# Appendix A
# Populated Explanatory Report Checklist

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| Texas Water Development Board | | | |
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| **Desired Future Condition Submission Packet Checklist - Administrative Completeness (part 1)** | | | |
| **Groundwater Management Area: GMA 8** | | | |
| **Reviewing Staff:** | | **Date Packet Received:** | |
| | | **Date E-mail Acknowledgement Sent:** | |
| | | **Date Review Completed:** | |
| | Citation of Rule | Present in packet and administratively complete | Notes |
| **1.** Is a copy of the explanatory report addressing the information required by Texas Water Code §36.108(d-3) and the criteria in Texas Water Code §36.108(d) included? *(refer to Explanatory Report checklist before responding)* | 31 TAC §356.32(1) | Yes | - Refer the Executive Summary on Page 1-1 of the Explanatory Report.<br>- Explanatory report included with Submission Package (SP). |
| **2.** Is a copy of the resolution of the groundwater management area adopting the desired future condition(s) as required by Texas Water Code §36.108(d-3) included? | 31 TAC §356.32(2) | Yes | - Refer Appendix D of the Explanatory Report document.<br>- Explanatory report included with Submission Package (SP). |
| **3.** Is a copy of the notice that was posted for the joint planning meeting at which the districts collectively adopted the desired future condition(s) as required by Texas Water Code §36.108(e) and §36.108(e-2) included? | 31 TAC §356.32(3) | Yes | - Refer Appendix B of the Explanatory Report document.<br>- Explanatory report included with Submission Package (SP). |
| **4.** Is the name of a designated representative of the groundwater management area for TWDB staff to contact as necessary included? | 31 TAC §356.32(4) | Yes | Drew Satterwhite, North Texas Groundwater Conservation District |
| **5.** Are any groundwater availability model files or aquifer assessments acceptable to the executive administrator used in developing the adopted desired future condition(s) with documentation sufficient to replicate the work included? *(refer to the Groundwater Availability Model Administrative Elements checklist before responding)* | 31 TAC §356.32(5) | Yes | - "The Deliverable_GMA8_Run11" model files are available on shared drive and submitted USB. Please refer "Model_files" sub folder within "Deliverable_GMA8_Run11" folder.<br>- A readme file is included with the Model files in SP. Other than the files in SP, Additional information can be provided as needed. |
| **6.** Is any other information the executive administrator may require to be able to estimate the modeled available groundwater included? | 31 TAC §356.32(6) | Yes | - A readme file is included with the Model files in SP. Other than the files in SP, Additional information can be provided as needed. |
| Mark elements that are present in the packet with YES<br>Mark elements that are not applicable with NA<br>Mark elements that are missing from the packet with NO | | | |

<table>
<tr><td colspan="4">Texas Water Development Board</td></tr>
<tr><td colspan="4">Desired Future Condition Submission Packet Checklist - Groundwater Availability Model Administrative Elements (part 2)</td></tr>
<tr><td colspan="4">Groundwater Management Area: GMA 8</td></tr>
<tr><td colspan="2" rowspan="2">Reviewing Staff:</td><td colspan="2">Date Packet Received:</td></tr>
<tr><td colspan="2">Date Review Completed:</td></tr>
<tr><td></td><td>Citation of Rule</td><td>Present in packet and administratively complete</td><td>Notes</td></tr>
<tr><td>1. Is a descriptive narrative of the methods and references used to determine the desired future condition(s) included with the desired future condition(s) statements?</td><td></td><td>Yes</td><td>Refer Section 3.0 and 3.1 of the Explanatory Report.</td></tr>
<tr><td>2. Is any other information the executive administrator may require to be able to estimate the modeled available groundwater included?</td><td>31 TAC §356.32(6)</td><td>Yes</td><td>- “The Deliverable_GMA8_Run11” model files are available on shared drive and submitted USB.<br>- A readme file is included with the Model files in SP. Other than the files in SP, Additional information can be provided as needed.</td></tr>
<tr><td>3. If item 2 is no, please list additional information required. (For example, model or GIS files necessary for review)</td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Mark elements that are present in the packet with YES</td></tr>
<tr><td colspan="4">Mark elements that are not applicable with NA</td></tr>
<tr><td colspan="4">Mark elements that are missing from the Packet with NO</td></tr>
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| Texas Water Development Board | | | |
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| **Desired Future Condition Submission Packet Checklist - Factors and Technical Elements (part 3)** | | | |
| **Groundwater Management Area: GMA 8** | | | |
| **Reviewing Staff:** | | **Date Packet Received:** | |
| | | **Date Review Completed:** | |
| | Citation of Rule | Present in packet and administratively complete | Notes |
| **1.** Does the explanatory report identify each desired future condition? | TWC §36.108(d-3) | Yes | Refer Section 3.0, and Appendix D of the Explanatory Report |
| **2.** Does the explanatory report provide the policy and technical justifications for each desired future condition? | TWC §36.108(d-3) | Yes | Refer Section 3.1, 3.1.1, 3.1.2, 3.1.3 of the Explanatory Report. |
| **3.** Does the explanatory report include documentation that the factors under Subsection (d) were considered by the districts and a discussion of how the adopted desired future condition(s) impacts each factor? | TWC §36.108(d-3) | Yes | Refer Section 3.2, and 3.2.1 – 3.2.9 of the Explanatory Report. |
| **3a.** Did the districts consider aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another? | TWC §36.108(d1) | Yes | Refer Section 3.2.1, Appendices B, G, H, I of the Explanatory Report. |
| **3b.** Did the districts consider the water supply needs and water management strategies included in the state water plan? | TWC §36.108(d2) | Yes | Refer Section 3.2.2, Appendices B, G, H, I of the Explanatory Report. |
| **3c.** Did the districts consider hydrological conditions, including for each aquifer in the management area the total estimated recoverable storage as provided by the executive administrator, and the average annual recharge, inflows, and discharge? | TWC §36.108(d3) | Yes | Refer Section 3.2.3, Appendices B, E of the Explanatory Report. |
| **3d.** Did the districts consider other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water? | TWC §36.108(d4) | Yes | Refer Section 3.2.4, Appendices B, E, G of the Explanatory Report. |
| **3e.** Did the districts consider the impact on subsidence? | TWC §36.108(d5) | Yes | Refer Section 3.2.5, Appendices B, G of the Explanatory Report. |
| **3f.** Did the districts consider socioeconomic impacts reasonably expected to occur? | TWC §36.108(d6) | Yes | Refer Section 3.2.6, Appendices B, E, G of the Explanatory Report. |
| **3g.** Did the districts consider the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under Section 36.002? | TWC §36.108(d7) | Yes | Refer Section 3.2.7, Appendices B of the Explanatory Report. |
| **3h.** Did the districts consider the feasibility of achieving the desired future condition(s)? | TWC §36.108(d8) | Yes | Refer Section 3.2.8, Appendices B of the Explanatory Report. |
| **3i.** Did the districts consider any other information relevant to the specific desired future condition(s)? | TWC §36.108(d9) | Yes | Refer Section 3.2.9 of the Explanatory Report. |
| **4.** Does the explanatory report list other desired future condition options considered, if any, and the reasons why those options were not adopted? | TWC §36.108(d-3)(4) | Yes | Refer Section 4.0 of the Explanatory Report. |
| **5.** Does the explanatory report discuss reasons why recommendations made by advisory committees and relevant public comments received by the districts were or were not incorporated into the desired future condition(s)? | TWC §36.108(d-3)(5) | Yes | Refer Section 5.0 of the Explanatory Report. |
| Mark elements that are present in the packet with YES<br>Mark elements that are missing from the packet with NO | | | |

| Texas Water Development Board | | | | |
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| **Desired Future Condition Submission Packet Checklist - Groundwater Availability Modeling Technical Elements (part 4)** | | | | |
| **Groundwater Management Area: GMA 8** | | | | |
| **Groundwater Management Area Coordinator and contact information: Drew Satterwhite, (903) 786-4433, drews@gtua.org** | | | | |
| **Reviewing Staff:** | | **Date Packet Received:**<br>**Date Review Completed:** | | |
| | Present in packet and administratively complete | Notes | Contacted GMA Coordinator (date and by whom) | Additional data received and loaded onto network (date/TWDB staff name) |
| 1. Summary report that includes the following: | | | | |
| a. Modeling contact information if clarification is needed | Yes | James Beach | | |
| b. Date and year of submittal | Yes | January 4, 2022 | | |
| c. Seal by Texas Professional Geoscientist or Engineer | Yes | James Beach, P.G., | | |
| d. Groundwater Management Area and requested by whom | Yes | GMA 8 - Drew Satterwhite | | |
| e. Description of Desired Future Condition (DFC) | Yes | Resolution August 2021, Refer Section 3.0, and Appendix D of "GMA 8 DFC ER 2021" report. | | |
| f. Approach: Modeling Methods Document to include parameters and assumptions such as: | | | | |
| i. Groundwater availability model (GAM) version or acceptable alternative model, and version of acceptable pre-/post-processor used, if applicable | Yes | For all elements related to modeling of DFCs, please refer to Technical Memorandum in Appendix E of this Explanatory Report and Model files submitted under separate cover by WSP. | | |
| ii. Table or description of stress periods and corresponding years/months | Yes | See 1. (f) and (i) above<br>- Made all stress periods 365.25 days instead of including the leap year day<br>- Going to extend the model to run for another 10 years to the end of 2080 (2010-2080) | | |
| iii. If the end of the calibration period is different from the start of the predictive simulations, describe assumptions for projecting model from end of calibration to beginning conditions for predictive simulation including pumping, recharge, and related surface water heads. Include targets and hydrographs, as applicable, in appendix as well as electronic copies. | Yes | See 1. (f) and.(i).above<br>Refer Appendix E of "GMA 8 DFC ER 2021 Appendices" document. Modifications in model inputs, pumping inputs, methods and results are discussed in "Summary of Run 11 Predictive Simulation for GMA 8 Joint Planning" technical memorandum. | | |
| iv. Assumption for recharge, i.e. what years averaged and/or drought and related stress periods, etc. | Yes | See 1. (f) and.(i).above<br>Refer Appendix E of "GMA 8 DFC ER 2021 Appendices" document. Modifications in model inputs, pumping inputs, methods and results are discussed in "Summary of Run 11 Predictive Simulation for GMA 8 Joint Planning" technical memorandum. | | |
| v. Assumption for pumping in prediction such as: | | | | |
| 1. Same distribution as end of calibration and increase or decrease per county and layer? | Yes | See 1. (f) and.(i).above<br>Refer Appendix E of "GMA 8 DFC ER 2021 Appendices" document. Modifications in model inputs, pumping inputs, methods and results are discussed in "Summary of Run 11 Predictive Simulation for GMA 8 Joint Planning" technical memorandum. | | |
| 2. New wellfields (include maps). | Yes | See 1. (f) and.(i).above<br>For more details well file is included in model files. Please reach out if you need more information. | | |
| 3. Some other method—please provide as much detail as needed. | NA | Please reach out if you need more information. | | |
| g. Version of TWDB "model grid" file that associates model grids with counties, groundwater conservation districts, river basins, groundwater management areas, and regional water planning areas within the model study area using a centroid based approach. These files are available to download on each of the respective model web pages noted above. | Yes | See 1. (f) and.(i).above<br>The model files are available on shared drive and submitted USB. | | |
| h. Description of method used to extract data from model; for example, method and assumptions used to average drawdown, etc. Include a description of how dry cells were treated in averaging drawdown. | Yes | See 1. (f) and.(i).above<br>Refer Appendix E of "GMA 8 DFC ER 2021 Appendices" document. Modifications in model inputs, pumping inputs, methods and results are discussed in "Summary of Run 11 Predictive Simulation for GMA 8 Joint Planning" technical memorandum. | | |
| i. Results Section to include appropriate tables of pumping versus drawdown, volume, surface water discharge, etc. by aquifer, layer, etc. as applicable to the DFC statement. | Yes | See 1. (f) and.(i).above<br>- Refer Appendix E of "GMA 8 DFC ER 2021 Appendices" document. Modifications in model inputs, pumping inputs, methods and results are discussed in "Summary of Run 11 Predictive Simulation for GMA 8 Joint Planning" technical memorandum.<br>- Run 11 model results – Pumping summary and water level decline by GCD, County and Aquifer are provided in Appendix E of "GMA 8 DFC ER 2021 Appendices" document.<br>- GMA 8 – Run 11 water budgets are provided in Appendix E of "GMA 8 DFC ER 2021 Appendices " document. | | |

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| j. References | Yes | See 1. (f) and.(i).above<br><br>Refer Appendix E of “GMA 8 DFC ER 2021 Appendices” document. Modifications in model inputs, pumping inputs, methods and results are discussed in “Summary of Run 11 Predictive Simulation for GMA 8 Joint Planning” technical memorandum. | | |
| 2. Related model files (MODFLOW), PEST or other automated calibration files (if used), target files (for establishing starting conditions) with appropriate read me files. | Yes | See 1. (f) and.(i).above<br><br>- The model files are available on shared drive and submitted USB. Please refer “Model_files” sub folder within “Deliverable_GMA8_Run11” folder.<br>- A readme file is included with the Model files in SP. Other than the files in SP, Additional information can be provided as needed. | | |
| Mark elements that are present in the packet with YES | | | | |
| Mark elements that are not applicable with NA | | | | |
| Mark elements that are missing from the Packet with NO | | | | |

| Texas Water Development Board | | | | |
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| **Desired Future Condition Submission Packet Checklist - Aquifer Assessments Elements (part 5)** | | | | |
| **Groundwater Management Area: GMA 8** | | | | |
| **Groundwater Management Area Coordinator and contact information: Drew Satterwhite, (903) 786-4433, drews@gtua.org** | | | | |
| **Reviewing Staff:** | | **Date Packet Received:** | | |
| | | **Date Review Completed:** | | |
| | Present in packet and administratively complete | Absent from packet and not complete | Contacted GMA Coordinator (date and by whom) | Additional data received and loaded onto network (date/TWDB staff name) |
| 1. Summary report that includes the following: | | | | |
| a. Technical contact information if clarification is needed | See Transmittal Letter | | | |
| b. Date and year of submittal | See Transmittal Letter | | | |
| c. Seal by Texas Professional Geoscientist or Engineer | See inside cover of the Explanatory Report | | | |
| d. Groundwater Management Area and requested by whom | GMA 8 – Drew Satterwhite | | | |
| e. Description of Desired Future Condition (DFC) | Resolution August 2021, Refer Section 3.0, and Appendix D of the Explanatory Report. | | | |
| f. Approach: Details of the water budget or analytical methods used, as applicable to selected method: | | | | |
| i. Description and documentation of water budget, analytic formula/model, or other method used | See 1. (f) and (i) from part (4) above<br>Appendix E of the Explanatory Report. | | | |
| ii. Recharge assumptions and data | See 1. (f) and (i) from part (4) above<br>Appendix E of the Explanatory Report. | | | |
| iii. Water level data used, including hydrographs and maps | See 1. (f) and (i) from part (4) above<br>Appendix E of the Explanatory Report. | | | |
| iv. Inflow and outflow data | See 1. (f) and (i) from part (4) above<br>Appendix E of the Explanatory Report. | | | |
| v. Hydrologic parameters required for method | See 1. (f) and (i) from part (4) above<br>Refer Section 3 of the Explanatory Report | | | |
| vi. Structural data used in method | See 1. (f) and (i) from part (4) above<br>Refer Section 3 of the Explanatory Report | | | |

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| vii. Formulas and calculations used in assessment | See 1. (f) and (i) from part (4) above<br>Refer Section 3 of the Explanatory Report | | | |
| viii. Geographic information system files or references used for assessment | See 1. (f) and (i) from part (4) above<br>Refer Section 3 of the Explanatory Report | | | |
| ix. Any other applicable information to assess the aquifer | See 1. (f) and (i) from part (4) above<br>Refer Section 3 of the Explanatory Report | | | |
| g. Description of method used to extract data from background data or geographic information file; for example, methods and assumptions used to average drawdown, recharge, or any other relevant method. | See 1. (f) and (i) from part (4) above<br>Refer Section 3 of the Explanatory Report | | | |
| h. Results section with appropriate summary tables, as applicable to the DFC statement. | See 1. (f) and (i) from part (4) above<br>Refer Section 3 and Appendix E of the Explanatory Report | | | |
| i. References | See 1. (f) and (i) from part (4) above<br>Refer Section 3 of the Explanatory Report. | | | |

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| **Texas Water Development Board** | | | | |
| **Desired Future Condition Submission Packet Checklist - Aquifer Assessments Elements (part 5)** | | | | |
| **Groundwater Management Area: GMA 8** | | | | |
| **Groundwater Management Area Coordinator and contact information: Drew Satterwhite, (903) 786-4433, drews@gtua.org** | | | | |
| **Reviewing Staff:** | | **Date Packet Received:** | | |
| | | **Date Review Completed:** | | |
| | Present in packet and administratively complete | Absent from packet and not complete | Contacted GMA Coordinator (date and by whom) | Additional data received and loaded onto network (date/TWDB staff name) |
| Mark elements that are present in the packet with YES | | | | |
| Mark elements that are not applicable with NA | | | | |
| Mark elements that are missing from the Packet with NO | | | | |

**Texas Water Development Board**

**Desired Future Condition Submission Packet Checklist - Non-Relevant Aquifer Elements (part 6)**

**Groundwater Management Area: GMA8** **Reviewing Staff:**

**Required Documentation (31 TAC §356.31(b)):**

1. Description, location, and/or map of aquifer or portion of the aquifer.
2. Summary of aquifer characteristics, groundwater demands, and current groundwater uses, including the total estimated recoverable storage as provided by the executive administrator, that support the conclusion that desired future conditions in adjacent or hydraulically connected relevant aquifer(s) will not be affected.
3. Why the aquifer or portion of the aquifer is non-relevant for joint planning.

| Aquifers | Present in packet | Notes |
|---|---|---|
| **1 Nacatoch** | Yes | Ch. 6 of the Explanatory Report |
| **2 Blossom** | Yes | See 1 above. |
| **3 Brazos River Alluvium** | Yes | See 1 above. |
| **4 Cross Timbers** | Yes | See 1 above. |
| **5 N/A** | | |

Mark elements that are present in the packet with YES
Mark elements that are not applicable with NA
Mark elements that are missing from the packet with NO

# Appendix B
# GMA 8 Meeting Agendas (2019 – 2021)

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**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a ***Joint Planning meeting at 10:00 A.M. on May 6, 2019*** at the **Cleburne Conference Center** located at **1501 W. Henderson St., Cleburne, TX 76033**. The meeting will be open to the public. The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the November 30, 2018, GMA 8 meeting
6. Presentation of Plaque in to Eddie Daniel expressing appreciation for service as GMA 8 Chair
7. Consider and act upon all matters incident and related to the contract and scope of services with WSP for consulting services for DFC development.
8. Consider and act upon all matters incident and related to an Interlocal Agreement regarding Groundwater Management Area 8 Funding for Development of Desired Future Conditions joint planning.
9. Discussion and possible action on potential model runs for this planning cycle.
10. Discussion and possible action on joint planning schedule.
11. Update and possible action on pending legislation that relates to the joint planning process including but not limited to similar rules.
12. Discussion of possible agenda items and dates for next GMA 8 meeting.
13. Closing comments.
14. Adjourn.

Dated this 22nd day of April, 2019

Joe Cooper, Chair
Groundwater Management Area 8

*The above agenda schedules represent an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.*

*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a ***Joint Planning meeting at 10:00 A.M. on July 26, 2019*** at the **Cleburne Conference Center** located at **1501 W. Henderson St., Cleburne, TX 76033**. The meeting will be open to the public. The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the May 6, 2019, GMA 8 meeting
6. Update on all matters incident and related to the contract and scope of services with WSP for consulting services for DFC development including the associated GMA 8 Interlocal Agreement.
7. Discussion and possible action on potential model runs for this planning cycle.
8. Discuss plan and schedule for GMA 8 consideration of nine factors required by Texas Water Code Subsections 36.108(d)(1 – 9) in the third round of DFC joint planning
9. Discuss plan for updating and preparing the GMA 8 explanatory report for the third round of DFC joint planning
10. Discussion and possible action on joint planning schedule.
11. Update and possible action on pending legislation that relates to the joint planning process including but not limited to similar rules.
12. Discussion of possible agenda items and dates for next GMA 8 meeting.
13. Closing comments.
14. Adjourn.

Dated this 3rd day of July, 2019

Joe Cooper, Chair
Groundwater Management Area 8

*The above agenda schedules represent an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.*

*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a ***Joint Planning meeting at 10:00 A.M. on November 22, 2019*** at the **Cleburne Conference Center** located at **1501 W. Henderson St., Cleburne, TX 76033**. The meeting will be open to the public. The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the July 26, 2019, GMA 8 meeting.
6. Discussion and possible action of upcoming model run inputs.
7. Presentations and discussions regarding Environmental Impacts, Subsidence Impacts, and Hydrological Conditions factors as they relate to Desired Future Conditions pursuant to Texas Water Code Section 36.108(d).
8. Update on similar rules surveys.
9. Receive update from the Texas Water Development Board.
10. Discussion of possible agenda items and dates for next GMA 8 meeting.
11. Closing comments.
12. Adjourn.

Dated this 5th day of November, 2019

Joe Cooper, Chair
Groundwater Management Area 8

*The above agenda schedules represent an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.*

*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a ***Joint Planning meeting at 10:00 A.M. on February 26, 2020*** at the **Cleburne Conference Center** located at **1501 W. Henderson St., Cleburne, TX 76033**. The meeting will be open to the public. The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the November 22, 2019, GMA 8 meeting.
6. Discussion and possible action on results from updated NTWGAM run related to Joint Planning in GMA 8.
7. Presentations and discussions regarding Aquifer Uses or Conditions, Supply Needs & Management Strategies, and Private Property Rights factors as they relate to Desired Future Conditions pursuant to Texas Water Code Section 36.108(d).
8. Update on similar rules surveys.
9. Receive update from the Texas Water Development Board.
10. Receive presentation from Texas Water Development Board on Groundwater Availability Model Slivers
11. Discussion and possible action regarding all matters incident and related to Groundwater Availability Model Slivers
12. Discussion of possible agenda items and dates for next GMA 8 meeting.
13. Closing comments.
14. Adjourn.

Dated this 27th day of January, 2020

Joe Cooper, Chair
Groundwater Management Area 8

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*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Join by computer, tablet or smartphone at the following link:
https://global.gotomeeting.com/join/308505565

or

Join by phone 1-646-749-3112 with access code: 308-505-565

Friday, May 15, 2020 – 10:00 a.m.

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a Joint Planning meeting at 10:00 A.M. on May 15, 2020.

Notice is hereby given that, in accordance with Governor Abbott's March 16, 2020, action to temporarily suspend certain provisions of the Texas Open Meetings Act, a Joint Planning Meeting will be held via telephone and video conference call beginning at 10:00 a.m. on May 15, 2020. Any member of the public who wishes to participate remotely may do so through the remote access options provided above.

The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the February 26, 2020, GMA 8 meeting.
6. Discussion and possible action on results from updated NTWGAM run related to Joint Planning in GMA 8. Discussion will include changes made in Upper Trinity GCD, Prairielands GCD, Southern Trinity GCD, Clearwater UWCD, Central Texas GCD, and Williamson and Travis County.
7. Presentation and discussion regarding Socioeconomic Impacts, Feasibility of Desired Future Conditions (DFCs), and Other Relevant Information factors as they relate to Desired Future Conditions (DFCs) adoption pursuant to Texas Water Code Section 36.108(d).
8. Update on similar rules surveys.
9. Receive update from Texas Water Development Board.

10. Discussion of possible agenda items and dates for next GMA 8 meeting.
11. Closing comments.
12. Adjourn.

Dated this 30th day of April, 2020

Joe Cooper, Chair
Groundwater Management Area 8

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**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Join by computer, tablet or smartphone at the following link:
https://global.gotomeeting.com/join/484143909

or

Join by phone 408-650-3123 with access code: 484-143-909

Friday, August 7, 2020 – 10:00 a.m.

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a **Joint Planning meeting at 10:00 A.M. on August 7, 2020.**

Notice is hereby given that, in accordance with Governor Abbott's March 16, 2020, action to temporarily suspend certain provisions of the Texas Open Meetings Act, a Joint Planning Meeting will be held via telephone and video conference call beginning at 10:00 a.m. on August 7, 2020. Any member of the public who wishes to participate remotely may do so through the remote access options provided above.

The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the May 15, 2020, GMA 8 meeting.
6. Discussion and possible action on results from the Central Texas Llano Uplift model run.
7. Discuss and possible action regarding GMA 8 declaration of non-relevant aquifers.
8. Presentation, discussion and possible action on options for Desired Future Conditions statements and next steps to establish proposed Desired Future Conditions.
9. Discussion and possible action on margin of error language for the Desired Future Conditions Statement.
10. Consider and act upon adopting a resolution regarding the reassignment of GMA boundaries between GMA 8 and GMA 6.

11. Consider and act upon adopting a resolution regarding the reassignment of GMA boundaries between GMA 8 and GMA 7.
12. Consider and act upon adopting a resolution regarding the reassignment of GMA boundaries between GMA 8 and GMA 9.
13. Discussion of possible agenda items and dates for next GMA 8 meeting.
14. Closing comments.
15. Adjourn.

Dated this 15th day of July, 2020

Joe Cooper, Chair
Groundwater Management Area 8

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**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Join by computer, tablet or smartphone at the following link:
https://global.gotomeeting.com/join/889909501

or

Join by phone 872-240-3212 with access code: 889-909-501

Tuesday, October 27, 2020 – 10:00 a.m.

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a **Joint Planning meeting at 10:00 A.M. on October 27, 2020.**

Notice is hereby given that, in accordance with Governor Abbott's March 16, 2020, action to temporarily suspend certain provisions of the Texas Open Meetings Act, a Joint Planning Meeting will be held via telephone and video conference call beginning at 10:00 a.m. on October 27, 2020. Any member of the public who wishes to participate remotely may do so through the remote access options provided above.

The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the August 7, 2020, GMA 8 meeting.
6. Receive update from the Texas Water Development Board.
7. Presentation and discussion of the 9 factors pursuant to Texas Water Code Section 36.108(d).
8. Discussion and possible action on margin of error language for the Desired Future Conditions Statements.
9. Discussion and possible action on a resolution to adopt proposed Desired Future Conditions.
10. Discussion and possible action regarding next steps in adopting Desired Future Conditions.
11. Discuss similar rules survey.

12. Discussion of possible agenda items and dates for next GMA 8 meeting.
13. Closing comments.
14. Adjourn.

Dated this 7th day of October, 2020

Joe Cooper, Chair
Groundwater Management Area 8

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# Appendix C
# GMA 8 Boundary Amendment Letters

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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

March 12, 2021

Mr. Drew Satterwhite
General Manager
North Texas Groundwater Conservation District
P.O. Box 508
Gainesville, TX 76241

Dear Mr. Satterwhite:

We received your request, dated December 8, 2020, to amend the boundaries of groundwater management areas 6 and 8 pursuant to 31 Texas Administrative Code (TAC) § 356.22. Based on our staff's technical and administrative review of the request and supporting documentation, the Board approved the request on March 10, 2021. TWDB staff will make the necessary changes to the data files as described in TAC § 356.22 and will notify you when the changes are complete.

By copy of this letter, and in compliance with TAC § 356.22(b), I am also informing the affected districts of this action.

Please feel free to contact Natalie Ballew of our Groundwater staff at 512-463-2779 or natalie.ballew@twdb.texas.gov if you have any questions regarding this action or need any further information.

Sincerely,

Jeff Walker Digitally signed by Jeff Walker Date: 2021.03.23 14:35:41 -05'00'

Jeff Walker
Executive Administrator

c w/o enc: Doug Shaw, Upper Trinity Groundwater Conservation District
Mike McGuire, Rolling Plains Groundwater Conservation District
John T. Dupnik, P.G., Deputy Executive Administrator of Water Science and Conservation
Larry French, P.G., Groundwater
Natalie Ballew, P.G., Groundwater

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

May 19, 2021

Mr. Ronald G. Fieseler, P.G.
Chairman, Groundwater Management Area 9
Blanco-Pedernales Groundwater Conservation District
P.O. Box 1516
Johnson City, TX 78636

Dear Mr. Fieseler:

We received your two requests, dated March 2, 2021 and April 20, 2021, to amend the boundaries of groundwater management areas 8, 9, and 10 pursuant to 31 Texas Administrative Code (TAC) § 356.22. Based on staff technical and administrative review of the requested boundary changes and supporting documentation, it has been determined that the changes qualify as administrative corrections and have been approved. TWDB staff will make the necessary changes to the data files as described in TAC § 356.22 and will notify you when the change is complete.

By copy of this letter, and in compliance with TAC § 356.22(b), I am also informing the affected districts of this action.

Please feel free to contact Natalie Ballew of our Groundwater staff at 512-463-2779 or natalie.ballew@twdb.texas.gov if you have any questions regarding this action or need any further information.

