed modifications to the TCEQ WAMs for the Cypress Creek, Red River, Sabine River, and Sulphur River Basins for the purposes of determining surface water source availabilities for the purposes of the 2026 Region D Regional Water Plan. With these modifications, the TCEQ WAMs are hereafter referred to as the "Region D WAMs." The authorized variances include the following items:

- Inclusion of current and future return flows by entities located throughout the basin with permitted discharges and indirect reuse water right permits. These return flows are based on recent return flow information as well as projected future increases in wastewater flows assuming an aggressive plan for future reuse.

[1] https://www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/wam.html

- Inclusion of 2030 and 2080 sediment conditions for all reservoirs authorized for greater than 5,000 acre-feet (ac-ft) storage capacity and have post impoundment volumetric surveys and a reported rate of sedimentation.
- Correction of the Sulphur River Basin WAM for the drainage area at Control Point C10 to 1,365 sq-miles.

These modifications as presently applied to the WAM are documented in further detail in the North East Texas RWPG's Hydrologic Variance Request dated October 27, 2023, have been approved by the TWDB on January 4, 2024, and have been used in the determination of availability for surface water sources in Region D. Per statutory and TWDB requirements, different assumptions that are also documented within the approved Hydrologic Variance Request will be used for determining surface water availability for new water management strategies for the purposes of the 2026 North East Texas Regional Water Plan, in coordination with Water User Groups (WUGs) and Wholesale Water Providers (WWPs).

1.1 Current and Future Return Flows

Region D WUGs served by the North Texas Municipal Water District's sources associated with reuse for the East Fork Wetlands and Lake Lavon have supply allocations consistent with source availabilities established by the Region C RWPG. No other Region D WUGs currently have permitted indirect reuse originating from return flows from wastewater treatment discharges. Thus, no existing supply return flows have been added to the Region D WAMs. Return flows for WUGs related to reuse water management strategies will be modeled when evaluating future strategies.

1.2 Estimates of Current and Future Reservoir Sedimentation

The planning horizon for the 2026 Region D Plan is 2030 to 2080. Only reservoirs that meet the below criteria have been updated in the WAM to reflect losses of storage capacity due to future sedimentation:

1. Have a conservation storage capacity greater than 5,000 ac-ft,
2. Have a post impoundment volumetric survey available as of December 1st, 2023, and
3. Have a reported sedimentation rate;

Table 1 provides a summary of the reservoirs with modeled sedimentation impacts.

Table 1 Summary of Current and Future Sedimentation Estimates for Region D Reservoirs with Post Impoundment Surveys

Reservoir	Basin	Year of Survey	Sed. Rate	2026 Plan Conservation Storage Capacity (ac-ft)	
			(ac-ft/yr)	2030	2080
Bob Sandlin	Cypress	2018	249	189,960	177,515
Cypress Springs	Cypress	2007	168	58,529	50,268
Monticello	Cypress	1998	214	27,860	17,125
Lake O' The Pines	Cypress	2009	260	214,551	201,577
Welsh	Cypress	2001	129	15,904	9,469
Crook	Red	2003	28	8,441	7,018
Pat Mayse	Red	2008	162	114,272	106,155

Reservoir	Basin	Year of Survey	Sed. Rate (ac-ft/yr)	2026 Plan Conservation Storage Capacity (ac-ft)	
				2030	2080
Fork	Sabine	2009	1327	609,572	543,216
Gladewater	Sabine	2000	46	3,355	1,075
Tawakoni	Sabine	2009	1322	844,627	778,513
Big Creek	Sulphur	2022	56	2,470	0
Chapman/Cooper	Sulphur	2022	830	287,856	246,659
Langford	Sulphur	2008	38	516	0
Wright Patman	Sulphur	2018	824	294,121	245,887

1.3 Yield Analyses for Large Reservoirs

For reservoirs with permitted storage capacities greater than 5,000 ac-ft, estimates of source availability have been determined using the Region D WAMs. For each reservoir, yield estimates are determined using the updated 2030 (current) and 2080 (future) elevation-area-capacity information. For reservoirs with less than 5,000 ac-ft of storage, the permitted capacities are used to determine yield estimates. Yields have been limited to authorized diversions.

Firm yield estimates have been calculated for all reservoirs. Table 2 presents summaries of the firm yield estimates for major reservoirs used for supply in Region D.

Table 2 Yields for Reservoirs in the Region D Area (ac-ft/yr)

Water Right ID	Reservoir Name	Basin	Firm Yield	
			2030	2080
4564	Bob Sandlin	Cypress	26,200	23,500
N/A	Caddo	Cypress	10,000	10,000
4560	Cypress Springs	Cypress	10,500	8,200
4582	Ellison Creek	Cypress	33,640	33,640
5272	Gilmer	Cypress	6,300	6,300
4588	Johnson Creek	Cypress	2,280	2,280
4563	Monticello	Cypress	5,000	2,800
4590	Lake O' The Pines	Cypress	159,000	151,500
4582	Peacock Site 1A Tailings Lake	Cypress	877	861
4565	Tankersley	Cypress	1,500	1,500
4576	Welsh	Cypress	2,900	1,500
3222	Rhines	Neches	1,400	1,400
4943	Crook	Red	5,000	4,000
4940	Pat Mayse	Red	50,490	49,300
4759	Big Sandy Creek	Sabine	2,680	2,680
4647	Brandy Branch	Sabine	19,889	19,889

			Firm Yield	
Water Right ID	Reservoir Name	Basin	2030	2080
4678	Edgewood City Lake	Sabine	160	160
4669	Fork	Sabine	168,966	159,730
4762	Gladewater	Sabine	4,540	1,560
4665	Greenville City Lake	Sabine	3,420	3,420
4758	Loma	Sabine	1,777	1,777
4675	Mill Creek	Sabine	1,190	1,190
4670	Tawakoni	Sabine	226,239	217,760
4395	Big Creek	Sulphur	940	0
5873	Caney Creek	Sulphur	792	792
4797, 4798, 4799	Chapman/Cooper	Sulphur	66,201	58,327
5873	Elliot	Sulphur	1,318	1,318
4809	Langford	Sulphur	130	0
4804	River Crest	Sulphur	5,300	5,300
4811	Sulphur Springs	Sulphur	7,730	7,730
4795	Turkey Creek	Sulphur	190	190
4836	Wright Patman	Sulphur	264,230	218,910

1.4 Reliability of Run-of-River and Small Reservoir Rights

Modeled source water availability estimates for each water right located in the Cypress Creek, Neches, Red, Sabine, and Sulphur River Basins have been developed through application of each of the approved Region D WAMs. Water available to run-of-river water rights (including rights with small reservoirs not explicitly addressed in the yield discussions) have been identified by firm diversion amount. TWDB guidelines define the firm diversion as the minimum monthly diversion amount that is available 100 percent of the time during a repeat of the drought of record. The firm diversion supplies for run-of-river water rights have been used to determine surface water source availability by type of use and county.

The modeled source availabilities for run-of-river water rights and rights with small reservoirs have been entered into the TWDB water planning database (DB27). Summaries of surface water availability by county are not presented herein but are documented in the database reports collected in Appendix C.

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Appendix J. Model Input and Output Files for the Region D WAMs

Appendix J. North East Texas RWPG WAM Files

Folder Name	Description	Use	Version Date	Simulation Date
Cypress_2030	Files for Cypress Creek Basin Region D WAM with 2030 sediment conditions.	Cypress Creek Basin Reservoir Firm Yields and Run-of-river Firm Yields	10/1/2023	11/17/2023
Cypress_2080	Files for Cypress Creek Basin Region D WAM with 2080 sediment conditions.	Cypress Creek Basin Reservoir Firm Yields and Run-of-river Firm Yields	10/1/2023	11/17/2023
Neches	Files for Neches River Basin Region D WAM with no modifications from TCEQ Run3 due to no reservoirs in planning area with sedimentation surveys.	Neches River Basin Run-of-river Firm Yields	10/1/2023	11/17/2023
Red_2030	Files for Red River Basin Region D WAM with 2030 sediment conditions.	Red River Basin Reservoir Firm Yields and Run-of-river Firm Yields	10/1/2023	11/20/2023
Red_2080	Files for Red River Basin Region D WAM with 2080 sediment conditions.	Red River Basin Reservoir Firm Yields and Run-of-river Firm Yields	10/1/2023	11/20/2023
Sabine_2030	Files for Sabine River Basin Region D WAM with 2030 sediment conditions.	Sabine River Basin Reservoir Firm Yields and Run-of-river Firm Yields	10/1/2023	1/19/2024
Sabine_2080	Files for Sabine River Basin Region D WAM with 2080 sediment conditions.	Sabine River Basin Reservoir Firm Yields and Run-of-river Firm Yields	10/1/2023	1/19/2024
Sulphur_2030	Files for Sulphur River Basin Region D WAM with 2030 sediment conditions.	Sulphur River Basin Reservoir Firm Yields and Run-of-river Firm Yields	10/1/2023	11/16/2023
Sulphur_2080	Files for Sulphur River Basin Region D WAM with 2080 sediment conditions.	Sulphur River Basin Reservoir Firm Yields and Run-of-river Firm Yields	10/1/2023	11/16/2023

(The electronic files described above are submitted separately as a digital deliverable to this memorandum.)

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Appendix K. Region D Groundwater Availability Summary

Groundwater Source Type				Source Availability (acre-feet per year)					
Source Name	County	Basin	Salinity	2030	2040	2050	2060	2070	2080
Blossom Aquifer	Bowie	Red	Fresh	21	21	21	21	21	21
Blossom Aquifer	Bowie	Sulphur	Fresh	180	180	180	180	180	180
Blossom Aquifer	Lamar	Red	Fresh	323	323	323	323	323	323
Blossom Aquifer	Lamar	Sulphur	Fresh	71	71	71	71	71	71
Blossom Aquifer	Red River	Red	Fresh	665	665	665	665	665	665
Blossom Aquifer	Red River	Sulphur	Fresh	1,013	1,013	1,013	1,013	1,013	1,013
Carrizo-Wilcox Aquifer	Bowie	Sulphur	Fresh	9,645	9,645	9,645	9,645	9,645	9,645
Carrizo-Wilcox Aquifer	Camp	Cypress	Fresh	3,862	3,862	3,862	3,862	3,862	3,862
Carrizo-Wilcox Aquifer	Cass	Cypress	Fresh	12,865	12,865	12,865	12,865	12,865	12,865
Carrizo-Wilcox Aquifer	Cass	Sulphur	Fresh	777	777	777	777	777	777
Carrizo-Wilcox Aquifer	Franklin	Cypress	Fresh	5,334	5,334	5,334	5,334	5,334	5,334
Carrizo-Wilcox Aquifer	Franklin	Sulphur	Fresh	398	398	398	398	398	398
Carrizo-Wilcox Aquifer	Gregg	Cypress	Fresh	726	726	726	726	726	726
Carrizo-Wilcox Aquifer	Gregg	Sabine	Fresh	5,346	5,346	5,346	5,346	5,346	5,346
Carrizo-Wilcox Aquifer	Harrison	Cypress	Fresh	4,636	4,636	4,636	4,636	4,636	4,636
Carrizo-Wilcox Aquifer	Harrison	Sabine	Fresh	4,460	4,460	4,460	4,460	4,460	4,460
Carrizo-Wilcox Aquifer	Hopkins	Cypress	Fresh	309	309	309	309	309	309
Carrizo-Wilcox Aquifer	Hopkins	Sabine	Fresh	2,426	2,426	2,426	2,426	2,426	2,426
Carrizo-Wilcox Aquifer	Hopkins	Sulphur	Fresh	2,017	2,017	2,017	2,017	2,017	2,017
Carrizo-Wilcox Aquifer	Marion	Cypress	Fresh	1,966	1,966	1,966	1,966	1,966	1,966
Carrizo-Wilcox Aquifer	Morris	Cypress	Fresh	2,156	2,156	2,156	2,156	2,156	2,156
Carrizo-Wilcox Aquifer	Morris	Sulphur	Fresh	415	415	415	415	415	415
Carrizo-Wilcox Aquifer	Rains	Sabine	Fresh	1,411	1,411	1,411	1,411	1,411	1,411
Carrizo-Wilcox Aquifer	Red River	Sulphur	Fresh	0	0	0	0	0	0
Carrizo-Wilcox Aquifer	Smith	Sabine	Fresh	7,939	7,939	7,939	7,939	7,939	7,939
Carrizo-Wilcox Aquifer	Titus	Cypress	Fresh	5,594	5,594	5,594	5,594	5,594	5,594
Carrizo-Wilcox Aquifer	Titus	Sulphur	Fresh	1,942	1,942	1,942	1,942	1,942	1,942
Carrizo-Wilcox Aquifer	Upshur	Cypress	Fresh	5,107	5,107	5,107	5,107	5,107	5,107
Carrizo-Wilcox Aquifer	Upshur	Sabine	Fresh	1,550	1,550	1,550	1,550	1,550	1,550
Carrizo-Wilcox Aquifer	Van Zandt	Neches	Fresh	2,616	2,616	2,616	2,616	2,616	2,616
Carrizo-Wilcox Aquifer	Van Zandt	Sabine	Fresh	3,286	3,286	3,286	3,286	3,286	3,286
Carrizo-Wilcox Aquifer	Van Zandt	Trinity	Fresh	1,030	1,030	1,030	1,030	1,030	1,030
Carrizo-Wilcox Aquifer	Wood	Cypress	Fresh	925	925	925	925	925	925
Carrizo-Wilcox Aquifer	Wood	Sabine	Fresh	16,977	16,977	16,977	16,977	16,977	16,977
Nacatoch Aquifer	Bowie	Red	Fresh	3,071	3,071	3,071	3,071	3,071	3,071
Nacatoch Aquifer	Bowie	Sulphur	Fresh	1,942	1,942	1,942	1,942	1,942	1,942
Nacatoch Aquifer	Delta	Sulphur	Fresh	575	575	575	575	575	575
Nacatoch Aquifer	Franklin	Sulphur	Fresh	30	30	30	30	30	30
Nacatoch Aquifer	Hopkins	Sabine	Fresh	291	291	291	291	291	291
Nacatoch Aquifer	Hopkins	Sulphur	Fresh	916	916	916	916	916	916
Nacatoch Aquifer	Hunt	Sabine	Fresh	3,303	3,303	3,303	3,303	3,303	3,303
Nacatoch Aquifer	Hunt	Sulphur	Fresh	491	491	513	868	1,347	2,052
Nacatoch Aquifer	Lamar	Sulphur	Fresh	110	110	110	110	110	110
Nacatoch Aquifer	Rains	Sabine	Fresh	1	1	1	1	1	1
Nacatoch Aquifer	Red River	Red	Fresh	58	58	58	58	58	58
Nacatoch Aquifer	Red River	Sulphur	Fresh	2,924	2,923	2,923	2,923	2,923	2,923
Queen City Aquifer	Camp	Cypress	Fresh	1,594	1,594	1,594	1,594	1,594	1,594
Queen City Aquifer	Cass	Cypress	Fresh	15,855	15,855	15,855	15,855	15,855	15,855
Queen City Aquifer	Cass	Sulphur	Fresh	624	624	624	624	624	624
Queen City Aquifer	Gregg	Cypress	Fresh	456	456	456	456	456	456
Queen City Aquifer	Gregg	Sabine	Fresh	2,056	2,056	2,056	2,056	2,056	2,055
Queen City Aquifer	Harrison	Cypress	Fresh	2,976	2,976	2,976	2,976	2,976	2,976
Queen City Aquifer	Harrison	Sabine	Fresh	561	561	561	561	561	561
Queen City Aquifer	Marion	Cypress	Fresh	7,389	7,389	7,389	7,389	7,389	7,389
Queen City Aquifer	Morris	Cypress	Fresh	3,278	3,278	3,278	3,278	3,278	3,278
Queen City Aquifer	Smith	Sabine	Fresh	12,457	12,457	12,457	12,457	12,457	12,457
Queen City Aquifer	Titus	Cypress	Fresh	0	0	0	0	0	0

Groundwater Source Type				Source Availability (acre-feet per year)					
Source Name	County	Basin	Salinity	2030	2040	2050	2060	2070	2080
Queen City Aquifer	Upshur	Cypress	Fresh	6,215	6,215	6,215	6,215	6,215	6,215
Queen City Aquifer	Upshur	Sabine	Fresh	5,949	5,949	5,949	5,949	5,949	5,949
Queen City Aquifer	Van Zandt	Neches	Fresh	2,343	2,343	2,343	2,343	2,343	2,343
Queen City Aquifer	Wood	Cypress	Fresh	779	779	779	779	779	779
Queen City Aquifer	Wood	Sabine	Fresh	5,731	5,731	5,731	5,731	5,731	5,731
Sparta Aquifer	Cass	Cypress	Fresh	0	0	0	0	0	0
Sparta Aquifer	Marion	Cypress	Fresh	0	0	0	0	0	0
Sparta Aquifer	Smith	Sabine	Fresh	0	0	0	0	0	0
Sparta Aquifer	Upshur	Sabine	Fresh	0	0	0	0	0	0
Sparta Aquifer	Wood	Sabine	Fresh	0	0	0	0	0	0
Trinity Aquifer	Lamar	Red	Fresh	0	0	0	0	0	0
Trinity Aquifer	Lamar	Sulphur	Fresh	8	8	8	8	8	8
Trinity Aquifer	Red River	Red	Fresh	52	52	52	52	52	52
Trinity Aquifer	Delta	Sulphur	Fresh	56	56	56	56	56	56
Trinity Aquifer	Hunt	Sulphur	Fresh	3	3	3	3	3	3
Trinity Aquifer	Red River	Sulphur	Fresh	125	125	125	125	125	125
Trinity Aquifer	Hunt	Sabine	Fresh	0	0	0	0	0	0
Trinity Aquifer	Hunt	Trinity	Fresh	0	0	0	0	0	0
Woodbine Aquifer	Hunt	Sabine	Fresh	268	268	268	268	268	268
Woodbine Aquifer	Hunt	Sulphur	Fresh	165	165	165	165	165	165
Woodbine Aquifer	Hunt	Trinity	Fresh	330	330	330	330	330	330
Woodbine Aquifer	Lamar	Red	Fresh	0	0	0	0	0	0
Woodbine Aquifer	Lamar	Sulphur	Fresh	49	49	49	49	49	49
Woodbine Aquifer	Red River	Red	Fresh	2	2	2	2	2	2
Groundwater Total Source Availability				**191,021**	**191,020**	**191,042**	**191,397**	**191,876**	**192,580**

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Appendix L. List of Potentially Feasible Water Management Strategies

Tabular List of All Potentially Feasible WMSs Identified by the NETRWPG to Date

ASR	Conservation/Drought Management	Groundwater Desal	Groundwater Dvlp	Reuse	New Major Reservoir	Other Surface Water	Seawater Desal	Conjunctive Use	Other WMS (Subordination, etc)	WMS	WUG(s) &/or WWP Entities Potentially Served by WMS(s)	When was this WMS identified by RWPG as potentially feasible?	Was the WMS evaluated in any previous Regional Water Planning Cycles?
	X									Advanced Water Conservation	All Municipal WUGs and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 and recommended as WMS in 2016 and 2021 NETRWP.
	X									Drought Management	Municipal WUGs	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2016 and 2021 NETRWP.
				X						Water Reuse	WUGs and/or WWPs with a central wastewater collection and treatment system.	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.
			X							Local Groundwater	Small Rural Municipal WUGs	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Recommended WMS in 2011, 2016, and 2021 NETRWP.
					X	X			X	Surface Water	All Municipal WUGs and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Recommended WMS in 2011, 2016, and 2021 NETRWPs.

ASR	Conservation/Drought Management	Groundwater Desal	Groundwater Dvlp	Reuse	New Major Reservoir	Other Surface Water	Seawater Desal	Conjunctive Use	Other WMS (Subordination, etc)	WMS	WUG(s) &/or WWP Entities Potentially Served by WMS(s)	When was this WMS identified by RWPG as potentially feasible?	Was the WMS evaluated in any previous Regional Water Planning Cycles?
			X			X			X	Facilities Expansions	All Municipal WUGs (e.g., City of Greenville, City of Texarkana), WWPs, and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 NETRWP and recommended as a WMS in 2016 and 2021 NETRWPs.
			X			X			X	Regional Supply and Management	Municipal WUGs (e.g. RWRD, Cities of Texarkana, Annona, Avery, De Kalb, Hooks, Maud, Nash, New Boston, Redwater, Wake Village, Greenville, Mount Pleasant, Paris, Longview), WWPs (e.g., NETMWD, SRA) and Sub-WUG entities characterized as County-Other (e.g., Bowie and Hunt Counties).	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 NETRWP and recommended as a WMS in 2016 and 2021 NETRWP.

ASR	Conservation/Drought Management	Groundwater Desal	Groundwater Dvlp	Reuse	New Major Reservoir	Other Surface Water	Seawater Desal	Conjunctive Use	Other WMS (Subordination, etc)	WMS	WUG(s) &/or WWP Entities Potentially Served by WMS(s)	When was this WMS identified by RWPG as potentially feasible?	Was the WMS evaluated in any previous Regional Water Planning Cycles?
	X									Voluntary or Emergency Transfers	All Municipal WUGs, WWPs, and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.
								X		Balancing Storage and/or Conjunctive Use	All Municipal WUGs, (e.g., City of Clarksville) WWPs, and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.

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Appendix M. List of Infeasible Water Management Strategies and Water Management Strategy Projects from the 2021 Region D Regional Water Plan

No Water Management Strategies or Water Management Strategy Projects from the 2021 Region D Regional Water Plan have been identified as infeasible by the NETRWPG. A summary of this evaluation is included as digital deliverable in the required TWDB spreadsheet format.

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Appendix N. Interregional Coordination Letter

NORTH EAST TEXAS REGIONAL WATER PLANNING GROUP - D

November 11, 2021

Mr. J. Kevin Ward
Chair, Region C Water Planning Group
Trinity River Authority of Texas
P.O. Box 60
Arlington, Tx 76004-0600
wardk@trinityra.org

Dear Mr. Ward:

The North East Texas Regional Water Planning Group (Region D) has authorized the submission of this letter to you as Chair of the Region C Water Planning Group to notify the Region C Planning Group of a potential conflict between our two plans and to enhance interregional coordination efforts going forward.

Obviously, we are at the beginning of the planning cycle and very early on in the process. However past experiences between our Regional Water Planning Groups regarding conflicts and potential conflicts have shown that early identification and discussions of any potential conflicts can be helpful. The Interregional Planning Council Report to The Texas Water Development Board dated October 16, 2020 stressed the importance of identifying issues and potential interregional conflict concerns at the beginning and throughout the planning cycle.

We realize that final decisions on potential projects for the upcoming Regional Water Plan have not occurred. However, we are also aware that Region C has consistently included the potential Marvin Nichols Reservoir as a future water supply source in its Plans. We also know that for at least the last twenty (20) years, Region D has included language in its Plans that expressly states that Marvin Nichols Reservoir should not be included in the State Water Plan or any Regional Water Plan because it does not protect the economic, agricultural and natural resources of the region and of Texas and that the development of this project would have a substantial adverse effect on our region as a result of the impacts the reservoir would cause. I have attached with this letter Section 6.9 and Section 6.10 of the most recent approved Region D Water Plan which details the concerns our Region has regarding the proposed Marvin Nichols Reservoir.

It is certainly our hope that our two groups can avoid a conflict on this issue. We are willing to take all reasonable measures to do so. Those efforts could include coordinating and exploring other viable measures to increase water supply sources for Region C in the future as well as decreasing future demand, including but not limited to fully utilizing water supplies in existing reservoirs, potential reallocation of water resources in existing reservoirs, additional reuse beyond what is proposed in the Region C Water Plan, and increased water conservation.