Sincerely,

Jeff Walker Digitally signed by Jeff Walker Date: 2021.05.19 20:37:17 -05'00'

Jeff Walker
Executive Administrator

c w/o enc: Drew Satterwhite, North Texas Groundwater Conservation District
Michael Redman, Barton Springs Edwards Aquifer Conservation District
John T. Dupnik, P.G., Deputy Executive Administrator of Water Science and Conservation
Larry French, P.G., Groundwater
Natalie Ballew, P.G., Groundwater

# Appendix D
# GMA 8 DFC Adoption Resolution (November 4, 2021)

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RESOLUTION TO ADOPT DESIRED FUTURE CONDITIONS
FOR RELEVANT AQUIFERS IN GROUNDWATER MANAGEMENT AREA 8

THE STATE OF TEXAS §
§
GROUNDWATER MANAGEMENT AREA 8 §
§
GROUNDWATER CONSERVATION DISTRICTS §

**WHEREAS**, Section 36.108 of the Texas Water Code requires groundwater conservation districts located entirely or partially within a groundwater management area ("GMA") designated by the Texas Water Development Board ("TWDB") to adopt desired future conditions ("DFCs") for the relevant aquifers located within the management area;

**WHEREAS**, the groundwater conservation districts located entirely or partially within Groundwater Management Area 8 ("GMA 8") as of the date of this resolution are as follows: Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District (collectively referenced hereinafter as "the GMA 8 Districts");

**WHEREAS**, the GMA 8 Districts are each governmental agencies and bodies politic and corporate operating pursuant to Chapter 36 of the Texas Water Code and their specific enabling statutes;

**WHEREAS**, the GMA 8 Districts each desire to fulfill the requirements of Section 36.108 of the Texas Water Code through mutual cooperation and joint planning efforts;

**WHEREAS**, Section 36.108(d-3) of the Texas Water Code requires the GMA 8 Districts to approve a resolution adopted by a two-thirds (2/3) vote of all the district representatives not later than January 5, 2022, and every five years thereafter;

**WHEREAS**, the GMA 8 Districts secured hydrogeologic and engineering consulting services to provide technical support in their efforts to establish requisite DFCs;

**WHEREAS**, the representatives of the GMA 8 Districts held meetings on July 26, 2019, November 22, 2019, February 26, 2020, May 15, 2020, August 7, 2020, October 27, 2020, and November 4, 2021, in order to comply with their statutory duty and to publicly consider the factors and criteria required for proposing DFCs for adoption under Section 36.108 of the Texas Water Code;

**WHEREAS**, in developing proposed DFCs for the relevant aquifers in GMA 8, the GMA 8 Districts utilized the best available scientific and hydrogeological data;

**WHEREAS**, the GMA 8 Districts conducted multiple model runs using the TWDB approved aquifer Groundwater Availability Models ("GAMs") to provide insight to the impacts of pumping and to help establish proposed DFCs;

**WHEREAS**, the GMA 8 Districts considered all of the nine (9) statutory factors set forth in Section 36.108(d) of the Texas Water Code before voting to propose the DFCs for the relevant aquifers in GMA 8, including:

1) aquifer uses or conditions within the management area, including conditions that differ substantially from one geographic area to another;
2) the water supply needs and water management strategies included in the state water plan;
3) hydrological conditions, including for each aquifer in the management area the total estimated recoverable storage as provided by the TWDB executive administrator, and the average annual recharge, inflows, and discharge;
4) other environmental impacts, including impacts on spring flow and other interactions between groundwater and surface water;
5) the impact on subsidence;
6) socioeconomic impacts reasonably expected to occur;
7) the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under Section 36.002 of the Texas Water Code;
8) the feasibility of achieving the desired future condition; and
9) any other information relevant to the specific desired future conditions;

**WHEREAS**, pursuant to Section 36.108(d-2) of the Texas Water Code, the GMA 8 Districts also considered the balance between the highest practicable level of groundwater production and the conservation, preservation, protection, recharging, and prevention of waste of groundwater and control of subsidence in the management area;

**WHEREAS**, after consideration of multiple GAM runs and other data and information relevant to the development of DFCs as required by Section 36.108 of the Texas Water Code, the representatives of the GMA 8 Districts voted to approve proposed DFCs for the relevant aquifers in GMA 8 on October 27, 2020, at a publicly held meeting;

**WHEREAS**, the proposed DFCs approved by the representatives of the GMA 8 Districts were distributed by mail to each GMA 8 District, initiating a 90-day public comment period by which each GMA 8 District held a public hearing on the proposed DFCs relevant to that district pursuant to Section 36.108(d-2) of the Texas Water Code;

**WHEREAS**, each GMA 8 District compiled a written summary report inclusive of relevant comments received on the proposed DFCs, any suggested revisions to the proposed DFCs, and the basis for any such revisions;

**WHEREAS**, the GMA 8 Districts' summary reports were submitted to the GMA 8 Administrator District for review and consideration by GMA 8;

**WHEREAS**, in compliance with Section 36.108(d-3) of the Texas Water Code, the representatives of the GMA 8 Districts reconvened and held a public meeting to review the reports submitted by the GMA 8 Districts and consider any suggested revisions to the proposed DFCs;

**WHEREAS**, there were no substantive revisions to the proposed DFCs adopted on October 27, 2020 submitted by any of the GMA 8 Districts;

**WHEREAS**, in order to finally adopt the DFCs, as required by Section 36.108(d-3) of the Texas Water Code, the representatives of the GMA 8 Districts convened for a meeting, which was duly noticed and open to the public, this day, November 4, 2021, at 10:00 a.m. at the Prairielands Groundwater Conservation District Office, to take up and consider the adoption of the DFCs for all relevant aquifers within GMA 8;

**WHEREAS,** of the eleven (11) GMA 8 Districts, the meeting this day was attended by duly appointed voting representatives from the following districts (as indicated):

- ☐ Central Texas Groundwater Conservation District
- ☐ Clearwater Underground Water Conservation District
- ☐ Middle Trinity Groundwater Conservation District
- ☐ North Texas Groundwater Conservation District
- ☐ Northern Trinity Groundwater Conservation District
- ☐ Post Oak Savannah Groundwater Conservation District
- ☐ Prairielands Groundwater Conservation District
- ☐ Red River Groundwater Conservation District
- ☐ Saratoga Underground Water Conservation District
- ☐ Southern Trinity Groundwater Conservation District
- ☐ Upper Trinity Groundwater Conservation District;

**WHEREAS**, the representatives of the GMA 8 Districts have adopted administrative procedures for the consideration, proposal, and adoption of DFCs, and the representatives of the GMA 8 Districts find that the DFCs set forth in this resolution were considered, proposed, and adopted in compliance with the requirements of those administrative procedures in all respects;

**WHEREAS**, the GMA 8 Districts find that the notice and meeting requirements to review, consider, and adopt DFCs for all relevant aquifers within GMA 8 have been and are satisfied, with a true and correct copy of each of the notices required under Section 36.108(e) of the Texas Water Code attached hereto in Attachment A and incorporated herein for all purposes;

**WHEREAS**, the GMA 8 Districts have documented in the explanatory report required under Section 36.108(d-3) of the Texas Water Code all consideration of the factors and criteria required for adopting DFCs under Section 36.108 of the Texas Water Code; and

**WHEREAS,** the GMA 8 Districts find that the adoption of the DFCs provided herein are in each instance merited and necessary to support the management of groundwater resources within the boundaries of the GMA 8 Districts in a manner consistent with the requirements of Chapter 36, Water Code.

**NOW, THEREFORE, BE IT RESOLVED BY THE REPRESENTATIVES OF THE GROUNDWATER CONSERVATION DISTRICTS WITHIN GROUNDWATER MANAGEMENT AREA 8:**

1. Each of the affirmations and recitals set forth above are true and correct and fully incorporated into this resolution.

2. No less than two-thirds (2/3) of the authorized voting representatives of the GMA 8 Districts hereby adopt the DFCs for the relevant aquifers within GMA 8 as those set forth in Attachment B to this resolution, which is fully incorporated herein. For purposes of all calculations related to the adopted DFCs that are conducted by the TWDB, the GMA 8 Districts assume the model results are consistent with the proposed DFCs if the average drawdowns calculated by the TWDB are within five percent (5%) or five feet (5'), whichever is larger, of the proposed DFC drawdown values.

3. The GMA 8 Districts and their agents and representatives, individually and collectively, are further authorized to take any and all actions necessary to implement this resolution, including but not limited to the additional actions required for adoption of the DFCs in accordance with Section 36.108 of the Texas Water Code.

AND IT IS SO ORDERED.

PASSED AND ADOPTED on this 4th day of November, 2021.

ATTEST:

Central Texas Groundwater Conservation District

Clearwater Underground Water Conservation District

Middle Trinity Groundwater Conservation District

North Texas Groundwater Conservation District

Northern Trinity Groundwater Conservation District

Post Oak Savannah Groundwater Conservation District

Prairielands Groundwater Conservation District

Red River Groundwater Conservation District

Saratoga Underground Water Conservation District

Southern Trinity Groundwater Conservation District

Upper Trinity Groundwater Conservation District

# ATTACHMENT A

**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a ***Joint Planning meeting at 10:00 A.M. on May 6, 2019*** at the **Cleburne Conference Center** located at **1501 W. Henderson St., Cleburne, TX 76033**. The meeting will be open to the public. The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the November 30, 2018, GMA 8 meeting
6. Presentation of Plaque in to Eddie Daniel expressing appreciation for service as GMA 8 Chair
7. Consider and act upon all matters incident and related to the contract and scope of services with WSP for consulting services for DFC development.
8. Consider and act upon all matters incident and related to an Interlocal Agreement regarding Groundwater Management Area 8 Funding for Development of Desired Future Conditions joint planning.
9. Discussion and possible action on potential model runs for this planning cycle.
10. Discussion and possible action on joint planning schedule.
11. Update and possible action on pending legislation that relates to the joint planning process including but not limited to similar rules.
12. Discussion of possible agenda items and dates for next GMA 8 meeting.
13. Closing comments.
14. Adjourn.

Dated this 22nd day of April, 2019

Joe Cooper, Chair
Groundwater Management Area 8

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**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a ***Joint Planning meeting at 10:00 A.M. on July 26, 2019*** at the **Cleburne Conference Center** located at **1501 W. Henderson St., Cleburne, TX 76033**. The meeting will be open to the public. The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the May 6, 2019, GMA 8 meeting
6. Update on all matters incident and related to the contract and scope of services with WSP for consulting services for DFC development including the associated GMA 8 Interlocal Agreement.
7. Discussion and possible action on potential model runs for this planning cycle.
8. Discuss plan and schedule for GMA 8 consideration of nine factors required by Texas Water Code Subsections 36.108(d)(1 – 9) in the third round of DFC joint planning
9. Discuss plan for updating and preparing the GMA 8 explanatory report for the third round of DFC joint planning
10. Discussion and possible action on joint planning schedule.
11. Update and possible action on pending legislation that relates to the joint planning process including but not limited to similar rules.
12. Discussion of possible agenda items and dates for next GMA 8 meeting.
13. Closing comments.
14. Adjourn.

Dated this 3rd day of July, 2019

Joe Cooper, Chair
Groundwater Management Area 8

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**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

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1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the July 26, 2019, GMA 8 meeting.
6. Discussion and possible action of upcoming model run inputs.
7. Presentations and discussions regarding Environmental Impacts, Subsidence Impacts, and Hydrological Conditions factors as they relate to Desired Future Conditions pursuant to Texas Water Code Section 36.108(d).
8. Update on similar rules surveys.
9. Receive update from the Texas Water Development Board.
10. Discussion of possible agenda items and dates for next GMA 8 meeting.
11. Closing comments.
12. Adjourn.

Dated this 5th day of November, 2019

Joe Cooper, Chair
Groundwater Management Area 8

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**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a ***Joint Planning meeting at 10:00 A.M. on February 26, 2020*** at the **Cleburne Conference Center** located at **1501 W. Henderson St., Cleburne, TX 76033**. The meeting will be open to the public. The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the November 22, 2019, GMA 8 meeting.
6. Discussion and possible action on results from updated NTWGAM run related to Joint Planning in GMA 8.
7. Presentations and discussions regarding Aquifer Uses or Conditions, Supply Needs & Management Strategies, and Private Property Rights factors as they relate to Desired Future Conditions pursuant to Texas Water Code Section 36.108(d).
8. Update on similar rules surveys.
9. Receive update from the Texas Water Development Board.
10. Receive presentation from Texas Water Development Board on Groundwater Availability Model Slivers
11. Discussion and possible action regarding all matters incident and related to Groundwater Availability Model Slivers
12. Discussion of possible agenda items and dates for next GMA 8 meeting.
13. Closing comments.
14. Adjourn.

Dated this 27th day of January, 2020

Joe Cooper, Chair
Groundwater Management Area 8

*The above agenda schedules represent an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.*

*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Join by computer, tablet or smartphone at the following link:
https://global.gotomeeting.com/join/308505565

or

Join by phone 1-646-749-3112 with access code: 308-505-565

Friday, May 15, 2020 – 10:00 a.m.

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a Joint Planning meeting at 10:00 A.M. on May 15, 2020.

Notice is hereby given that, in accordance with Governor Abbott's March 16, 2020, action to temporarily suspend certain provisions of the Texas Open Meetings Act, a Joint Planning Meeting will be held via telephone and video conference call beginning at 10:00 a.m. on May 15, 2020. Any member of the public who wishes to participate remotely may do so through the remote access options provided above.

The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the February 26, 2020, GMA 8 meeting.
6. Discussion and possible action on results from updated NTWGAM run related to Joint Planning in GMA 8. Discussion will include changes made in Upper Trinity GCD, Prairielands GCD, Southern Trinity GCD, Clearwater UWCD, Central Texas GCD, and Williamson and Travis County.
7. Presentation and discussion regarding Socioeconomic Impacts, Feasibility of Desired Future Conditions (DFCs), and Other Relevant Information factors as they relate to Desired Future Conditions (DFCs) adoption pursuant to Texas Water Code Section 36.108(d).
8. Update on similar rules surveys.
9. Receive update from Texas Water Development Board.

10. Discussion of possible agenda items and dates for next GMA 8 meeting.
11. Closing comments.
12. Adjourn.

Dated this 30th day of April, 2020

Joe Cooper, Chair
Groundwater Management Area 8

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*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Join by computer, tablet or smartphone at the following link:
https://global.gotomeeting.com/join/484143909

or

Join by phone 408-650-3123 with access code: 484-143-909

Friday, August 7, 2020 – 10:00 a.m.

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a **Joint Planning meeting at 10:00 A.M. on August 7, 2020.**

Notice is hereby given that, in accordance with Governor Abbott's March 16, 2020, action to temporarily suspend certain provisions of the Texas Open Meetings Act, a Joint Planning Meeting will be held via telephone and video conference call beginning at 10:00 a.m. on August 7, 2020. Any member of the public who wishes to participate remotely may do so through the remote access options provided above.

The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the May 15, 2020, GMA 8 meeting.
6. Discussion and possible action on results from the Central Texas Llano Uplift model run.
7. Discuss and possible action regarding GMA 8 declaration of non-relevant aquifers.
8. Presentation, discussion and possible action on options for Desired Future Conditions statements and next steps to establish proposed Desired Future Conditions.
9. Discussion and possible action on margin of error language for the Desired Future Conditions Statement.
10. Consider and act upon adopting a resolution regarding the reassignment of GMA boundaries between GMA 8 and GMA 6.

11. Consider and act upon adopting a resolution regarding the reassignment of GMA boundaries between GMA 8 and GMA 7.
12. Consider and act upon adopting a resolution regarding the reassignment of GMA boundaries between GMA 8 and GMA 9.
13. Discussion of possible agenda items and dates for next GMA 8 meeting.
14. Closing comments.
15. Adjourn.

Dated this 15th day of July, 2020

Joe Cooper, Chair
Groundwater Management Area 8

*The above agenda schedules represent an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.*

*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

**NOTICE OF MEETING**
**GROUNDWATER MANAGEMENT AREA 8**

Join by computer, tablet or smartphone at the following link:
https://global.gotomeeting.com/join/889909501

or

Join by phone 872-240-3212 with access code: 889-909-501

Tuesday, October 27, 2020 – 10:00 a.m.

Notice is hereby given that the groundwater conservation districts located wholly or partially within Groundwater Management Area (GMA) 8, as designated by the Texas Water Development Board (TWDB), consisting of the Central Texas Groundwater Conservation District, Clearwater Underground Water Conservation District, Middle Trinity Groundwater Conservation District, North Texas Groundwater Conservation District, Northern Trinity Groundwater Conservation District, Post Oak Savannah Groundwater Conservation District, Prairielands Groundwater Conservation District, Red River Groundwater Conservation District, Saratoga Underground Water Conservation District, Southern Trinity Groundwater Conservation District, and Upper Trinity Groundwater Conservation District will hold a **Joint Planning meeting at 10:00 A.M. on October 27, 2020.**

Notice is hereby given that, in accordance with Governor Abbott's March 16, 2020, action to temporarily suspend certain provisions of the Texas Open Meetings Act, a Joint Planning Meeting will be held via telephone and video conference call beginning at 10:00 a.m. on October 27, 2020. Any member of the public who wishes to participate remotely may do so through the remote access options provided above.

The following items of business will be discussed and potentially acted upon:

1. Invocation.
2. Call meeting to order and establish quorum.
3. Welcome and introductions.
4. Public comment.
5. Consider and act upon approval of minutes from the August 7, 2020, GMA 8 meeting.
6. Receive update from the Texas Water Development Board.
7. Presentation and discussion of the 9 factors pursuant to Texas Water Code Section 36.108(d).
8. Discussion and possible action on margin of error language for the Desired Future Conditions Statements.
9. Discussion and possible action on a resolution to adopt proposed Desired Future Conditions.
10. Discussion and possible action regarding next steps in adopting Desired Future Conditions.
11. Discuss similar rules survey.

12. Discussion of possible agenda items and dates for next GMA 8 meeting.
13. Closing comments.
14. Adjourn.

Dated this 7th day of October, 2020

Joe Cooper, Chair
Groundwater Management Area 8

*The above agenda schedules represent an estimate of the order for the indicated items and is subject to change at any time. These public meetings are available to all persons regardless of disability. If you require special assistance to attend the meeting, please call (855) 426-4433 at least 24 hours in advance of the meeting to coordinate any special physical access arrangements.*

*For questions regarding this notice, please contact Velma Starks at (855) 426-4433, at ntgcd@northtexasgcd.org, or at 5100 Airport Drive, Denison, TX 75020.*

At any time during the meeting or work session and in compliance with the Texas Open Meetings Act, Chapter 551, Government Code, Vernon's Texas Codes, Annotated, the Groundwater Management Area 8 may meet in executive session on any of the above agenda items or other lawful items for consultation concerning attorney-client matters (§551.071); deliberation regarding real property (§551.072); deliberation regarding prospective gifts (§551.073); personnel matters (§551.074); and deliberation regarding security devices (§551.076). Any subject discussed in executive session may be subject to action during an open meeting.

# ATTACHMENT B

**Attachment B: Desired Future Conditions (DFCs) adopted by District Representatives in GMA 8 for all relevant aquifers.**

Table 1 – GMA 8 DFCs adopted at an aquifer-wide scale for Northern Trinity and Woodbine aquifers based on total average feet of drawdown (both unconfined and confined drawdown). Planning period from January 1, 2010 through December 31, 2080

| GMA 8 Adopted DFCs -Aquifer-Wide Scale | |
|---|---|
| Woodbine | 146 |
| Paluxy | 193 |
| Glen Rose | 148 |
| Twin Mountain | 345 |
| Travis Peak | 207 |
| Hensell | 148 |
| Hosston | 262 |
| Antlers | 193 |

Table 2 - GMA 8 DFCs adopted at a GCD scale for Northern Trinity and Woodbine aquifers (except for Upper Trinity GCD, see Table 3 below for Upper Trinity GCD) based on total average feet of drawdown (both unconfined and confined drawdown). Planning period from January 1, 2010 through December 31, 2080.

| GMA 8 Adopted DFCs - GCD Scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| GCD | Wood-bine | Paluxy | Glen Rose | Twin Mtn | Travis Peak | Hensell | Hosston | Antlers |
| Central Texas GCD | — | — | 2 | — | 19 | 7 | 21 | — |
| Clearwater UWCD | — | 17 | 83 | — | 333 | 145 | 375 | — |
| Middle Trinity GCD | — | 5 | 20 | 8 | 98 | 58 | 108 | 12 |
| North Texas GCD | 123 | 465 | 300 | 485 | — | — | — | 305 |
| Northern Trinity GCD | 6 | 105 | 163 | 348 | — | — | — | 177 |
| Post Oak Savannah GCD | — | — | 241 | — | 412 | 261 | 412 | — |
| Prairielands GCD | 35 | 44 | 142 | 170 | 323 | 201 | 364 | — |

| GMA 8 Adopted DFCs - GCD Scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| GCD | Wood-bine | Paluxy | Glen Rose | Twin Mtn | Travis Peak | Hensell | Hosston | Antlers |
| **Red River GCD** | 209 | 830 | 335 | 405 | 291 | — | — | 321 |
| **Saratoga UWCD** | — | 2— | 1 | — | 6 | 1 | 11 | — |
| **Southern Trinity GCD** | 6 | 41 | 148 | — | 504 | 242 | 582 | — |

Table 3 - GMA 8 DFCs adopted for Upper Trinity GCD for Northern Trinity and Woodbine aquifers based on total average feet of drawdown, discretized based on outcrop and downdip extent. Planning period from January 1, 2010 through December 31, 2080.

| GMA 8 Adopted DFCs - Upper Trinity GCD | | |
|---|---|---|
| **Antlers** | **Outcrop** | 47 |
| | **Downdip** | 154 |
| **Paluxy** | **Outcrop** | 6 |
| | **Downdip** | 2 |
| **Glen Rose** | **Outcrop** | 15 |
| | **Downdip** | 45 |
| **Twin Mtn** | **Outcrop** | 10 |
| | **Downdip** | 70 |

Table 4 - GMA 8 DFCs adopted at a county scale for Northern Trinity and Woodbine aquifers (except for Upper Trinity GCD counties, see Table 5 below for these counties) based on total average feet of drawdown (both unconfined and confined drawdown). Planning period from January 1, 2010 through December 31, 2080.

| GMA 8 Adopted DFCs - County Scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| County | Wood-bine | Paluxy | Glen Rose | Twin Mtn | Travis Peak | Hensell | Hosston | Antlers |
| **Bell** | — | 17 | 83 | — | 333 | 145 | 375 | — |
| **Bosque** | — | 6 | 53 | — | 189 | 139 | 232 | — |
| **Bowie** | — | — | — | — | — | — | — | — |
| **Brown** | — | 2 | 1 | — | 2 | 1 | 1 | 2 |
| **Burnet** | — | — | 2 | — | 19 | 7 | 21 | — |
| **Callahan** | — | — | — | — | — | — | — | 1 |
| **Collin** | 482 | 729 | 366 | 560 | — | — | — | 596 |
| **Comanche** | — | — | 2 | — | 4 | 2 | 3 | 12 |

| GMA 8 Adopted DFCs - County Scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| County | Wood-bine | Paluxy | Glen Rose | Twin Mtn | Travis Peak | Hensell | Hosston | Antlers |
| Cooke | 2 | — | — | — | — | — | — | 191 |
| Coryell | — | 5 | 15 | — | 107 | 70 | 141 | — |
| Dallas | 137 | 346 | 288 | 515 | 415 | 362 | 419 | — |
| Delta | — | 279 | 198 | — | 202 | — | — | — |
| Denton | 22 | 558 | 367 | 752 | — | — | — | 416 |
| Eastland | — | — | — | — | — | — | — | 4 |
| Ellis | 76 | 128 | 220 | 413 | 380 | 290 | 390 | — |
| Erath | — | 6 | 6 | 8 | 25 | 12 | 35 | 14 |
| Falls | — | 159 | 238 | — | 505 | 296 | 511 | — |
| Fannin | 259 | 709 | 305 | 400 | 291 | | | 269 |
| Franklin | — | — | — | — | — | — | — | — |
| Grayson | 163 | 943 | 364 | 445 | | | | 364 |
| Hamilton | — | 2 | 4 | — | 26 | 14 | 38 | — |
| Hill | 20 | 45 | 149 | — | 365 | 211 | 413 | — |
| Hopkins | — | — | — | — | — | — | — | — |
| Hunt | 631 | 610 | 326 | 399 | 35 | — | — | — |
| Johnson | 4 | -57 | 66 | 184 | 235 | 120 | 329 | — |
| Kaufman | 242 | 311 | 305 | 427 | 372 | 349 | 345 | — |
| Lamar | 42 | 100 | 107 | — | 125 | — | — | 132 |
| Lampasas | — | — | 1 | — | 6 | 1 | 11 | — |
| Limestone | — | 199 | 301 | — | 433 | 214 | 445 | — |
| McLennan | 6 | 41 | 148 | — | 504 | 242 | 582 | — |
| Milam | — | — | 241 | — | 412 | 261 | 412 | — |
| Mills | — | 1 | 1 | — | 9 | 2 | 13 | — |
| Navarro | 110 | 139 | 266 | — | 343 | 2995 | 343 | — |
| Rains | — | — | — | — | — | — | — | — |
| Red River | 2 | 24 | 40 | — | 57 | — | — | 15 |
| Rockwall | 275 | 433 | 343 | 466 | — | — | — | — |
| Somervell | — | 4 | 4 | 50 | 64 | 17 | 120 | — |
| Tarrant | 6 | 105 | 163 | 348 | — | — | — | 177 |
| Taylor | — | — | — | — | — | — | — | 0 |
| Travis | — | — | 83 | — | 219 | 68 | 226 | — |
| Williamson | — | — | 78 | — | 220 | 89 | 225 | — |

Table 5 - GMA 8 DFCs adopted at a county scale for Upper Trinity GCD counties for Northern Trinity and Woodbine aquifers based on total average feet of drawdown for outcrop and downdip areas. Planning period from January 1, 2010 through December 31, 2080.

| GMA 8 Adopted DFCs - Upper Trinity GCD by county (O-Outcrop, D-Downdip) | | | | |
|---|---|---|---|---|
| County | Antlers | Paluxy | Glen Rose | Twin Mtn |
| **Hood -O** | — | 6 | 9 | 13 |
| **Hood-D** | — | — | 39 | 72 |
| **Montague-O** | 40 | — | — | — |
| **Montague-D** | — | — | — | — |
| **Parker-O** | 42 | 6 | 20 | 7 |
| **Parker-D** | — | 2 | 50 | 68 |
| **Wise-O** | 60 | — | — | — |
| **Wise-D** | 154 | — | — | — |

Table 6 - GMA 8 DFCs adopted for the Edwards (BFZ) Aquifer for the planning period from January 1, 2010 through December 31, 2080. DFCs are in acre-feet per month spring/stream flow in Bell, Travis, and Williamson counties.

| County | DFC |
|---|---|
| Bell | Maintain at least 100 acre-feet per month of stream/spring flow in Salado Creek during a repeat of the drought of record |
| Travis | Maintain at least 42 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record |
| Williamson | Maintain at least 60 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record |

Table 7 - GMA 8 DFCs adopted at a county scale for the Llano Uplift Aquifers based on total average feet of drawdown. Planning period from January 1, 2010 through December 31, 2080.

| County | Ellenburger-San Saba Aquifer | Hickory Aquifer | Marble Falls Aquifer |
|---|---|---|---|
| **Brown** | 3 | 3 | 3 |
| Burnet | 12 | 11 | 11 |
| Lampasas | 16 | 16 | 16 |
| Mills | 9 | 9 | 9 |

# Appendix E
# Technical Memo – Summary of Run 11 Predictive Simulation for GMA 8 Joint Planning

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# TECHNICAL MEMO

**TO:** Drew Satterwhite, General Manager, NTGCD

**FROM:** James Beach, P.G., and Brant Konetchy

**SUBJECT:** Summary of Run 11 Predictive Simulation for GMA 8 Joint Planning

**DATE:** December 18, 2020

## INTRODUCTION

WSP conducted a predictive simulation in support of the Groundwater Management Area (GMA) 8 joint planning effort. The work we conducted was designed to provide the GMA 8 districts with necessary and sufficient information for discussing potential desired future conditions with the other members of GMA 8. Our work involved using the Groundwater Availability Model of the Northern Trinity and Woodbine Aquifers (NTWGAM) (Kelley, Ewing, Jones, Deeds, & Hamlin, 2014) to simulate potential production within the model area and evaluate the simulated response of the aquifers within GMA 8. We will identify the described simulation as "GMA 8 Run 11" or "Run 11" in this report.

## MODIFICATION OF MODEL INPUTS

Run 11 used the NTWGAM to simulate potential production and made the following changes to the model from the Run 10 version. The first change was to extend the model run by an additional ten years placing the end model data at the end of 2080. The second was to change all stress periods from actual days in a year (365 or 366 for leap year) to a constant 365.25 days. This change was made to make annual pumpage volumes (and resulting Managed Available Groundwater (MAG) estimates) consistent and to not have any variation due to difference in model stress period lengths. The last change was to move the drought of record recharge rates to the last three years of the model run from 2078 until the end of 2080.

WSP USA
1601 S MoPac Expy
Suite 325
Austin, TX 78746

Tel.: 737-703-3900
wsp.com

STATE OF TEXAS
JAMES A. BEACH
GEOLOGY
No. 2965
LICENSED
PROFESSIONAL GEOSCIENTIST

8/18/2021

## MODIFICATION OF PUMPING INPUTS

Run 11 pumping used Run 10 pumping (Beach, 2016) as the base pumping rate. Run 11 was modified by extending the pumping of Run 10 by an additional 10 years, as well as making changes in four different groundwater conservation districts (GCD) and in two counties. As with previous pumping inputs all pumping is kept at a constant rate starting in 2010. The exception to this is in Southern Trinity GCD (McLennan County) which requested changes to the first 10 years of pumping (2010-2019). Changes to Clearwater Underground Water Conservation District (CUWCD), Prairielands GCD, Southern Trinity GCD, Upper Trinity GCD, and Travis and Williamson county are shown in the tables below. The adjustment column shows the change from Run 10 pumping rates to Run 11 pumping rates. Negative values indicate a decrease in pumping rate and positive value indicating an increase in pumping rate.

*Table 1: Clearwater UWCD updated pumping in Run 11.*

| Aquifer | Run 10 (AFY) | Adjustment (AFY) | Run 11 (AFY) |
|---|---|---|---|
| **Glen Rose** | 972 | -697 | 275 |
| **Hensell** | 1,097 | 3 | 1,100 |
| **Hosston** | 7,179 | 721 | 7,900 |
| **Total** | 9,248 | 27 | 9,275 |

*Table 2: Prairielands GCD updated pumping in Run 11.*

| Aquifer | Run 10 (AFY) | Adjustment (AFY) | Run 11 (AFY) |
|---|---|---|---|
| **Hensell** | 3,603 | -3,207 | 397 |
| **Pearsall** | 98 | 1,848 | 1,946 |
| **Hosston** | 13,237 | 1,358 | 14,596 |
| **Total** | 29,887 | 0 | 29,887 |

*Table 3: Travis County updated pumping Run 11.*

| Aquifer | Run 10 (AFY) | Adjustment (AFY) | Run 11 (AFY) |
|---|---|---|---|
| **Glen Rose** | 973 | -873 | 100 |
| **Hensell** | 1,144 | 1,156 | 2,300 |
| **Hosston** | 2,799 | 1,401 | 4,200 |
| **Total** | 4,916 | 1,684 | 6,600 |

*Table 4: Williamson County updated pumping in Run 11.*

| Aquifer | Run 10 (AFY) | Adjustment (AFY) | Run 11 (AFY) |
|---|---|---|---|
| **Glen Rose** | 689 | -539 | 150 |
| **Hensell** | 752 | 848 | 1,600 |
| **Hosston** | 1,934 | -184 | 1,750 |
| **Total** | 3,375 | 125 | 3,500 |

*Table 5: Upper Trinity GCD updated pumping in Run 11.*

| Aquifer | O/D | County | Run 10 (AFY) | Adjustment (AFY) | Run 11 (AFY) |
|---|---|---|---|---|---|
| **Glen Rose** | Outcrop | Hood | 654 | 138 | 792 |
| **Glen Rose** | Downdip | Hood | 103 | 22 | 125 |
| **Paluxy** | Outcrop | Hood | 159 | 0 | 159 |
| **Twin Mountains** | Outcrop | Hood | 3,674 | 1,351 | 5,025 |
| **Twin Mountains** | Downdip | Hood | 7,854 | 2,914 | 10,768 |
| **Antlers** | Outcrop | Montague | 3,878 | 2,236 | 6,114 |
| **Antlers** | Downdip | Montague | | | |
| **Antlers** | Outcrop | Parker | 2,899 | 6 | 2,905 |
| **Antlers** | Downdip | Parker | | | |
| **Glen Rose** | Outcrop | Parker | 2,290 | 1,394 | 3,684 |
| **Glen Rose** | Downdip | Parker | 874 | 532 | 1,406 |
| **Paluxy** | Outcrop | Parker | 2,609 | 5 | 2,614 |

| Aquifer | O/D | County | Run 10 (AFY) | Adjustment (AFY) | Run 11 (AFY) |
|---|---|---|---|---|---|
| **Paluxy** | Downdip | Parker | 50 | 0 | 50 |
| **Twin Mountains** | Outcrop | Parker | 1,074 | 220 | 1,294 |
| **Twin Mountains** | Downdip | Parker | 2,083 | 444 | 2,527 |
| **Antlers** | Outcrop | Wise | 7,702 | 1,404 | 9,106 |
| **Antlers** | Downdip | Wise | 2,058 | 381 | 2,439 |
| - | - | Total | 37,961 | 11,048 | 49,009 |

*Table 6: Southern Trinity GCD updated pumping in Run 11.*

| Year | Hosston Run 10 (AFY) | Adjustement for Hosston (AFY) | Hosston Run 11 (AFY) |
|---|---|---|---|
| **2010** | 15,937 | -4,135 | 11,802 |
| **2011** | 15,937 | -4,635 | 11,302 |
| **2012** | 15,937 | -5,361 | 10,576 |
| **2013** | 15,937 | -6,978 | 8,959 |
| **2014** | 15,937 | -8,424 | 7,513 |
| **2015** | 15,937 | -7,565 | 8,372 |
| **2016** | 15,937 | -7,074 | 8,863 |
| **2017** | 15,937 | -7,929 | 8,008 |
| **2018** | 15,937 | -8,130 | 7,807 |
| **2019** | 15,937 | -8,135 | 7,802 |
| **2020-2070** | 15,937 | 0 | 15,937 |

## METHODOLOGY

WSP used the same methodology as the Beach and others (2016) report to calculate and report the results from Run 11. A summary of the methodology is included below, and any changes or differences made are included in discussion.