We are sending a copy of this letter to representatives of the Texas Water Development Board. It is our desire that a conflict be avoided if at all possible and hopefully, both regions can work toward that goal.

Thank you for your consideration.

Very truly yours,

Jim F. Thompson
Chair, Region D
Water Planning Group

cc: Mr. Jeff Walker
Executive Administrator
Texas Water Development Board
1700 N. Congress Ave.
Austin, Tx 78701

Temple McKinnon
Temple.McKinnon@twdb.texas.gov

Ron Ellis
Ron.Ellis@twdb.texas.gov

6.7.2 Navigation

As noted in Chapter 1, while the lack of perennial streams limits the viability of navigation projects in northeast Texas, there are several notable navigation projects either in the region or affected by streamflows from the region. None of the recommended water management strategies proffered herein are expected to exhibit impacts on navigation within the region. Conservation, groundwater wells, reuse, and contractual strategies will not impact navigation of surface waters, and the recommended surface water strategies considering development of infrastructure utilize existing surface water supplies and not affect navigation of streams in the region.

6.7.3 Parks and Public Lands

The NETRWPA contains numerous state parks, forests, and wildlife management areas. In addition, there are a number of city parks, recreational facilities, and public lands located throughout the region. None of the water management strategies evaluated for the 2021 NETRWP are expected to adversely impact parks or public land. The development of additional groundwater resources could ultimately reduce the reliance on water from surface water resources. Where possible, reducing the need for diversions from surface water sources may enhance recreational opportunities.

6.7.4 Energy Reserves

Numerous oil and gas wells are located within the NETRWPA, including the Hawkins Oil Field and the majority of the East Texas Oil Field. In addition, significant lignite coal resources can be found in the NETRWPA under portions of 15 counties. These resources represent an important economic base for the region. None of the water management strategies recommended by the NETRWPG are expected to significantly impact oil, natural gas, or coal production in the NETRWPA.

6.8 Consistency with State Water Planning Guidelines

To be considered consistent with long-term protection of the State's water, agricultural, and natural resources, the NETRWP must be determined to be in compliance with Texas Administrative Code (TAC) 31, Chapters 357.40, 357.41, 358.3(4) and (9).

The information, data evaluations, and recommendations included in Chapters 1 through 12 of the NETRWP collectively comply with these regulations.

6.9 Marvin Nichols I Reservoir and Impacts on Water Resources, Agricultural Resources and Natural Resources

Although not a recommended water planning strategy for the NETRWPG for this round of planning, Marvin Nichols I Reservoir was a recommended water management strategy for Region C in 2011 and 2016, and was included in the 2012 and 2017 State Water Plans. A larger Marvin Nichols reservoir has also been included in Region C's drafts as a proposed water management strategy for this round of planning. Since all proposals for Marvin Nichols reservoirs would be located exclusively in the North East Texas Region, and the impacts to agricultural and natural resources would be greatest in this Region, the NETRWPG feels it is important and necessary to review the impacts that any such Marvin Nichols reservoir would have to this area. This is particularly true since the spirit of Texas' regional water planning process includes a ground up, localized approach to the planning process. The discussion below will apply to the Marvin Nichols I/IA Reservoir, since it was included in the 2017 State Water Plan, but the approach applies to any proposed reservoir in the Sulphur River Basin.

Based on the reasons set forth below, it has been and continues to be the position of the NETRWPG that Marvin Nichols I Reservoir should not be included in any regional plans as a water management strategy and not be included in the 2022 State Water Plan as a water management strategy. The NETRWPG continues to oppose any Marvin Nichols type reservoir. The NETRWPG also has not yet seen an adequate evaluation by Region C of the impacts of such a reservoir on water, agricultural and natural resources of the state and on Region D. The NETRWPG supports its positions with both the facts set out in its previous 2011 and 2016 Region D Plans, including information provided again below that have come from evaluations of the needs for instream flows to protect flood plain forests that exist downstream of the proposed reservoir. It is the position of the NETRWPG that all proposals for Marvin Nichols reservoirs developed by Region C are based on the impoundment and use of water that NETRWPG needs to protect these downstream agricultural and natural resources.

Per the terms of agreement set forth from the October 5, 2015 mediation between Regions C and D and ratified by the NETRWPG at its October 21, 2015 meeting, the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan. At the time of publication of this Regional Water Plan, no agreement has been made between Regions C and D for the purposes of the 2021 Region D Plan.

6.9.1 Impacts on Agricultural Resources

Agriculture as a whole and timber in particular are vital and important industries throughout the NETRWPA, as illustrated in Chapter 1, Figure 1.11, wherein timber is listed in 12 of the 19 counties as a principal crop.

Estimates developed for the USACE and Sulphur River Basin Authority (SRBA 2013) reflect that Marvin Nichols I Reservoir would flood 66,103 acres, mainly in Red River County and including portions of Titus, Franklin, Delta, and Lamar Counties. Within that study, a high-level desktop analysis using available land coverage data from the TPWD Ecological Systems Classification, and EPA concluded that included in the flooded acreage would be 31,600 acres of forest lands, including an approximation of 10,156 acres of Priority 1 bottomland hardwoods potentially classified as waters of the U.S. (SRBA Environmental Evaluation Interim Report, Sulphur River Basin Comparative Assessment, 2014). Specifically to differentiate bottomland hardwood forest by that area potentially characterized as "waters of the U.S.," dubbed "Forested Wetland," an extra GIS filter was employed using the U.S. Fish and Wildlife Service National Wetlands Inventory data coverage.

While the SRBA study suggests that the amount of bottomland hardwood forest characterized as waters of the U.S., i.e., "Forested Wetland" potentially impacted by the proposed Marvin Nichols reservoir is 10,156 acres, the amount reported in the TWDB 2008 Reservoir Site Protection Study is reported as 26,309 acres (Table 5-37, pg. 100, utilizing a methodology performed by the Texas Parks and Wildlife Department, TPWD, described in Appendix C of that report). A possible reason for this significant difference may be the extra filtering noted above to differentiate between bottomland hardwood forest, and "Forested Wetland," which is used for their calculation of "waters of the U.S." While the difference in the overall acreage between the 2008 TWDB study and the more recent SRBA study is less than 2%, the reported difference in impacts on potentially mitigable bottomland hardwoods has decreased by approximately 16,153 acres, or more than 60%.

More recent analyses performed for the SRBA (as reported in Timberland and Agricultural Land Impact Assessment for Selected Water Resource Options in the Sulphur River Basin, SBG 2015) have indicated the impacted acreage from the Marvin Nichols Reservoir project to be 66,216 acres, assuming a reservoir elevation of 328 ft-NGVD. Additional information developed for the SRBA in early 2015 indicated that, "recent droughts had impacted the estimated firm yield of reservoirs within the Sulphur Basin to a greater extent than anticipated and that a larger scope of the Marvin Nichols project should be evaluated." This more recent study thus adopted a "more refined" approach to evaluate timber resources. The results indicated that approximately 42,019 acres of timber, 22,854 acres of agriculture, and 1,343 acres of "other" wildlife area would be impacted by the Marvin Nichols Reservoir project. The estimated value of these impacts totals approximately $28.3 million ($24.7 million timber value, $3.6 million agricultural value).

Ultimately, these studies provide a useful example of the uncertainty underlying the planning-level characterization of the significance of impacts from the Marvin Nichols I Reservoir on the timber industry in the North East Texas Region, and the importance of field verification and further detailed analysis.

In addition to the timber and agricultural land lost as a result of the reservoir, mitigation requirements are anticipated to significantly impact agricultural resources. The recent SRBA study of the Sulphur River Basin (specifically the Cost Rollup Report) concluded that approximately 47,060 acres would be necessary for mitigation. This methodology was based upon the application of a 2:1 ratio applied to the aforementioned calculated acreage of 23,530 acres of "water of the U.S." within the footprint of the proposed reservoir. This information was then incorporated into the 2016 Region C Water Plan.

The results of the SRBA Study were used as the basis for the 2014 analysis for Region C entitled, "Analysis and Quantification of the Impacts of the Marvin Nichols Reservoir Management Strategy on the Agricultural and Natural Resources of Region D and the State." This analysis compiled information developed during the SRBA study for use in the TWDB's conflict resolution process between Region C and Region D performed for the purposes of the 2016 regional water planning process.

Region D prepared a three-part response to Region C's analysis. In the first part of this response, Trungale (2014) concluded that the impacts on priority bottomland hardwoods due to the reservoir and its impacts on flows would be significant:

> *"Development of the Marvin Nichols Reservoir project as proposed in the Region C water plan would permanently flood a large proportion of the last remaining intact bottomland hardwoods (BLH) in East Texas. It would also result in a massive reduction in flows remaining in the river downstream of the proposed reservoir project which would result in significant, likely catastrophic, harm to an even larger bottomland hardwood forest area. As the plan acknowledges "Marvin Nichols Reservoir will have significant environmental impacts." (Region C 2011, p 4D.11)"*

These bottomland hardwoods habitats are important natural resources that are dependent on maintenance of instream flows.

> *"Floodplains with BLH and other ecologically important habitats are one of most altered and imperiled ecosystems on Earth (Opperman et al. 2010). The unique importance of this BLH ecosystem is largely based on its extensive swamp communities sustained by an active regime of high and overbank flows. More than any other factor, the sustainability of ecosystem processes within floodplains depends upon the longitudinal and lateral hydrologic connections that would be severed by the proposed reservoir."*

Trungale (2014) further concluded based on analysis of modeling provided by Region C that operation of Marvin Nichols as proposed by the Region C Plan would not protect these important natural resources.

> *"As currently modeled, the proposed Marvin Nichols I reservoir will not provide sufficient frequency and duration of high and overbank flows to sustain downstream BLH forest....Analysis of results generated by the water availability modeling (WAM), developed to evaluate this reservoir project, indicate that the flows needed to maintain these forests would*

> *be severely diminished, if not entirely eliminated. The environmental flow requirements used to evaluate the Marvin Nichols Reservoir Water Supply Project are based on an approach developed in the 1990's called the "Consensus Criteria". Unlike the more recent environmental flow criteria developed as part of SB3, there are no requirements, under the consensus criteria, to pass any high flow pulse flows. The maximum pass through for the proposed Marvin Nichols Reservoir Project, as required by consensus criteria, would be 514 cfs in May and then only if the reservoir is greater than 80% full.*
>
> *The clearest problem with the Region C report is that it contains no analysis or quantification of downstream impacts. Data and methodologies to perform this type of analysis, even at a planning level, are readily available. In 2004, the TWDB and the U.S. Army Corps of Engineers (USACE) conducted a study on the Sulphur River (TWDB 2004). Direct observations and technical evaluations reported in this study indicate that flows in the range of 862 cfs (approximately 50,000 ACFT per month) are transitional between in-channel and overbank flow.*
>
> *An analysis of the outputs from the water availability model, developed by Region C to evaluate the Marvin Nichols project, show that under existing conditions, there is only one year, out of the 57-year record, in which flows did not exceed this threshold volume in at least one month. When the proposed reservoir is included in the simulation, this number jumps to 29 years (more than half of the time) when no overbank events occur. The longest duration of time in which no over bank event occur under the without project scenario is 16 months; the flow regime resulting from the proposed reservoir indicates that at two separate times in the record, the river would go 80 months (almost 7 years) without overbank flow events. These flow rates, based on the 7Q2 water quality target, are intended to sustain the river during brief, infrequent and severe droughts, but with the Marvin Nichols project as proposed and modeled by Region C, these extremely low flows would occur much more frequently."*

The impact of flow alteration due to the Marvin Nichols Reservoir on downstream forests does not appear to have been considered in the recent Region C analyses. These losses as well as the losses within the reservoir footprint represent a significant impact on natural resources in Region D. From Trungale (2014):

> *"The lack of seasonal flooding identified in the water availability results indicates BLH forests cannot be maintained downstream of the proposed Marvin Nichols reservoir. When the effect on flows and the loss of episodic inundation are added to the impacts resulting within the reservoir footprint, the impacts from the Proposed Marvin Nichols Reservoir Project are huge. In the Sulphur basin 44% of the Forested Wetland area and 17% of the Bottomland Hardwood Forests would be at significant risk. By completely ignoring the largest and most significant impacts to natural resources resulting from the Marvin Nichols Reservoir Water Supply project, the Region C report does not meet the requirements of the TWDB order."*

In a separate section of Region D's 2014 response to the 2014 Region C analysis, Sharon Mattox, Ph.D., J.D., concluded that the Region C report "fails to provide reasonable quantification of impacts." This report cites a relatively recent major change in the means of determining mitigation, identifying that the U.S. Army Corps of Engineers and the U.S. EPA published their final rule, "Compensatory Mitigation for Losses of Aquatic Resources," better known as the "2008 Mitigation Rule." As noted in Mattox (2014):

> *"The policies and procedures laid out in the 2008 Mitigation Rule render it improper and utterly illogical to conduct an analysis of a future project based solely on historical information (even if Region C had gathered accurate and relevant historical data). Under well-developed tools and*

practices stemming from the 2008 Mitigation Rule, losses of functions and values are the emphasis and simple ratios are not the touchstone. If a ratio is used, that ratio should be in the range of 3:1 to 10:1."

Mattox (2014) further notes:

"Initially, the Report estimates impacts only for the inundation area of the Reservoir itself – that is, the footprint of reservoir. The Report fails to estimate jurisdictional areas for the 2,751 acres of "ancillary facilities" recognized in the [2011] Region C Plan. The ancillary facilities must be part of the USACE permit, which must assess the complete project. In addition, the Report fails to include any estimates for lands used during the construction process. The estimate also fails to include any estimate of critical secondary impacts to waters of the U.S., which will also require mitigation if losses of waters of the U.S. result. One example of a secondary impact that would likely have a material impact is wetlands adjacent to the Sulphur River downstream of the proposed dam that will no longer be inundated by frequent flood events."

Mattox (2014) summarizes the characterization of potential mitigation thusly:

"The 23,530 acre estimate of jurisdictional areas is not consistent even with the data on land coverage types... Based on my review of the EEIR-SRBCA, I would include the estimated acreages for bottomland hardwoods, forested wetlands, herbaceous wetlands, open water, and shrub wetland. In addition other habitat types identified ... as subtypes under Grassland/Old Field, Shrubland, and Upland Forests that are not broken out but likely qualify as waters of the U.S., include Pineywoods: Bottomland Wet Prairie, Pineywoods: Small Stream and Riparian Wet Prairie, Pineywoods: Small Stream and Riparian Evergreen Successional Shrubland, and Pineywoods: Small Stream and Riparian Temporarily Flooded Mixed Forest.

The total of only the habitat types listed Table 2 of the Report is 35,411 acres, which I believe to be a more realistic estimate of the number of acres that require mitigation, if one is limited to the numerical data provided in the Report. This number, however, still excludes the additional habitat types given above, which will also contain jurisdictional areas. It further excludes the small, but identifiable wetlands, streams, and other waters that are certainly present in other habitat categories. Although no data on these omitted waters is included, it would certainly increase the realistic minimum number of jurisdictional waters of the U.S. For planning purposes, an estimate of at least 40,000 jurisdictional acres is reasonable."

Noting that historically, all required mitigation has occurred in the watershed of the reservoir, Mattox (2014) indicates that, "given that the watershed approach is a central focus of the 2008 rule, all mitigation required for the [Marvin Nichols I] strategy must certainly occur within Region D," ultimately opining:

"...[T]he mitigation required for the [Marvin Nichols I] strategy will require at least 3 times as much land as the acres of jurisdictional waters, and potentially much more. Any of the reasonable estimates suggest the mitigation land required for the [Marvin Nichols I] strategy will exceed 100,000 acres..."

Another previous study by the Texas Parks and Wildlife Department (TPWD)/United States Fish and Wildlife Service (USFWS) concluded a minimum of 163,620 acres would be required for mitigation and that number could be as high as 648,578 acres. "The Economic Impact of the Proposed Marvin Nichols I Reservoir to the Northeast Texas Forest Industry" prepared by the Texas Forest Service dated August 2002 estimated that the total acres affected by Marvin Nichols I Reservoir could be as low as 258,000 acres or as high as 820,000 acres. "The Economic, Fiscal and Developmental Impacts of the Proposed Marvin Nichols Reservoir Project" dated March 2003 by Weinstein and Clower prepared for the SRBA stated a lower acreage loss, estimating agricultural land loss of 165,000 to 200,000 acres.

It is understood that the exact amount and location of the mitigation acreage is unknown. However, in analyzing impacts to agricultural and natural resources in the NETRWPG area, it is clear that vast amounts of agricultural acreage will be removed from production due to flooding and mitigation requirements associated with Marvin Nichols I Reservoir. These impacts are corroborated in "Table P.1: Summary of Evaluation of Water Management Strategies" as follows: "Agricultural Resources/Rural Areas" are rated high" and "Possible Third Party" are rated "high". Third Party impacts are considered to be social and economic impacts resulting from redistribution of water.

6.9.2 Impacts on Timber Industry

The Texas Forest Service Study dated August 2002 estimated that the forest industry and local economies would incur significant losses due to a substantial reduction in timber supply from the reservoir project and required mitigation. The study further detailed that manufacturing facilities such as paper mills located near the proposed site which are dependent on hardwood resources would be impacted the most. The NETRWPG has previously received oral and written commentary from Graphics Packaging International, (formerly International Paper Company), which operates a paper mill in Cass County, Texas, and from numerous other timber companies, logging contractors and related industries stating that Marvin Nichols I Reservoir and the mitigation associated with the project would place their industries in peril due to the loss of hardwood timber supplies.

The Texas Forest Service Study estimated forest industry losses based on three (3) separate mitigation options. The low end impacts were estimated to be an annual reduction of $51.18 million output, $21.89 million value-added, 417 jobs and $12.93 million labor income. The high end impacts were estimated to be annual loss of $163.91 million industry output, $70.10 million value-added, 1,334 jobs and $41.4 million labor income.

The Weinstein and Clower Study dated March 2003 estimated as much as 200,000 acres of agricultural land, including 150,000 acres of timberland, could be removed from production. However, the study opined that based on assessment U.S. Forest Service inventories, those inventories along with growth could offset the loss of timberland due to reservoir impoundment and mitigation. The study also indicated that the loss to the timber industry should be limited to additional transportation costs associated with assessing new regional sources of timber.

The Weinstein and Clower Study has been criticized on the following grounds:

1. The Weinstein and Clower Study used total U.S. Forest Service timber inventories throughout the region in arriving at its conclusion that the inventories together with the growth of those inventories would offset any losses due to reservoir impoundment and mitigation. It did not take into account that large amounts of this acreage is unharvestable because it is located in wildlife management areas, streamside management zones, parks, housing areas and other areas which cannot be harvested. In addition, it is well documented that hardwood acreage throughout Northeast Texas as well as the State as a whole is decreasing due to development, conversions of hardwood areas to production of pine plantation acreage, and inundation for water development projects. See "An Analysis of Bottomland Hardwood Areas" report to TWDB dated February, 1997.

2. The Weinstein and Clower Study fails to distinguish between timber inventories as a whole (which includes more pine than hardwood) and hardwood timber inventories. Many of the timber industries in Northeast Texas, such as paper mills and hardwood sawmills, are dependent upon a reliable and affordable supply of hardwood timber. Hardwood timber grows predominantly in bottomlands and thus would be more severely impacted by the reservoir project and required mitigation than other timber species.
3. The Weinstein and Clower Study acknowledges that transportation costs would be greater with Marvin Nichols I in place as timber companies would be required to purchase timber from farther distances. These additional costs would have a huge impact on the timber industry in Northeast Texas. Timber is a heavy product and the transportation cost of timber is a substantial factor, particularly taken in conjunction with the current high cost of fuel. The industries involved compete in a global market. Additional transportation costs and additional costs in obtaining raw materials will jeopardize their ability to compete in this global market. This is particularly important considering the number of manufacturing jobs already lost due to rising costs of manufacturing products in the United States.
4. The Weinstein and Clower Study used a mitigation factor of 1.54 to 1, citing that ratio as the mitigation required by the most recently developed reservoir in Texas. It is widely believed that the estimates by the TPW/USFWS Study and the TFS Study are more accurate estimates based on the detailed analysis of the actual acreage to be mitigated rather than a recent mitigation requirement from a totally different type of habitat. In addition, Cooper Lake in Northeast Texas had 5,900 acres of bottomland hardwood and required total mitigation of 31,980 acres throughout Northeast Texas.
5. Finally, additional skepticism of the Weinstein and Clower Study is based on the knowledge that funding for the Study came from Dallas-Fort Worth entities which would benefit from and utilize the water supplies from Marvin Nichols I Reservoir.

As noted previously, results from SBG (2015) developed for the SRBA indicated that approximately 42,019 acres of timber, 22,854 acres of agriculture, and 1,343 acres of "other" wildlife area would be impacted by the Marvin Nichols Reservoir project. The estimated value of these impacts totals approximately $28.3 million ($24.7 million timber value, $3.6 million agricultural value). The 2016 Region C Water Plan similarly reported potential impacted acreage of timberland to be approximately 42,823 acres. However, it is noted that both of these analyses focused upon the acreage potentially inundated within the reservoir, and did not include an analysis of acreage impacted by potential mitigation.

6.9.3 Impacts on Farming, Ranching and other Related Industries

The studies cited above deal only with the timber industry in Northeast Texas. Marvin Nichols I Reservoir and required mitigation would also impact areas which produce wheat, cotton, rice, milo, hay, soybean, and alfalfa. In addition, acreage currently being utilized for beef cattle, dairy cattle, poultry and hog production would be affected. The NETRWPG has received numerous oral and written comments from individuals involved in the production of these agricultural commodities, along with others in agribusiness industries, reflecting negative impacts from the potential development of Marvin Nichols I Reservoir.

6.9.4 Impacts on Natural Resources

Additional commentary has been previously received from the NETRWPG concerning negative impacts on natural resources such as lignite and oil and gas reserves located in and near the reservoir site. See Chapter 1 Figures 1.7 and 1.9 for maps of oil and gas as well as lignite resources. "Table P.3: Strategy Evaluation Matrix" as presented in the 2016 Region C Plan corroborates the negative impacts of Marvin Nichols I upon "Other Natural Resources" in its rating of "medium high." Additional concerns have been expressed from landowners regarding economic losses from hunting leases, grazing leases and timber sales. These impacts are again corroborated in the aforementioned table from the 2016 Region C Water Plan, rating the impacts of Marvin Nichols I upon "Agricultural Resources/Rural Areas" as "high" and "Possible Third Party" as high.

In addition, if Marvin Nichols I Reservoir is built the footprint will sit squarely on top of the outcrop of the Nacatoch Aquifer. Local residents report there are dozens of springs and thousands of sand boils. Man-made alterations include water wells, undocumented seismograph holes and unplugged oil wells. Residents' concern is that heavy metals settling to the bottom of the reservoir will contaminate the aquifer below.

6.9.5 Impacts on Environmental Factors

Region C's 2016 planning process provides a summation of significant negative environmental impacts in "Table P.4: Environmental Quantification Matrix." Marvin Nichols Reservoir would cause "High" habitat impacts, "Medium High" impacts to cultural resources, and "Medium" impacts to environmental water needs. "High" is the highest category for negative impacts given to any strategy. This includes 24,093 acres of wetlands impacted and 23 threatened/endangered species.

Although the NETRWPG opposes any Marvin Nichols type reservoir, the NETRWPG notes that other potentially feasible alternatives, such as reallocation of flood pool storage in Wright Patman Reservoir, do exist in the Sulphur River Basin. Evaluations considering the feasibility of this strategy have been performed as part of the aforementioned SRBA Sulphur River Basin Feasibility Study, an ongoing effort on the part of the USACE and SRBA to evaluate potential water supply alternatives in the Sulphur River Basin.