- Simulations were conducted with the Texas Water Development Board (TWDB) approved version of the NTWGAM with modification discussed above.
- Initial water levels remained the same as the January 1st, 2010 water levels taken from the transient calibration of the NTWGAM.
- Instances in which initial water levels were below the bottom of the aquifer at the start of the simulation were omitted from any calculations.
- Instances in which water levels fell below the bottom of the aquifer during the model simulation had their water levels set to the bottom of the aquifer and were still used in the calculations.
- Model cells were assigned spatial location (i.e. County, district, GMA, etc.) based on the TWDB grid shapefiles for the Woodbine and Trinity.
- Model cells were assigned to aquifers based on their model IBND values and were only used for calculations if they were also considered part of the official aquifer boundary which was given as the "AQ_Active" value is equal to 1 from the grid shapefiles.
- Aquifer hydrogeologic regions were also assigned to each model cell based on the aquifer regions developed during the creation of the NTWGAM and documented in Kelley and others (2014).
- All calculations were performed on a cell-by-cell basis. Specifically, for each cell the calculation for water level difference was performed, and then the results were summarized based on the county, GCD, aquifer, etc.
- The transmissivity weighted method remained the same as in Beach and others (2016) and was used to calculate aquifers that are composed of multiple aquifer layers within the NTWGAM.

## MODEL RESULTS

Results for the Run 11 simulation are summarized by GCD, County, and Aquifer and are contained in three different tables. The first group of tables summarize the pumping rates (in acre-feet per year, (AFY) for each decade starting in 2010 and ending 2080 (for each GCD or county). The second table shows the average water level decline or "drawdown" (if feet) for each GCD/County and Aquifer. The third group of tables provide a summary of the MODFLOW water budget components by decade for each GCD and county.

All model results are shown as tables and in order by GCD. After each GCD table summary will follow the individual counties that make up the GCD. For example, Red River GCD results showing pumping rates is immediately followed by Fannin and Grayson county pumping rate tables.

## BIBLIOGRAPHY

Beach, J.A., M. Keester, and B. Konetchy. (2016). *Results of Predicitve Simulations in Support of GMA 8 Joint Planning- NTGCD GAM 8 Run 10.* Austin: LBG-Guyton Associates.

Kelley, V., Ewing, J., Jones, T. L., Deeds, N., & Hamlin, S. (2014). *Updated Groundwater Availability Model of the Northern Trinity and Woodbine Aqiufers.* Austin: INTERA Incorperated.

# Run 11 Model Results
# Pumping Summary and Water Level Decline
# by GCD, County, and Aquifer

# Central Texas GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 |
| Hensell | 2,662 | 2,662 | 2,662 | 2,662 | 2,662 | 2,662 | 2,662 | 2,662 |
| Hosston | 887 | 887 | 887 | 887 | 887 | 887 | 887 | 887 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 3,747 | 3,747 | 3,747 | 3,747 | 3,747 | 3,747 | 3,747 | 3,747 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Burnet County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | 148 | 148 | 148 | 148 | 148 | 148 | 148 | 148 |
| Hensell | 2,662 | 2,662 | 2,662 | 2,662 | 2,662 | 2,662 | 2,662 | 2,662 |
| Hosston | 887 | 887 | 887 | 887 | 887 | 887 | 887 | 887 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 3,747 | 3,747 | 3,747 | 3,747 | 3,747 | 3,747 | 3,747 | 3,747 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Central Texas GCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Central Texas GCD | – | – | 2 | – | 19 | 7 | 21 | – |
| Burnet County | – | – | 2 | – | 19 | 7 | 21 | – |

## Clearwater UWCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 |
| Hensell | 1,100 | 1,100 | 1,100 | 1,100 | 1,100 | 1,100 | 1,100 | 1,100 |
| Hosston | 7,900 | 7,900 | 7,900 | 7,900 | 7,900 | 7,900 | 7,900 | 7,900 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Bell County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 275 | 275 | 275 | 275 | 275 | 275 | 275 | 275 |
| Hensell | 1,100 | 1,100 | 1,100 | 1,100 | 1,100 | 1,100 | 1,100 | 1,100 |
| Hosston | 7,900 | 7,900 | 7,900 | 7,900 | 7,900 | 7,900 | 7,900 | 7,900 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 | 9,000 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Clearwater UWCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Clearwater UWCD | – | 17 | 83 | – | 333 | 145 | 375 | – |
| Bell County | – | 17 | 83 | – | 333 | 145 | 375 | – |

## Middle Trinity GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 417 | 417 | 417 | 417 | 417 | 417 | 417 | 417 |
| GlenRose | 1,968 | 1,968 | 1,968 | 1,968 | 1,968 | 1,968 | 1,968 | 1,968 |
| Hensell | 11,379 | 11,379 | 11,379 | 11,379 | 11,379 | 11,379 | 11,379 | 11,379 |
| Hosston | 18,183 | 18,183 | 18,183 | 18,183 | 18,183 | 18,183 | 18,183 | 18,183 |
| Antlers | 8,473 | 8,473 | 8,473 | 8,473 | 8,473 | 8,473 | 8,473 | 8,473 |
| TravisPeak | 30,045 | 30,045 | 30,045 | 30,045 | 30,045 | 30,045 | 30,045 | 30,045 |
| TwinMnts | 5,020 | 5,020 | 5,020 | 5,020 | 5,020 | 5,020 | 5,020 | 5,020 |

## Bosque County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 357 | 357 | 357 | 357 | 357 | 357 | 357 | 357 |
| GlenRose | 729 | 729 | 729 | 729 | 729 | 729 | 729 | 729 |
| Hensell | 3,837 | 3,837 | 3,837 | 3,837 | 3,837 | 3,837 | 3,837 | 3,837 |
| Hosston | 3,765 | 3,765 | 3,765 | 3,765 | 3,765 | 3,765 | 3,765 | 3,765 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 7,683 | 7,683 | 7,683 | 7,683 | 7,683 | 7,683 | 7,683 | 7,683 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Comanche County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 41 | 41 | 41 | 41 | 41 | 41 | 41 | 41 |
| Hensell | 204 | 204 | 204 | 204 | 204 | 204 | 204 | 204 |
| Hosston | 5,869 | 5,869 | 5,869 | 5,869 | 5,869 | 5,869 | 5,869 | 5,869 |
| Antlers | 5,843 | 5,843 | 5,843 | 5,843 | 5,843 | 5,843 | 5,843 | 5,843 |
| TravisPeak | 6,164 | 6,164 | 6,164 | 6,164 | 6,164 | 6,164 | 6,164 | 6,164 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Coryell County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 120 | 120 | 120 | 120 | 120 | 120 | 120 | 120 |
| Hensell | 2,197 | 2,197 | 2,197 | 2,197 | 2,197 | 2,197 | 2,197 | 2,197 |
| Hosston | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 | 2,163 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 4,374 | 4,374 | 4,374 | 4,374 | 4,374 | 4,374 | 4,374 | 4,374 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Erath County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 61 | 61 | 61 | 61 | 61 | 61 | 61 | 61 |
| GlenRose | 1,078 | 1,078 | 1,078 | 1,078 | 1,078 | 1,078 | 1,078 | 1,078 |
| Hensell | 5,140 | 5,140 | 5,140 | 5,140 | 5,140 | 5,140 | 5,140 | 5,140 |
| Hosston | 6,387 | 6,387 | 6,387 | 6,387 | 6,387 | 6,387 | 6,387 | 6,387 |
| Antlers | 2,630 | 2,630 | 2,630 | 2,630 | 2,630 | 2,630 | 2,630 | 2,630 |
| TravisPeak | 11,824 | 11,824 | 11,824 | 11,824 | 11,824 | 11,824 | 11,824 | 11,824 |
| TwinMnts | 5,020 | 5,020 | 5,020 | 5,020 | 5,020 | 5,020 | 5,020 | 5,020 |

## Middle Trinity GCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Middle Trinity GCD | – | 5 | 21 | 8 | 98 | 68 | 124 | 12 |
| Bosque County | – | 6 | 53 | – | 189 | 139 | 232 | – |
| Comanche County | – | 2 | 2 | – | 4 | 2 | 3 | 12 |
| Coryell County | – | 5 | 15 | – | 107 | 70 | 141 | – |
| Erath County | – | 6 | 6 | 8 | 25 | 12 | 35 | 14 |

## North Texas GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 8,664 | 8,664 | 8,664 | 8,664 | 8,664 | 8,664 | 8,664 | 8,664 |
| Paluxy | 6,370 | 6,370 | 6,370 | 6,370 | 6,370 | 6,370 | 6,370 | 6,370 |
| GlenRose | 422 | 422 | 422 | 422 | 422 | 422 | 422 | 422 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 29,041 | 29,041 | 29,041 | 29,041 | 29,041 | 29,041 | 29,041 | 29,041 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 10,574 | 10,574 | 10,574 | 10,574 | 10,574 | 10,574 | 10,574 | 10,574 |

## Collin County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 4,254 | 4,254 | 4,254 | 4,254 | 4,254 | 4,254 | 4,254 | 4,254 |
| Paluxy | 1,548 | 1,548 | 1,548 | 1,548 | 1,548 | 1,548 | 1,548 | 1,548 |
| GlenRose | 83 | 83 | 83 | 83 | 83 | 83 | 83 | 83 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 1,962 | 1,962 | 1,962 | 1,962 | 1,962 | 1,962 | 1,962 | 1,962 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 2,202 | 2,202 | 2,202 | 2,202 | 2,202 | 2,202 | 2,202 | 2,202 |

## Cooke County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 800 | 800 | 800 | 800 | 800 | 800 | 800 | 800 |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 10,521 | 10,521 | 10,521 | 10,521 | 10,521 | 10,521 | 10,521 | 10,521 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | – | – | – | – | – | – | – | – |

## Denton County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 3,609 | 3,609 | 3,609 | 3,609 | 3,609 | 3,609 | 3,609 | 3,609 |
| Paluxy | 4,823 | 4,823 | 4,823 | 4,823 | 4,823 | 4,823 | 4,823 | 4,823 |
| GlenRose | 339 | 339 | 339 | 339 | 339 | 339 | 339 | 339 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 16,557 | 16,557 | 16,557 | 16,557 | 16,557 | 16,557 | 16,557 | 16,557 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 8,372 | 8,372 | 8,372 | 8,372 | 8,372 | 8,372 | 8,372 | 8,372 |

## North Texas GCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| North Texas GCD | 263 | 690 | 366 | 603 | – | – | – | 308 |
| Collin County | 482 | 729 | 366 | 560 | – | – | – | 596 |
| Cooke County | 2 | – | – | – | – | – | – | 191 |
| Denton County | 20 | 558 | 367 | 752 | – | – | – | 416 |

# Northern Trinity GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 1,139 | 1,139 | 1,139 | 1,139 | 1,139 | 1,139 | 1,139 | 1,139 |
| Paluxy | 8,963 | 8,963 | 8,963 | 8,963 | 8,963 | 8,963 | 8,963 | 8,963 |
| GlenRose | 793 | 793 | 793 | 793 | 793 | 793 | 793 | 793 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 6,922 | 6,922 | 6,922 | 6,922 | 6,922 | 6,922 | 6,922 | 6,922 |

## Tarrant County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 1,139 | 1,139 | 1,139 | 1,139 | 1,139 | 1,139 | 1,139 | 1,139 |
| Paluxy | 8,963 | 8,963 | 8,963 | 8,963 | 8,963 | 8,963 | 8,963 | 8,963 |
| GlenRose | 793 | 793 | 793 | 793 | 793 | 793 | 793 | 793 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 6,922 | 6,922 | 6,922 | 6,922 | 6,922 | 6,922 | 6,922 | 6,922 |

## Northern Trinity GCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Northern Trinity GCD | 6 | 105 | 163 | 348 | – | – | – | 177 |
| Tarrant County | 6 | 105 | 163 | 348 | – | – | – | 177 |

# Post Oak Savannah GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | – | – | – | – | – | – | – | – |

## Milam County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hosston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Post Oak Savannah GCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Post Oak Savannah GCD | – | – | 241 | – | 412 | 261 | 412 | – |
| Milam County | – | – | 241 | – | 412 | 261 | 412 | – |

## Prairielands GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 4,642 | 4,642 | 4,642 | 4,642 | 4,642 | 4,642 | 4,642 | 4,642 |
| Paluxy | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 |
| GlenRose | 1,944 | 1,944 | 1,944 | 1,944 | 1,944 | 1,944 | 1,944 | 1,944 |
| Hensell | 361 | 361 | 361 | 361 | 361 | 361 | 361 | 361 |
| Hosston | 14,337 | 14,337 | 14,337 | 14,337 | 14,337 | 14,337 | 14,337 | 14,337 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 16,595 | 16,595 | 16,595 | 16,595 | 16,595 | 16,595 | 16,595 | 16,595 |
| TwinMnts | 343 | 343 | 343 | 343 | 343 | 343 | 343 | 343 |

## Ellis County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 2,074.0 | 2,074.0 | 2,074.0 | 2,074.0 | 2,074.0 | 2,074.0 | 2,074.0 | 2,074.0 |
| Paluxy | 442.0 | 442.0 | 442.0 | 442.0 | 442.0 | 442.0 | 442.0 | 442.0 |
| GlenRose | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Hensell | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Hosston | 5,545.0 | 5,545.0 | 5,545.0 | 5,545.0 | 5,545.0 | 5,545.0 | 5,545.0 | 5,545.0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 5,676.0 | 5,676.0 | 5,676.0 | 5,676.0 | 5,676.0 | 5,676.0 | 5,676.0 | 5,676.0 |
| TwinMnts | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

## Hill County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 587.0 | 587.0 | 587.0 | 587.0 | 587.0 | 587.0 | 587.0 | 587.0 |
| Paluxy | 352.0 | 352.0 | 352.0 | 352.0 | 352.0 | 352.0 | 352.0 | 352.0 |
| GlenRose | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 |
| Hensell | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 | 25.0 |
| Hosston | 3,610.0 | 3,610.0 | 3,610.0 | 3,610.0 | 3,610.0 | 3,610.0 | 3,610.0 | 3,610.0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 4,685.0 | 4,685.0 | 4,685.0 | 4,685.0 | 4,685.0 | 4,685.0 | 4,685.0 | 4,685.0 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Johnson County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 1,981.0 | 1,981.0 | 1,981.0 | 1,981.0 | 1,981.0 | 1,981.0 | 1,981.0 | 1,981.0 |
| Paluxy | 2,442.0 | 2,442.0 | 2,442.0 | 2,442.0 | 2,442.0 | 2,442.0 | 2,442.0 | 2,442.0 |
| GlenRose | 1,633.0 | 1,633.0 | 1,633.0 | 1,633.0 | 1,633.0 | 1,633.0 | 1,633.0 | 1,633.0 |
| Hensell | 119.0 | 119.0 | 119.0 | 119.0 | 119.0 | 119.0 | 119.0 | 119.0 |
| Hosston | 4,251.0 | 4,251.0 | 4,251.0 | 4,251.0 | 4,251.0 | 4,251.0 | 4,251.0 | 4,251.0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 4,472.0 | 4,472.0 | 4,472.0 | 4,472.0 | 4,472.0 | 4,472.0 | 4,472.0 | 4,472.0 |
| TwinMnts | 278.0 | 278.0 | 278.0 | 278.0 | 278.0 | 278.0 | 278.0 | 278.0 |

## Somervell County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 | 13.0 |
| GlenRose | 146.0 | 146.0 | 146.0 | 146.0 | 146.0 | 146.0 | 146.0 | 146.0 |
| Hensell | 217.0 | 217.0 | 217.0 | 217.0 | 217.0 | 217.0 | 217.0 | 217.0 |
| Hosston | 930.0 | 930.0 | 930.0 | 930.0 | 930.0 | 930.0 | 930.0 | 930.0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 1,762.0 | 1,762.0 | 1,762.0 | 1,762.0 | 1,762.0 | 1,762.0 | 1,762.0 | 1,762.0 |
| TwinMnts | 65.0 | 65.0 | 65.0 | 65.0 | 65.0 | 65.0 | 65.0 | 65.0 |

## Prairielands GCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Prairielands GCD | 44 | 44 | 142 | 170 | 323 | 207 | 369 | – |
| Ellis County | 76 | 128 | 220 | 413 | 380 | 290 | 390 | – |
| Hill County | 20 | 45 | 149 | – | 365 | 211 | 413 | – |
| Johnson County | 4 | −57 | 66 | 184 | 235 | 120 | 329 | – |
| Somervell County | – | 4 | 4 | 50 | 64 | 17 | 120 | – |

## Red River GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 12,450 | 12,450 | 12,450 | 12,450 | 12,450 | 12,450 | 12,450 | 12,450 |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 12,804 | 12,804 | 12,804 | 12,804 | 12,804 | 12,804 | 12,804 | 12,804 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | – | – | – | – | – | – | – | – |

## Fannin County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 4,924 | 4,924 | 4,924 | 4,924 | 4,924 | 4,924 | 4,924 | 4,924 |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 2,088 | 2,088 | 2,088 | 2,088 | 2,088 | 2,088 | 2,088 | 2,088 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | – | – | – | – | – | – | – | – |

## Grayson County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 7,526 | 7,526 | 7,526 | 7,526 | 7,526 | 7,526 | 7,526 | 7,526 |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 10,716 | 10,716 | 10,716 | 10,716 | 10,716 | 10,716 | 10,716 | 10,716 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Red River GCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Red River GCD | 211 | 720 | 308 | 405 | 291 | – | – | 321 |
| Fannin County | 259 | 709 | 305 | 400 | 291 | – | – | 269 |
| Grayson County | 163 | 943 | 364 | 445 | – | – | – | 364 |

## Saratoga UWCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Hensell | 713 | 713 | 713 | 713 | 713 | 713 | 713 | 713 |
| Hosston | 857 | 857 | 857 | 857 | 857 | 857 | 857 | 857 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Lampasas County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| Hensell | 713 | 713 | 713 | 713 | 713 | 713 | 713 | 713 |
| Hosston | 857 | 857 | 857 | 857 | 857 | 857 | 857 | 857 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 | 1,600 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Saratoga UWCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Saratoga UWCD | – | 1 | 1 | – | 6 | 1 | 11 | – |
| Lampasas County | – | 1 | 1 | – | 6 | 1 | 11 | – |

## Southern Trinity GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | 4,701 | 4,701 | 4,701 | 4,701 | 4,701 | 4,701 | 4,701 | 4,701 |
| Hosston | 11,809 | 15,948 | 15,948 | 15,948 | 15,948 | 15,948 | 15,948 | 15,948 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 16,510 | 20,649 | 20,649 | 20,649 | 20,649 | 20,649 | 20,649 | 20,649 |
| TwinMnts | – | – | – | – | – | – | – | – |

## McLennan County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | 4,701 | 4,701 | 4,701 | 4,701 | 4,701 | 4,701 | 4,701 | 4,701 |
| Hosston | 11,809 | 15,948 | 15,948 | 15,948 | 15,948 | 15,948 | 15,948 | 15,948 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 16,510 | 20,649 | 20,649 | 20,649 | 20,649 | 20,649 | 20,649 | 20,649 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Southern Trinity GCD DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Southern Trinity GCD | 6 | 41 | 148 | – | 504 | 242 | 582 | – |
| McLennan County | 6 | 41 | 148 | – | 504 | 242 | 582 | – |

## Upper Trinity GCD MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 2,818 | 2,818 | 2,818 | 2,818 | 2,818 | 2,818 | 2,818 | 2,818 |
| GlenRose | 6,005 | 6,005 | 6,005 | 6,005 | 6,005 | 6,005 | 6,005 | 6,005 |
| Hensell | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| Hosston | 72 | 72 | 72 | 72 | 72 | 72 | 72 | 72 |
| Antlers | 20,535 | 20,535 | 20,535 | 20,535 | 20,535 | 20,535 | 20,535 | 20,535 |
| TravisPeak | 122 | 122 | 122 | 122 | 122 | 122 | 122 | 122 |
| TwinMnts | 19,457 | 19,457 | 19,457 | 19,457 | 19,457 | 19,457 | 19,457 | 19,457 |

## Hood County (Downdip) MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 | 124.0 |
| Hensell | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| Hosston | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 | 72.0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 122.0 | 122.0 | 122.0 | 122.0 | 122.0 | 122.0 | 122.0 | 122.0 |
| TwinMnts | 10,619.0 | 10,619.0 | 10,619.0 | 10,619.0 | 10,619.0 | 10,619.0 | 10,619.0 | 10,619.0 |

## Hood County (Outcrop) MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 159.0 | 159.0 | 159.0 | 159.0 | 159.0 | 159.0 | 159.0 | 159.0 |
| GlenRose | 790.0 | 790.0 | 790.0 | 790.0 | 790.0 | 790.0 | 790.0 | 790.0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 5,024.0 | 5,024.0 | 5,024.0 | 5,024.0 | 5,024.0 | 5,024.0 | 5,024.0 | 5,024.0 |

# Montague County (Downdip) MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | – | – | – | – | – | – | – | – |

## Montague County (Outcrop) MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 6,114.0 | 6,114.0 | 6,114.0 | 6,114.0 | 6,114.0 | 6,114.0 | 6,114.0 | 6,114.0 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | – | – | – | – | – | – | – | – |

## Parker County (Downdip) MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 | 50.0 |
| GlenRose | 1,406.0 | 1,406.0 | 1,406.0 | 1,406.0 | 1,406.0 | 1,406.0 | 1,406.0 | 1,406.0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 2,528.0 | 2,528.0 | 2,528.0 | 2,528.0 | 2,528.0 | 2,528.0 | 2,528.0 | 2,528.0 |

## Parker County (Outcrop) MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 2,609.0 | 2,609.0 | 2,609.0 | 2,609.0 | 2,609.0 | 2,609.0 | 2,609.0 | 2,609.0 |
| GlenRose | 3,685.0 | 3,685.0 | 3,685.0 | 3,685.0 | 3,685.0 | 3,685.0 | 3,685.0 | 3,685.0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 2,899.0 | 2,899.0 | 2,899.0 | 2,899.0 | 2,899.0 | 2,899.0 | 2,899.0 | 2,899.0 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 1,286.0 | 1,286.0 | 1,286.0 | 1,286.0 | 1,286.0 | 1,286.0 | 1,286.0 | 1,286.0 |

## Wise County (Downdip) MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 2,439.0 | 2,439.0 | 2,439.0 | 2,439.0 | 2,439.0 | 2,439.0 | 2,439.0 | 2,439.0 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | – | – | – | – | – | – | – | – |

## Wise County (Outcrop) MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | – | – | – | – | – | – | – | – |
| GlenRose | – | – | – | – | – | – | – | – |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 9,083.0 | 9,083.0 | 9,083.0 | 9,083.0 | 9,083.0 | 9,083.0 | 9,083.0 | 9,083.0 |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | – | – | – | – | – | – | – | – |

# UTGCD DFC Results

| Name | O/D | Paluxy | Glen Rose | Twin Mnts | Antlers |
|---|---|---|---|---|---|
| Upper Trinity GCD | Outcrop | 6 | 14 | 11 | 50 |
| Upper Trinity GCD | Downdip | 2 | 49 | 70 | 154 |
| Hood County | Downdip | – | 39 | 72 | – |
| Hood County | Outcrop | 6 | 9 | 13 | – |
| Montague County | Downdip | – | – | – | – |
| Montague County | Outcrop | – | – | – | 40 |
| Parker County | Downdip | 2 | 50 | 68 | – |
| Parker County | Outcrop | 6 | 20 | 7 | 42 |
| Wise County | Downdip | – | – | – | 154 |
| Wise County | Outcrop | – | – | – | 59 |

## Dallas County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 2,798 | 2,798 | 2,798 | 2,798 | 2,798 | 2,798 | 2,798 | 2,798 |
| Paluxy | 359 | 359 | 359 | 359 | 359 | 359 | 359 | 359 |
| GlenRose | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |
| Hensell | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hosston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | 3,201 | 3,201 | 3,201 | 3,201 | 3,201 | 3,201 | 3,201 | 3,201 |

# Dallas County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Dallas County | 137 | 346 | 288 | 515 | 415 | 362 | 419 | – |

# Delta County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 56 | 56 | 56 | 56 | 56 | 56 | 56 | 56 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Delta County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Delta County | – | 279 | 198 | – | 202 | – | – | – |

## Falls County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hosston | 1,435 | 1,435 | 1,435 | 1,435 | 1,435 | 1,435 | 1,435 | 1,435 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 1,435 | 1,435 | 1,435 | 1,435 | 1,435 | 1,435 | 1,435 | 1,435 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Falls County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Falls County | – | 159 | 238 | – | 505 | 296 | 511 | – |

## Hamilton County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 218 | 218 | 218 | 218 | 218 | 218 | 218 | 218 |
| Hensell | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 |
| Hosston | 385 | 385 | 385 | 385 | 385 | 385 | 385 | 385 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 2,209 | 2,209 | 2,209 | 2,209 | 2,209 | 2,209 | 2,209 | 2,209 |
| TwinMnts | – | – | – | – | – | – | – | – |

## Hamilton County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Hamilton County | – | 2 | 4 | – | 26 | 14 | 38 | – |

# Hunt County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 763 | 763 | 763 | 763 | 763 | 763 | 763 | 763 |
| Paluxy | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hunt County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Hunt County | 631 | 610 | 326 | 399 | 350 | – | – | – |

# Kaufman County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hosston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Kaufman County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Kaufman County | 242 | 311 | 305 | 427 | 372 | 349 | 345 | – |

# Lamar County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 49 | 49 | 49 | 49 | 49 | 49 | 49 | 49 |
| Paluxy | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Lamar County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Lamar County | 42 | 100 | 107 | – | 125 | – | – | 132 |

# Limestone County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hosston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Limestone County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Limestone County | – | 199 | 301 | – | 433 | 214 | 445 | – |

## Mills County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | – | – | – | – | – | – | – | – |
| Paluxy | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| GlenRose | 189 | 189 | 189 | 189 | 189 | 189 | 189 | 189 |
| Hensell | 607 | 607 | 607 | 607 | 607 | 607 | 607 | 607 |
| Hosston | 1,469 | 1,469 | 1,469 | 1,469 | 1,469 | 1,469 | 1,469 | 1,469 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 2,277 | 2,277 | 2,277 | 2,277 | 2,277 | 2,277 | 2,277 | 2,277 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Mills County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Mills County | – | 1 | 1 | – | 9 | 2 | 13 | – |

## Navarro County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hosston | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Navarro County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Navarro County | 110 | 139 | 266 | – | 343 | 295 | 343 | – |

# Red River County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Paluxy | 177 | 177 | 177 | 177 | 177 | 177 | 177 | 177 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TravisPeak | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| TwinMnts | – | – | – | – | – | – | – | – |

# Red River County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Red River County | 2 | 24 | 40 | – | 57 | – | – | 15 |

# Rockwall County MAG Results (AFY)

| Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| Woodbine | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Paluxy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| GlenRose | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hensell | – | – | – | – | – | – | – | – |
| Hosston | – | – | – | – | – | – | – | – |
| Antlers | – | – | – | – | – | – | – | – |
| TravisPeak | – | – | – | – | – | – | – | – |
| TwinMnts | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

## Rockwall County DFC Results

| Name | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Rockwall County | 275 | 433 | 343 | 466 | – | – | – | – |

# GMA 8 – RUN 11 WATER BUDGETS

*Values in the table are for the various water budget components obtained for the indicated decadal year in acre-feet per year (AFY). The water budget components and the obtained positive & negative values are explained below*

- **Storage** – (+) positive values indicate water being added to the aquifer storage, (-) negative values indicate water leaving the aquifer storage
- **Pumping** – (-) negative value indicates water being pumped out through wells
- **SW (Surface Water) and GW (Ground Water) interactions** – (+) positive value indicates volume of water entering the aquifer through loosing surface water bodies; (-) negative value indicates volume of water leaving the aquifer and discharging into surface water bodies including springs, lakes, streams and rivers
- **Recharge** - (+) positive value only and indicates water entering the aquifer via recharge
- **Vertical Leakage Upper**- (+) positive value indicates water entering the layer from overlying formation; (-) negative value indicates water leaving the aquifer to overlying formation
- **Vertical Leakage Lower** – (+) positive value indicates water entering the aquifer from underlying formation; (-) negative value indicates water leaving the aquifer to underlying formation
- **Lateral Flow** – (+) positive value indicates water entering the aquifer from outside the county boundaries; (-) negative value indicates water leaving the aquifer to outside the county boundaries