A modified WAM for the Sulphur River Basin, and conditions representing full demands of existing water rights with no discharges (i.e., Run 3), was used in this study to evaluate three reallocation scenarios with conservation elevations of 232.5 ft., 242.5 ft., and 252.5 ft. The results from these analyses conclude that the available firm supply from reallocation of Wright Patman reservoir ranges from 415,000 ac-ft/yr, to 730,400 ac-ft/yr, and up to 1,004,100 ac-ft/yr, depending upon the amount reallocated from flood storage[2]. It is noted, however, that more recent modeling reflecting updated hydrology may decrease these amounts due to a more recent drought of record in the Sulphur River Basin.

Analyses of potential unit costs of alternative water supplies from the Sulphur River Basin are presented within the *Cost Rollup Report – Final* for the SRBA study. Through a series of planning level analyses, the study identified 12 alternatives having unit costs under $650 per acre-foot during debt service (after debt service, these 12 most cost effective alternatives remain the least expensive). These seven alternatives are comprised of some combination of the following components:

- Marvin Nichols 328'
- Marvin Nichols 313.5'
- Wright Patman 232.5'
- Wright Patman 242.5'
- Talco 350' – Configuration 1
- Talco 370' Configuration 1
- Parkhouse I
- Parkhouse II

It is then concluded that *"[i]n general, the larger Marvin Nichols scales, the smaller Wright Patman scales, and the Talco alternatives appear to merit further consideration, at least on the basis of unit costs."*

[2] Taken from *Technical Memorandum on Hydrologic Yields – Sulphur River Basin Feasibility Study, 08/26/2014.*

As noted in the SRBA's Socioeconomic Study of the Sulphur River Basin, "the analysis of socioeconomic resources identifies those aspects of the social and economic environment that are sensitive to change and that may be affected by actions associated with the development of water resources in the Sulphur Basin." Regional economic development effects were estimated using the MIG, Inc. IMPLAN modeling software for the construction and operation of alternative reservoir scenarios, with all costs and impacts expressed in 2014 dollars. Study areas for each of 12 reservoir scenarios were defined via the adjacent counties to each reservoir alternative. The resultant comparisons between modeled estimates of employment and labor income generated during construction and during project operations demonstrate that the considered Wright Patman Reservoir scenario offers the greatest induced, indirect, and direct effects of all the scenarios analyzed.

The *Environmental Evaluation Interim Report, Sulphur River Basin, Comparative Assessment* produced as part of the SRBA Sulphur River Feasibility Study provides consideration of potential environmental concerns associated with the development of additional water supply within the Sulphur River Basin. Preliminary environmental analyses were performed to, "...help with the identification of potential impacts and constraints..." to the considered potential reservoir sites under evaluation. Readily available information regarding land cover/resources, wetlands, bottomland hardwoods, water quality, archeological resources, instream uses, groundwater, and state and federally listed threatened or endangered species was gathered and reviewed. This information was analyzed within the footprint of each alternative reservoir site to develop a structured assessment. Rankings were then developed based on the identified impacts/constraints. With regard to the Marvin Nichols and Wright Patman reservoir scenarios, the report states:

> *"The Marvin Nichols project is representative of a more downstream location for new storage within the Sulphur River Basin. At least five locations for this dam have been considered in previous studies. In general, these alternative sites represent an attempt to locate the impoundment so as to avoid conflicts with Priority 1 bottomland hardwood habitats and oilfield activity while maintaining yield. A potential reservoir at the Marvin Nichols 1A site ...was identified as a recommended strategy for [the North Texas Municipal Water District, Upper Trinity River Water District, and the Tarrant Regional Water District] in the 2006 and 2011 [Region C] plan. The Marvin Nichols 1A site is also recommended for protection in the Reservoir Site Protection Study."*

and

> *"Wright Patman Lake is an existing reservoir located on the Sulphur River in Bowie and Cass Counties, Texas. The top of Wright Patman Dam is at elevation 286 ft. msl. In terms of normal operations, elevation 259.5 ft. msl is considered the top of the flood control pool. At this elevation, Wright Patman Lake would have a cumulative storage capacity of 2,659,000 acre-feet. Theoretically, reallocation of almost any portion of that flood storage is possible. In a practical sense, reallocations are typically limited by either the need to maintain a large amount of flood control storage in order to protect downstream lives and properties, or the constraint on the increase in dependable yield that can be obtained as a result of limited water rights availability, or both. For the purposes of this analysis, the assessment of potential impacts to resources was estimated for two scenarios: 1) the portion of the flood pool from the existing top-of-conservation-pool elevation of 227.5 ft msl* up to 237.5 ft. msl. (i.e., an increase of 10 ft. msl. in the conservation pool) and 2) the entire flood pool from the existing top-of-conservation-pool elevation of 227.5 ft. msl. up to 259.5 ft. msl.*

** The existing top-of conservation-pool elevation of 227.5 ft. msl. was determined by calculating an average for seven years of daily water surface elevations recorded by the USGS Gage (Wright Patman Lk nr Texarkana, TX) located at Wright Patman Lake from February 2006 to February 2013."*

Based on the SRBA study's review of cultural resource records and environmental data, it is reported that the Lake Jim Chapman reallocation and Lake Wright Patman minimum reallocation (237.5 ft. msl.) have the "Lowest Impacts", while the Parkhouse I, Parkhouse II, and Wright Patman maximum reallocation (259.5 ft. msl.) have "Moderate Impacts." Significantly, the Talco and Marvin Nichols 1A scenarios were determined to have the "Highest Impacts."

The comparative environmental assessment performed for the Sulphur River Basin Feasibility Study provides a structured comparative assessment of the potential impacts associated with the alternative reservoirs considered. Significant questions remain regarding the specifics of the methods employed in deriving the impacts on archeological resources, bottomland hardwoods, wetlands, the overall rankings, and the individual weight of each ranking in contributing to the overall rankings. However, although such questions remain, the results of the analysis are informative. A comparison is summarized and presented in the SRBA study via a matrix of rankings, presented in Table 6.17.

Although the full reallocation of Wright Patman Reservoir is presented as having the greatest overall ranking (7 = most impact), it is noteworthy that the lower reallocation of Wright Patman (237.5 ft. msl.) is considered to have a lesser impact than that of Marvin Nichols 1A.

Table 6.17 Summary/Comparison Matrix of the Potential Impacts of the Alternative Reservoir Sites

Reservoir Site	T&E Impacts	Archeological Resources Impacts	Bottomland Hardwood Impacts	Wetlands	Water Quality	Overall Ranking
WRIGHT PATMAN (259.5)	7	3	7	7	7	7
MARVIN NICHOLS 1A	6	4	6	6	4	6
WRIGHT PATMAN (237.5)	4	2	5	5	6	5
TALCO	5	4	4	4	5	4
PARKHOUSE I	3	3	3	3	3	3
PARKHOUSE II	2	3	2	2	2	2
JIM CHAPMAN (446.2)	1	1	1	1	1	1

Source: Environmental Evaluation Interim Report, Sulphur River Basin, Comparative Assessment, SRBA, June 2013.

6.10 Conclusion

It has been and continues to be the position of the NETRWPG that due to the significant negative impacts upon environmental factors, agricultural resources/rural areas, other natural resources, and third parties, Marvin Nichols I Reservoir should not be included as a water management strategy in any regional water plan or the State Water Plan. In referencing Marvin Nichols I, the NETRWP incorporates Marvin Nichols I, Marvin Nichols IA, and any major dam sites on the main stem of the Sulphur River.

Per the terms of agreement set forth from the October 5, 2015 mediation between Regions C and D and ratified by the NETRWPG at its October 21, 2015 meeting, the NETRWPG does not challenge Marvin Nichols Reservoir as a unique reservoir site for the purposes of this Plan. At the time of publication of this Regional Water Plan, no agreement has been made between Regions C and D for the purposes of the 2021 Region D Plan.

Considering the aforementioned information, it is further the position of the NETRWPG that the reallocation of Wright Patman Reservoir provides a viable potential water management strategy to assist in meeting the needs for Region C. Although the approach may be potentially more expensive to Region C (in terms of the unit costs of water) to meet that region's growing needs, the reallocation of Wright Patman may produce less of a potential impact to the agricultural and natural resources of Region D, while providing greater socioeconomic benefits to North East Texas.

MEETING OF THE
North East Texas Regional Water Planning Group
WEDNESDAY, February 21, 2024

Agenda Item 18 &19
Draft NETRWPG Task 5B NTP, Scope of Work, and Budget

February 21, 2024

Mr. Ron Ellis
Texas Water Development Board
1700 North Congress
P.O. Box 13231
Austin, Texas 78711-3231

Subject: Notice-to-Proceed Request

Dear Mr. Ellis:

At its February 21, 2024, North East Texas Regional Water Planning Group (NETRWPG; Region D) meeting, the NETRWPG approved the evaluation of nine Potentially Feasible Water Management Strategies (WMS) and associated draft scopes of work and budgets. These nine WMS (Advanced Water Conservation, Drought Management, Water Reuse, Local Groundwater, Surface Water, Facilities Expansions, Regional Supply and Management, Voluntary or Emergency Transfer, and Balancing Storage and/or Conjunctive Use) have been previously considered and/or recommended as Water Management Strategies in the 2011, 2016, and 2021 Regional Water Plans, as denoted in the attached table.

Additionally, the NETRWPG approved an overall method for identifying and evaluating potentially feasible WMSs, and authorized the Riverbend Water Resources District, as Administrator for Region D, to submit the request for the Notice-to-Proceed for evaluation of the nine WMS' identified here. Although this notice-to-proceed request is being submitted prior to the RWPG's completion of identifying water needs, the WMS evaluations identified herein will not be performed until after the Region D needs have been identified.

Should there be any questions or comments regarding this application, please contact me.

Thank you for your attention to this application and for your review.

Sincerely,

Kyle Dooley, P.E.

Administrator, Region D

Enclosures (2)

Cc: Jim Thompson, Chair, Region D

Tony Smith, PE, Vice President, Carollo

Stan Hayes, Principal, Hayes Engineering

ATTACHMENT 1
Amended Task 5B
Region-Specific Scope of Work

The following task is replaced as follows:

TASK 5B - Evaluation and Recommendation of Water Management Strategies and Associated Water Management Strategy Projects

The objective of this task is to evaluate and recommend WMSs and their associated WMSPs, and to prepare a separate chapter (in accordance with 31 TAC §357.22(b)) to be combined with Task 5A and 5C and included in the 2026 RWP that identifies, evaluates, and recommends WMSs and WMSPs. Work includes presenting alternative WMSs and WMSPs and includes all technical evaluations.

In addition to generally meeting all applicable rules and statute requirements governing regional and state water planning under 31 TAC Chapters 357 and 358, this portion of work must include all work necessary to meet all the requirements of 31 TAC §357.22(a), §357.34, and §357.35 that is not already included under Tasks 5A or 5C.

Performance of work associated with any 5B subtasks will be <u>contingent upon a written notice-to-proceed in the form of a contract amendment.</u> This task includes, but is not limited to, performing all work in accordance with TWDB rules and guidance required to:

1) – 19) remain the same as the currently executed contract

20) This subtask is the region-specific scope of work to complete water management strategy evaluations, except for as noted, for inclusion in the initially prepared and final adopted 2026 Regional Water Plan. Each task includes the calculation of supplies using methodologies in accordance with applicable regional water planning rules and TWDB guidelines for the development of firm supplies for water management strategies and water management strategy projects, use of the updated TWDB Unified Costing Model, application of the approach adopted by the NETRWPG, and necessary coordination with specific WUGs and WWPs.