# Bell County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 42 | 44 | 45 | 46 | 47 | 47 | 48 | 49 |
| *Recharge* | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 5 |
| *Vertical Leakage Upper* | −3,742 | −3,311 | −3,091 | −2,931 | −2,814 | −2,721 | −2,649 | −2,562 |
| *Vertical Leakage Lower* | 3,639 | 3,204 | 2,982 | 2,820 | 2,701 | 2,609 | 2,535 | 2,448 |
| *Lateral Flow* | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 11 |
| *Net from other zones* | −91 | −95 | −97 | −99 | −101 | −101 | −103 | −103 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bell County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −14,047 | −13,105 | −12,243 | −11,399 | −11,066 | −10,851 | −10,691 | −10,194 |
| *Recharge* | 14,278 | 14,278 | 14,278 | 14,278 | 14,278 | 14,278 | 14,278 | 9,182 |
| *Vertical Leakage Upper* | 10,176 | 8,728 | 7,226 | 5,700 | 5,153 | 4,815 | 4,569 | 8,759 |
| *Vertical Leakage Lower* | 3,627 | 3,192 | 2,970 | 2,808 | 2,689 | 2,597 | 2,523 | 2,436 |
| *Lateral Flow* | 13 | 12 | 12 | 12 | 12 | 12 | 12 | 11 |
| *Net from other zones* | 13,816 | 11,932 | 10,208 | 8,520 | 7,854 | 7,424 | 7,104 | 11,206 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bell County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 10 | 15 | 14 | 9 | 6 | 5 | 4 | 6 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −95 | −99 | −102 | −103 | −103 | −103 | −103 | −101 |
| *Recharge* | 299 | 299 | 299 | 299 | 299 | 299 | 299 | 187 |
| *Vertical Leakage Upper* | 705 | 1,855 | 2,475 | 2,855 | 3,080 | 3,223 | 3,316 | 3,479 |
| *Vertical Leakage Lower* | −834 | −1,981 | −2,594 | −2,967 | −3,189 | −3,330 | −3,422 | −3,479 |
| *Lateral Flow* | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 9 |
| *Net from other zones* | −119 | −116 | −109 | −102 | −99 | −98 | −97 | 9 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bell County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −33 | 34 | 36 | 22 | 14 | 10 | 7 | 6 |
| *Pumping* | −275 | −275 | −275 | −275 | −275 | −275 | −275 | −275 |
| *SW and GW Interactions* | −7,812 | −7,434 | −7,217 | −7,029 | −6,865 | −6,721 | −6,596 | −6,190 |
| *Recharge* | 6,619 | 6,619 | 6,619 | 6,619 | 6,619 | 6,619 | 6,619 | 3,871 |
| *Vertical Leakage Upper* | 9,838 | 10,229 | 10,408 | 10,406 | 10,300 | 10,153 | 9,996 | 11,988 |
| *Vertical Leakage Lower* | −1,399 | −2,551 | −3,039 | −3,313 | −3,474 | −3,577 | −3,645 | −3,687 |
| *Lateral Flow* | 874 | 812 | 685 | 599 | 546 | 512 | 490 | 477 |
| *Net from other zones* | 9,313 | 8,490 | 8,054 | 7,692 | 7,372 | 7,088 | 6,841 | 8,778 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bell County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 279 | 50 | 44 | 25 | 15 | 10 | 7 | 6 |
| *Pumping* | −1,101 | −1,101 | −1,101 | −1,101 | −1,101 | −1,101 | −1,101 | −1,101 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,341 | 2,551 | 3,039 | 3,313 | 3,475 | 3,577 | 3,645 | 3,687 |
| *Vertical Leakage Lower* | −693 | −1,678 | −2,131 | −2,384 | −2,538 | −2,638 | −2,704 | −2,747 |
| *Lateral Flow* | 174 | 178 | 149 | 147 | 149 | 152 | 153 | 155 |
| *Net from other zones* | 822 | 1,051 | 1,057 | 1,076 | 1,086 | 1,091 | 1,094 | 1,095 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bell County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 272 | 172 | 141 | 86 | 54 | 35 | 23 | 17 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 693 | 1,678 | 2,131 | 2,384 | 2,537 | 2,638 | 2,704 | 2,746 |
| *Vertical Leakage Lower* | −922 | −1,853 | −2,215 | −2,395 | −2,506 | −2,581 | −2,631 | −2,664 |
| *Lateral Flow* | −43 | 3 | −57 | −75 | −85 | −92 | −96 | −99 |
| *Net from other zones* | −272 | −172 | −141 | −86 | −54 | −35 | −23 | −17 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bell County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 4,354 | 613 | 465 | 284 | 184 | 122 | 83 | 59 |
| *Pumping* | −7,900 | −7,900 | −7,900 | −7,900 | −7,900 | −7,900 | −7,900 | −7,900 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 876 | 1,853 | 2,215 | 2,395 | 2,506 | 2,581 | 2,631 | 2,664 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 2,670 | 5,434 | 5,220 | 5,221 | 5,210 | 5,197 | 5,186 | 5,177 |
| *Net from other zones* | 3,546 | 7,287 | 7,435 | 7,616 | 7,716 | 7,778 | 7,817 | 7,841 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bosque County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1,528 | −1,074 | −819 | −641 | −522 | −435 | −367 | −282 |
| *Vertical Leakage Lower* | 1,505 | 1,052 | 797 | 619 | 501 | 414 | 346 | 261 |
| *Lateral Flow* | 23 | 22 | 22 | 22 | 21 | 21 | 21 | 21 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bosque County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −24,343 | −22,319 | −21,759 | −21,424 | −21,186 | −20,998 | −20,843 | −19,926 |
| *Recharge* | 27,487 | 27,487 | 27,487 | 27,487 | 27,487 | 27,487 | 27,487 | 15,825 |
| *Vertical Leakage Upper* | 19,694 | 16,099 | 15,234 | 14,741 | 14,384 | 14,095 | 13,853 | 23,766 |
| *Vertical Leakage Lower* | 1,482 | 1,029 | 774 | 597 | 479 | 392 | 324 | 239 |
| *Lateral Flow* | 23 | 23 | 23 | 23 | 22 | 22 | 22 | 22 |
| *Net from other zones* | 21,199 | 17,151 | 16,031 | 15,361 | 14,885 | 14,509 | 14,199 | 24,027 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bosque County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 18 | 5 | 6 | 4 | 2 | 2 | 1 | 3 |
| *Pumping* | −357 | −357 | −357 | −357 | −357 | −357 | −357 | −357 |
| *SW and GW Interactions* | −7,031 | −6,402 | −6,229 | −6,115 | −6,032 | −5,969 | −5,919 | −5,585 |
| *Recharge* | 3,683 | 3,683 | 3,683 | 3,683 | 3,683 | 3,683 | 3,683 | 2,061 |
| *Vertical Leakage Upper* | 15,433 | 15,154 | 15,396 | 15,542 | 15,581 | 15,580 | 15,563 | 16,568 |
| *Vertical Leakage Lower* | −4,895 | −5,878 | −6,459 | −6,822 | −7,019 | −7,140 | −7,219 | −7,270 |
| *Lateral Flow* | 180 | 197 | 189 | 180 | 174 | 170 | 167 | 165 |
| *Net from other zones* | 10,718 | 9,473 | 9,126 | 8,900 | 8,736 | 8,610 | 8,511 | 9,463 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bosque County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 133 | 40 | 46 | 25 | 15 | 10 | 7 | 7 |
| *Pumping* | −729 | −729 | −729 | −729 | −729 | −729 | −729 | −729 |
| *SW and GW Interactions* | −8,697 | −7,614 | −7,175 | −6,850 | −6,605 | −6,408 | −6,246 | −5,700 |
| *Recharge* | 4,827 | 4,827 | 4,827 | 4,827 | 4,827 | 4,827 | 4,827 | 2,602 |
| *Vertical Leakage Upper* | 17,462 | 16,279 | 15,982 | 15,694 | 15,403 | 15,129 | 14,884 | 16,069 |
| *Vertical Leakage Lower* | −4,622 | −5,634 | −6,189 | −6,489 | −6,647 | −6,741 | −6,802 | −6,842 |
| *Lateral Flow* | 323 | 445 | 413 | 372 | 341 | 320 | 305 | 293 |
| *Net from other zones* | 13,163 | 11,090 | 10,206 | 9,577 | 9,097 | 8,708 | 8,387 | 9,520 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bosque County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 743 | 149 | 146 | 73 | 43 | 28 | 19 | 16 |
| *Pumping* | −3,837 | −3,837 | −3,837 | −3,837 | −3,837 | −3,837 | −3,837 | −3,837 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 4,622 | 5,634 | 6,189 | 6,489 | 6,646 | 6,740 | 6,802 | 6,842 |
| *Vertical Leakage Lower* | −2,877 | −3,656 | −4,289 | −4,540 | −4,667 | −4,744 | −4,794 | −4,827 |
| *Lateral Flow* | 1,349 | 1,710 | 1,791 | 1,815 | 1,815 | 1,813 | 1,810 | 1,806 |
| *Net from other zones* | 3,094 | 3,688 | 3,691 | 3,764 | 3,794 | 3,809 | 3,818 | 3,821 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bosque County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 404 | 131 | 110 | 52 | 30 | 19 | 13 | 10 |
| *Pumping* | −81 | −81 | −81 | −81 | −81 | −81 | −81 | −81 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,878 | 3,656 | 4,288 | 4,540 | 4,667 | 4,744 | 4,793 | 4,827 |
| *Vertical Leakage Lower* | −3,054 | −3,552 | −4,086 | −4,249 | −4,335 | −4,389 | −4,424 | −4,449 |
| *Lateral Flow* | −147 | −154 | −231 | −262 | −281 | −293 | −301 | −307 |
| *Net from other zones* | −323 | −50 | −29 | 29 | 51 | 62 | 68 | 71 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Bosque County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,132 | 373 | 255 | 122 | 71 | 45 | 31 | 23 |
| *Pumping* | −3,765 | −3,765 | −3,765 | −3,765 | −3,765 | −3,765 | −3,765 | −3,765 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3,054 | 3,553 | 4,086 | 4,249 | 4,335 | 4,389 | 4,424 | 4,449 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −421 | −161 | −576 | −606 | −641 | −669 | −690 | −707 |
| *Net from other zones* | 2,633 | 3,392 | 3,510 | 3,643 | 3,694 | 3,720 | 3,734 | 3,742 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Brown County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,081 | 2,079 | 2,074 | 2,070 | 2,067 | 2,064 | 2,061 | 2,057 |
| *Vertical Leakage Lower* | −2,070 | −2,069 | −2,064 | −2,060 | −2,057 | −2,054 | −2,051 | −2,048 |
| *Lateral Flow* | −11 | −10 | −10 | −10 | −10 | −10 | −10 | −9 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Brown County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,070 | 2,069 | 2,064 | 2,060 | 2,057 | 2,054 | 2,052 | 2,048 |
| *Vertical Leakage Lower* | −2,059 | −2,059 | −2,054 | −2,050 | −2,047 | −2,044 | −2,042 | −2,039 |
| *Lateral Flow* | −11 | −10 | −10 | −10 | −10 | −10 | −10 | −9 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Brown County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,578 | 2,569 | 2,561 | 2,554 | 2,550 | 2,547 | 2,544 | 2,536 |
| *Vertical Leakage Lower* | −2,558 | −2,549 | −2,541 | −2,535 | −2,531 | −2,528 | −2,525 | −2,517 |
| *Lateral Flow* | −20 | −20 | −20 | −19 | −19 | −19 | −19 | −19 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Brown County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 12 |
| *Vertical Leakage Upper* | 2,536 | 2,527 | 2,519 | 2,514 | 2,510 | 2,505 | 2,502 | 2,505 |
| *Vertical Leakage Lower* | −2,544 | −2,536 | −2,528 | −2,523 | −2,519 | −2,515 | −2,512 | −2,505 |
| *Lateral Flow* | −14 | −13 | −13 | −13 | −13 | −12 | −12 | −12 |
| *Net from other zones* | −22 | −22 | −22 | −22 | −22 | −22 | −22 | −12 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Brown County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −4 | −4 | −4 | −4 | −4 | −4 | −4 | −4 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 224 |
| *Vertical Leakage Upper* | 2,144 | 2,136 | 2,127 | 2,123 | 2,118 | 2,115 | 2,112 | 2,280 |
| *Vertical Leakage Lower* | −2,432 | −2,424 | −2,415 | −2,410 | −2,405 | −2,401 | −2,398 | −2,390 |
| *Lateral Flow* | −108 | −108 | −108 | −109 | −109 | −110 | −110 | −110 |
| *Net from other zones* | −396 | −396 | −396 | −396 | −396 | −396 | −396 | −220 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Brown County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −34 | −34 | −34 | −34 | −34 | −34 | −34 | −34 |
| *SW and GW Interactions* | −249 | −245 | −241 | −238 | −234 | −231 | −228 | −221 |
| *Recharge* | 712 | 712 | 712 | 712 | 712 | 712 | 712 | 406 |
| *Vertical Leakage Upper* | 2,219 | 2,202 | 2,186 | 2,174 | 2,162 | 2,152 | 2,142 | 2,427 |
| *Vertical Leakage Lower* | −2,267 | −2,256 | −2,247 | −2,241 | −2,237 | −2,233 | −2,229 | −2,222 |
| *Lateral Flow* | −132 | −134 | −135 | −135 | −135 | −135 | −135 | −135 |
| *Net from other zones* | −180 | −188 | −196 | −202 | −210 | −216 | −222 | 70 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Brown County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Pumping* | −1,424 | −1,424 | −1,424 | −1,424 | −1,424 | −1,424 | −1,424 | −1,424 |
| *SW and GW Interactions* | −3,241 | −3,173 | −3,122 | −3,077 | −3,037 | −3,001 | −2,967 | −2,906 |
| *Recharge* | 4,196 | 4,196 | 4,196 | 4,196 | 4,196 | 4,196 | 4,196 | 2,380 |
| *Vertical Leakage Upper* | 4,553 | 4,406 | 4,295 | 4,199 | 4,115 | 4,039 | 3,967 | 5,653 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −844 | −832 | −823 | −817 | −813 | −809 | −805 | −798 |
| *Net from other zones* | 3,709 | 3,574 | 3,472 | 3,382 | 3,302 | 3,230 | 3,162 | 4,855 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Burnet County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3,146 | 3,880 | 4,233 | 4,484 | 4,668 | 4,803 | 4,902 | 4,989 |
| *Vertical Leakage Lower* | −3,171 | −3,905 | −4,257 | −4,508 | −4,691 | −4,826 | −4,925 | −5,012 |
| *Lateral Flow* | 25 | 25 | 24 | 24 | 23 | 23 | 23 | 23 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Burnet County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3,171 | 3,904 | 4,257 | 4,507 | 4,691 | 4,826 | 4,925 | 5,012 |
| *Vertical Leakage Lower* | −3,196 | −3,929 | −4,281 | −4,531 | −4,714 | −4,849 | −4,948 | −5,035 |
| *Lateral Flow* | 25 | 25 | 24 | 24 | 23 | 23 | 23 | 23 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Burnet County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 10,756 | 11,619 | 12,005 | 12,276 | 12,472 | 12,612 | 12,712 | 12,767 |
| *Vertical Leakage Lower* | −10,732 | −11,595 | −11,980 | −12,251 | −12,447 | −12,587 | −12,687 | −12,742 |
| *Lateral Flow* | −24 | −24 | −25 | −25 | −25 | −25 | −25 | −25 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Burnet County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −148 | −148 | −148 | −148 | −148 | −148 | −148 | −148 |
| *SW and GW Interactions* | −4,397 | −3,969 | −3,725 | −3,530 | −3,367 | −3,223 | −3,094 | −2,701 |
| *Recharge* | 10,565 | 10,565 | 10,565 | 10,565 | 10,565 | 10,565 | 10,565 | 5,935 |
| *Vertical Leakage Upper* | 8,961 | 8,969 | 8,865 | 8,747 | 8,616 | 8,468 | 8,310 | 12,210 |
| *Vertical Leakage Lower* | −9,743 | −10,610 | −10,997 | −11,271 | −11,468 | −11,610 | −11,711 | −11,768 |
| *Lateral Flow* | −841 | −838 | −835 | −833 | −831 | −829 | −828 | −827 |
| *Net from other zones* | −1,623 | −2,479 | −2,967 | −3,357 | −3,683 | −3,971 | −4,229 | −385 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Burnet County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 134 | 2 | 2 | 1 | 1 | 1 | 1 | 2 |
| *Pumping* | −2,666 | −2,666 | −2,666 | −2,666 | −2,666 | −2,666 | −2,666 | −2,666 |
| *SW and GW Interactions* | −1,963 | −1,844 | −1,788 | −1,746 | −1,713 | −1,685 | −1,662 | −1,582 |
| *Recharge* | 1,909 | 1,909 | 1,909 | 1,909 | 1,909 | 1,909 | 1,909 | 1,079 |
| *Vertical Leakage Upper* | 11,759 | 12,388 | 12,663 | 12,854 | 12,985 | 13,071 | 13,126 | 13,853 |
| *Vertical Leakage Lower* | −6,404 | −7,132 | −7,517 | −7,790 | −7,986 | −8,127 | −8,228 | −8,286 |
| *Lateral Flow* | −806 | −813 | −815 | −816 | −817 | −818 | −818 | −818 |
| *Net from other zones* | 4,549 | 4,443 | 4,331 | 4,248 | 4,182 | 4,126 | 4,080 | 4,749 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Burnet County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 48 | 9 | 6 | 4 | 4 | 3 | 2 | 3 |
| *Pumping* | −197 | −197 | −197 | −197 | −197 | −197 | −197 | −197 |
| *SW and GW Interactions* | −42 | −41 | −41 | −40 | −40 | −40 | −39 | −38 |
| *Recharge* | 678 | 678 | 678 | 678 | 678 | 678 | 678 | 374 |
| *Vertical Leakage Upper* | 5,811 | 6,535 | 6,921 | 7,192 | 7,388 | 7,529 | 7,628 | 7,989 |
| *Vertical Leakage Lower* | −6,034 | −6,706 | −7,082 | −7,349 | −7,542 | −7,680 | −7,779 | −7,838 |
| *Lateral Flow* | −222 | −237 | −244 | −248 | −251 | −253 | −254 | −255 |
| *Net from other zones* | −445 | −408 | −405 | −405 | −405 | −404 | −405 | −104 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Burnet County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −9 | 26 | 18 | 13 | 10 | 8 | 6 | 7 |
| *Pumping* | −890 | −890 | −890 | −890 | −890 | −890 | −890 | −890 |
| *SW and GW Interactions* | −1,519 | −1,536 | −1,550 | −1,558 | −1,561 | −1,559 | −1,554 | −1,536 |
| *Recharge* | 3,768 | 3,768 | 3,768 | 3,768 | 3,768 | 3,768 | 3,768 | 2,046 |
| *Vertical Leakage Upper* | 5,303 | 6,011 | 6,415 | 6,698 | 6,896 | 7,030 | 7,119 | 8,864 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −5,134 | −5,843 | −6,211 | −6,473 | −6,662 | −6,798 | −6,895 | −6,955 |
| *Net from other zones* | 169 | 168 | 204 | 225 | 234 | 232 | 224 | 1,909 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Callahan County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,277 | 2,269 | 2,269 | 2,268 | 2,267 | 2,266 | 2,264 | 2,256 |
| *Vertical Leakage Lower* | −2,261 | −2,254 | −2,254 | −2,253 | −2,252 | −2,251 | −2,249 | −2,241 |
| *Lateral Flow* | −16 | −15 | −15 | −15 | −15 | −15 | −15 | −15 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Callahan County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,262 | 2,254 | 2,254 | 2,253 | 2,252 | 2,250 | 2,249 | 2,241 |
| *Vertical Leakage Lower* | −2,246 | −2,239 | −2,239 | −2,238 | −2,237 | −2,235 | −2,234 | −2,226 |
| *Lateral Flow* | −16 | −15 | −15 | −15 | −15 | −15 | −15 | −15 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Callahan County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,246 | 2,239 | 2,238 | 2,238 | 2,237 | 2,235 | 2,233 | 2,226 |
| *Vertical Leakage Lower* | −2,230 | −2,224 | −2,223 | −2,223 | −2,222 | −2,220 | −2,218 | −2,211 |
| *Lateral Flow* | −16 | −15 | −15 | −15 | −15 | −15 | −15 | −15 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Callahan County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,231 | 2,223 | 2,223 | 2,222 | 2,221 | 2,220 | 2,218 | 2,211 |
| *Vertical Leakage Lower* | −2,215 | −2,208 | −2,208 | −2,207 | −2,206 | −2,205 | −2,203 | −2,196 |
| *Lateral Flow* | −16 | −15 | −15 | −15 | −15 | −15 | −15 | −15 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Callahan County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −1 | −1 | −1 | −1 | −1 | −1 | −1 | −1 |
| *SW and GW Interactions* | −14 | −14 | −14 | −14 | −14 | −13 | −13 | −13 |
| *Recharge* | 29 | 29 | 29 | 29 | 29 | 29 | 29 | 17 |
| *Vertical Leakage Upper* | 2,214 | 2,207 | 2,207 | 2,207 | 2,206 | 2,202 | 2,200 | 2,206 |
| *Vertical Leakage Lower* | −2,199 | −2,192 | −2,192 | −2,192 | −2,191 | −2,189 | −2,187 | −2,181 |
| *Lateral Flow* | −15 | −15 | −15 | −15 | −15 | −15 | −15 | −15 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | −2 | −2 | 10 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Callahan County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −23 | −23 | −23 | −23 | −23 | −23 | −23 | −23 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 52 | 52 | 52 | 52 | 52 | 52 | 52 | 30 |
| *Vertical Leakage Upper* | 2,147 | 2,140 | 2,140 | 2,140 | 2,139 | 2,138 | 2,136 | 2,151 |
| *Vertical Leakage Lower* | −2,162 | −2,156 | −2,156 | −2,156 | −2,155 | −2,154 | −2,152 | −2,146 |
| *Lateral Flow* | −14 | −13 | −13 | −13 | −13 | −13 | −13 | −12 |
| *Net from other zones* | −29 | −29 | −29 | −29 | −29 | −29 | −29 | −7 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Callahan County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Pumping* | −1,702 | −1,702 | −1,702 | −1,702 | −1,702 | −1,702 | −1,702 | −1,702 |
| *SW and GW Interactions* | −3,792 | −3,730 | −3,681 | −3,637 | −3,594 | −3,555 | −3,517 | −3,451 |
| *Recharge* | 4,371 | 4,371 | 4,371 | 4,371 | 4,371 | 4,371 | 4,371 | 2,602 |
| *Vertical Leakage Upper* | 5,375 | 5,245 | 5,147 | 5,059 | 4,972 | 4,892 | 4,815 | 6,445 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −460 | −454 | −454 | −454 | −453 | −451 | −450 | −444 |
| *Net from other zones* | 4,915 | 4,791 | 4,693 | 4,605 | 4,519 | 4,441 | 4,365 | 6,001 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Collin County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,571 | 859 | 476 | 284 | 181 | 121 | 84 | 60 |
| *Pumping* | −2,521 | −2,521 | −2,521 | −2,521 | −2,521 | −2,521 | −2,521 | −2,521 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 97 | 180 | 220 | 237 | 246 | 252 | 254 | 257 |
| *Vertical Leakage Lower* | 25 | 51 | 59 | 62 | 63 | 63 | 63 | 62 |
| *Lateral Flow* | 828 | 1,431 | 1,766 | 1,938 | 2,031 | 2,085 | 2,120 | 2,142 |
| *Net from other zones* | 950 | 1,662 | 2,045 | 2,237 | 2,340 | 2,400 | 2,437 | 2,461 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Collin County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 103 | 208 | 183 | 139 | 101 | 73 | 53 | 38 |
| *Pumping* | −97 | −97 | −97 | −97 | −97 | −97 | −97 | −97 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −25 | −52 | −59 | −63 | −63 | −63 | −64 | −63 |
| *Vertical Leakage Lower* | −19 | −44 | −47 | −46 | −45 | −44 | −43 | −43 |
| *Lateral Flow* | 38 | −15 | 20 | 67 | 104 | 131 | 151 | 165 |
| *Net from other zones* | −6 | −111 | −86 | −42 | −4 | 24 | 44 | 59 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Collin County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,015 | 201 | 92 | 56 | 38 | 27 | 19 | 14 |
| *Pumping* | −1,786 | −1,786 | −1,786 | −1,786 | −1,786 | −1,786 | −1,786 | −1,786 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 19 | 44 | 47 | 46 | 44 | 44 | 43 | 43 |
| *Vertical Leakage Lower* | 21 | 61 | 61 | 59 | 57 | 55 | 54 | 53 |
| *Lateral Flow* | 731 | 1,480 | 1,586 | 1,625 | 1,647 | 1,660 | 1,670 | 1,676 |
| *Net from other zones* | 771 | 1,585 | 1,694 | 1,730 | 1,748 | 1,759 | 1,767 | 1,772 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Collin County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 29 | 424 | 300 | 199 | 137 | 98 | 71 | 52 |
| *Pumping* | −10 | −10 | −10 | −10 | −10 | −10 | −10 | −10 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −21 | −61 | −61 | −59 | −57 | −55 | −54 | −54 |
| *Vertical Leakage Lower* | −70 | −166 | −161 | −155 | −152 | −152 | −151 | −151 |
| *Lateral Flow* | 72 | −187 | −68 | 25 | 82 | 119 | 144 | 163 |
| *Net from other zones* | −19 | −414 | −290 | −189 | −127 | −88 | −61 | −42 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Collin County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,886 | 691 | 387 | 266 | 193 | 141 | 104 | 77 |
| *Pumping* | −1,381 | −1,381 | −1,381 | −1,381 | −1,381 | −1,381 | −1,381 | −1,381 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 70 | 165 | 161 | 155 | 152 | 152 | 151 | 151 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −575 | 525 | 833 | 960 | 1,036 | 1,088 | 1,126 | 1,153 |
| *Net from other zones* | −505 | 690 | 994 | 1,115 | 1,188 | 1,240 | 1,277 | 1,304 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Comanche County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 9,235 | 9,482 | 9,622 | 9,742 | 9,852 | 9,957 | 10,195 | 10,361 |
| *Vertical Leakage Lower* | −9,270 | −9,514 | −9,651 | −9,768 | −9,876 | −9,978 | −10,210 | −10,371 |
| *Lateral Flow* | 35 | 32 | 29 | 26 | 24 | 21 | 15 | 10 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Comanche County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 9,270 | 9,514 | 9,651 | 9,769 | 9,875 | 9,978 | 10,210 | 10,371 |
| *Vertical Leakage Lower* | −9,305 | −9,546 | −9,680 | −9,795 | −9,899 | −9,999 | −10,225 | −10,381 |
| *Lateral Flow* | 35 | 32 | 29 | 26 | 24 | 21 | 15 | 10 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Comanche County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 10,337 | 10,566 | 10,690 | 10,799 | 10,898 | 10,994 | 11,216 | 11,361 |
| *Vertical Leakage Lower* | −10,352 | −10,578 | −10,700 | −10,806 | −10,903 | −10,996 | −11,212 | −11,354 |
| *Lateral Flow* | 15 | 12 | 10 | 7 | 5 | 2 | −4 | −8 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Comanche County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −41 | −41 | −41 | −41 | −41 | −41 | −41 | −41 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 743 | 743 | 743 | 743 | 743 | 743 | 743 | 417 |
| *Vertical Leakage Upper* | 9,609 | 9,835 | 9,957 | 10,063 | 10,160 | 10,253 | 10,469 | 10,937 |
| *Vertical Leakage Lower* | −10,512 | −10,736 | −10,855 | −10,959 | −11,054 | −11,145 | −11,355 | −11,493 |
| *Lateral Flow* | 201 | 199 | 196 | 194 | 192 | 190 | 184 | 180 |
| *Net from other zones* | −702 | −702 | −702 | −702 | −702 | −702 | −702 | −376 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Comanche County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 4 |
| *Pumping* | −437 | −437 | −437 | −437 | −437 | −437 | −437 | −437 |
| *SW and GW Interactions* | −3,332 | −3,211 | −3,153 | −3,108 | −3,068 | −3,029 | −2,992 | −2,899 |
| *Recharge* | 6,058 | 6,058 | 6,058 | 6,058 | 6,058 | 6,058 | 6,058 | 3,430 |
| *Vertical Leakage Upper* | 11,118 | 11,100 | 11,103 | 11,116 | 11,131 | 11,145 | 11,280 | 13,861 |
| *Vertical Leakage Lower* | −11,111 | −11,297 | −11,405 | −11,501 | −11,590 | −11,676 | −11,878 | −12,012 |
| *Lateral Flow* | 1,034 | 997 | 986 | 979 | 973 | 967 | 959 | 952 |
| *Net from other zones* | 1,041 | 800 | 684 | 594 | 514 | 436 | 361 | 2,801 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Comanche County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 1 | 1 | 1 | 1 | 1 | 2 | 4 |
| *Pumping* | −427 | −427 | −427 | −427 | −427 | −427 | −427 | −427 |
| *SW and GW Interactions* | −4,462 | −4,339 | −4,287 | −4,251 | −4,222 | −4,195 | −4,173 | −4,085 |
| *Recharge* | 2,316 | 2,316 | 2,316 | 2,316 | 2,316 | 2,316 | 2,316 | 1,325 |
| *Vertical Leakage Upper* | 17,718 | 17,658 | 17,662 | 17,687 | 17,718 | 17,750 | 17,907 | 18,857 |
| *Vertical Leakage Lower* | −10,922 | −11,076 | −11,174 | −11,262 | −11,342 | −11,419 | −11,606 | −11,725 |
| *Lateral Flow* | 237 | 206 | 196 | 187 | 178 | 169 | 154 | 136 |
| *Net from other zones* | 7,033 | 6,788 | 6,684 | 6,612 | 6,554 | 6,500 | 6,455 | 7,268 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Comanche County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 4 | 3 | 4 | 5 | 6 | 7 | 8 | 31 |
| *Pumping* | −11,142 | −11,142 | −11,142 | −11,142 | −11,142 | −11,142 | −11,142 | −11,142 |
| *SW and GW Interactions* | −13,905 | −13,316 | −12,964 | −12,618 | −12,254 | −11,870 | −11,492 | −10,779 |
| *Recharge* | 10,181 | 10,181 | 10,181 | 10,181 | 10,181 | 10,181 | 10,181 | 5,827 |
| *Vertical Leakage Upper* | 28,551 | 27,528 | 26,922 | 26,317 | 25,669 | 24,977 | 24,410 | 27,457 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 216 | 62 | −37 | −125 | −206 | −283 | −473 | −615 |
| *Net from other zones* | 28,767 | 27,590 | 26,885 | 26,192 | 25,463 | 24,694 | 23,937 | 26,842 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Cooke County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −12,078 | −11,685 | −11,388 | −11,154 | −10,969 | −10,819 | −10,694 | −10,058 |
| *Recharge* | 12,802 | 12,802 | 12,802 | 12,802 | 12,802 | 12,802 | 12,802 | 8,651 |
| *Vertical Leakage Upper* | 7,228 | 7,793 | 7,674 | 7,453 | 7,241 | 7,054 | 6,889 | 9,884 |
| *Vertical Leakage Lower* | 4,045 | 2,694 | 2,220 | 1,973 | 1,815 | 1,703 | 1,618 | 1,503 |
| *Lateral Flow* | 81 | 81 | 80 | 80 | 80 | 79 | 79 | 78 |
| *Net from other zones* | 11,354 | 10,568 | 9,974 | 9,506 | 9,136 | 8,836 | 8,586 | 11,465 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Cooke County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −42,140 | −41,561 | −41,176 | −40,912 | −40,724 | −40,573 | −40,458 | −38,012 |
| *Recharge* | 47,478 | 47,478 | 47,478 | 47,478 | 47,478 | 47,478 | 47,478 | 31,911 |
| *Vertical Leakage Upper* | 32,757 | 32,951 | 32,654 | 32,374 | 32,155 | 31,965 | 31,821 | 42,610 |
| *Vertical Leakage Lower* | 3,961 | 2,610 | 2,137 | 1,890 | 1,733 | 1,621 | 1,536 | 1,422 |
| *Lateral Flow* | 84 | 83 | 83 | 82 | 82 | 82 | 81 | 81 |
| *Net from other zones* | 36,802 | 35,644 | 34,874 | 34,346 | 33,970 | 33,668 | 33,438 | 44,113 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Cooke County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 512 | 346 | 201 | 111 | 66 | 42 | 28 | 27 |
| *Pumping* | −1,091 | −1,091 | −1,091 | −1,091 | −1,091 | −1,091 | −1,091 | −1,091 |
| *SW and GW Interactions* | −15,197 | −14,726 | −14,362 | −14,091 | −13,878 | −13,704 | −13,556 | −12,787 |
| *Recharge* | 16,439 | 16,439 | 16,439 | 16,439 | 16,439 | 16,439 | 16,439 | 10,942 |
| *Vertical Leakage Upper* | 21,003 | 22,785 | 23,146 | 23,137 | 23,006 | 22,837 | 22,658 | 26,665 |
| *Vertical Leakage Lower* | −5,404 | −7,761 | −8,608 | −9,007 | −9,233 | −9,374 | −9,467 | −9,508 |
| *Lateral Flow* | −1,065 | −1,266 | −1,363 | −1,407 | −1,431 | −1,445 | −1,455 | −1,461 |
| *Net from other zones* | 14,534 | 13,758 | 13,175 | 12,723 | 12,342 | 12,018 | 11,736 | 15,696 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Cooke County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 480 | 583 | 326 | 191 | 120 | 80 | 55 | 48 |
| *Pumping* | −743 | −743 | −743 | −743 | −743 | −743 | −743 | −743 |
| *SW and GW Interactions* | −10,560 | −10,043 | −9,690 | −9,443 | −9,258 | −9,115 | −8,999 | −8,268 |
| *Recharge* | 8,960 | 8,960 | 8,960 | 8,960 | 8,960 | 8,960 | 8,960 | 6,043 |
| *Vertical Leakage Upper* | 17,564 | 18,888 | 19,029 | 18,934 | 18,789 | 18,643 | 18,505 | 20,002 |
| *Vertical Leakage Lower* | −4,508 | −6,896 | −7,403 | −7,598 | −7,702 | −7,768 | −7,813 | −7,832 |
| *Lateral Flow* | −633 | −706 | −789 | −858 | −908 | −942 | −966 | −982 |
| *Net from other zones* | 12,423 | 11,286 | 10,837 | 10,478 | 10,179 | 9,933 | 9,726 | 11,188 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Cooke County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 818 | 196 | 90 | 50 | 32 | 21 | 15 | 15 |
| *Pumping* | −2,474 | −2,474 | −2,474 | −2,474 | −2,474 | −2,474 | −2,474 | −2,474 |
| *SW and GW Interactions* | −1,903 | −1,727 | −1,589 | −1,490 | −1,415 | −1,357 | −1,313 | −1,092 |
| *Recharge* | 2,618 | 2,618 | 2,618 | 2,618 | 2,618 | 2,618 | 2,618 | 1,808 |
| *Vertical Leakage Upper* | 5,695 | 7,732 | 7,962 | 7,960 | 7,913 | 7,865 | 7,821 | 8,208 |
| *Vertical Leakage Lower* | −1,607 | −2,823 | −3,163 | −3,292 | −3,361 | −3,406 | −3,437 | −3,453 |
| *Lateral Flow* | −1,244 | −1,795 | −1,855 | −1,882 | −1,898 | −1,910 | −1,917 | −1,920 |
| *Net from other zones* | 2,844 | 3,114 | 2,944 | 2,786 | 2,654 | 2,549 | 2,467 | 2,835 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Cooke County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 638 | 458 | 183 | 98 | 61 | 42 | 30 | 24 |
| *Pumping* | −364 | −364 | −364 | −364 | −364 | −364 | −364 | −364 |
| *SW and GW Interactions* | −2,280 | −2,124 | −2,027 | −1,957 | −1,905 | −1,865 | −1,833 | −1,753 |
| *Recharge* | 524 | 524 | 524 | 524 | 524 | 524 | 524 | 360 |
| *Vertical Leakage Upper* | 5,644 | 6,547 | 6,693 | 6,682 | 6,647 | 6,612 | 6,578 | 6,599 |
| *Vertical Leakage Lower* | −2,139 | −3,578 | −3,684 | −3,727 | −3,754 | −3,774 | −3,788 | −3,796 |
| *Lateral Flow* | 257 | 661 | 702 | 701 | 696 | 690 | 686 | 683 |
| *Net from other zones* | 3,762 | 3,630 | 3,711 | 3,656 | 3,589 | 3,528 | 3,476 | 3,486 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Cooke County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2,423 | 270 | 105 | 57 | 36 | 25 | 18 | 14 |
| *Pumping* | −5,850 | −5,850 | −5,850 | −5,850 | −5,850 | −5,850 | −5,850 | −5,850 |
| *SW and GW Interactions* | −2,146 | −2,107 | −2,076 | −2,053 | −2,034 | −2,021 | −2,011 | −1,918 |
| *Recharge* | 1,272 | 1,272 | 1,272 | 1,272 | 1,272 | 1,272 | 1,272 | 887 |
| *Vertical Leakage Upper* | 5,159 | 6,520 | 6,564 | 6,561 | 6,551 | 6,544 | 6,539 | 6,746 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 1,288 | 2,002 | 2,061 | 2,066 | 2,059 | 2,051 | 2,043 | 2,039 |
| *Net from other zones* | 6,447 | 8,522 | 8,625 | 8,627 | 8,610 | 8,595 | 8,582 | 8,785 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Coryell County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −7,935 | −7,142 | −6,667 | −6,375 | −6,177 | −6,022 | −5,897 | −5,733 |
| *Vertical Leakage Lower* | 7,891 | 7,099 | 6,625 | 6,333 | 6,135 | 5,981 | 5,856 | 5,693 |
| *Lateral Flow* | 44 | 43 | 42 | 42 | 42 | 41 | 41 | 40 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Coryell County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −9,864 | −9,349 | −9,161 | −9,040 | −8,949 | −8,875 | −8,813 | −8,358 |
| *Recharge* | 13,685 | 13,685 | 13,685 | 13,685 | 13,685 | 13,685 | 13,685 | 8,652 |
| *Vertical Leakage Upper* | −1,847 | −2,085 | −1,988 | −1,938 | −1,921 | −1,917 | −1,914 | 2,371 |
| *Vertical Leakage Lower* | 7,846 | 7,055 | 6,582 | 6,290 | 6,092 | 5,940 | 5,814 | 5,652 |
| *Lateral Flow* | 44 | 43 | 43 | 43 | 42 | 42 | 41 | 41 |
| *Net from other zones* | 6,043 | 5,013 | 4,637 | 4,395 | 4,213 | 4,065 | 3,941 | 8,064 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Coryell County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −9 | 3 | 3 | 2 | 1 | 1 | 1 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −727 | −679 | −651 | −632 | −620 | −611 | −605 | −567 |
| *Recharge* | 666 | 666 | 666 | 666 | 666 | 666 | 666 | 439 |
| *Vertical Leakage Upper* | 5,596 | 6,906 | 7,716 | 8,115 | 8,317 | 8,435 | 8,511 | 8,717 |
| *Vertical Leakage Lower* | −4,578 | −5,995 | −6,858 | −7,292 | −7,516 | −7,651 | −7,738 | −7,793 |
| *Lateral Flow* | −221 | −222 | −225 | −227 | −228 | −229 | −230 | −230 |
| *Net from other zones* | 797 | 689 | 633 | 596 | 573 | 555 | 543 | 694 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Coryell County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −2 | 11 | 11 | 6 | 4 | 3 | 2 | 4 |
| *Pumping* | −120 | −120 | −120 | −120 | −120 | −120 | −120 | −120 |
| *SW and GW Interactions* | −24,370 | −22,861 | −22,098 | −21,540 | −21,110 | −20,762 | −20,465 | −19,288 |
| *Recharge* | 19,196 | 19,196 | 19,196 | 19,196 | 19,196 | 19,196 | 19,196 | 11,956 |
| *Vertical Leakage Upper* | 34,122 | 32,521 | 31,858 | 31,176 | 30,539 | 29,979 | 29,473 | 34,413 |
| *Vertical Leakage Lower* | −3,895 | −5,231 | −5,960 | −6,301 | −6,472 | −6,574 | −6,639 | −6,679 |
| *Lateral Flow* | −561 | −655 | −789 | −877 | −927 | −960 | −982 | −998 |
| *Net from other zones* | 29,666 | 26,635 | 25,109 | 23,998 | 23,140 | 22,445 | 21,852 | 26,736 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Coryell County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 422 | 82 | 73 | 34 | 20 | 13 | 9 | 9 |
| *Pumping* | −2,197 | −2,197 | −2,197 | −2,197 | −2,197 | −2,197 | −2,197 | −2,197 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3,779 | 5,144 | 5,889 | 6,238 | 6,414 | 6,519 | 6,586 | 6,626 |
| *Vertical Leakage Lower* | −1,863 | −2,659 | −3,237 | −3,474 | −3,594 | −3,666 | −3,712 | −3,741 |
| *Lateral Flow* | −141 | −370 | −528 | −601 | −643 | −669 | −686 | −697 |