1. **Advanced Water Conservation:** Update the Municipal, Irrigation, Industrial, Steam-Electric, and Mining water use categories advanced water conservation WMSs using the applicable subset from the general procedures and Best Management Practices (BMPs) starting with the 2021 Region D recommended WMSs and accounting for more current estimates of municipal per capita use, irrigation application rates, and BMP implementation costs, etc. As is required, these RWPG recommendations shall be assumed to be the "highest practicable level" of conservation for WUGs/ WWPs that are dependent upon WMSs involving an interbasin transfer(s). Each WMSP with a capital cost will be presented separately in the 2026 Plan and DB27.

2. **Drought Management:** Using available historical water use rates, economic impact factors from the TWDB (if available), and the methodology now integrated in the standard cost estimation tool for regional water planning statewide, develop

evaluations of drought management as a water management strategy for WUGs with projected needs for additional water supply.

3. **Water Reuse:** Compile current information regarding recycled water sources and WUGs potentially in need of such supplies for non-potable uses. Update simplified technical evaluation including generalized estimates of cost for delivery of recycled water from treatment facilities to WUGs.

4. **Local Groundwater:** Update technical evaluations including phased well implementation schedules and associated costs for WUGs dependent on local aquifer supplies based on projected needs for additional water supply with due consideration of Modeled Available Groundwater (MAG). This will include evaluations of potential acquisition of available existing groundwater supplies, as well as development of new supplies.

   If there is a greater need for groundwater than estimated by the MAG on a county and aquifer basis, a more refined assessment of groundwater availability will be performed to evaluate if increasing availability can be justified hydrogeologically. For those WUGs/sellers wherein existing or planned pumpage exceeds MAG amounts, a more detailed analysis of the entity's pumping, typical production of the aquifer, and relevant information from applicable GMAs will be considered towards development of the available groundwater supply for the entity. Current infrastructure (number of wells, well field capacity, peaking factors, etc.) will also be considered when evaluating future water management strategies.

5. **Surface Water:** Compile and summarize current information regarding pending or potential acquisitions, leases, and/or amendments of existing surface water rights by WUGs and/or WWPs in Region D. Update technical evaluation documentation. This will include evaluations of potential acquisition of available existing surface water supplies, as well as development of new supplies.

6. **Facilities Expansions:** Compile and summarize current information regarding potential or planned facilities expansions by WUGs and/or WWPs in Region D that do not involve additional source water supplies and are not otherwise reflected in technical evaluation of another water management strategy (e.g., water treatment plant expansion, emergency interconnection between adjacent distribution systems, etc.). Update technical evaluation documentation.

7. **Regional Supply and Management:** Compile and summarize current information regarding potential or planned development of regional water supply facilities or providing regional management of water supply facilities by WUGs and/or WWPs in Region D. Update technical evaluation documentation.

8. **Voluntary or Emergency Transfers:** Compile and summarize current information regarding potential or planned voluntary or emergency transfers of water by WUGs and/or WWPs in Region D. Update technical evaluation documentation.

9. **Balancing Storage and/or Conjunctive Use:** Compile and summarize current information regarding potential or planned development of balancing storage (and/or

conjunctive use) by WUGs and/or WWPs in Region D. Update technical evaluation documentation.

(v) *[REMAINING SCOPE OF WORK TO BE DETERMINED]*

Scope of Work to be amended based on specific Task 5B scope of work to be developed and negotiated with TWDB. Work under this Task to be performed only after approval and incorporation of Task 5B scope of work and written notice-to-proceed.

Deliverables: A completed Chapter 5 shall be delivered in the 2026 RWP as a work product to include technical analyses of all evaluated WMSs, GIS mapping. Data shall be submitted and finalized through DB27 in accordance with the Guidelines for Regional Water Planning Data Deliverables.

ATTACHMENT 2
SCOPE ITEMS

ASR	Conservation/Drought Management	Groundwater Desal	Groundwater Dvlp	Reuse	New Major Reservoir	Other Surface Water	Seawater Desal	Conjunctive Use	Other WMS (Subordination, etc)	WMS	SubTask Budget ($)	WUG(s) &/or WWP Entities Potentially Served by WMS(s)	When was this WMS identified by RWPG as potentially feasible?	Was the WMS evaluated in any previous Regional Water Planning Cycles?
	X									Advanced Water Conservation	$ 37,290	All Municipal WUGs and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 and recommended as WMS in 2016 and 2021 NETRWP.
	X									Drought Management	$ 68,360	Municipal WUGs	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2016 and 2021 NETRWP.
				X						Water Reuse	$ 16,780	WUGs and/or WWPs with a central wastewater collection and treatment system.	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.
			X							Local Groundwater	$ 102,540	Small Rural Municipal WUGs	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Recommended WMS in 2011, 2016, and 2021 NETRWP.
					X	X			X	Surface Water	$ 110,618	All Municipal WUGs and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Recommended WMS in 2011, 2016, and 2021 NETRWPs.
			X			X			X	Facilities Expansions	$ 63,390	All Municipal WUGs (e.g., City of Greenville, City of Texarkana), WWPs, and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 NETRWP and recommended as a WMS in 2016 and 2021 NETRWPs.
			X			X			X	Regional Supply and Management	$ 47,230	Municipal WUGs (e.g. RWRD, Cities of Texarkana, Annona, Avery, De Kalb, Hooks, Maud, Nash, New Boston, Redwater, Wake Village, Greenville, Mount Pleasant, Paris, Longview), WWPs (e.g., NETMWD, SRA) and Sub-WUG entities characterized as County-	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011 NETRWP and recommended as a WMS in 2016 and 2021 NETRWP.
	X									Voluntary or Emergency Transfers	$ 24,855	All Municipal WUGs, WWPs, and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.
								X		Balancing Storage and/or Conjunctive Use	$ 10,800	All Municipal WUGs, (e.g., City of Clarksville) WWPs, and potentially other non-municipal WUGs (as needed)	February 21, 2024 RWPG Meeting (6th Cycle)	Yes - Evaluated as a WMS in 2011, 2016, and 2021 NETRWPs.
										REGION-SPECIFIC SUBTASKS TOTAL BUDGET	**$ 481,863**			

MEETING OF THE
North East Texas Regional Water Planning Group
WEDNESDAY, February 21, 2024

Agenda Item 20
Financial Report

8911 N. Capital of Texas Hwy North, Suite 2200, Austin, TX 78759
P. 512.453.5383 F. 512.453.0101

September 26, 2023

Mr. Kyle Dooley, P.E.
Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

RE: August 2023 Invoice – 2026 Region D Water Planning
(TWDB Contract No. 2148302556 / Carollo # 200343)

Dear Mr. Dooley:

Please find the attached invoice for services performed during August 2023, under the above referenced contract. The Carollo Team has been working on the following items for the 2026 Region D Regional Water Plan:

Task No.	Task Description	Current Progress	Future Progress	Problems Encountered/Resolution
1	Planning Area Description	n/a	Continued development of information and draft chapter.	n/a
2A	Non-Municipal Water Demand Projections	Review and respond to comments received on revision request for non-municipal demands.	Preparation of draft chapter.	None.
2B	Population and Municipal Water Demand Projections	Review and respond to comments received on revision request for non-municipal demands.	Preparation of draft chapter.	None.
3	Water Supply Analyses	Review of 2021 Methodology and documentation	Preparation of draft Hydrologic Variance Request.	
8	Recommendations Regarding Unique Stream Segments and/or Reservoir Sites and Legislative & Regional Policy Issues	n/a	n/a	n/a
10	Public Participation and Plan Adoption	Continued internal project coordination, engagement.	Continued internal project coordination and engagement.	None.

Should you have any questions regarding this matter, please don't hesitate to contact me.

Sincerely,

Carollo Engineers, Inc.

Tony L. Smith, P.E.
Project Manager

TLS;

Enclosures

Engineers...Working Wonders With Water®

[redacted]

Attn: Mr. Kyle Dooley, P.E., Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

September 26, 2023
Project No.: 200343
Invoice No.: FB41670

Regional Water Plan for the North East Texas Regional Water Planning Group (Region D RWPG)
Total Contract: $580,747

Professional Services from August 01, 2023 to August 31, 2023

Task 2A 00002A Non-Municipal Water Demand Projections

Professional Personnel

		Hours	Rate	Amount	
Document Processing/Clerical					
Ward, Angela		2.5	39.48	98.70	
Butler, Katy		11.5	39.48	454.04	
	Totals	14.0		552.74	
		Fringe	552.74	829.11	
		Overhead	829.11	1,642.74	
	Total Labor				**1,642.74**
Additional Fees					
Profit				149.25	
	Total Additional Fees			**149.25**	**149.25**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	1,791.99	20,883.94	22,675.93
Limit			24,152.00
Remaining			1,476.07

Task Total **$ 1,791.99**

Task 2B 00002B Population and Municipal Water Demand Projections

Professional Personnel

		Hours	Rate	Amount	
Project Professional					
Smith, Tony		8.0	86.05	688.46	
	Totals	8.0		688.46	
		Fringe	688.46	1,032.68	
		Overhead	1,032.68	2,046.09	
	Total Labor				**2,046.09**
Additional Fees					
Profit				185.90	
	Total Additional Fees			**185.90**	**185.90**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	2,231.99	30,823.97	33,055.96
Limit			42,734.00
Remaining			9,678.04

Task Total **$ 2,231.99**

Task 3	000030	Water Supply Analyses			
Professional Personnel					
		Hours	**Rate**	**Amount**	
Project Professional					
Smith, Tony		1.0	86.05	86.05	
	Totals	1.0		86.05	
		Fringe	86.05	129.08	
		Overhead	129.08	255.76	
	Total Labor				**255.76**
Additional Fees					
Profit				23.24	
	Total Additional Fees			**23.24**	**23.24**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	279.00	0.00	279.00
Limit			82,230.00
Remaining			81,951.00

Task Total **$ 279.00**

Task 10	000100	Public Participation and Plan Adoption			
Professional Personnel					
		Hours	**Rate**	**Amount**	
Project Professional					
Smith, Tony		7.5	86.05	645.43	
	Totals	7.5		645.43	
		Fringe	645.43	968.14	
		Overhead	968.14	1,918.21	
	Total Labor				**1,918.21**
Additional Fees					
Profit				174.28	
Travel - Company Vehicle		Quantity	Rate		
Mileage		677	0.655	443.44	
	Total Additional Fees			**617.72**	**617.72**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	2,535.93	36,122.40	38,658.33
Limit			136,131.00
Remaining			97,472.67

Task Total **$ 2,535.93**

Project Total **$ 6,838.91**

Project 200343.0S 2026 Region D - SUBS

Subconsultant Total **$ -**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	0.00	14,122.85	14,122.85
Limit			195,043.00
Remaining			180,920.15

Project Total **$ 6,838.91**

Retainage		
Current Retainage	341.95 (5% of 6,838.91)	**- 341.95**
Prior Retainage	5,097.64	
Retainage To-Date	5,439.59	

Please Pay This Amount $ 6,496.96

Budget Category Breakdown

Salaries & Wages	1,972.68
Fringe	986.33
Overhead	2,903.79
Profit	532.67
Travel	443.44
Other Expenses	0.00
Subcontractor Services	0.00
Total	6,838.91
Retainage	- 341.95
Total	6,496.96

Project Summary

Contract Amount	580,747.00
Less Current Invoice	6,496.96
Less Total Retainage to Date	5,439.59
Less Prior Amount Invoiced	79,910.51
Balance Remaining	488,899.94

Remit To: P.O. Box 30835 | Salt Lake City, UT 84130-0835 | United States
Phone: 1-800-523-5822

Outstanding Invoices

Number	Date	Balance	Retainage	Now Due
FB40517	8/28/2023	16,945.01	891.84	16,945.01
Total		**16,945.01**	**891.84**	**16,945.01**

For any questions regarding this invoice please contact us at ClientInvoicing@carollo.com.