| *Net from other zones* | 1,775 | 2,115 | 2,124 | 2,163 | 2,177 | 2,184 | 2,188 | 2,188 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Coryell County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 189 | 70 | 53 | 24 | 14 | 9 | 6 | 5 |
| *Pumping* | −14 | −14 | −14 | −14 | −14 | −14 | −14 | −14 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,851 | 2,659 | 3,237 | 3,474 | 3,594 | 3,665 | 3,712 | 3,741 |
| *Vertical Leakage Lower* | −1,931 | −2,585 | −3,090 | −3,283 | −3,384 | −3,445 | −3,485 | −3,511 |
| *Lateral Flow* | −95 | −130 | −186 | −201 | −210 | −215 | −219 | −221 |
| *Net from other zones* | −175 | −56 | −39 | −10 | 0 | 5 | 8 | 9 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Coryell County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 505 | 191 | 136 | 62 | 36 | 23 | 16 | 12 |
| *Pumping* | −2,163 | −2,163 | −2,163 | −2,163 | −2,163 | −2,163 | −2,163 | −2,163 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,901 | 2,585 | 3,090 | 3,283 | 3,384 | 3,446 | 3,485 | 3,511 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −243 | −613 | −1,063 | −1,182 | −1,257 | −1,306 | −1,338 | −1,360 |
| *Net from other zones* | 1,658 | 1,972 | 2,027 | 2,101 | 2,127 | 2,140 | 2,147 | 2,151 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Dallas County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −773 | −662 | −613 | −579 | −551 | −528 | −509 | −374 |
| *Recharge* | 392 | 392 | 392 | 392 | 392 | 392 | 392 | 200 |
| *Vertical Leakage Upper* | 1,154 | 932 | 834 | 766 | 710 | 664 | 626 | 548 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 1,154 | 932 | 834 | 766 | 710 | 664 | 626 | 548 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Dallas County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 459 | 448 | 321 | 226 | 161 | 115 | 84 | 61 |
| *Pumping* | −359 | −359 | −359 | −359 | −359 | −359 | −359 | −359 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 224 | 296 | 338 | 362 | 376 | 386 | 391 | 395 |
| *Vertical Leakage Lower* | 38 | 52 | 54 | 54 | 54 | 53 | 53 | 53 |
| *Lateral Flow* | −362 | −437 | −354 | −283 | −232 | −195 | −169 | −150 |
| *Net from other zones* | −100 | −89 | 38 | 133 | 198 | 244 | 275 | 298 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Dallas County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 47 | 117 | 105 | 81 | 60 | 43 | 31 | 23 |
| *Pumping* | −131 | −131 | −131 | −131 | −131 | −131 | −131 | −131 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −38 | −52 | −55 | −55 | −55 | −54 | −53 | −53 |
| *Vertical Leakage Lower* | −2 | −20 | −25 | −26 | −26 | −26 | −26 | −26 |
| *Lateral Flow* | 124 | 86 | 106 | 131 | 152 | 168 | 179 | 187 |
| *Net from other zones* | 84 | 14 | 26 | 50 | 71 | 88 | 100 | 108 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Dallas County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 153 | 190 | 110 | 71 | 48 | 34 | 24 | 18 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2 | 20 | 25 | 26 | 27 | 26 | 26 | 25 |
| *Vertical Leakage Lower* | −42 | −38 | −44 | −50 | −54 | −57 | −59 | −60 |
| *Lateral Flow* | −113 | −172 | −91 | −47 | −21 | −3 | 9 | 17 |
| *Net from other zones* | −153 | −190 | −110 | −71 | −48 | −34 | −24 | −18 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Dallas County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 203 | 437 | 310 | 209 | 143 | 100 | 71 | 52 |
| *Pumping* | −1 | −1 | −1 | −1 | −1 | −1 | −1 | −1 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 42 | 37 | 43 | 49 | 54 | 57 | 60 | 60 |
| *Vertical Leakage Lower* | −300 | −413 | −397 | −384 | −377 | −374 | −373 | −372 |
| *Lateral Flow* | 56 | −60 | 45 | 127 | 181 | 218 | 243 | 261 |
| *Net from other zones* | −202 | −436 | −309 | −208 | −142 | −99 | −70 | −51 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Dallas County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,566 | 617 | 372 | 264 | 191 | 139 | 102 | 75 |
| *Pumping* | −3,200 | −3,200 | −3,200 | −3,200 | −3,200 | −3,200 | −3,200 | −3,200 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 300 | 413 | 397 | 383 | 377 | 374 | 372 | 372 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 1,334 | 2,170 | 2,431 | 2,553 | 2,632 | 2,687 | 2,726 | 2,753 |
| *Net from other zones* | 1,634 | 2,583 | 2,828 | 2,936 | 3,009 | 3,061 | 3,098 | 3,125 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Delta County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 50 | 15 | 12 | 9 | 7 | 5 | 4 | 3 |
| *Pumping* | −56 | −56 | −56 | −56 | −56 | −56 | −56 | −56 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 2 | 1 | 2 | 2 | 2 | 2 | 2 |
| *Vertical Leakage Lower* | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| *Lateral Flow* | 5 | 37 | 41 | 43 | 45 | 47 | 48 | 49 |
| *Net from other zones* | 6 | 41 | 44 | 47 | 49 | 51 | 52 | 53 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Delta County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 6 | 12 | 13 | 11 | 9 | 7 | 5 | 4 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | −2 | −2 | −2 | −2 | −2 | −1 | −2 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −6 | −10 | −11 | −9 | −7 | −5 | −4 | −2 |
| *Net from other zones* | −6 | −12 | −13 | −11 | −9 | −7 | −5 | −4 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Delta County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 4 | 4 | 3 | 2 | 2 | 1 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 0 | 0 | −1 | 0 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −2 | −4 | −4 | −3 | −2 | −1 | −1 | −1 |
| *Net from other zones* | −2 | −4 | −4 | −3 | −2 | −2 | −1 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Delta County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 7 | 15 | 15 | 12 | 10 | 7 | 6 | 4 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −7 | −15 | −15 | −12 | −10 | −7 | −6 | −4 |
| *Net from other zones* | −7 | −15 | −15 | −12 | −10 | −7 | −6 | −4 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Delta County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 10 | 21 | 20 | 16 | 13 | 10 | 7 | 6 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −10 | −21 | −20 | −17 | −13 | −10 | −8 | −6 |
| *Net from other zones* | −10 | −21 | −20 | −16 | −13 | −10 | −7 | −6 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Denton County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −14,159 | −13,391 | −12,844 | −12,404 | −12,042 | −11,739 | −11,484 | −10,583 |
| *Recharge* | 18,721 | 18,721 | 18,721 | 18,721 | 18,721 | 18,721 | 18,721 | 10,594 |
| *Vertical Leakage Upper* | 9,461 | 7,953 | 6,875 | 6,004 | 5,286 | 4,685 | 4,179 | 10,509 |
| *Vertical Leakage Lower* | 134 | 106 | 90 | 81 | 75 | 70 | 66 | 61 |
| *Lateral Flow* | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| *Net from other zones* | 9,597 | 8,061 | 6,967 | 6,087 | 5,363 | 4,757 | 4,247 | 10,572 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Denton County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −44,469 | −42,684 | −41,855 | −41,309 | −40,918 | −40,618 | −40,383 | −37,403 |
| *Recharge* | 41,220 | 41,220 | 41,220 | 41,220 | 41,220 | 41,220 | 41,220 | 23,255 |
| *Vertical Leakage Upper* | 47,584 | 44,041 | 42,399 | 41,316 | 40,542 | 39,947 | 39,480 | 51,491 |
| *Vertical Leakage Lower* | 131 | 104 | 88 | 79 | 72 | 67 | 64 | 58 |
| *Lateral Flow* | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 |
| *Net from other zones* | 47,718 | 44,148 | 42,490 | 41,398 | 40,616 | 40,016 | 39,546 | 51,551 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Denton County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 4,082 | 1,216 | 551 | 295 | 177 | 115 | 80 | 67 |
| *Pumping* | −10,522 | −10,522 | −10,522 | −10,522 | −10,522 | −10,522 | −10,522 | −10,522 |
| *SW and GW Interactions* | −2,680 | −2,057 | −1,751 | −1,559 | −1,426 | −1,325 | −1,246 | −781 |
| *Recharge* | 2,050 | 2,050 | 2,050 | 2,050 | 2,050 | 2,050 | 2,050 | 1,214 |
| *Vertical Leakage Upper* | 6,686 | 7,391 | 7,533 | 7,513 | 7,451 | 7,377 | 7,304 | 7,272 |
| *Vertical Leakage Lower* | −162 | −286 | −440 | −533 | −592 | −632 | −659 | −678 |
| *Lateral Flow* | 3,226 | 4,265 | 4,330 | 4,315 | 4,288 | 4,262 | 4,239 | 4,209 |
| *Net from other zones* | 9,750 | 11,370 | 11,423 | 11,295 | 11,147 | 11,007 | 10,884 | 10,803 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Denton County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,135 | 986 | 541 | 318 | 201 | 135 | 94 | 71 |
| *Pumping* | −1,726 | −1,726 | −1,726 | −1,726 | −1,726 | −1,726 | −1,726 | −1,726 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 162 | 286 | 440 | 533 | 592 | 631 | 659 | 677 |
| *Vertical Leakage Lower* | −1,423 | −2,292 | −2,341 | −2,344 | −2,345 | −2,347 | −2,350 | −2,352 |
| *Lateral Flow* | 1,852 | 2,746 | 3,086 | 3,219 | 3,278 | 3,307 | 3,323 | 3,330 |
| *Net from other zones* | 591 | 740 | 1,185 | 1,408 | 1,525 | 1,591 | 1,632 | 1,655 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Denton County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2,527 | 404 | 178 | 100 | 63 | 43 | 30 | 23 |
| *Pumping* | −7,187 | −7,187 | −7,187 | −7,187 | −7,187 | −7,187 | −7,187 | −7,187 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,423 | 2,292 | 2,341 | 2,343 | 2,345 | 2,347 | 2,350 | 2,353 |
| *Vertical Leakage Lower* | −209 | −410 | −553 | −617 | −656 | −683 | −702 | −716 |
| *Lateral Flow* | 3,446 | 4,901 | 5,221 | 5,361 | 5,435 | 5,480 | 5,509 | 5,527 |
| *Net from other zones* | 4,660 | 6,783 | 7,009 | 7,087 | 7,124 | 7,144 | 7,157 | 7,164 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Denton County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,177 | 732 | 333 | 189 | 122 | 84 | 60 | 44 |
| *Pumping* | −1,098 | −1,098 | −1,098 | −1,098 | −1,098 | −1,098 | −1,098 | −1,098 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 210 | 409 | 552 | 616 | 655 | 683 | 702 | 716 |
| *Vertical Leakage Lower* | −1,574 | −2,376 | −2,396 | −2,404 | −2,415 | −2,427 | −2,436 | −2,444 |
| *Lateral Flow* | 1,285 | 2,333 | 2,609 | 2,697 | 2,736 | 2,758 | 2,772 | 2,782 |
| *Net from other zones* | −79 | 366 | 765 | 909 | 976 | 1,014 | 1,038 | 1,054 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Denton County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 4,225 | 661 | 275 | 162 | 109 | 77 | 56 | 42 |
| *Pumping* | −9,552 | −9,552 | −9,552 | −9,552 | −9,552 | −9,552 | −9,552 | −9,552 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,574 | 2,377 | 2,396 | 2,405 | 2,416 | 2,427 | 2,436 | 2,444 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 3,753 | 6,514 | 6,881 | 6,985 | 7,027 | 7,048 | 7,060 | 7,066 |
| *Net from other zones* | 5,327 | 8,891 | 9,277 | 9,390 | 9,443 | 9,475 | 9,496 | 9,510 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Eastland County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 6,321 | 6,292 | 6,280 | 6,272 | 6,265 | 6,260 | 6,252 | 6,233 |
| *Vertical Leakage Lower* | −6,308 | −6,279 | −6,268 | −6,260 | −6,253 | −6,248 | −6,241 | −6,222 |
| *Lateral Flow* | −13 | −13 | −12 | −12 | −12 | −12 | −11 | −11 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Eastland County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 6,307 | 6,279 | 6,268 | 6,260 | 6,253 | 6,248 | 6,240 | 6,222 |
| *Vertical Leakage Lower* | −6,294 | −6,266 | −6,256 | −6,248 | −6,241 | −6,236 | −6,229 | −6,211 |
| *Lateral Flow* | −13 | −13 | −12 | −12 | −12 | −12 | −11 | −11 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Eastland County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 6,322 | 6,293 | 6,282 | 6,275 | 6,267 | 6,262 | 6,256 | 6,237 |
| *Vertical Leakage Lower* | −6,308 | −6,280 | −6,269 | −6,262 | −6,255 | −6,250 | −6,244 | −6,226 |
| *Lateral Flow* | −14 | −13 | −13 | −13 | −12 | −12 | −12 | −11 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Eastland County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 6,308 | 6,279 | 6,269 | 6,262 | 6,255 | 6,250 | 6,244 | 6,225 |
| *Vertical Leakage Lower* | −6,294 | −6,266 | −6,256 | −6,249 | −6,243 | −6,238 | −6,232 | −6,214 |
| *Lateral Flow* | −14 | −13 | −13 | −13 | −12 | −12 | −12 | −11 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Eastland County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Pumping* | −125 | −125 | −125 | −125 | −125 | −125 | −125 | −125 |
| *SW and GW Interactions* | −374 | −349 | −334 | −320 | −308 | −299 | −293 | −285 |
| *Recharge* | 794 | 794 | 794 | 794 | 794 | 794 | 794 | 450 |
| *Vertical Leakage Upper* | 6,248 | 6,171 | 6,130 | 6,095 | 6,065 | 6,042 | 6,024 | 6,333 |
| *Vertical Leakage Lower* | −5,906 | −5,886 | −5,877 | −5,871 | −5,864 | −5,859 | −5,853 | −5,836 |
| *Lateral Flow* | −263 | −256 | −254 | −253 | −254 | −254 | −254 | −253 |
| *Net from other zones* | 79 | 29 | −1 | −29 | −53 | −71 | −83 | 244 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Eastland County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| *Pumping* | −266 | −266 | −266 | −266 | −266 | −266 | −266 | −266 |
| *SW and GW Interactions* | −69 | −66 | −64 | −61 | −59 | −57 | −54 | −50 |
| *Recharge* | 308 | 308 | 308 | 308 | 308 | 308 | 308 | 176 |
| *Vertical Leakage Upper* | 5,736 | 5,710 | 5,698 | 5,685 | 5,674 | 5,664 | 5,653 | 5,761 |
| *Vertical Leakage Lower* | −5,560 | −5,545 | −5,538 | −5,531 | −5,525 | −5,519 | −5,513 | −5,497 |
| *Lateral Flow* | −80 | −75 | −74 | −74 | −74 | −74 | −75 | −75 |
| *Net from other zones* | 96 | 90 | 86 | 80 | 75 | 71 | 65 | 189 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Eastland County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 1 | 1 | 1 | 2 | 2 | 2 | 3 |
| *Pumping* | −5,329 | −5,329 | −5,329 | −5,329 | −5,329 | −5,329 | −5,329 | −5,329 |
| *SW and GW Interactions* | −6,783 | −6,532 | −6,378 | −6,249 | −6,136 | −6,034 | −5,940 | −5,766 |
| *Recharge* | 6,129 | 6,129 | 6,129 | 6,129 | 6,129 | 6,129 | 6,129 | 3,453 |
| *Vertical Leakage Upper* | 12,997 | 12,480 | 12,165 | 11,900 | 11,667 | 11,457 | 11,263 | 13,575 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −231 | −217 | −210 | −203 | −197 | −191 | −185 | −170 |
| *Net from other zones* | 12,766 | 12,263 | 11,955 | 11,697 | 11,470 | 11,266 | 11,078 | 13,405 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Erath County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 21,402 | 22,347 | 22,425 | 22,394 | 22,332 | 22,258 | 22,080 | 21,990 |
| *Vertical Leakage Lower* | −21,397 | −22,341 | −22,421 | −22,394 | −22,334 | −22,262 | −22,089 | −22,001 |
| *Lateral Flow* | −5 | −6 | −4 | 0 | 2 | 4 | 9 | 11 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Erath County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 28 | 28 | 28 | 28 | 28 | 28 | 28 | 14 |
| *Vertical Leakage Upper* | 21,369 | 22,314 | 22,394 | 22,366 | 22,306 | 22,235 | 22,061 | 21,988 |
| *Vertical Leakage Lower* | −21,392 | −22,336 | −22,418 | −22,394 | −22,336 | −22,267 | −22,098 | −22,013 |
| *Lateral Flow* | −5 | −6 | −4 | 0 | 2 | 4 | 9 | 11 |
| *Net from other zones* | −28 | −28 | −28 | −28 | −28 | −28 | −28 | −14 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Erath County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| *Pumping* | −61 | −61 | −61 | −61 | −61 | −61 | −61 | −61 |
| *SW and GW Interactions* | −587 | −549 | −533 | −521 | −512 | −503 | −495 | −475 |
| *Recharge* | 1,876 | 1,876 | 1,876 | 1,876 | 1,876 | 1,876 | 1,876 | 968 |
| *Vertical Leakage Upper* | 25,873 | 26,624 | 26,604 | 26,512 | 26,405 | 26,289 | 26,078 | 26,789 |
| *Vertical Leakage Lower* | −26,402 | −27,230 | −27,245 | −27,181 | −27,094 | −26,999 | −26,809 | −26,655 |
| *Lateral Flow* | −113 | −112 | −109 | −105 | −103 | −100 | −95 | −93 |
| *Net from other zones* | −642 | −718 | −750 | −774 | −792 | −810 | −826 | 41 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Erath County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| *Pumping* | −1,078 | −1,078 | −1,078 | −1,078 | −1,078 | −1,078 | −1,078 | −1,078 |
| *SW and GW Interactions* | −2,269 | −1,740 | −1,501 | −1,311 | −1,143 | −993 | −855 | −463 |
| *Recharge* | 8,342 | 8,342 | 8,342 | 8,342 | 8,342 | 8,342 | 8,342 | 4,415 |
| *Vertical Leakage Upper* | 22,598 | 22,368 | 21,905 | 21,461 | 21,037 | 20,642 | 20,177 | 23,165 |
| *Vertical Leakage Lower* | −24,911 | −25,742 | −25,761 | −25,701 | −25,617 | −25,524 | −25,340 | −25,189 |
| *Lateral Flow* | −415 | −411 | −407 | −403 | −399 | −397 | −392 | −389 |
| *Net from other zones* | −2,728 | −3,785 | −4,263 | −4,643 | −4,979 | −5,279 | −5,555 | −2,413 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Erath County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 165 | 21 | 19 | 17 | 16 | 15 | 15 | 26 |
| *Pumping* | −7,371 | −7,371 | −7,371 | −7,371 | −7,371 | −7,371 | −7,371 | −7,371 |
| *SW and GW Interactions* | −3,150 | −2,840 | −2,616 | −2,440 | −2,286 | −2,157 | −2,044 | −1,886 |
| *Recharge* | 12,299 | 12,299 | 12,299 | 12,299 | 12,299 | 12,299 | 12,299 | 6,765 |
| *Vertical Leakage Upper* | 18,911 | 19,124 | 18,694 | 18,283 | 17,890 | 17,540 | 17,128 | 22,196 |
| *Vertical Leakage Lower* | −14,332 | −15,016 | −15,021 | −14,962 | −14,887 | −14,808 | −14,642 | −14,521 |
| *Lateral Flow* | −3,372 | −3,377 | −3,388 | −3,386 | −3,375 | −3,361 | −3,341 | −3,323 |
| *Net from other zones* | 1,207 | 731 | 285 | −65 | −372 | −629 | −855 | 4,352 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Erath County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 137 | 9 | 9 | 8 | 7 | 8 | 8 | 12 |
| *Pumping* | −870 | −870 | −870 | −870 | −870 | −870 | −870 | −870 |
| *SW and GW Interactions* | −962 | −929 | −907 | −889 | −876 | −863 | −852 | −829 |
| *Recharge* | 1,283 | 1,283 | 1,283 | 1,283 | 1,283 | 1,283 | 1,283 | 720 |
| *Vertical Leakage Upper* | 14,974 | 15,592 | 15,552 | 15,456 | 15,356 | 15,251 | 15,064 | 15,459 |
| *Vertical Leakage Lower* | −13,290 | −13,848 | −13,854 | −13,799 | −13,733 | −13,665 | −13,515 | −13,416 |
| *Lateral Flow* | −310 | −308 | −306 | −300 | −291 | −281 | −266 | −247 |
| *Net from other zones* | 1,374 | 1,436 | 1,392 | 1,357 | 1,332 | 1,305 | 1,283 | 1,796 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Erath County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 442 | 19 | 18 | 14 | 13 | 14 | 13 | 20 |
| *Pumping* | −11,237 | −11,237 | −11,237 | −11,237 | −11,237 | −11,237 | −11,237 | −11,237 |
| *SW and GW Interactions* | −6,772 | −6,570 | −6,451 | −6,362 | −6,287 | −6,222 | −6,164 | −6,033 |
| *Recharge* | 2,816 | 2,816 | 2,816 | 2,816 | 2,816 | 2,816 | 2,816 | 1,575 |
| *Vertical Leakage Upper* | 24,017 | 24,172 | 23,940 | 23,708 | 23,491 | 23,293 | 23,027 | 23,908 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −2,494 | −2,630 | −2,635 | −2,577 | −2,509 | −2,442 | −2,291 | −2,200 |
| *Net from other zones* | 21,523 | 21,542 | 21,305 | 21,131 | 20,982 | 20,851 | 20,736 | 21,708 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Falls County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 7 | 12 | 8 | 5 | 3 | 2 | 2 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 10 | 8 | 9 | 14 | 18 | 19 | 20 | 20 |
| *Vertical Leakage Lower* | −12 | −15 | −21 | −23 | −24 | −24 | −24 | −24 |
| *Lateral Flow* | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |
| *Net from other zones* | −2 | −7 | −12 | −8 | −5 | −3 | −2 | −2 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Falls County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −23 | 27 | 34 | 19 | 12 | 8 | 5 | 4 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 11 | 15 | 21 | 23 | 23 | 24 | 24 | 24 |
| *Vertical Leakage Lower* | −22 | −26 | −28 | −30 | −31 | −32 | −32 | −32 |
| *Lateral Flow* | 34 | −16 | −27 | −12 | −4 | 0 | 3 | 4 |
| *Net from other zones* | 23 | −27 | −34 | −19 | −12 | −8 | −5 | −4 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Falls County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 29 | 8 | 11 | 6 | 4 | 2 | 2 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 22 | 27 | 29 | 31 | 31 | 32 | 31 | 32 |
| *Vertical Leakage Lower* | 6 | 0 | −9 | −14 | −17 | −19 | −20 | −21 |
| *Lateral Flow* | −57 | −35 | −31 | −23 | −18 | −15 | −13 | −12 |
| *Net from other zones* | −29 | −8 | −11 | −6 | −4 | −2 | −2 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Falls County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 68 | 87 | 112 | 67 | 39 | 24 | 15 | 10 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −5 | −1 | 9 | 14 | 17 | 18 | 20 | 21 |
| *Vertical Leakage Lower* | −38 | −46 | −59 | −54 | −51 | −49 | −48 | −48 |
| *Lateral Flow* | −25 | −40 | −62 | −27 | −5 | 7 | 13 | 17 |
| *Net from other zones* | −68 | −87 | −112 | −67 | −39 | −24 | −15 | −10 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Falls County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 687 | 781 | 306 | 163 | 99 | 64 | 42 | 29 |
| *Pumping* | −1,435 | −1,435 | −1,435 | −1,435 | −1,435 | −1,435 | −1,435 | −1,435 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 38 | 47 | 59 | 54 | 51 | 49 | 49 | 48 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 710 | 607 | 1,070 | 1,218 | 1,285 | 1,322 | 1,344 | 1,358 |
| *Net from other zones* | 748 | 654 | 1,129 | 1,272 | 1,336 | 1,371 | 1,393 | 1,406 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Fannin County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −20,851 | −20,574 | −20,277 | −20,019 | −19,792 | −19,587 | −19,407 | −18,465 |
| *Recharge* | 28,920 | 28,920 | 28,920 | 28,920 | 28,920 | 28,920 | 28,920 | 24,081 |
| *Vertical Leakage Upper* | 12,782 | 12,228 | 11,634 | 11,118 | 10,664 | 10,254 | 9,894 | 12,849 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 12,782 | 12,228 | 11,634 | 11,118 | 10,664 | 10,254 | 9,894 | 12,849 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Fannin County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −502 | −486 | −470 | −453 | −436 | −418 | −401 | −370 |
| *Recharge* | 752 | 752 | 752 | 752 | 752 | 752 | 752 | 592 |
| *Vertical Leakage Upper* | 252 | 220 | 188 | 154 | 120 | 84 | 50 | 148 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 252 | 220 | 188 | 154 | 120 | 84 | 50 | 148 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Fannin County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,182 | 642 | 404 | 267 | 183 | 128 | 91 | 66 |
| *Pumping* | −2,088 | −2,088 | −2,088 | −2,088 | −2,088 | −2,088 | −2,088 | −2,088 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 29 | 60 | 79 | 92 | 98 | 103 | 106 | 108 |
| *Vertical Leakage Lower* | 1 | 14 | 20 | 20 | 19 | 17 | 16 | 15 |
| *Lateral Flow* | 876 | 1,372 | 1,585 | 1,709 | 1,788 | 1,840 | 1,875 | 1,899 |
| *Net from other zones* | 906 | 1,446 | 1,684 | 1,821 | 1,905 | 1,960 | 1,997 | 2,022 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Fannin County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 149 | 231 | 258 | 235 | 193 | 151 | 115 | 86 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | −13 | −21 | −21 | −19 | −17 | −16 | −14 |
| *Vertical Leakage Lower* | −8 | −19 | −21 | −20 | −18 | −16 | −14 | −13 |
| *Lateral Flow* | −140 | −199 | −216 | −194 | −156 | −118 | −85 | −59 |
| *Net from other zones* | −149 | −231 | −258 | −235 | −193 | −151 | −115 | −86 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Fannin County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 57 | 99 | 65 | 47 | 34 | 25 | 19 | 14 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 9 | 19 | 21 | 20 | 19 | 16 | 15 | 13 |
| *Vertical Leakage Lower* | 1 | 13 | 13 | 10 | 8 | 7 | 5 | 5 |
| *Lateral Flow* | −67 | −131 | −99 | −77 | −61 | −48 | −39 | −32 |
| *Net from other zones* | −57 | −99 | −65 | −47 | −34 | −25 | −19 | −14 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Fannin County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 79 | 231 | 208 | 157 | 117 | 87 | 65 | 48 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | −13 | −13 | −10 | −8 | −6 | −6 | −4 |
| *Vertical Leakage Lower* | −19 | −37 | −41 | −42 | −42 | −43 | −43 | −44 |
| *Lateral Flow* | −59 | −181 | −154 | −105 | −67 | −38 | −16 | 0 |
| *Net from other zones* | −79 | −231 | −208 | −157 | −117 | −87 | −65 | −48 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Fannin County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 86 | 281 | 213 | 160 | 121 | 90 | 68 | 50 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 19 | 37 | 42 | 42 | 42 | 43 | 43 | 44 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −105 | −318 | −255 | −202 | −163 | −133 | −111 | −94 |
| *Net from other zones* | −86 | −281 | −213 | −160 | −121 | −90 | −68 | −50 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Grayson County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −31,253 | −30,536 | −29,848 | −29,265 | −28,766 | −28,338 | −27,972 | −26,543 |
| *Recharge* | 34,736 | 34,736 | 34,736 | 34,736 | 34,736 | 34,736 | 34,736 | 24,848 |
| *Vertical Leakage Upper* | 27,847 | 26,450 | 25,085 | 23,925 | 22,931 | 22,078 | 21,347 | 28,379 |
| *Vertical Leakage Lower* | −77 | −114 | −125 | −131 | −135 | −138 | −139 | −141 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net from other zones* | 27,770 | 26,336 | 24,960 | 23,794 | 22,796 | 21,940 | 21,208 | 28,238 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Grayson County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −16,467 | −16,512 | −16,563 | −16,632 | −16,707 | −16,786 | −16,862 | −16,486 |
| *Recharge* | 23,655 | 23,655 | 23,655 | 23,655 | 23,655 | 23,655 | 23,655 | 18,489 |
| *Vertical Leakage Upper* | 9,356 | 9,483 | 9,596 | 9,740 | 9,894 | 10,055 | 10,209 | 14,624 |
| *Vertical Leakage Lower* | −77 | −114 | −125 | −131 | −135 | −138 | −140 | −141 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net from other zones* | 9,279 | 9,369 | 9,471 | 9,609 | 9,759 | 9,917 | 10,069 | 14,483 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Grayson County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,509 | 763 | 409 | 233 | 141 | 91 | 61 | 44 |
| *Pumping* | −4,109 | −4,109 | −4,109 | −4,109 | −4,109 | −4,109 | −4,109 | −4,109 |
| *SW and GW Interactions* | −1,834 | −1,793 | −1,750 | −1,720 | −1,703 | −1,694 | −1,688 | −1,655 |
| *Recharge* | 639 | 639 | 639 | 639 | 639 | 639 | 639 | 487 |
| *Vertical Leakage Upper* | 4,515 | 4,969 | 5,172 | 5,283 | 5,353 | 5,401 | 5,434 | 5,548 |
| *Vertical Leakage Lower* | −58 | −63 | −109 | −151 | −184 | −209 | −228 | −241 |
| *Lateral Flow* | 1,172 | 1,387 | 1,498 | 1,545 | 1,566 | 1,575 | 1,579 | 1,581 |
| *Net from other zones* | 5,629 | 6,293 | 6,561 | 6,677 | 6,735 | 6,767 | 6,785 | 6,888 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Grayson County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 430 | 647 | 526 | 382 | 269 | 190 | 135 | 98 |
| *Pumping* | −1,053 | −1,053 | −1,053 | −1,053 | −1,053 | −1,053 | −1,053 | −1,053 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 59 | 63 | 110 | 151 | 184 | 209 | 228 | 241 |
| *Vertical Leakage Lower* | −369 | −636 | −674 | −673 | −667 | −662 | −659 | −657 |
| *Lateral Flow* | 933 | 979 | 1,091 | 1,193 | 1,267 | 1,316 | 1,349 | 1,371 |
| *Net from other zones* | 623 | 406 | 527 | 671 | 784 | 863 | 918 | 955 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Grayson County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 983 | 249 | 121 | 74 | 49 | 34 | 25 | 18 |
| *Pumping* | −3,123 | −3,123 | −3,123 | −3,123 | −3,123 | −3,123 | −3,123 | −3,123 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 369 | 636 | 675 | 673 | 668 | 663 | 660 | 657 |
| *Vertical Leakage Lower* | 30 | 28 | −21 | −44 | −59 | −69 | −77 | −82 |
| *Lateral Flow* | 1,741 | 2,210 | 2,348 | 2,420 | 2,465 | 2,495 | 2,515 | 2,530 |
| *Net from other zones* | 2,140 | 2,874 | 3,002 | 3,049 | 3,074 | 3,089 | 3,098 | 3,105 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Grayson County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 487 | 395 | 222 | 137 | 92 | 65 | 47 | 34 |
| *Pumping* | −1,184 | −1,184 | −1,184 | −1,184 | −1,184 | −1,184 | −1,184 | −1,184 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −31 | −28 | 21 | 45 | 60 | 70 | 77 | 83 |
| *Vertical Leakage Lower* | −275 | −551 | −576 | −582 | −588 | −594 | −599 | −603 |
| *Lateral Flow* | 1,003 | 1,368 | 1,517 | 1,584 | 1,620 | 1,643 | 1,659 | 1,670 |
| *Net from other zones* | 697 | 789 | 962 | 1,047 | 1,092 | 1,119 | 1,137 | 1,150 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Grayson County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 717 | 370 | 183 | 115 | 80 | 57 | 42 | 31 |
| *Pumping* | −1,247 | −1,247 | −1,247 | −1,247 | −1,247 | −1,247 | −1,247 | −1,247 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 275 | 550 | 575 | 581 | 587 | 594 | 598 | 602 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 255 | 327 | 489 | 551 | 580 | 596 | 607 | 614 |
| *Net from other zones* | 530 | 877 | 1,064 | 1,132 | 1,167 | 1,190 | 1,205 | 1,216 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hamilton County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −3,148 | −2,589 | −2,357 | −2,207 | −2,112 | −2,039 | −1,977 | −1,897 |
| *Vertical Leakage Lower* | 3,115 | 2,556 | 2,324 | 2,175 | 2,080 | 2,007 | 1,945 | 1,866 |
| *Lateral Flow* | 33 | 33 | 33 | 32 | 32 | 32 | 32 | 31 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hamilton County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −502 | −404 | −363 | −338 | −316 | −298 | −283 | −240 |
| *Recharge* | 3,210 | 3,210 | 3,210 | 3,210 | 3,210 | 3,210 | 3,210 | 1,813 |
| *Vertical Leakage Upper* | −5,321 | −4,958 | −4,808 | −4,710 | −4,658 | −4,621 | −4,589 | −3,199 |
| *Vertical Leakage Lower* | 3,080 | 2,522 | 2,290 | 2,142 | 2,047 | 1,974 | 1,912 | 1,834 |
| *Lateral Flow* | 35 | 34 | 34 | 34 | 33 | 33 | 33 | 32 |
| *Net from other zones* | −2,206 | −2,402 | −2,484 | −2,534 | −2,578 | −2,614 | −2,644 | −1,333 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hamilton County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −156 | −155 | −155 | −154 | −154 | −154 | −154 | −152 |
| *Recharge* | 386 | 386 | 386 | 386 | 386 | 386 | 386 | 214 |
| *Vertical Leakage Upper* | 8,053 | 8,984 | 9,339 | 9,536 | 9,635 | 9,693 | 9,730 | 9,913 |
| *Vertical Leakage Lower* | −8,087 | −9,018 | −9,373 | −9,572 | −9,671 | −9,729 | −9,766 | −9,782 |
| *Lateral Flow* | −41 | −42 | −42 | −42 | −42 | −42 | −42 | −42 |
| *Net from other zones* | −75 | −76 | −76 | −78 | −78 | −78 | −78 | 89 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hamilton County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 9 | 3 | 3 | 2 | 2 | 2 | 2 | 3 |
| *Pumping* | −218 | −218 | −218 | −218 | −218 | −218 | −218 | −218 |
| *SW and GW Interactions* | −13,681 | −12,637 | −12,257 | −11,992 | −11,787 | −11,617 | −11,469 | −10,559 |
| *Recharge* | 17,218 | 17,218 | 17,218 | 17,218 | 17,218 | 17,218 | 17,218 | 9,819 |
| *Vertical Leakage Upper* | 18,231 | 17,074 | 16,669 | 16,338 | 16,026 | 15,745 | 15,486 | 21,081 |
| *Vertical Leakage Lower* | −6,940 | −7,813 | −8,140 | −8,324 | −8,415 | −8,469 | −8,504 | −8,521 |
| *Lateral Flow* | −938 | −990 | −1,018 | −1,032 | −1,039 | −1,044 | −1,046 | −1,046 |
| *Net from other zones* | 10,353 | 8,271 | 7,511 | 6,982 | 6,572 | 6,232 | 5,936 | 11,514 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hamilton County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 171 | 17 | 16 | 9 | 6 | 4 | 4 | 6 |
| *Pumping* | −1,672 | −1,672 | −1,672 | −1,672 | −1,672 | −1,672 | −1,672 | −1,672 |
| *SW and GW Interactions* | −4,332 | −4,098 | −4,006 | −3,939 | −3,887 | −3,843 | −3,806 | −3,660 |
| *Recharge* | 1,081 | 1,081 | 1,081 | 1,081 | 1,081 | 1,081 | 1,081 | 633 |
| *Vertical Leakage Upper* | 14,523 | 14,929 | 15,072 | 15,121 | 15,108 | 15,074 | 15,034 | 15,208 |
| *Vertical Leakage Lower* | −2,628 | −3,101 | −3,287 | −3,391 | −3,442 | −3,471 | −3,490 | −3,501 |
| *Lateral Flow* | −2,811 | −3,058 | −3,198 | −3,270 | −3,307 | −3,330 | −3,345 | −3,354 |
| *Net from other zones* | 9,084 | 8,770 | 8,587 | 8,460 | 8,359 | 8,273 | 8,199 | 8,353 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hamilton County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 104 | 20 | 17 | 8 | 5 | 3 | 3 | 3 |
| *Pumping* | −151 | −151 | −151 | −151 | −151 | −151 | −151 | −151 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,628 | 3,100 | 3,287 | 3,391 | 3,442 | 3,471 | 3,490 | 3,502 |
| *Vertical Leakage Lower* | −2,352 | −2,708 | −2,874 | −2,961 | −3,004 | −3,029 | −3,046 | −3,056 |
| *Lateral Flow* | −229 | −261 | −279 | −287 | −292 | −294 | −296 | −298 |
| *Net from other zones* | 47 | 131 | 134 | 143 | 146 | 148 | 148 | 148 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hamilton County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 161 | 34 | 30 | 14 | 8 | 6 | 4 | 5 |
| *Pumping* | −383 | −383 | −383 | −383 | −383 | −383 | −383 | −383 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,352 | 2,708 | 2,874 | 2,961 | 3,004 | 3,028 | 3,045 | 3,055 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −2,130 | −2,359 | −2,521 | −2,592 | −2,629 | −2,651 | −2,666 | −2,677 |
| *Net from other zones* | 222 | 349 | 353 | 369 | 375 | 377 | 379 | 378 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hill County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −329 | −282 | −264 | −249 | −239 | −230 | −224 | −176 |
| *Recharge* | 715 | 715 | 715 | 715 | 715 | 715 | 715 | 393 |
| *Vertical Leakage Upper* | −57 | −151 | −187 | −217 | −237 | −255 | −267 | −41 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | −57 | −151 | −187 | −217 | −237 | −255 | −267 | −41 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hill County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −17,562 | −16,165 | −15,751 | −15,483 | −15,289 | −15,141 | −15,026 | −14,149 |
| *Recharge* | 14,112 | 14,112 | 14,112 | 14,112 | 14,112 | 14,112 | 14,112 | 7,788 |
| *Vertical Leakage Upper* | 21,012 | 18,218 | 17,390 | 16,854 | 16,466 | 16,170 | 15,940 | 20,510 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 21,012 | 18,218 | 17,390 | 16,854 | 16,466 | 16,170 | 15,940 | 20,510 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hill County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 3 | 27 | 27 | 22 | 17 | 12 | 10 |