8911 N. Capital of Texas Hwy North, Suite 2200, Austin, TX 78759
P. 512.453.5383 F. 512.453.0101

October 25, 2023

Mr. Kyle Dooley, P.E.
Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

RE: September 2023 Invoice – 2026 Region D Water Planning
(TWDB Contract No. 2148302556 / Carollo # 200343)

Dear Mr. Dooley:

Please find the attached invoice for services performed during September 2023, under the above referenced contract. The Carollo Team has been working on the following items for the 2026 Region D Regional Water Plan:

Task No.	Task Description	Current Progress	Future Progress	Problems Encountered/Resolution
1	Planning Area Description	n/a	Continued development of information and draft chapter.	n/a
2A	Non-Municipal Water Demand Projections	n/a	Preparation of draft chapter.	None.
2B	Population and Municipal Water Demand Projections	n/a	Preparation of draft chapter.	None.
3	Water Supply Analyses	WAM review, initial preparation of Hydrologic Variance Request	Preparation and submittal of Hydrologic Variance Request, model prep and implementation. Groundwater analyses.	
4B	Identification of Infeasible Water Management Strategies in the previously adopted 2021 Regional Water Plan	Review of potential infeasible strategies, engagement with sponsors, documentation of process for identifying infeasible strategies.	Continued sponsor engagement, preliminary identification of infeasible strategies.	None.
4C	Technical Memorandum	Development of process for identifying potentially feasible strategies.	Develop and recommend refinements to process for identifying potentially feasible strategies, draft outline.	None.
8	Recommendations Regarding Unique Stream Segments and/or Reservoir Sites and Legislative & Regional Policy Issues	n/a	n/a	n/a
10	Public Participation and Plan Adoption	Continued internal project coordination, engagement.	Continued internal project coordination and engagement with WUG and WWPs, preparation and participation in Region D mtg.	None.

Should you have any questions regarding this matter, please don't hesitate to contact me.

Sincerely,

Carollo Engineers, Inc.

Tony L. Smith, P.E.
Project Manager

TLS;

Enclosures

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[redacted]

Attn: Mr. Kyle Dooley, P.E., Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

October 25, 2023
Project No.: 200343
Invoice No.: FB42902

Regional Water Plan for the North East Texas Regional Water Planning Group (Region D RWPG)
Total Contract: $580,747

Professional Services from September 01, 2023 to September 30, 2023

Task 3 000030 Water Supply Analyses

Professional Personnel

		Hours	Rate	Amount	
Project Professional					
	Smith, Tony	4.5	86.05	387.26	
Professional					
	Pinckney, Michael	2.0	73.72	147.44	
	Totals	6.5		534.70	
	Fringe		534.70	802.04	
	Overhead		802.04	1,589.11	
	Total Labor				**1,589.11**

Additional Fees

Profit		144.38	
	Total Additional Fees	**144.38**	**144.38**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	1,733.49	279.00	2,012.49
Limit			82,230.00
Remaining			80,217.51

Task Total **$ 1,733.49**

Task 4B 00004B Identification of Infeasible Water Management Strategies in the previously adopted 2021 Regional Water Plan

Professional Personnel

		Hours	Rate	Amount	
Project Professional					
	Smith, Tony	11.5	86.05	989.66	
	Totals	11.5		989.66	
	Fringe		989.66	1,484.48	
	Overhead		1,484.48	2,941.26	
	Total Labor				**2,941.26**

Additional Fees

Profit		267.23	
	Total Additional Fees	**267.23**	**267.23**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	3,208.49	0.00	3,208.49
Limit			11,652.00
Remaining			8,443.51

Task Total **$ 3,208.49**

Task 4C	00004C	Technical Memorandum			
Professional Personnel					
		Hours	**Rate**	**Amount**	
Project Professional					
Smith, Tony		2.0	86.05	172.11	
	Totals	2.0		172.11	
		Fringe	172.11	258.17	
		Overhead	258.17	511.52	
	Total Labor				**511.52**
Additional Fees					
Profit				46.48	
	Total Additional Fees			**46.48**	**46.48**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	558.00	0.00	558.00
Limit			16,174.00
Remaining			15,616.00

Task Total **$ 558.00**

Task 10	000100	Public Participation and Plan Adoption			
Professional Personnel					
		Hours	**Rate**	**Amount**	
Project Professional					
Smith, Tony		3.0	86.05	258.17	
	Totals	3.0		258.17	
		Fringe	258.17	387.25	
		Overhead	387.25	767.28	
	Total Labor				**767.28**
Additional Fees					
Profit				69.71	
	Total Additional Fees			**69.71**	**69.71**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	836.99	38,658.33	39,495.32
Limit			136,131.00
Remaining			96,635.68

Task Total **$ 836.99**

Project Total **$ 6,336.97**

Project 200343.0S 2026 Region D - SUBS

Subconsultant Total **$ -**

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	0.00	14,122.85	14,122.85
Limit			195,043.00
Remaining			180,920.15

Project Total	**$**	**6,336.97**

Retainage

Current Retainage	316.85 (5% of 6,336.97)	**- 316.85**
Prior Retainage	5,439.59	
Retainage To-Date	5,756.44	

Please Pay This Amount $ 6,020.12

Budget Category Breakdown

Salaries & Wages	1,954.64
Fringe	977.30
Overhead	2,877.23
Profit	527.80
Travel	0.00
Other Expenses	0.00
Subcontractor Services	0.00
Total	6,336.97
Retainage	- 316.85
Total	6,020.12

Project Summary

Contract Amount	580,747.00
Less Current Invoice	6,020.12
Less Total Retainage to Date	5,756.44
Less Prior Amount Invoiced	96,855.52
Balance Remaining	472,114.92

Remit To: P.O. Box 30835 | Salt Lake City, UT 84130-0835 | United States
Phone: 1-800-523-5822

Outstanding Invoices

Number	Date	Balance	Retainage	Now Due
FB40517	8/28/2023	16,945.01	891.84	16,945.01
FB41670	9/26/2023	6,496.96	341.95	6,496.96
Total		**23,441.97**	**1,233.79**	**23,441.97**

For any questions regarding this invoice please contact us at ClientInvoicing@carollo.com.

8911 N. Capital of Texas Hwy North, Suite 2200, Austin, TX 78759
P. 512.453.5383 F. 512.453.0101

November 20, 2023

Mr. Kyle Dooley, P.E.
Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

RE: October 2023 Invoice – 2026 Region D Water Planning
(TWDB Contract No. 2148302556 / Carollo # 200343)

Dear Mr. Dooley:

Please find the attached invoice for services performed during October 2023, under the above referenced contract. The Carollo Team has been working on the following items for the 2026 Region D Regional Water Plan:

Task No.	Task Description	Current Progress	Future Progress	Problems Encountered/Resolution
1	Planning Area Description	n/a	Continued development of information and draft chapter.	n/a
2A	Non-Municipal Water Demand Projections	n/a	Preparation of draft chapter.	None.
2B	Population and Municipal Water Demand Projections	n/a	Preparation of draft chapter.	None.
3	Water Supply Analyses	Preparation and submittal of Hydrologic Variance Request, model prep and implementation. Groundwater analyses.	Determination of source availabilities and supply allocations, data entry, continued groundwater analyses.	
4B	Identification of Infeasible Water Management Strategies in the previously adopted 2021 Regional Water Plan	Continued sponsor engagement, identification of infeasible strategies.	Continued sponsor engagement, documentation.	None.
4C	Technical Memorandum	Develop and recommend refinements to process for identifying potentially feasible strategies, draft outline.	Development of required supplemental material.	None.
8	Recommendations Regarding Unique Stream Segments and/or Reservoir Sites and Legislative & Regional Policy Issues	n/a	n/a	n/a
10	Public Participation and Plan Adoption	Continued internal project coordination and engagement with WUG and WWPs, preparation and participation in Region D mtg.	Continued internal project coordination and engagement with WUG and WWPs.	None.

Should you have any questions regarding this matter, please don't hesitate to contact me.

Sincerely,

Carollo Engineers, Inc.

Tony L. Smith, P.E.
Project Manager

TLS;

Enclosures

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OUR PASSION

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[redacted]

Attn: Mr. Kyle Dooley, P.E., Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

November 20, 2023
Project No.: 200343
Invoice No.: FB43867

Regional Water Plan for the North East Texas Regional Water Planning Group (Region D RWPG)
Total Contract: $580,747

Professional Services from October 01, 2023 to October 31, 2023

Task 3 000030 Water Supply Analyses

Professional Personnel

		Hours	Rate	Amount	
Project Professional					
	Smith, Tony	9.0	86.05	774.52	
Professional					
	Pinckney, Michael	10.0	73.72	737.20	
	Ortega, Janet	39.5	73.72	2,911.94	
	Totals	58.5		4,423.66	
		Fringe	4,423.66	6,635.44	
		Overhead	6,635.44	13,147.01	
	Total Labor				**13,147.01**

Additional Fees

Profit	1,194.50	
Total Additional Fees	**1,194.50**	**1,194.50**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	14,341.51	2,012.49	16,354.00
Limit			82,230.00
Remaining			65,876.00

Task Total $ **14,341.51**

Task 4B 00004B Identification of Infeasible Water Management Strategies in the previously adopted 2021 Regional Water Plan

Professional Personnel

		Hours	Rate	Amount	
Project Professional					
	Smith, Tony	14.0	86.05	1,204.81	
	Totals	14.0		1,204.81	
		Fringe	1,204.81	1,807.20	
		Overhead	1,807.20	3,580.67	
	Total Labor				**3,580.67**

Additional Fees

Profit	325.33	
Total Additional Fees	**325.33**	**325.33**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	3,906.00	3,208.49	7,114.49
Limit			11,652.00
Remaining			4,537.51

Task Total $ **3,906.00**

Task 4C	00004C	Technical Memorandum			

Professional Personnel

		Hours	Rate	Amount	
Project Professional					
Smith, Tony		2.0	86.05	172.11	
	Totals	2.0		172.11	
		Fringe	172.11	258.17	
		Overhead	258.17	511.52	
	Total Labor				**511.52**
Additional Fees					
Profit				46.48	
	Total Additional Fees			**46.48**	**46.48**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	558.00	558.00	1,116.00
Limit			16,174.00
Remaining			15,058.00

Task Total $ **558.00**

Task 10	000100	Public Participation and Plan Adoption			

Professional Personnel

		Hours	Rate	Amount	
Project Professional					
Smith, Tony		3.0	86.05	258.17	
	Totals	3.0		258.17	
		Fringe	258.17	387.25	
		Overhead	387.25	767.28	
	Total Labor				**767.28**
Additional Fees					
Profit				69.71	
	Total Additional Fees			**69.71**	**69.71**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	836.99	39,495.32	40,332.31
Limit			136,131.00
Remaining			95,798.69

Task Total $ **836.99**

Project Total $ **19,642.50**

Retainage

Current Retainage	982.13 (5% of 19,642.50)	**- 982.13**
Prior Retainage	5,756.44	
Retainage To-Date	6,738.57	

Please Pay This Amount $ 18,660.37

Budget Category Breakdown

Salaries & Wages	6,058.75
Fringe	3,029.31
Overhead	8,918.42
Profit	1,636.02
Travel	0.00
Other Expenses	0.00
Subcontractor Services	0.00
Total	19,642.50
Retainage	- 982.13
Total	18,660.37

Project Summary

Contract Amount	580,747.00
Less Current Invoice	18,660.37
Less Total Retainage to Date	6,738.57
Less Prior Amount Invoiced	103,352.48
Balance Remaining	451,995.58

Remit To: P.O. Box 30835 | Salt Lake City, UT 84130-0835 | United States
Phone: 1-800-523-5822

Outstanding Invoices

Number	Date	Balance	Retainage	Now Due
FB40517	8/28/2023	16,945.01	891.84	16,945.01
FB41670	9/26/2023	6,496.96	341.95	6,496.96
FB42902	10/25/2023	6,020.12	316.85	6,020.12
Total		**29,462.09**	**1,550.64**	**29,462.09**

For any questions regarding this invoice please contact us at ClientInvoicing@carollo.com.