| *Pumping* | −352 | −352 | −352 | −352 | −352 | −352 | −352 | −352 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,046 | 1,035 | 1,108 | 1,185 | 1,238 | 1,276 | 1,304 | 1,322 |
| *Vertical Leakage Lower* | −392 | −503 | −601 | −672 | −713 | −739 | −756 | −768 |
| *Lateral Flow* | −304 | −183 | −182 | −188 | −195 | −202 | −208 | −212 |
| *Net from other zones* | 350 | 349 | 325 | 325 | 330 | 335 | 340 | 342 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hill County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 65 | 51 | 75 | 49 | 32 | 21 | 15 | 11 |
| *Pumping* | −115 | −115 | −115 | −115 | −115 | −115 | −115 | −115 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 392 | 503 | 601 | 671 | 712 | 739 | 756 | 767 |
| *Vertical Leakage Lower* | −405 | −537 | −633 | −685 | −712 | −728 | −738 | −744 |
| *Lateral Flow* | 63 | 98 | 72 | 80 | 83 | 83 | 82 | 81 |
| *Net from other zones* | 50 | 64 | 40 | 66 | 83 | 94 | 100 | 104 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hill County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 75 | 110 | 123 | 74 | 45 | 29 | 20 | 14 |
| *Pumping* | −25 | −25 | −25 | −25 | −25 | −25 | −25 | −25 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 405 | 537 | 633 | 685 | 712 | 728 | 738 | 745 |
| *Vertical Leakage Lower* | −807 | −1,123 | −1,293 | −1,370 | −1,412 | −1,438 | −1,456 | −1,467 |
| *Lateral Flow* | 352 | 501 | 562 | 636 | 680 | 706 | 723 | 733 |
| *Net from other zones* | −50 | −85 | −98 | −49 | −20 | −4 | 5 | 11 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hill County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 838 | 231 | 227 | 137 | 85 | 55 | 37 | 26 |
| *Pumping* | −1,050 | −1,050 | −1,050 | −1,050 | −1,050 | −1,050 | −1,050 | −1,050 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 807 | 1,124 | 1,294 | 1,369 | 1,412 | 1,439 | 1,456 | 1,467 |
| *Vertical Leakage Lower* | −934 | −862 | −1,022 | −1,028 | −1,029 | −1,031 | −1,033 | −1,035 |
| *Lateral Flow* | 339 | 557 | 551 | 572 | 582 | 587 | 590 | 592 |
| *Net from other zones* | 212 | 819 | 823 | 913 | 965 | 995 | 1,013 | 1,024 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hill County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 960 | 821 | 458 | 251 | 157 | 104 | 72 | 51 |
| *Pumping* | −3,610 | −3,610 | −3,610 | −3,610 | −3,610 | −3,610 | −3,610 | −3,610 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 933 | 862 | 1,022 | 1,029 | 1,029 | 1,031 | 1,033 | 1,035 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 1,717 | 1,927 | 2,130 | 2,330 | 2,424 | 2,475 | 2,505 | 2,524 |
| *Net from other zones* | 2,650 | 2,789 | 3,152 | 3,359 | 3,453 | 3,506 | 3,538 | 3,559 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hood County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 13,938 | 15,294 | 15,642 | 15,883 | 16,047 | 16,170 | 16,266 | 16,356 |
| *Vertical Leakage Lower* | −13,938 | −15,294 | −15,642 | −15,883 | −16,046 | −16,169 | −16,265 | −16,355 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | −1 | −1 | −1 | −1 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hood County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 13,938 | 15,294 | 15,641 | 15,882 | 16,047 | 16,169 | 16,265 | 16,355 |
| *Vertical Leakage Lower* | −13,938 | −15,294 | −15,641 | −15,882 | −16,046 | −16,168 | −16,264 | −16,354 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | −1 | −1 | −1 | −1 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hood County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| *Pumping* | −159 | −159 | −159 | −159 | −159 | −159 | −159 | −159 |
| *SW and GW Interactions* | −419 | −389 | −371 | −354 | −339 | −325 | −311 | −288 |
| *Recharge* | 875 | 875 | 875 | 875 | 875 | 875 | 875 | 457 |
| *Vertical Leakage Upper* | 16,630 | 17,948 | 18,262 | 18,446 | 18,547 | 18,590 | 18,608 | 19,000 |
| *Vertical Leakage Lower* | −16,525 | −17,929 | −18,284 | −18,505 | −18,637 | −18,710 | −18,757 | −18,779 |
| *Lateral Flow* | 17 | 43 | 48 | 51 | 52 | 54 | 55 | 56 |
| *Net from other zones* | 122 | 62 | 26 | −8 | −38 | −66 | −94 | 277 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hood County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 8 | 2 | 2 | 2 | 2 | 2 | 2 | 3 |
| *Pumping* | −914 | −914 | −914 | −914 | −914 | −914 | −914 | −914 |
| *SW and GW Interactions* | −4,403 | −3,616 | −3,208 | −2,879 | −2,598 | −2,356 | −2,150 | −1,675 |
| *Recharge* | 5,751 | 5,751 | 5,751 | 5,751 | 5,751 | 5,751 | 5,751 | 3,108 |
| *Vertical Leakage Upper* | 19,579 | 19,410 | 18,949 | 18,511 | 18,081 | 17,671 | 17,305 | 19,021 |
| *Vertical Leakage Lower* | −14,863 | −16,243 | −16,554 | −16,749 | −16,863 | −16,932 | −16,976 | −16,996 |
| *Lateral Flow* | −755 | −774 | −818 | −843 | −861 | −866 | −868 | −872 |
| *Net from other zones* | 3,961 | 2,393 | 1,577 | 919 | 357 | −127 | −539 | 1,153 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hood County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 320 | 22 | 17 | 13 | 10 | 9 | 8 | 10 |
| *Pumping* | −8,123 | −8,123 | −8,123 | −8,123 | −8,123 | −8,123 | −8,123 | −8,123 |
| *SW and GW Interactions* | −1,781 | −1,135 | −716 | −381 | −107 | 130 | 337 | 659 |
| *Recharge* | 3,127 | 3,127 | 3,127 | 3,127 | 3,127 | 3,127 | 3,127 | 1,711 |
| *Vertical Leakage Upper* | 15,299 | 15,386 | 14,859 | 14,385 | 13,950 | 13,545 | 13,174 | 13,967 |
| *Vertical Leakage Lower* | −6,958 | −8,001 | −8,173 | −8,277 | −8,334 | −8,369 | −8,390 | −8,399 |
| *Lateral Flow* | −103 | −141 | −275 | −363 | −416 | −449 | −470 | −484 |
| *Net from other zones* | 8,238 | 7,244 | 6,411 | 5,745 | 5,200 | 4,727 | 4,314 | 5,084 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hood County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 348 | 20 | 13 | 8 | 6 | 5 | 4 | 4 |
| *Pumping* | −397 | −397 | −397 | −397 | −397 | −397 | −397 | −397 |
| *SW and GW Interactions* | −1,327 | −1,194 | −1,126 | −1,074 | −1,026 | −985 | −946 | −867 |
| *Recharge* | 552 | 552 | 552 | 552 | 552 | 552 | 552 | 302 |
| *Vertical Leakage Upper* | 9,060 | 9,838 | 9,872 | 9,873 | 9,835 | 9,786 | 9,730 | 9,832 |
| *Vertical Leakage Lower* | −6,815 | −7,540 | −7,682 | −7,768 | −7,816 | −7,843 | −7,861 | −7,868 |
| *Lateral Flow* | −94 | −85 | −106 | −120 | −128 | −133 | −136 | −139 |
| *Net from other zones* | 2,151 | 2,213 | 2,084 | 1,985 | 1,891 | 1,810 | 1,733 | 1,825 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hood County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 638 | 22 | 15 | 10 | 7 | 6 | 5 | 6 |
| *Pumping* | −7,244 | −7,244 | −7,244 | −7,244 | −7,244 | −7,244 | −7,244 | −7,244 |
| *SW and GW Interactions* | −2,966 | −2,875 | −2,796 | −2,725 | −2,659 | −2,599 | −2,540 | −2,451 |
| *Recharge* | 2,639 | 2,639 | 2,639 | 2,639 | 2,639 | 2,639 | 2,639 | 1,455 |
| *Vertical Leakage Upper* | 10,108 | 10,650 | 10,635 | 10,579 | 10,494 | 10,402 | 10,301 | 11,314 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −209 | −317 | −453 | −534 | −578 | −605 | −621 | −629 |
| *Net from other zones* | 9,899 | 10,333 | 10,182 | 10,045 | 9,916 | 9,797 | 9,680 | 10,685 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hunt County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 165 | 51 | 31 | 21 | 15 | 10 | 8 | 5 |
| *Pumping* | −3 | −3 | −3 | −3 | −3 | −3 | −3 | −3 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3 | 5 | 7 | 7 | 7 | 8 | 7 | 8 |
| *Vertical Leakage Lower* | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| *Lateral Flow* | −166 | −56 | −38 | −28 | −22 | −18 | −15 | −13 |
| *Net from other zones* | −162 | −48 | −28 | −18 | −12 | −7 | −5 | −2 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hunt County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 10 | 26 | 26 | 22 | 17 | 13 | 10 | 7 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | −3 | −3 | −4 | −4 | −4 | −4 | −3 |
| *Vertical Leakage Lower* | 0 | −1 | −2 | −1 | −1 | −1 | −1 | −1 |
| *Lateral Flow* | −9 | −22 | −21 | −17 | −12 | −8 | −5 | −3 |
| *Net from other zones* | −10 | −26 | −26 | −22 | −17 | −13 | −10 | −7 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hunt County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 4 | 8 | 5 | 4 | 3 | 2 | 2 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 1 |
| *Vertical Leakage Lower* | 1 | 4 | 4 | 3 | 3 | 3 | 3 | 3 |
| *Lateral Flow* | −6 | −13 | −11 | −9 | −7 | −6 | −6 | −5 |
| *Net from other zones* | −4 | −8 | −5 | −4 | −3 | −2 | −2 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hunt County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 9 | 28 | 24 | 18 | 13 | 10 | 7 | 5 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | −3 | −3 | −3 | −3 | −3 | −2 | −2 |
| *Vertical Leakage Lower* | −1 | −3 | −3 | −3 | −3 | −3 | −3 | −3 |
| *Lateral Flow* | −7 | −22 | −18 | −12 | −7 | −4 | −2 | 0 |
| *Net from other zones* | −9 | −28 | −24 | −18 | −13 | −10 | −7 | −5 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Hunt County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 20 | 54 | 39 | 29 | 22 | 16 | 12 | 9 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −22 | −56 | −42 | −32 | −25 | −19 | −15 | −12 |
| *Net from other zones* | −20 | −54 | −39 | −29 | −22 | −16 | −12 | −9 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Johnson County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −4,406 | −3,809 | −3,593 | −3,439 | −3,318 | −3,213 | −3,127 | −2,881 |
| *Recharge* | 4,712 | 4,712 | 4,712 | 4,712 | 4,712 | 4,712 | 4,712 | 2,486 |
| *Vertical Leakage Upper* | 4,186 | 3,087 | 2,751 | 2,517 | 2,326 | 2,153 | 2,009 | 3,777 |
| *Vertical Leakage Lower* | −90 | −185 | −281 | −355 | −406 | −443 | −471 | −505 |
| *Lateral Flow* | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| *Net from other zones* | 4,100 | 2,906 | 2,474 | 2,166 | 1,924 | 1,714 | 1,542 | 3,276 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Johnson County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −15,389 | −14,367 | −13,859 | −13,488 | −13,179 | −12,915 | −12,686 | −12,140 |
| *Recharge* | 17,485 | 17,485 | 17,485 | 17,485 | 17,485 | 17,485 | 17,485 | 9,022 |
| *Vertical Leakage Upper* | 13,383 | 11,434 | 10,514 | 9,846 | 9,279 | 8,788 | 8,358 | 15,763 |
| *Vertical Leakage Lower* | −96 | −191 | −287 | −361 | −412 | −449 | −477 | −511 |
| *Lateral Flow* | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| *Net from other zones* | 13,293 | 11,249 | 10,233 | 9,491 | 8,873 | 8,345 | 7,887 | 15,258 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Johnson County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −1,491 | −29 | 35 | 33 | 26 | 20 | 15 | 14 |
| *Pumping* | −2,442 | −2,442 | −2,442 | −2,442 | −2,442 | −2,442 | −2,442 | −2,442 |
| *SW and GW Interactions* | −204 | −164 | −152 | −144 | −138 | −135 | −131 | −107 |
| *Recharge* | 600 | 600 | 600 | 600 | 600 | 600 | 600 | 312 |
| *Vertical Leakage Upper* | 5,048 | 4,346 | 4,438 | 4,544 | 4,609 | 4,660 | 4,692 | 4,943 |
| *Vertical Leakage Lower* | −1,459 | −1,723 | −1,864 | −1,966 | −2,024 | −2,066 | −2,095 | −2,101 |
| *Lateral Flow* | 152 | −424 | −463 | −481 | −493 | −502 | −508 | −512 |
| *Net from other zones* | 3,741 | 2,199 | 2,111 | 2,097 | 2,092 | 2,092 | 2,089 | 2,330 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Johnson County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −81 | 36 | 39 | 29 | 21 | 15 | 11 | 11 |
| *Pumping* | −1,633 | −1,633 | −1,633 | −1,633 | −1,633 | −1,633 | −1,633 | −1,633 |
| *SW and GW Interactions* | 722 | 938 | 1,040 | 1,118 | 1,175 | 1,218 | 1,252 | 1,369 |
| *Recharge* | 439 | 439 | 439 | 439 | 439 | 439 | 439 | 230 |
| *Vertical Leakage Upper* | −424 | −593 | −654 | −709 | −765 | −809 | −848 | −867 |
| *Vertical Leakage Lower* | −511 | −689 | −805 | −873 | −912 | −935 | −951 | −960 |
| *Lateral Flow* | 766 | 564 | 534 | 511 | 500 | 487 | 478 | 481 |
| *Net from other zones* | −169 | −718 | −925 | −1,071 | −1,177 | −1,257 | −1,321 | −1,346 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Johnson County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −487 | 151 | 114 | 73 | 48 | 33 | 24 | 20 |
| *Pumping* | −138 | −138 | −138 | −138 | −138 | −138 | −138 | −138 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 510 | 690 | 805 | 874 | 911 | 935 | 951 | 960 |
| *Vertical Leakage Lower* | −1,519 | −2,085 | −2,243 | −2,336 | −2,391 | −2,427 | −2,451 | −2,467 |
| *Lateral Flow* | 1,634 | 1,382 | 1,462 | 1,527 | 1,570 | 1,597 | 1,614 | 1,625 |
| *Net from other zones* | 625 | −13 | 24 | 65 | 90 | 105 | 114 | 118 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Johnson County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 447 | 189 | 127 | 80 | 52 | 36 | 25 | 19 |
| *Pumping* | −124 | −124 | −124 | −124 | −124 | −124 | −124 | −124 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,519 | 2,085 | 2,244 | 2,336 | 2,392 | 2,427 | 2,451 | 2,467 |
| *Vertical Leakage Lower* | −2,271 | −2,500 | −2,583 | −2,618 | −2,637 | −2,649 | −2,658 | −2,664 |
| *Lateral Flow* | 429 | 350 | 336 | 326 | 317 | 310 | 306 | 302 |
| *Net from other zones* | −323 | −65 | −3 | 44 | 72 | 88 | 99 | 105 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Johnson County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 642 | 235 | 165 | 101 | 66 | 45 | 32 | 24 |
| *Pumping* | −4,489 | −4,489 | −4,489 | −4,489 | −4,489 | −4,489 | −4,489 | −4,489 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,271 | 2,500 | 2,582 | 2,618 | 2,636 | 2,649 | 2,658 | 2,664 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 1,576 | 1,754 | 1,742 | 1,770 | 1,787 | 1,795 | 1,799 | 1,801 |
| *Net from other zones* | 3,847 | 4,254 | 4,324 | 4,388 | 4,423 | 4,444 | 4,457 | 4,465 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Kaufman County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 15 | 18 | 15 | 12 | 9 | 7 | 5 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2 | 2 | 2 | 3 | 2 | 3 | 2 | 3 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −4 | −17 | −20 | −18 | −14 | −12 | −9 | −8 |
| *Net from other zones* | −2 | −15 | −18 | −15 | −12 | −9 | −7 | −5 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Kaufman County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 3 | 12 | 13 | 11 | 8 | 6 | 5 | 3 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | −1 | 0 | 0 | −1 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −3 | −12 | −13 | −10 | −8 | −6 | −4 | −3 |
| *Net from other zones* | −3 | −12 | −13 | −11 | −8 | −6 | −5 | −3 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Kaufman County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 8 | 6 | 4 | 3 | 2 | 2 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Lower* | −1 | −1 | −1 | −1 | −1 | −1 | −1 | −1 |
| *Lateral Flow* | −1 | −7 | −5 | −4 | −2 | −1 | −1 | 0 |
| *Net from other zones* | −2 | −8 | −6 | −4 | −3 | −2 | −2 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Kaufman County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 3 | 14 | 14 | 11 | 8 | 6 | 4 | 3 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| *Vertical Leakage Lower* | −3 | −5 | −4 | −3 | −3 | −2 | −2 | −2 |
| *Lateral Flow* | −1 | −10 | −11 | −9 | −6 | −4 | −3 | −2 |
| *Net from other zones* | −3 | −14 | −14 | −11 | −8 | −6 | −4 | −3 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Kaufman County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 33 | 53 | 45 | 35 | 26 | 20 | 14 | 11 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3 | 5 | 3 | 3 | 3 | 2 | 3 | 2 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −36 | −58 | −48 | −38 | −29 | −22 | −17 | −13 |
| *Net from other zones* | −33 | −53 | −45 | −35 | −26 | −20 | −14 | −11 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lamar County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −18,104 | −18,139 | −18,058 | −17,995 | −17,948 | −17,912 | −17,883 | −16,989 |
| *Recharge* | 19,300 | 19,300 | 19,300 | 19,300 | 19,300 | 19,300 | 19,300 | 16,438 |
| *Vertical Leakage Upper* | 16,908 | 16,978 | 16,816 | 16,690 | 16,596 | 16,524 | 16,466 | 17,540 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 16,908 | 16,978 | 16,816 | 16,690 | 16,596 | 16,524 | 16,466 | 17,540 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lamar County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −272 | −281 | −276 | −272 | −269 | −266 | −264 | −184 |
| *Recharge* | 370 | 370 | 370 | 370 | 370 | 370 | 370 | 318 |
| *Vertical Leakage Upper* | 174 | 192 | 182 | 174 | 168 | 162 | 158 | 50 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 174 | 192 | 182 | 174 | 168 | 162 | 158 | 50 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lamar County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 46 | 152 | 133 | 109 | 86 | 66 | 50 | 38 |
| *Pumping* | −8 | −8 | −8 | −8 | −8 | −8 | −8 | −8 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −3 | −1 | 2 | 5 | 6 | 7 | 7 | 8 |
| *Vertical Leakage Lower* | 1 | 2 | 2 | 1 | 0 | −1 | −1 | −2 |
| *Lateral Flow* | −36 | −145 | −129 | −107 | −84 | −64 | −48 | −36 |
| *Net from other zones* | −38 | −144 | −125 | −101 | −78 | −58 | −42 | −30 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lamar County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 22 | 37 | 44 | 42 | 35 | 28 | 22 | 17 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | −1 | −1 | −2 | 0 | 1 | 1 | 1 |
| *Vertical Leakage Lower* | 2 | 1 | 1 | 2 | 2 | 3 | 3 | 4 |
| *Lateral Flow* | −23 | −37 | −44 | −42 | −37 | −32 | −26 | −22 |
| *Net from other zones* | −22 | −37 | −44 | −42 | −35 | −28 | −22 | −17 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lamar County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 10 | 28 | 27 | 23 | 18 | 14 | 11 | 8 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −2 | −1 | −1 | −1 | −2 | −2 | −3 | −4 |
| *Vertical Leakage Lower* | −9 | −10 | −12 | −14 | −15 | −17 | −18 | −18 |
| *Lateral Flow* | 1 | −17 | −14 | −8 | −1 | 5 | 10 | 14 |
| *Net from other zones* | −10 | −28 | −27 | −23 | −18 | −14 | −11 | −8 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lamar County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 30 | 77 | 85 | 72 | 58 | 45 | 34 | 26 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 9 | 9 | 11 | 14 | 15 | 17 | 18 | 18 |
| *Vertical Leakage Lower* | −15 | −19 | −23 | −24 | −26 | −27 | −28 | −28 |
| *Lateral Flow* | −24 | −67 | −73 | −62 | −47 | −35 | −24 | −16 |
| *Net from other zones* | −30 | −77 | −85 | −72 | −58 | −45 | −34 | −26 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lamar County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 35 | 98 | 99 | 84 | 67 | 52 | 40 | 30 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 15 | 20 | 23 | 25 | 26 | 27 | 28 | 29 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −50 | −118 | −122 | −109 | −93 | −79 | −68 | −59 |
| *Net from other zones* | −35 | −98 | −99 | −84 | −67 | −52 | −40 | −30 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lampasas County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −961 | −728 | −628 | −567 | −532 | −507 | −489 | −464 |
| *Vertical Leakage Lower* | 909 | 677 | 577 | 516 | 481 | 456 | 438 | 414 |
| *Lateral Flow* | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 50 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lampasas County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −909 | −677 | −577 | −517 | −481 | −457 | −438 | −414 |
| *Vertical Leakage Lower* | 857 | 626 | 526 | 466 | 430 | 406 | 387 | 364 |
| *Lateral Flow* | 52 | 51 | 51 | 51 | 51 | 51 | 51 | 50 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lampasas County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,035 | 2,282 | 2,386 | 2,447 | 2,480 | 2,501 | 2,516 | 2,520 |
| *Vertical Leakage Lower* | −2,048 | −2,296 | −2,400 | −2,461 | −2,494 | −2,515 | −2,530 | −2,534 |
| *Lateral Flow* | 13 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lampasas County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −68 | −68 | −68 | −68 | −68 | −68 | −68 | −68 |
| *SW and GW Interactions* | −2,346 | −2,271 | −2,240 | −2,217 | −2,200 | −2,187 | −2,176 | −2,091 |
| *Recharge* | 3,822 | 3,822 | 3,822 | 3,822 | 3,822 | 3,822 | 3,822 | 2,236 |
| *Vertical Leakage Upper* | 2,919 | 3,017 | 3,058 | 3,073 | 3,072 | 3,067 | 3,060 | 4,480 |
| *Vertical Leakage Lower* | −1,852 | −2,100 | −2,204 | −2,265 | −2,298 | −2,319 | −2,334 | −2,338 |
| *Lateral Flow* | −129 | −129 | −128 | −128 | −128 | −128 | −128 | −128 |
| *Net from other zones* | 938 | 788 | 726 | 680 | 646 | 620 | 598 | 2,014 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lampasas County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| *Pumping* | −713 | −713 | −713 | −713 | −713 | −713 | −713 | −713 |
| *SW and GW Interactions* | −11,903 | −11,556 | −11,401 | −11,284 | −11,190 | −11,111 | −11,043 | −10,664 |
| *Recharge* | 6,203 | 6,203 | 6,203 | 6,203 | 6,203 | 6,203 | 6,203 | 3,598 |
| *Vertical Leakage Upper* | 19,455 | 19,008 | 18,803 | 18,630 | 18,476 | 18,338 | 18,217 | 20,068 |
| *Vertical Leakage Lower* | −1,167 | −1,391 | −1,486 | −1,541 | −1,571 | −1,589 | −1,602 | −1,606 |
| *Lateral Flow* | 25 | 4 | −6 | −11 | −15 | −17 | −19 | −20 |
| *Net from other zones* | 18,313 | 17,621 | 17,311 | 17,078 | 16,890 | 16,732 | 16,596 | 18,442 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lampasas County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 11 | 5 | 4 | 2 | 1 | 1 | 1 | 1 |
| *Pumping* | −30 | −30 | −30 | −30 | −30 | −30 | −30 | −30 |
| *SW and GW Interactions* | −1,623 | −1,594 | −1,575 | −1,560 | −1,547 | −1,537 | −1,529 | −1,510 |
| *Recharge* | 1,752 | 1,752 | 1,752 | 1,752 | 1,752 | 1,752 | 1,752 | 1,003 |
| *Vertical Leakage Upper* | 2,661 | 2,827 | 2,884 | 2,909 | 2,913 | 2,911 | 2,908 | 3,624 |
| *Vertical Leakage Lower* | −1,187 | −1,393 | −1,482 | −1,532 | −1,560 | −1,577 | −1,589 | −1,594 |
| *Lateral Flow* | 39 | 27 | 22 | 19 | 18 | 17 | 16 | 16 |
| *Net from other zones* | 1,513 | 1,461 | 1,424 | 1,396 | 1,371 | 1,351 | 1,335 | 2,046 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lampasas County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 24 | 9 | 7 | 4 | 2 | 2 | 1 | 2 |
| *Pumping* | −857 | −857 | −857 | −857 | −857 | −857 | −857 | −857 |
| *SW and GW Interactions* | −3,391 | −3,350 | −3,318 | −3,292 | −3,269 | −3,249 | −3,231 | −3,185 |
| *Recharge* | 3,512 | 3,512 | 3,512 | 3,512 | 3,512 | 3,512 | 3,512 | 1,955 |
| *Vertical Leakage Upper* | 4,457 | 4,581 | 4,606 | 4,604 | 4,586 | 4,563 | 4,539 | 6,009 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −354 | −545 | −632 | −679 | −705 | −722 | −733 | −739 |
| *Net from other zones* | 4,103 | 4,036 | 3,974 | 3,925 | 3,881 | 3,841 | 3,806 | 5,270 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lee County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lee County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lee County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lee County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Lee County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 3 | 7 | 5 | 4 | 3 | 2 | 1 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −3 | −7 | −6 | −4 | −3 | −2 | −2 | −1 |
| *Net from other zones* | −3 | −7 | −5 | −4 | −3 | −2 | −1 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Limestone County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 4 | 4 | 6 | 5 | 4 | 3 | 2 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | −3 | −3 | −3 | −3 | −2 | −2 | −1 |
| *Vertical Leakage Lower* | −2 | −2 | −3 | −3 | −3 | −3 | −3 | −3 |
| *Lateral Flow* | −1 | 1 | 0 | 1 | 2 | 2 | 3 | 3 |
| *Net from other zones* | −4 | −4 | −6 | −5 | −4 | −3 | −2 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Limestone County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 8 | 11 | 15 | 9 | 5 | 4 | 2 | 2 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2 | 2 | 4 | 3 | 4 | 3 | 4 | 3 |
| *Vertical Leakage Lower* | −2 | −1 | −1 | −1 | −1 | −1 | −1 | −1 |
| *Lateral Flow* | −8 | −12 | −18 | −11 | −8 | −6 | −5 | −4 |
| *Net from other zones* | −8 | −11 | −15 | −9 | −5 | −4 | −2 | −2 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Limestone County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −8 | 4 | 7 | 4 | 2 | 2 | 1 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3 | 0 | 1 | 2 | 1 | 0 | 1 | 0 |
| *Vertical Leakage Lower* | 1 | 0 | −1 | −2 | −2 | −2 | −2 | −2 |
| *Lateral Flow* | 4 | −4 | −7 | −4 | −1 | 0 | 0 | 1 |
| *Net from other zones* | 8 | −4 | −7 | −4 | −2 | −2 | −1 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Limestone County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 18 | 18 | 31 | 20 | 12 | 7 | 5 | 3 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | 1 | 1 | 1 | 2 | 3 | 2 | 2 |
| *Vertical Leakage Lower* | −6 | −6 | −9 | −7 | −6 | −5 | −5 | −4 |
| *Lateral Flow* | −11 | −13 | −23 | −14 | −8 | −5 | −2 | −1 |
| *Net from other zones* | −18 | −18 | −31 | −20 | −12 | −7 | −5 | −3 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Limestone County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 109 | 203 | 83 | 45 | 27 | 18 | 12 | 8 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 5 | 5 | 9 | 7 | 6 | 5 | 5 | 5 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −114 | −208 | −92 | −52 | −33 | −23 | −17 | −13 |
| *Net from other zones* | −109 | −203 | −83 | −45 | −27 | −18 | −12 | −8 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# McLennan County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −23,410 | −21,477 | −20,721 | −20,173 | −19,767 | −19,454 | −19,206 | −17,872 |
| *Recharge* | 16,581 | 16,581 | 16,581 | 16,581 | 16,581 | 16,581 | 16,581 | 10,325 |
| *Vertical Leakage Upper* | 30,239 | 26,373 | 24,861 | 23,765 | 22,953 | 22,327 | 21,831 | 25,419 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 30,239 | 26,373 | 24,861 | 23,765 | 22,953 | 22,327 | 21,831 | 25,419 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# McLennan County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −203 | 17 | 32 | 21 | 14 | 9 | 6 | 5 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 552 | 493 | 601 | 683 | 730 | 761 | 780 | 792 |
| *Vertical Leakage Lower* | −492 | −635 | −765 | −840 | −882 | −908 | −925 | −936 |
| *Lateral Flow* | 143 | 125 | 132 | 136 | 138 | 138 | 139 | 139 |
| *Net from other zones* | 203 | −17 | −32 | −21 | −14 | −9 | −6 | −5 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# McLennan County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −187 | 63 | 87 | 48 | 29 | 19 | 13 | 9 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 493 | 634 | 765 | 840 | 882 | 907 | 924 | 936 |
| *Vertical Leakage Lower* | −1,251 | −1,556 | −1,744 | −1,810 | −1,841 | −1,859 | −1,870 | −1,877 |
| *Lateral Flow* | 945 | 859 | 892 | 922 | 930 | 933 | 933 | 932 |
| *Net from other zones* | 187 | −63 | −87 | −48 | −29 | −19 | −13 | −9 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# McLennan County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 498 | 119 | 120 | 61 | 35 | 22 | 14 | 10 |
| *Pumping* | −4,701 | −4,701 | −4,701 | −4,701 | −4,701 | −4,701 | −4,701 | −4,701 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,251 | 1,557 | 1,744 | 1,809 | 1,841 | 1,859 | 1,870 | 1,877 |
| *Vertical Leakage Lower* | −159 | −303 | −779 | −883 | −936 | −967 | −986 | −999 |
| *Lateral Flow* | 3,111 | 3,328 | 3,616 | 3,714 | 3,761 | 3,787 | 3,803 | 3,813 |
| *Net from other zones* | 4,203 | 4,582 | 4,581 | 4,640 | 4,666 | 4,679 | 4,687 | 4,691 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# McLennan County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 528 | 534 | 303 | 153 | 88 | 54 | 35 | 24 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 159 | 302 | 779 | 883 | 935 | 966 | 987 | 998 |
| *Vertical Leakage Lower* | −1,348 | −1,556 | −2,106 | −2,104 | −2,106 | −2,110 | −2,115 | −2,118 |
| *Lateral Flow* | 661 | 720 | 1,024 | 1,068 | 1,083 | 1,090 | 1,093 | 1,096 |
| *Net from other zones* | −528 | −534 | −303 | −153 | −88 | −54 | −35 | −24 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# McLennan County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2,232 | 5,021 | 557 | 269 | 159 | 101 | 68 | 47 |
| *Pumping* | −11,809 | −15,948 | −15,948 | −15,948 | −15,948 | −15,948 | −15,948 | −15,948 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,348 | 1,557 | 2,106 | 2,105 | 2,106 | 2,111 | 2,115 | 2,118 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 8,229 | 9,370 | 13,285 | 13,574 | 13,683 | 13,736 | 13,765 | 13,783 |
| *Net from other zones* | 9,577 | 10,927 | 15,391 | 15,679 | 15,789 | 15,847 | 15,880 | 15,901 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Milam County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 3 | 3 | 3 | 2 | 1 | 1 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −2 | −3 | −3 | −3 | −2 | −1 | −1 | −1 |
| *Vertical Leakage Lower* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net from other zones* | −1 | −3 | −3 | −3 | −2 | −1 | −1 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Milam County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 11 | 10 | 7 | 5 | 3 | 2 | 2 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | 0 | 1 | 0 | 0 | 0 | 0 | −1 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | −1 | −1 | −1 | −1 |
| *Lateral Flow* | 0 | −11 | −11 | −7 | −4 | −2 | −1 | 0 |
| *Net from other zones* | −1 | −11 | −10 | −7 | −5 | −3 | −2 | −2 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Milam County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| *Vertical Leakage Lower* | −3 | −4 | −5 | −7 | −8 | −8 | −9 | −9 |
| *Lateral Flow* | 2 | 2 | 3 | 5 | 6 | 7 | 7 | 7 |
| *Net from other zones* | −1 | −2 | −2 | −2 | −1 | −1 | −1 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Milam County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 6 | 20 | 19 | 15 | 10 | 7 | 5 | 3 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2 | 4 | 6 | 6 | 8 | 8 | 9 | 10 |
| *Vertical Leakage Lower* | −5 | −11 | −12 | −11 | −11 | −10 | −10 | −10 |
| *Lateral Flow* | −3 | −13 | −13 | −10 | −7 | −5 | −4 | −3 |
| *Net from other zones* | −6 | −20 | −19 | −15 | −10 | −7 | −5 | −3 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Milam County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 494 | 259 | 232 | 156 | 104 | 70 | 47 | 33 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 5 | 11 | 11 | 11 | 10 | 10 | 10 | 9 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −499 | −270 | −243 | −167 | −114 | −80 | −57 | −42 |
| *Net from other zones* | −494 | −259 | −232 | −156 | −104 | −70 | −47 | −33 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Mills County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −122 | 45 | 58 | 64 | 67 | 68 | 69 | 74 |
| *Vertical Leakage Lower* | 96 | −70 | −83 | −89 | −92 | −93 | −94 | −99 |
| *Lateral Flow* | 26 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Mills County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 937 | 951 | 959 | 965 | 970 | 973 | 978 | 1,016 |
| *Recharge* | 1,171 | 1,171 | 1,171 | 1,171 | 1,171 | 1,171 | 1,171 | 671 |
| *Vertical Leakage Upper* | −3,142 | −3,003 | −3,006 | −3,012 | −3,019 | −3,023 | −3,033 | −2,604 |
| *Vertical Leakage Lower* | 71 | −95 | −108 | −114 | −117 | −119 | −119 | −124 |
| *Lateral Flow* | 26 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| *Net from other zones* | −3,045 | −3,073 | −3,089 | −3,101 | −3,111 | −3,117 | −3,127 | −2,703 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Mills County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −84 | −84 | −84 | −84 | −84 | −84 | −84 | −84 |
| *SW and GW Interactions* | 256 | 257 | 257 | 257 | 258 | 258 | 258 | 260 |
| *Recharge* | 86 | 86 | 86 | 86 | 86 | 86 | 86 | 49 |
| *Vertical Leakage Upper* | 4,368 | 4,571 | 4,574 | 4,574 | 4,570 | 4,567 | 4,564 | 4,587 |
| *Vertical Leakage Lower* | −4,850 | −5,055 | −5,058 | −5,059 | −5,057 | −5,054 | −5,051 | −5,041 |
| *Lateral Flow* | −32 | −32 | −32 | −31 | −31 | −31 | −31 | −31 |
| *Net from other zones* | −514 | −516 | −516 | −516 | −518 | −518 | −518 | −485 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Mills County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −189 | −189 | −189 | −189 | −189 | −189 | −189 | −189 |
| *SW and GW Interactions* | −1,845 | −1,805 | −1,775 | −1,752 | −1,733 | −1,717 | −1,700 | −1,667 |
| *Recharge* | 4,746 | 4,746 | 4,746 | 4,746 | 4,746 | 4,746 | 4,746 | 2,691 |
| *Vertical Leakage Upper* | 3,794 | 3,921 | 3,863 | 3,817 | 3,778 | 3,743 | 3,706 | 5,685 |
| *Vertical Leakage Lower* | −4,360 | −4,566 | −4,569 | −4,569 | −4,568 | −4,566 | −4,563 | −4,554 |
| *Lateral Flow* | −302 | −302 | −301 | −301 | −301 | −300 | −300 | −299 |
| *Net from other zones* | −868 | −947 | −1,007 | −1,053 | −1,091 | −1,123 | −1,157 | 832 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Mills County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 21 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| *Pumping* | −607 | −607 | −607 | −607 | −607 | −607 | −607 | −607 |
| *SW and GW Interactions* | −1,672 | −1,639 | −1,614 | −1,594 | −1,577 | −1,561 | −1,547 | −1,523 |
| *Recharge* | 3,721 | 3,721 | 3,721 | 3,721 | 3,721 | 3,721 | 3,721 | 2,071 |
| *Vertical Leakage Upper* | 3,983 | 4,123 | 4,076 | 4,036 | 4,000 | 3,966 | 3,936 | 5,530 |
| *Vertical Leakage Lower* | −2,413 | −2,606 | −2,610 | −2,612 | −2,611 | −2,610 | −2,609 | −2,603 |
| *Lateral Flow* | −1,361 | −1,354 | −1,353 | −1,351 | −1,350 | −1,349 | −1,348 | −1,347 |
| *Net from other zones* | 209 | 163 | 113 | 73 | 39 | 7 | −21 | 1,580 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Mills County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 87 | 2 | 1 | 1 | 1 | 1 | 1 | 1 |
| *Pumping* | −202 | −202 | −202 | −202 | −202 | −202 | −202 | −202 |
| *SW and GW Interactions* | −879 | −854 | −837 | −822 | −809 | −798 | −787 | −772 |
| *Recharge* | 499 | 499 | 499 | 499 | 499 | 499 | 499 | 277 |
| *Vertical Leakage Upper* | 3,672 | 3,815 | 3,786 | 3,756 | 3,730 | 3,707 | 3,683 | 3,870 |
| *Vertical Leakage Lower* | −2,096 | −2,217 | −2,221 | −2,222 | −2,222 | −2,221 | −2,220 | −2,215 |
| *Lateral Flow* | −202 | −189 | −189 | −188 | −188 | −188 | −187 | −187 |
| *Net from other zones* | 1,374 | 1,409 | 1,376 | 1,346 | 1,320 | 1,298 | 1,276 | 1,468 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Mills County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 182 | 3 | 2 | 1 | 1 | 1 | 1 | 2 |
| *Pumping* | −1,471 | −1,471 | −1,471 | −1,471 | −1,471 | −1,471 | −1,471 | −1,471 |
| *SW and GW Interactions* | −4,236 | −4,190 | −4,148 | −4,108 | −4,069 | −4,033 | −4,000 | −3,945 |
| *Recharge* | 1,405 | 1,405 | 1,405 | 1,405 | 1,405 | 1,405 | 1,405 | 778 |
| *Vertical Leakage Upper* | 9,163 | 9,192 | 9,112 | 9,034 | 8,955 | 8,882 | 8,815 | 9,327 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −807 | −749 | −752 | −753 | −752 | −751 | −750 | −746 |
| *Net from other zones* | 8,356 | 8,443 | 8,360 | 8,281 | 8,203 | 8,131 | 8,065 | 8,581 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Montague County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 6,450 | 8,301 | 8,595 | 8,727 | 8,805 | 8,858 | 8,897 | 8,929 |
| *Vertical Leakage Lower* | −6,434 | −8,285 | −8,578 | −8,710 | −8,788 | −8,841 | −8,880 | −8,912 |
| *Lateral Flow* | −16 | −16 | −17 | −17 | −17 | −17 | −17 | −17 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Montague County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 6,434 | 8,285 | 8,578 | 8,710 | 8,788 | 8,841 | 8,880 | 8,912 |
| *Vertical Leakage Lower* | −6,418 | −8,269 | −8,561 | −8,693 | −8,771 | −8,824 | −8,863 | −8,895 |
| *Lateral Flow* | −16 | −16 | −17 | −17 | −17 | −17 | −17 | −17 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Montague County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −19 | −19 | −19 | −19 | −19 | −19 | −19 | −19 |
| *SW and GW Interactions* | −181 | −177 | −173 | −169 | −165 | −161 | −158 | −150 |
| *Recharge* | 1,350 | 1,350 | 1,350 | 1,350 | 1,350 | 1,350 | 1,350 | 818 |
| *Vertical Leakage Upper* | 8,314 | 10,203 | 10,491 | 10,613 | 10,679 | 10,720 | 10,747 | 11,268 |
| *Vertical Leakage Lower* | −9,098 | −10,997 | −11,294 | −11,424 | −11,499 | −11,548 | −11,582 | −11,587 |
| *Lateral Flow* | −185 | −183 | −182 | −182 | −181 | −181 | −180 | −180 |
| *Net from other zones* | −969 | −977 | −985 | −993 | −1,001 | −1,009 | −1,015 | −499 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Montague County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 3 |
| *Pumping* | −33 | −33 | −33 | −33 | −33 | −33 | −33 | −33 |
| *SW and GW Interactions* | −7,044 | −6,687 | −6,485 | −6,335 | −6,214 | −6,114 | −6,028 | −5,453 |
| *Recharge* | 11,378 | 11,378 | 11,378 | 11,378 | 11,378 | 11,378 | 11,378 | 7,272 |
| *Vertical Leakage Upper* | 11,808 | 12,992 | 12,886 | 12,716 | 12,549 | 12,398 | 12,260 | 15,221 |
| *Vertical Leakage Lower* | −8,668 | −10,562 | −10,856 | −10,984 | −11,058 | −11,106 | −11,139 | −11,146 |
| *Lateral Flow* | −400 | −403 | −406 | −408 | −409 | −410 | −411 | −411 |
| *Net from other zones* | 2,740 | 2,027 | 1,624 | 1,324 | 1,082 | 882 | 710 | 3,664 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Montague County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 133 | 7 | 4 | 2 | 2 | 2 | 1 | 4 |
| *Pumping* | −1,266 | −1,266 | −1,266 | −1,266 | −1,266 | −1,266 | −1,266 | −1,266 |
| *SW and GW Interactions* | −5,454 | −5,037 | −4,768 | −4,571 | −4,418 | −4,293 | −4,198 | −3,932 |
| *Recharge* | 6,537 | 6,537 | 6,537 | 6,537 | 6,537 | 6,537 | 6,537 | 4,191 |
| *Vertical Leakage Upper* | 13,039 | 14,099 | 13,855 | 13,589 | 13,356 | 13,154 | 12,998 | 14,820 |
| *Vertical Leakage Lower* | −6,406 | −8,108 | −8,360 | −8,467 | −8,527 | −8,566 | −8,593 | −8,599 |
| *Lateral Flow* | −1,129 | −1,195 | −1,234 | −1,253 | −1,266 | −1,275 | −1,281 | −1,286 |
| *Net from other zones* | 5,504 | 4,796 | 4,261 | 3,869 | 3,563 | 3,313 | 3,124 | 4,935 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Montague County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 472 | 36 | 14 | 7 | 5 | 4 | 3 | 4 |
| *Pumping* | −573 | −573 | −573 | −573 | −573 | −573 | −573 | −573 |
| *SW and GW Interactions* | −4,021 | −3,274 | −2,890 | −2,637 | −2,455 | −2,329 | −2,233 | −2,040 |
| *Recharge* | 4,132 | 4,132 | 4,132 | 4,132 | 4,132 | 4,132 | 4,132 | 2,694 |
| *Vertical Leakage Upper* | 10,316 | 10,524 | 10,008 | 9,610 | 9,306 | 9,093 | 8,927 | 9,985 |
| *Vertical Leakage Lower* | −5,011 | −6,079 | −6,194 | −6,243 | −6,270 | −6,288 | −6,300 | −6,297 |
| *Lateral Flow* | −1,294 | −1,492 | −1,607 | −1,659 | −1,690 | −1,710 | −1,723 | −1,733 |
| *Net from other zones* | 4,011 | 2,953 | 2,207 | 1,708 | 1,346 | 1,095 | 904 | 1,955 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Montague County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 891 | 25 | 10 | 6 | 4 | 3 | 2 | 4 |
| *Pumping* | −4,223 | −4,223 | −4,223 | −4,223 | −4,223 | −4,223 | −4,223 | −4,223 |
| *SW and GW Interactions* | −9,581 | −9,335 | −9,150 | −9,001 | −8,876 | −8,771 | −8,681 | −8,305 |
| *Recharge* | 9,402 | 9,402 | 9,402 | 9,402 | 9,402 | 9,402 | 9,402 | 6,154 |
| *Vertical Leakage Upper* | 14,771 | 15,347 | 15,092 | 14,842 | 14,620 | 14,427 | 14,259 | 16,753 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −1,679 | −1,881 | −1,981 | −2,025 | −2,051 | −2,067 | −2,078 | −2,078 |
| *Net from other zones* | 13,092 | 13,466 | 13,111 | 12,817 | 12,569 | 12,360 | 12,181 | 14,675 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Navarro County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 19 | 14 | 20 | 24 | 22 | 18 | 14 | 10 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1 | −2 | −2 | −4 | −4 | −4 | −3 | −2 |
| *Vertical Leakage Lower* | −4 | −4 | −6 | −7 | −7 | −7 | −7 | −7 |
| *Lateral Flow* | −14 | −8 | −12 | −13 | −11 | −7 | −4 | −1 |
| *Net from other zones* | −19 | −14 | −20 | −24 | −22 | −18 | −14 | −10 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Navarro County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 24 | 29 | 45 | 33 | 23 | 16 | 12 | 9 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 4 | 4 | 6 | 7 | 8 | 8 | 7 | 7 |
| *Vertical Leakage Lower* | −2 | −2 | −3 | −3 | −4 | −4 | −4 | −4 |
| *Lateral Flow* | −26 | −31 | −48 | −37 | −27 | −20 | −15 | −12 |
| *Net from other zones* | −24 | −29 | −45 | −33 | −23 | −16 | −12 | −9 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Navarro County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 11 | 9 | 14 | 10 | 7 | 5 | 3 | 2 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1 | 3 | 2 | 4 | 4 | 3 | 4 | 4 |
| *Vertical Leakage Lower* | −9 | −14 | −16 | −19 | −21 | −22 | −23 | −24 |
| *Lateral Flow* | −3 | 2 | 0 | 5 | 10 | 14 | 16 | 18 |
| *Net from other zones* | −11 | −9 | −14 | −10 | −7 | −5 | −3 | −2 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Navarro County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 38 | 52 | 66 | 53 | 37 | 25 | 17 | 12 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 10 | 13 | 16 | 18 | 20 | 22 | 23 | 24 |
| *Vertical Leakage Lower* | −19 | −18 | −21 | −17 | −14 | −12 | −11 | −10 |
| *Lateral Flow* | −29 | −47 | −61 | −54 | −43 | −35 | −29 | −26 |
| *Net from other zones* | −38 | −52 | −66 | −53 | −37 | −25 | −17 | −12 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Navarro County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 142 | 186 | 224 | 154 | 107 | 75 | 53 | 39 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 19 | 18 | 21 | 18 | 14 | 12 | 12 | 10 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −161 | −204 | −245 | −172 | −121 | −87 | −65 | −49 |
| *Net from other zones* | −142 | −186 | −224 | −154 | −107 | −75 | −53 | −39 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Parker County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 12,869 | 13,671 | 14,375 | 14,800 | 15,149 | 15,430 | 15,646 | 15,851 |
| *Vertical Leakage Lower* | −12,882 | −13,683 | −14,385 | −14,809 | −15,156 | −15,436 | −15,651 | −15,854 |
| *Lateral Flow* | 13 | 12 | 10 | 9 | 7 | 6 | 5 | 3 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Parker County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −40 | −38 | −36 | −34 | −32 | −30 | −28 | −24 |
| *Recharge* | 551 | 551 | 551 | 551 | 551 | 551 | 551 | 275 |
| *Vertical Leakage Upper* | 12,411 | 13,208 | 13,906 | 14,326 | 14,669 | 14,945 | 15,156 | 15,627 |
| *Vertical Leakage Lower* | −12,895 | −13,695 | −14,395 | −14,818 | −15,163 | −15,442 | −15,656 | −15,857 |
| *Lateral Flow* | 13 | 12 | 10 | 9 | 7 | 6 | 5 | 3 |
| *Net from other zones* | −471 | −475 | −479 | −483 | −487 | −491 | −495 | −227 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Parker County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −16 | 4 | 4 | 4 | 4 | 4 | 4 | 8 |
| *Pumping* | −3,190 | −3,190 | −3,190 | −3,190 | −3,190 | −3,190 | −3,190 | −3,190 |
| *SW and GW Interactions* | −6,771 | −6,294 | −5,969 | −5,685 | −5,443 | −5,220 | −5,011 | −4,533 |
| *Recharge* | 10,973 | 10,973 | 10,973 | 10,973 | 10,973 | 10,973 | 10,973 | 5,605 |
| *Vertical Leakage Upper* | 26,245 | 25,975 | 25,888 | 25,629 | 25,336 | 25,014 | 24,675 | 29,091 |
| *Vertical Leakage Lower* | −18,875 | −19,624 | −20,176 | −20,476 | −20,660 | −20,779 | −20,855 | −20,860 |
| *Lateral Flow* | −1,595 | −1,550 | −1,561 | −1,570 | −1,577 | −1,582 | −1,585 | −1,588 |
| *Net from other zones* | 5,775 | 4,801 | 4,151 | 3,583 | 3,099 | 2,653 | 2,235 | 6,643 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Parker County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 62 | 17 | 12 | 9 | 8 | 7 | 7 | 12 |
| *Pumping* | −5,973 | −5,973 | −5,973 | −5,973 | −5,973 | −5,973 | −5,973 | −5,973 |
| *SW and GW Interactions* | −3,839 | −2,521 | −1,597 | −951 | −487 | −126 | 187 | 941 |
| *Recharge* | 9,699 | 9,699 | 9,699 | 9,699 | 9,699 | 9,699 | 9,699 | 5,003 |
| *Vertical Leakage Upper* | 16,853 | 14,966 | 13,671 | 12,678 | 11,935 | 11,332 | 10,782 | 13,976 |
| *Vertical Leakage Lower* | −11,831 | −12,464 | −12,942 | −13,195 | −13,350 | −13,448 | −13,510 | −13,511 |
| *Lateral Flow* | −1,132 | −1,203 | −1,273 | −1,316 | −1,345 | −1,365 | −1,379 | −1,389 |
| *Net from other zones* | 3,890 | 1,299 | −544 | −1,833 | −2,760 | −3,481 | −4,107 | −924 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Parker County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −17 | 37 | 22 | 15 | 12 | 10 | 9 | 15 |
| *Pumping* | −1,075 | −1,075 | −1,075 | −1,075 | −1,075 | −1,075 | −1,075 | −1,075 |
| *SW and GW Interactions* | −1,440 | −1,352 | −1,288 | −1,237 | −1,193 | −1,156 | −1,124 | −1,067 |
| *Recharge* | 2,504 | 2,504 | 2,504 | 2,504 | 2,504 | 2,504 | 2,504 | 1,290 |
| *Vertical Leakage Upper* | 12,208 | 12,665 | 13,014 | 13,165 | 13,231 | 13,256 | 13,254 | 14,354 |
| *Vertical Leakage Lower* | −8,352 | −8,849 | −9,189 | −9,365 | −9,472 | −9,540 | −9,583 | −9,585 |
| *Lateral Flow* | −2,388 | −2,578 | −2,700 | −2,770 | −2,814 | −2,843 | −2,861 | −2,865 |
| *Net from other zones* | 1,468 | 1,238 | 1,125 | 1,030 | 945 | 873 | 810 | 1,904 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Parker County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −138 | 53 | 27 | 18 | 13 | 10 | 9 | 14 |
| *Pumping* | −348 | −348 | −348 | −348 | −348 | −348 | −348 | −348 |
| *SW and GW Interactions* | −1,765 | −1,559 | −1,474 | −1,415 | −1,370 | −1,332 | −1,299 | −1,178 |
| *Recharge* | 1,499 | 1,499 | 1,499 | 1,499 | 1,499 | 1,499 | 1,499 | 782 |
| *Vertical Leakage Upper* | 10,382 | 10,468 | 10,638 | 10,696 | 10,713 | 10,705 | 10,682 | 11,159 |
| *Vertical Leakage Lower* | −6,815 | −7,275 | −7,503 | −7,624 | −7,698 | −7,745 | −7,775 | −7,778 |
| *Lateral Flow* | −1,050 | −1,279 | −1,365 | −1,411 | −1,439 | −1,457 | −1,469 | −1,473 |
| *Net from other zones* | 2,517 | 1,914 | 1,770 | 1,661 | 1,576 | 1,503 | 1,438 | 1,908 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Parker County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −135 | 53 | 27 | 17 | 12 | 10 | 8 | 14 |
| *Pumping* | −3,866 | −3,866 | −3,866 | −3,866 | −3,866 | −3,866 | −3,866 | −3,866 |
| *SW and GW Interactions* | −8,352 | −8,157 | −8,060 | −7,982 | −7,913 | −7,851 | −7,793 | −7,541 |
| *Recharge* | 4,929 | 4,929 | 4,929 | 4,929 | 4,929 | 4,929 | 4,929 | 2,590 |
| *Vertical Leakage Upper* | 18,591 | 18,660 | 18,695 | 18,660 | 18,595 | 18,518 | 18,432 | 20,270 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −2,815 | −3,462 | −3,665 | −3,776 | −3,844 | −3,889 | −3,917 | −3,926 |
| *Net from other zones* | 15,776 | 15,198 | 15,030 | 14,884 | 14,751 | 14,629 | 14,515 | 16,344 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Red River County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −18,592 | −18,289 | −18,127 | −18,034 | −17,978 | −17,942 | −17,917 | −17,297 |
| *Recharge* | 19,886 | 19,886 | 19,886 | 19,886 | 19,886 | 19,886 | 19,886 | 17,154 |
| *Vertical Leakage Upper* | 17,298 | 16,692 | 16,368 | 16,182 | 16,070 | 15,998 | 15,948 | 17,440 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 17,298 | 16,692 | 16,368 | 16,182 | 16,070 | 15,998 | 15,948 | 17,440 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Red River County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −5,752 | −5,660 | −5,626 | −5,607 | −5,596 | −5,590 | −5,585 | −5,369 |
| *Recharge* | 3,687 | 3,687 | 3,687 | 3,687 | 3,687 | 3,687 | 3,687 | 3,257 |
| *Vertical Leakage Upper* | 7,817 | 7,633 | 7,565 | 7,527 | 7,505 | 7,493 | 7,483 | 7,481 |
| *Vertical Leakage Lower* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Lateral Flow* | NA | NA | NA | NA | NA | NA | NA | NA |
| *Net from other zones* | 7,817 | 7,633 | 7,565 | 7,527 | 7,505 | 7,493 | 7,483 | 7,481 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Red River County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −18 | 11 | 26 | 29 | 26 | 22 | 18 | 15 |
| *Pumping* | −177 | −177 | −177 | −177 | −177 | −177 | −177 | −177 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −15 | −16 | −17 | −16 | −15 | −15 | −15 | −15 |
| *Vertical Leakage Lower* | −2 | −3 | −3 | −4 | −5 | −5 | −6 | −6 |
| *Lateral Flow* | 212 | 185 | 171 | 168 | 171 | 175 | 180 | 183 |
| *Net from other zones* | 195 | 166 | 151 | 148 | 151 | 155 | 159 | 162 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Red River County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 2 | 3 | 3 | 2 | 2 | 2 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1 | 3 | 3 | 4 | 6 | 5 | 5 | 7 |
| *Vertical Leakage Lower* | 0 | −1 | −1 | −2 | −3 | −3 | −3 | −4 |
| *Lateral Flow* | −2 | −4 | −5 | −5 | −5 | −4 | −4 | −4 |
| *Net from other zones* | −1 | −2 | −3 | −3 | −2 | −2 | −2 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Red River County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 3 | 5 | 7 | 7 | 6 | 5 | 4 | 3 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 1 | 1 | 2 | 3 | 3 | 4 | 4 |
| *Vertical Leakage Lower* | −15 | −16 | −18 | −20 | −22 | −23 | −25 | −26 |
| *Lateral Flow* | 12 | 10 | 10 | 11 | 13 | 15 | 17 | 19 |
| *Net from other zones* | −3 | −5 | −7 | −7 | −6 | −5 | −4 | −3 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Red River County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 8 | 15 | 21 | 21 | 18 | 15 | 12 | 9 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 15 | 17 | 18 | 20 | 22 | 23 | 24 | 26 |
| *Vertical Leakage Lower* | −7 | −8 | −9 | −10 | −10 | −10 | −10 | −11 |
| *Lateral Flow* | −16 | −24 | −30 | −31 | −30 | −28 | −26 | −24 |
| *Net from other zones* | −8 | −15 | −21 | −21 | −18 | −15 | −12 | −9 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Red River County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 7 | 16 | 20 | 19 | 16 | 13 | 11 | 8 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 6 | 8 | 9 | 10 | 10 | 11 | 10 | 11 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −13 | −24 | −29 | −29 | −26 | −24 | −21 | −19 |
| *Net from other zones* | −7 | −16 | −20 | −19 | −16 | −13 | −11 | −8 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Rockwall County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 2 | 19 | 17 | 12 | 9 | 6 | 4 | 3 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1 | 2 | 3 | 2 | 2 | 3 | 3 | 3 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| *Lateral Flow* | −3 | −21 | −20 | −15 | −12 | −10 | −8 | −7 |
| *Net from other zones* | −2 | −19 | −17 | −12 | −9 | −6 | −4 | −3 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Rockwall County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 7 | 7 | 6 | 4 | 3 | 2 | 2 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | −1 | −1 | −1 | −1 | −1 | −1 |
| *Lateral Flow* | −1 | −7 | −6 | −5 | −3 | −2 | −1 | −1 |
| *Net from other zones* | −1 | −7 | −7 | −6 | −4 | −3 | −2 | −2 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Rockwall County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 3 | 7 | 4 | 3 | 2 | 2 | 1 | 1 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −3 | −8 | −5 | −4 | −3 | −2 | −2 | −1 |
| *Net from other zones* | −3 | −7 | −4 | −3 | −2 | −2 | −1 | −1 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Rockwall County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 3 | 14 | 11 | 8 | 6 | 4 | 3 | 2 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 0 | −1 | 1 | 0 | 0 | 0 | 0 | 1 |
| *Vertical Leakage Lower* | −3 | −5 | −5 | −4 | −4 | −4 | −4 | −4 |
| *Lateral Flow* | 0 | −8 | −7 | −4 | −2 | 0 | 1 | 1 |
| *Net from other zones* | −3 | −14 | −11 | −8 | −6 | −4 | −3 | −2 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Rockwall County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 31 | 33 | 22 | 17 | 12 | 9 | 7 | 5 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3 | 5 | 5 | 4 | 4 | 4 | 3 | 4 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −34 | −38 | −27 | −21 | −16 | −13 | −10 | −9 |
| *Net from other zones* | −31 | −33 | −22 | −17 | −12 | −9 | −7 | −5 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Somervell County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1,083 | −545 | −277 | −94 | 21 | 101 | 161 | 217 |
| *Vertical Leakage Lower* | 1,068 | 531 | 263 | 80 | −35 | −115 | −175 | −231 |
| *Lateral Flow* | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Somervell County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 16 |
| *Vertical Leakage Upper* | −1,098 | −561 | −293 | −110 | 5 | 85 | 145 | 216 |
| *Vertical Leakage Lower* | 1,053 | 517 | 249 | 66 | −49 | −129 | −189 | −246 |
| *Lateral Flow* | 15 | 14 | 14 | 14 | 14 | 14 | 14 | 14 |
| *Net from other zones* | −30 | −30 | −30 | −30 | −30 | −30 | −30 | −16 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Somervell County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −13 | −13 | −13 | −13 | −13 | −13 | −13 | −13 |
| *SW and GW Interactions* | −137 | −124 | −120 | −116 | −113 | −110 | −108 | −100 |
| *Recharge* | 1,094 | 1,094 | 1,094 | 1,094 | 1,094 | 1,094 | 1,094 | 572 |
| *Vertical Leakage Upper* | −53 | 436 | 703 | 882 | 989 | 1,059 | 1,111 | 1,659 |
| *Vertical Leakage Lower* | −697 | −1,229 | −1,503 | −1,689 | −1,802 | −1,878 | −1,934 | −1,976 |
| *Lateral Flow* | −57 | −40 | −41 | −42 | −42 | −42 | −42 | −42 |
| *Net from other zones* | −807 | −833 | −841 | −849 | −855 | −861 | −865 | −359 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Somervell County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| *Pumping* | −146 | −146 | −146 | −146 | −146 | −146 | −146 | −146 |
| *SW and GW Interactions* | −8,835 | −7,603 | −7,105 | −6,747 | −6,479 | −6,269 | −6,097 | −5,453 |
| *Recharge* | 4,563 | 4,563 | 4,563 | 4,563 | 4,563 | 4,563 | 4,563 | 2,442 |
| *Vertical Leakage Upper* | 13,804 | 11,872 | 11,150 | 10,619 | 10,197 | 9,854 | 9,566 | 10,440 |
| *Vertical Leakage Lower* | −687 | −1,206 | −1,461 | −1,632 | −1,735 | −1,804 | −1,854 | −1,891 |
| *Lateral Flow* | 135 | 122 | 103 | 89 | 78 | 71 | 65 | 60 |
| *Net from other zones* | 13,252 | 10,788 | 9,792 | 9,076 | 8,540 | 8,121 | 7,777 | 8,609 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Somervell County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −198 | 13 | 11 | 7 | 5 | 3 | 3 | 4 |
| *Pumping* | −234 | −234 | −234 | −234 | −234 | −234 | −234 | −234 |
| *SW and GW Interactions* | −1,926 | −1,678 | −1,559 | −1,474 | −1,413 | −1,365 | −1,329 | −1,243 |
| *Recharge* | 319 | 319 | 319 | 319 | 319 | 319 | 319 | 171 |
| *Vertical Leakage Upper* | 4,164 | 4,236 | 4,260 | 4,261 | 4,241 | 4,215 | 4,193 | 4,206 |
| *Vertical Leakage Lower* | −1,081 | −1,623 | −1,756 | −1,839 | −1,886 | −1,916 | −1,937 | −1,951 |
| *Lateral Flow* | 882 | 645 | 518 | 434 | 381 | 343 | 314 | 290 |
| *Net from other zones* | 3,965 | 3,258 | 3,022 | 2,856 | 2,736 | 2,642 | 2,570 | 2,545 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Somervell County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 199 | 13 | 10 | 5 | 3 | 2 | 2 | 2 |
| *Pumping* | −642 | −642 | −642 | −642 | −642 | −642 | −642 | −642 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,081 | 1,623 | 1,756 | 1,839 | 1,886 | 1,916 | 1,937 | 1,951 |
| *Vertical Leakage Lower* | −717 | −1,056 | −1,171 | −1,241 | −1,281 | −1,307 | −1,325 | −1,338 |
| *Lateral Flow* | 79 | 62 | 47 | 39 | 34 | 31 | 28 | 27 |
| *Net from other zones* | 443 | 629 | 632 | 637 | 639 | 640 | 640 | 640 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Somervell County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 296 | 26 | 20 | 11 | 7 | 5 | 4 | 3 |
| *Pumping* | −952 | −952 | −952 | −952 | −952 | −952 | −952 | −952 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 717 | 1,056 | 1,172 | 1,242 | 1,282 | 1,307 | 1,325 | 1,338 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −61 | −130 | −240 | −301 | −337 | −360 | −377 | −389 |
| *Net from other zones* | 656 | 926 | 932 | 941 | 945 | 947 | 948 | 949 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Tarrant County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −7,893 | −7,399 | −7,125 | −6,928 | −6,767 | −6,632 | −6,518 | −6,007 |
| *Recharge* | 7,889 | 7,889 | 7,889 | 7,889 | 7,889 | 7,889 | 7,889 | 3,896 |
| *Vertical Leakage Upper* | 8,139 | 7,294 | 6,870 | 6,575 | 6,335 | 6,133 | 5,965 | 9,015 |
| *Vertical Leakage Lower* | −257 | −399 | −522 | −620 | −701 | −769 | −828 | −906 |
| *Lateral Flow* | 15 | 14 | 13 | 12 | 11 | 11 | 10 | 9 |
| *Net from other zones* | 7,897 | 6,909 | 6,361 | 5,967 | 5,645 | 5,375 | 5,147 | 8,118 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Tarrant County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −26,613 | −25,359 | −24,706 | −24,227 | −23,841 | −23,513 | −23,232 | −21,644 |
| *Recharge* | 25,161 | 25,161 | 25,161 | 25,161 | 25,161 | 25,161 | 25,161 | 12,485 |
| *Vertical Leakage Upper* | 28,322 | 25,956 | 24,773 | 23,913 | 23,222 | 22,634 | 22,131 | 31,710 |
| *Vertical Leakage Lower* | −272 | −413 | −535 | −632 | −712 | −780 | −838 | −916 |
| *Lateral Flow* | 15 | 14 | 13 | 12 | 11 | 11 | 10 | 9 |
| *Net from other zones* | 28,065 | 25,557 | 24,251 | 23,293 | 22,521 | 21,865 | 21,303 | 30,803 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Tarrant County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 653 | 365 | 205 | 132 | 92 | 67 | 50 | 53 |
| *Pumping* | −9,694 | −9,694 | −9,694 | −9,694 | −9,694 | −9,694 | −9,694 | −9,694 |
| *SW and GW Interactions* | −4,050 | −3,623 | −3,284 | −2,983 | −2,701 | −2,443 | −2,209 | −1,823 |
| *Recharge* | 5,038 | 5,038 | 5,038 | 5,038 | 5,038 | 5,038 | 5,038 | 2,557 |
| *Vertical Leakage Upper* | 11,306 | 11,022 | 10,735 | 10,367 | 9,957 | 9,551 | 9,165 | 10,932 |
| *Vertical Leakage Lower* | −262 | −420 | −543 | −620 | −671 | −706 | −732 | −752 |
| *Lateral Flow* | 1,059 | 935 | 827 | 743 | 680 | 630 | 591 | 550 |
| *Net from other zones* | 12,103 | 11,537 | 11,019 | 10,490 | 9,966 | 9,475 | 9,024 | 10,730 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Tarrant County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 91 | 127 | 80 | 53 | 36 | 26 | 19 | 18 |
| *Pumping* | −916 | −916 | −916 | −916 | −916 | −916 | −916 | −916 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 262 | 420 | 543 | 621 | 672 | 707 | 732 | 752 |
| *Vertical Leakage Lower* | −595 | −945 | −1,094 | −1,165 | −1,205 | −1,231 | −1,248 | −1,261 |
| *Lateral Flow* | 1,158 | 1,314 | 1,387 | 1,407 | 1,413 | 1,414 | 1,413 | 1,407 |
| *Net from other zones* | 825 | 789 | 836 | 863 | 880 | 890 | 897 | 898 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Tarrant County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 382 | 317 | 167 | 102 | 68 | 47 | 34 | 29 |
| *Pumping* | −628 | −628 | −628 | −628 | −628 | −628 | −628 | −628 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 594 | 945 | 1,095 | 1,165 | 1,204 | 1,231 | 1,249 | 1,260 |
| *Vertical Leakage Lower* | −1,732 | −2,253 | −2,441 | −2,539 | −2,601 | −2,643 | −2,673 | −2,692 |
| *Lateral Flow* | 1,384 | 1,619 | 1,807 | 1,900 | 1,957 | 1,993 | 2,018 | 2,031 |
| *Net from other zones* | 246 | 311 | 461 | 526 | 560 | 581 | 594 | 599 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Tarrant County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 549 | 430 | 227 | 140 | 93 | 65 | 47 | 37 |
| *Pumping* | −101 | −101 | −101 | −101 | −101 | −101 | −101 | −101 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 1,732 | 2,253 | 2,441 | 2,539 | 2,602 | 2,643 | 2,672 | 2,693 |
| *Vertical Leakage Lower* | −3,121 | −3,749 | −3,788 | −3,801 | −3,813 | −3,823 | −3,831 | −3,838 |
| *Lateral Flow* | 941 | 1,167 | 1,221 | 1,223 | 1,219 | 1,216 | 1,213 | 1,209 |
| *Net from other zones* | −448 | −329 | −126 | −39 | 8 | 36 | 54 | 64 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Tarrant County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,310 | 444 | 217 | 135 | 91 | 64 | 46 | 37 |
| *Pumping* | −6,601 | −6,601 | −6,601 | −6,601 | −6,601 | −6,601 | −6,601 | −6,601 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 3,121 | 3,749 | 3,788 | 3,801 | 3,812 | 3,822 | 3,831 | 3,837 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 2,170 | 2,408 | 2,596 | 2,665 | 2,698 | 2,715 | 2,724 | 2,727 |
| *Net from other zones* | 5,291 | 6,157 | 6,384 | 6,466 | 6,510 | 6,537 | 6,555 | 6,564 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Taylor County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 149 | 148 | 148 | 148 | 148 | 148 | 148 | 147 |
| *Vertical Leakage Lower* | −145 | −144 | −144 | −144 | −144 | −144 | −144 | −143 |
| *Lateral Flow* | −4 | −4 | −4 | −4 | −4 | −4 | −4 | −4 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Taylor County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 145 | 145 | 144 | 144 | 144 | 144 | 144 | 144 |
| *Vertical Leakage Lower* | −141 | −141 | −140 | −140 | −140 | −140 | −140 | −140 |
| *Lateral Flow* | −4 | −4 | −4 | −4 | −4 | −4 | −4 | −4 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Taylor County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 141 | 141 | 141 | 141 | 141 | 141 | 140 | 140 |
| *Vertical Leakage Lower* | −137 | −137 | −137 | −137 | −137 | −137 | −136 | −136 |
| *Lateral Flow* | −4 | −4 | −4 | −4 | −4 | −4 | −4 | −4 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Taylor County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 138 | 137 | 137 | 137 | 137 | 137 | 137 | 136 |
| *Vertical Leakage Lower* | −134 | −133 | −133 | −133 | −133 | −133 | −133 | −132 |
| *Lateral Flow* | −4 | −4 | −4 | −4 | −4 | −4 | −4 | −4 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Taylor County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 134 | 133 | 133 | 133 | 133 | 133 | 133 | 133 |
| *Vertical Leakage Lower* | −130 | −129 | −129 | −129 | −129 | −129 | −129 | −129 |
| *Lateral Flow* | −4 | −4 | −4 | −4 | −4 | −4 | −4 | −4 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Taylor County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −2 | −2 | −2 | −2 | −2 | −2 | −2 | −2 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 5 |
| *Vertical Leakage Upper* | 121 | 121 | 121 | 121 | 121 | 121 | 121 | 124 |
| *Vertical Leakage Lower* | −124 | −124 | −124 | −124 | −124 | −124 | −124 | −123 |
| *Lateral Flow* | −4 | −4 | −4 | −4 | −4 | −4 | −4 | −4 |
| *Net from other zones* | −7 | −7 | −7 | −7 | −7 | −7 | −7 | −3 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Taylor County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | −12 | −12 | −12 | −12 | −12 | −12 | −12 | −12 |
| *SW and GW Interactions* | −335 | −333 | −332 | −332 | −331 | −331 | −330 | −327 |
| *Recharge* | 660 | 660 | 660 | 660 | 660 | 660 | 660 | 408 |
| *Vertical Leakage Upper* | 135 | 130 | 128 | 128 | 126 | 126 | 124 | 370 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −113 | −112 | −112 | −112 | −112 | −112 | −112 | −112 |
| *Net from other zones* | 22 | 18 | 16 | 16 | 14 | 14 | 12 | 258 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Travis County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −2 | −2 | −1 | −1 | −1 | 0 | 0 | 0 |
| *Recharge* | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 1 |
| *Vertical Leakage Upper* | 64 | 647 | 940 | 1,151 | 1,300 | 1,400 | 1,469 | 1,540 |
| *Vertical Leakage Lower* | −96 | −679 | −973 | −1,183 | −1,331 | −1,432 | −1,500 | −1,568 |
| *Lateral Flow* | 34 | 34 | 33 | 32 | 31 | 30 | 29 | 27 |
| *Net from other zones* | 2 | 2 | 0 | 0 | 0 | −2 | −2 | −1 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Travis County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −170 | 104 | 813 | 1,496 | 1,874 | 2,133 | 2,332 | 2,789 |
| *Recharge* | 2,130 | 2,130 | 2,130 | 2,130 | 2,130 | 2,130 | 2,130 | 1,119 |
| *Vertical Leakage Upper* | −1,695 | −1,659 | −2,783 | −3,939 | −4,548 | −4,964 | −5,294 | −5,129 |
| *Vertical Leakage Lower* | −158 | −739 | −1,030 | −1,237 | −1,381 | −1,480 | −1,545 | −1,608 |
| *Lateral Flow* | 63 | 60 | 57 | 54 | 51 | 48 | 45 | 40 |
| *Net from other zones* | −1,790 | −2,338 | −3,756 | −5,122 | −5,878 | −6,396 | −6,794 | −6,697 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Travis County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 75 | 15 | 9 | 6 | 4 | 3 | 2 | 4 |
| *Pumping* | −13 | −13 | −13 | −13 | −13 | −13 | −13 | −13 |
| *SW and GW Interactions* | −8 | −8 | −8 | −8 | −9 | −9 | −9 | −9 |
| *Recharge* | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 10 |
| *Vertical Leakage Upper* | 1,925 | 2,506 | 2,772 | 2,965 | 3,104 | 3,195 | 3,253 | 3,287 |
| *Vertical Leakage Lower* | −2,021 | −2,554 | −2,818 | −3,007 | −3,141 | −3,230 | −3,286 | −3,314 |
| *Lateral Flow* | 32 | 44 | 48 | 47 | 46 | 45 | 44 | 44 |
| *Net from other zones* | −64 | −4 | 2 | 5 | 9 | 10 | 11 | 17 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Travis County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −9 | 25 | 22 | 17 | 12 | 9 | 6 | 7 |
| *Pumping* | −100 | −100 | −100 | −100 | −100 | −100 | −100 | −100 |
| *SW and GW Interactions* | −2,594 | −2,519 | −2,475 | −2,426 | −2,384 | −2,352 | −2,318 | −2,253 |
| *Recharge* | 3,687 | 3,687 | 3,687 | 3,687 | 3,687 | 3,687 | 3,687 | 1,917 |
| *Vertical Leakage Upper* | 3,522 | 3,905 | 4,081 | 4,172 | 4,222 | 4,246 | 4,236 | 5,902 |
| *Vertical Leakage Lower* | −2,237 | −2,796 | −3,033 | −3,196 | −3,311 | −3,387 | −3,436 | −3,461 |
| *Lateral Flow* | 325 | 317 | 293 | 272 | 258 | 249 | 243 | 241 |
| *Net from other zones* | 1,610 | 1,426 | 1,341 | 1,248 | 1,169 | 1,108 | 1,043 | 2,682 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Travis County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 144 | 4 | 5 | 4 | 4 | 3 | 3 | 3 |
| *Pumping* | −2,300 | −2,300 | −2,300 | −2,300 | −2,300 | −2,300 | −2,300 | −2,300 |
| *SW and GW Interactions* | −804 | −869 | −931 | −987 | −1,039 | −1,089 | −1,136 | −1,171 |
| *Recharge* | 1,021 | 1,021 | 1,021 | 1,021 | 1,021 | 1,021 | 1,021 | 530 |
| *Vertical Leakage Upper* | 2,808 | 3,499 | 3,862 | 4,139 | 4,358 | 4,537 | 4,681 | 5,269 |
| *Vertical Leakage Lower* | −730 | −1,150 | −1,383 | −1,542 | −1,654 | −1,729 | −1,777 | −1,803 |
| *Lateral Flow* | 665 | 664 | 657 | 652 | 649 | 646 | 644 | 643 |
| *Net from other zones* | 2,743 | 3,013 | 3,136 | 3,249 | 3,353 | 3,454 | 3,548 | 4,109 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Travis County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 86 | 77 | 76 | 72 | 66 | 57 | 49 | 41 |
| *Pumping* | −189 | −189 | −189 | −189 | −189 | −189 | −189 | −189 |
| *SW and GW Interactions* | −77 | −77 | −73 | −70 | −65 | −61 | −55 | −50 |
| *Recharge* | 200 | 200 | 200 | 200 | 200 | 200 | 200 | 105 |
| *Vertical Leakage Upper* | 684 | 1,104 | 1,329 | 1,483 | 1,584 | 1,651 | 1,687 | 1,798 |
| *Vertical Leakage Lower* | −694 | −1,104 | −1,334 | −1,488 | −1,591 | −1,657 | −1,696 | −1,714 |
| *Lateral Flow* | 67 | 66 | 64 | 62 | 60 | 60 | 59 | 59 |
| *Net from other zones* | 57 | 66 | 59 | 57 | 53 | 54 | 50 | 143 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Travis County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 1,514 | 839 | 643 | 503 | 370 | 264 | 187 | 138 |
| *Pumping* | −4,200 | −4,200 | −4,200 | −4,200 | −4,200 | −4,200 | −4,200 | −4,200 |
| *SW and GW Interactions* | −99 | −96 | −90 | −84 | −77 | −69 | −63 | −56 |
| *Recharge* | 149 | 149 | 149 | 149 | 149 | 149 | 149 | 77 |
| *Vertical Leakage Upper* | 744 | 1,148 | 1,365 | 1,507 | 1,597 | 1,647 | 1,673 | 1,750 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 1,991 | 2,256 | 2,223 | 2,209 | 2,238 | 2,278 | 2,317 | 2,347 |
| *Net from other zones* | 2,735 | 3,404 | 3,588 | 3,716 | 3,835 | 3,925 | 3,990 | 4,097 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Williamson County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | −1,302 | −1,188 | −1,140 | −1,097 | −1,059 | −1,024 | −992 | −947 |
| *Vertical Leakage Lower* | 1,294 | 1,181 | 1,133 | 1,090 | 1,052 | 1,017 | 985 | 940 |
| *Lateral Flow* | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Williamson County