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8911 N. Capital of Texas Hwy North, Suite 2200, Austin, TX 78759
P. 512.453.5383 F. 512.453.0101

January 3, 2024

Mr. Kyle Dooley, P.E.
Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

RE: November 2023 Invoice – 2026 Region D Water Planning
(TWDB Contract No. 2148302556 / Carollo # 200343)

Dear Mr. Dooley:

Please find the attached invoice for services performed during November 2023, under the above referenced contract. The Carollo Team has been working on the following items for the 2026 Region D Regional Water Plan:

Task No.	Task Description	Current Progress	Future Progress	Problems Encountered/Resolution
1	Planning Area Description	n/a	Continued development of information and draft chapter.	n/a
2A	Non-Municipal Water Demand Projections	n/a	Preparation of draft chapter.	None.
2B	Population and Municipal Water Demand Projections	n/a	Preparation of draft chapter.	None.
3	Water Supply Analyses	Determination of source availabilities and supply allocations, data entry, continued groundwater analyses.	Modeling of source availabilities, initial supply allocations, data entry, continued groundwater analyses.	
4B	Identification of Infeasible Water Management Strategies in the previously adopted 2021 Regional Water Plan	Continued sponsor engagement, documentation.	Continued sponsor engagement, documentation.	None.
4C	Technical Memorandum	Development of required supplemental material.	Continued development of required supplemental material.	None.
8	Recommendations Regarding Unique Stream Segments and/or Reservoir Sites and Legislative & Regional Policy Issues	n/a	n/a	n/a
10	Public Participation and Plan Adoption	n/a	Continued internal project coordination and engagement with WUG and WWPs.	None.

Should you have any questions regarding this matter, please don't hesitate to contact me.

Sincerely,

Carollo Engineers, Inc.

Tony L. Smith, P.E.
Project Manager

TLS;

Enclosures

WATER
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OUR PASSION

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[redacted]

Attn: Mr. Kyle Dooley, P.E., Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

January 3, 2024
Project No.: 200343
Invoice No.: FB45360

Regional Water Plan for the North East Texas Regional Water Planning Group (Region D RWPG)
Total Contract: $580,747

Professional Services from November 01, 2023 to November 30, 2023

Task 3 000030 Water Supply Analyses

Professional Personnel

			Hours	Rate	Amount	
Project Professional						
	Smith, Tony		4.0	86.05	344.23	
Professional						
	Pinckney, Michael		25.5	73.72	1,879.86	
	Ortega, Janet		38.0	73.72	2,801.36	
Technicians						
	Li, Renjie N		1.0	45.96	45.96	
		Totals	68.5		5,071.41	
			Fringe	5,071.41	7,607.05	
			Overhead	7,607.05	15,072.10	
		Total Labor				**15,072.10**

Additional Fees

Profit		1,369.40	
	Total Additional Fees	**1,369.40**	**1,369.40**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	16,441.50	16,354.00	32,795.50
Limit			82,230.00
Remaining			49,434.50

Task Total **$ 16,441.50**

Task 4A 00004A Water Needs Analysis

Professional Personnel

			Hours	Rate	Amount	
Project Professional						
	Smith, Tony		0.5	86.05	43.02	
		Totals	0.5		43.02	
			Fringe	43.02	64.53	
			Overhead	64.53	127.87	
		Total Labor				**127.87**

Additional Fees

Profit		11.62	
	Total Additional Fees	**11.62**	**11.62**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	139.49	0.00	139.49
Limit			15,000.00
Remaining			14,860.51

Task Total **$ 139.49**

Task 4B	00004B	Identification of Infeasible Water Management Strategies in the previously adopted 2021 Regional Water Plan			
Professional Personnel					
		Hours	**Rate**	**Amount**	
Project Professional					
Smith, Tony		5.0	86.05	430.28	
	Totals	5.0		430.28	
		Fringe	430.28	645.42	
		Overhead	645.42	1,278.80	
	Total Labor				**1,278.80**
Additional Fees					
Profit				116.19	
	Total Additional Fees			**116.19**	**116.19**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	1,394.99	7,114.49	8,509.48
Limit			11,652.00
Remaining			3,142.52

Task Total $ **1,394.99**

Task 4C	00004C	Technical Memorandum			
Professional Personnel					
		Hours	**Rate**	**Amount**	
Project Professional					
Smith, Tony		5.5	86.05	473.31	
	Totals	5.5		473.31	
		Fringe	473.31	709.96	
		Overhead	709.96	1,406.68	
	Total Labor				**1,406.68**
Additional Fees					
Profit				127.81	
	Total Additional Fees			**127.81**	**127.81**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	1,534.49	1,116.00	2,650.49
Limit			16,174.00
Remaining			13,523.51

Task Total $ **1,534.49**

Project Total $ **19,510.47**

Project 200343.0S 2026 Region D - SUBS

Subconsultant Total $ -

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	0.00	14,122.85	14,122.85
Limit			195,043.00
Remaining			180,920.15

Project Total $ **19,510.47**

Retainage		
Current Retainage	975.52 (5% of 19,510.47)	**- 975.52**
Prior Retainage	6,738.57	
Retainage To-Date	7,714.09	

Please Pay This Amount $ 18,534.95

Budget Category Breakdown

Salaries & Wages	6,018.02
Fringe	3,008.94
Overhead	8,858.49
Profit	1,625.02
Travel	0.00
Other Expenses	0.00
Subcontractor Services	0.00
Total	19,510.47
Retainage	- 975.52
Total	18,534.95

Project Summary

Contract Amount	580,747.00
Less Current Invoice	18,534.95
Less Total Retainage to Date	7,714.09
Less Prior Amount Invoiced	109,372.60
Balance Remaining	445,125.36

Remit To: P.O. Box 30835 | Salt Lake City, UT 84130-0835 | United States
Phone: 1-800-523-5822

Outstanding Invoices

Number	Date	Balance	Retainage	Now Due
FB40517	8/28/2023	16,945.01	891.84	16,945.01
FB41670	9/26/2023	6,496.96	341.95	6,496.96
FB42902	10/25/2023	6,020.12	316.85	6,020.12
FB43867	11/20/2023	18,660.37	982.13	18,660.37
Total		**48,122.46**	**2,532.77**	**48,122.46**

For any questions regarding this invoice please contact us at ClientInvoicing@carollo.com.

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8911 N. Capital of Texas Hwy North, Suite 2200, Austin, TX 78759
P. 512.453.5383 F. 512.453.0101

January 31, 2024

Mr. Kyle Dooley, P.E.
Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

RE: December 2023 Invoice – 2026 Region D Water Planning
(TWDB Contract No. 2148302556 / Carollo # 200343)

Dear Mr. Dooley:

Please find the attached invoice for services performed during December 2023, under the above referenced contract. The Carollo Team has been working on the following items for the 2026 Region D Regional Water Plan:

Task No.	Task Description	Current Progress	Future Progress	Problems Encountered/Resolution
1	Planning Area Description	n/a	Continued development of information and draft chapter.	n/a
2A	Non-Municipal Water Demand Projections	n/a	Preparation of draft chapter.	None.
2B	Population and Municipal Water Demand Projections	Preparation of draft chapter.	Preparation of draft chapter.	None.
3	Water Supply Analyses	Modeling of source availabilities, initial supply allocations, data entry, continued groundwater analyses.	Continued supply allocations, data entry, continued groundwater analyses.	
4B	Identification of Infeasible Water Management Strategies in the previously adopted 2021 Regional Water Plan	n/a	Continued sponsor engagement, documentation.	None.
4C	Technical Memorandum	n/a	Continued development of required supplemental material.	None.
8	Recommendations Regarding Unique Stream Segments and/or Reservoir Sites and Legislative & Regional Policy Issues	n/a	n/a	n/a
10	Public Participation and Plan Adoption	Continued internal project coordination and engagement with WUG and WWPs.	Continued internal project coordination and engagement with WUG and WWPs.	None.

Should you have any questions regarding this matter, please don't hesitate to contact me.

Sincerely,

Carollo Engineers, Inc.

Tony L. Smith, P.E.
Project Manager

TLS;

Enclosures

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[redacted]

Attn: Mr. Kyle Dooley, P.E., Executive Director/CEO
228 Texas Ave., Suite A
New Boston, TX 75570

January 31, 2024
Project No.: 200343
Invoice No.: FB46479

Regional Water Plan for the North East Texas Regional Water Planning Group (Region D RWPG)
Total Contract: $580,747

Professional Services from December 01, 2023 to December 31, 2023

Task 2B 00002B Population and Municipal Water Demand Projections

Professional Personnel

			Hours	Rate	Amount	
Professional						
	Ortega, Janet		0.5	73.72	36.86	
		Totals	0.5		36.86	
		Fringe		36.86	55.29	
		Overhead		55.29	109.55	
		Total Labor				**109.55**

Additional Fees

Profit		9.95	
	Total Additional Fees	**9.95**	**9.95**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	119.50	33,055.96	33,175.46
Limit			42,734.00
Remaining			9,558.54

Task Total $ **119.50**

Task 3 000030 Water Supply Analyses

Professional Personnel

			Hours	Rate	Amount	
Project Professional						
	Smith, Tony		4.0	86.05	344.23	
Professional						
	Pinckney, Michael		9.0	73.72	663.48	
	Ortega, Janet		26.0	73.72	1,916.72	
Technicians						
	Li, Renjie N		16.5	45.96	758.33	
		Totals	55.5		3,682.76	
		Fringe		3,682.76	5,524.10	
		Overhead		5,524.10	10,945.07	
		Total Labor				**10,945.07**

Additional Fees

Profit		994.43	
	Total Additional Fees	**994.43**	**994.43**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	11,939.50	32,795.50	44,735.00
Limit			82,230.00
Remaining			37,495.00

Task Total $ **11,939.50**

Task 10	000100	Public Participation and Plan Adoption			
Professional Personnel					
		Hours	**Rate**	**Amount**	
Project Professional					
Smith, Tony		4.0	86.05	344.23	
	Totals	4.0		344.23	
		Fringe	344.23	516.34	
		Overhead	516.34	1,023.05	
	Total Labor				**1,023.05**
Additional Fees					
Profit				92.95	
	Total Additional Fees			**92.95**	**92.95**

Billing Limits	**Current**	**Prior**	**To Date**
Total Billings	1,116.00	40,332.31	41,448.31
Limit			136,131.00
Remaining			94,682.69

Task Total $ **1,116.00**

Project Total $ **13,175.00**

Project 200343.0S 2026 Region D - SUBS

Subconsultant Total $ -

Billing Limits	**Current**	**Prior**	**To-Date**
Total Billings	0.00	14,122.85	14,122.85
Limit			195,043.00
Remaining			180,920.15

Project Total $ **13,175.00**

Retainage		
Current Retainage	658.75 (5% of 13,175.00)	**- 658.75**
Prior Retainage	7,714.09	
Retainage To-Date	8,372.84	

Please Pay This Amount $ 12,516.25

Budget Category Breakdown	
Salaries & Wages	4,063.85
Fringe	2,031.88
Overhead	5,981.94
Profit	1,097.33
Travel	0.00
Other Expenses	0.00
Subcontractor Services	0.00
Total	13,175.00
Retainage	- 658.75
Total	12,516.25

Project Summary	
Contract Amount	580,747.00
Less Current Invoice	12,516.25
Less Total Retainage to Date	8,372.84
Less Prior Amount Invoiced	128,032.97
Balance Remaining	431,824.94

Remit To: P.O. Box 30835 | Salt Lake City, UT 84130-0835 | United States
Phone: 1-800-523-5822

Outstanding Invoices

Number	Date	Balance	Retainage	Now Due
FB40517	8/28/2023	16,945.01	891.84	16,945.01
FB41670	9/26/2023	6,496.96	341.95	6,496.96
FB42902	10/25/2023	6,020.12	316.85	6,020.12
FB43867	11/20/2023	18,660.37	982.13	18,660.37
Total		**48,122.46**	**2,532.77**	**48,122.46**

For any questions regarding this invoice please contact us at ClientInvoicing@carollo.com.