## Washita and Fredericksburg Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | −2,250 | 926 | 3,156 | 4,994 | 6,365 | 7,428 | 8,157 | 9,474 |
| *Recharge* | 11,620 | 11,620 | 11,620 | 11,620 | 11,620 | 11,620 | 11,620 | 6,480 |
| *Vertical Leakage Upper* | −8,414 | −14,652 | −19,064 | −22,698 | −25,402 | −27,493 | −28,919 | −26,368 |
| *Vertical Leakage Lower* | 1,286 | 1,173 | 1,125 | 1,083 | 1,045 | 1,010 | 978 | 933 |
| *Lateral Flow* | 8 | 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| *Net from other zones* | −7,120 | −13,472 | −17,932 | −21,608 | −24,350 | −26,476 | −27,934 | −25,428 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Williamson County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 38 | 17 | 13 | 9 | 7 | 5 | 4 | 6 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 16 | 29 | 40 | 52 | 59 | 67 | 86 |
| *Recharge* | 181 | 181 | 181 | 181 | 181 | 181 | 181 | 97 |
| *Vertical Leakage Upper* | 3,929 | 4,246 | 4,399 | 4,511 | 4,580 | 4,634 | 4,664 | 4,733 |
| *Vertical Leakage Lower* | −4,115 | −4,431 | −4,602 | −4,733 | −4,826 | −4,892 | −4,938 | −4,964 |
| *Lateral Flow* | −33 | −45 | −49 | −48 | −46 | −46 | −45 | −44 |
| *Net from other zones* | −219 | −230 | −252 | −270 | −292 | −304 | −319 | −275 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Williamson County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | −121 | 42 | 37 | 27 | 19 | 14 | 10 | 11 |
| *Pumping* | −150 | −150 | −150 | −150 | −150 | −150 | −150 | −150 |
| *SW and GW Interactions* | −6,857 | −6,476 | −6,288 | −6,139 | −6,012 | −5,900 | −5,800 | −5,335 |
| *Recharge* | 7,296 | 7,296 | 7,296 | 7,296 | 7,296 | 7,296 | 7,296 | 3,930 |
| *Vertical Leakage Upper* | 10,533 | 10,086 | 9,882 | 9,715 | 9,554 | 9,396 | 9,242 | 11,704 |
| *Vertical Leakage Lower* | −2,502 | −2,845 | −2,920 | −2,973 | −3,014 | −3,044 | −3,066 | −3,079 |
| *Lateral Flow* | −1,342 | −1,477 | −1,569 | −1,637 | −1,681 | −1,712 | −1,732 | −1,746 |
| *Net from other zones* | 6,689 | 5,764 | 5,393 | 5,105 | 4,859 | 4,640 | 4,444 | 6,879 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Williamson County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 196 | 14 | 13 | 12 | 10 | 8 | 6 | 6 |
| *Pumping* | −1,594 | −1,594 | −1,594 | −1,594 | −1,594 | −1,594 | −1,594 | −1,594 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 2,478 | 2,830 | 2,911 | 2,968 | 3,010 | 3,042 | 3,065 | 3,078 |
| *Vertical Leakage Lower* | −819 | −988 | −1,073 | −1,134 | −1,179 | −1,212 | −1,236 | −1,252 |
| *Lateral Flow* | −261 | −262 | −257 | −252 | −247 | −244 | −241 | −238 |
| *Net from other zones* | 1,398 | 1,580 | 1,581 | 1,582 | 1,584 | 1,586 | 1,588 | 1,588 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Williamson County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 111 | 102 | 95 | 85 | 73 | 59 | 47 | 38 |
| *Pumping* | −199 | −199 | −199 | −199 | −199 | −199 | −199 | −199 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 819 | 989 | 1,074 | 1,135 | 1,179 | 1,212 | 1,236 | 1,252 |
| *Vertical Leakage Lower* | −731 | −893 | −973 | −1,027 | −1,062 | −1,084 | −1,098 | −1,107 |
| *Lateral Flow* | 0 | 1 | 3 | 6 | 9 | 12 | 14 | 16 |
| *Net from other zones* | 88 | 97 | 104 | 114 | 126 | 140 | 152 | 161 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Williamson County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 920 | 959 | 741 | 552 | 393 | 275 | 193 | 141 |
| *Pumping* | −1,747 | −1,747 | −1,747 | −1,747 | −1,747 | −1,747 | −1,747 | −1,747 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 731 | 892 | 972 | 1,026 | 1,061 | 1,084 | 1,097 | 1,107 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | 96 | −104 | 34 | 169 | 293 | 388 | 457 | 499 |
| *Net from other zones* | 827 | 788 | 1,006 | 1,195 | 1,354 | 1,472 | 1,554 | 1,606 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Wise County

## Woodbine Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Pumping* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *SW and GW Interactions* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Recharge* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Vertical Leakage Upper* | 9,630 | 13,027 | 14,275 | 14,905 | 15,311 | 15,607 | 15,840 | 16,062 |
| *Vertical Leakage Lower* | −9,661 | −13,058 | −14,305 | −14,935 | −15,340 | −15,635 | −15,867 | −16,088 |
| *Lateral Flow* | 31 | 31 | 30 | 30 | 29 | 28 | 27 | 26 |
| *Net from other zones* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Mass Balance* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Wise County

## Paluxy Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 63 | 32 | 19 | 15 | 13 | 12 | 12 | 24 |
| *Pumping* | −2,143 | −2,143 | −2,143 | −2,143 | −2,143 | −2,143 | −2,143 | −2,143 |
| *SW and GW Interactions* | −6,817 | −6,267 | −5,920 | −5,686 | −5,494 | −5,330 | −5,190 | −4,726 |
| *Recharge* | 11,073 | 11,073 | 11,073 | 11,073 | 11,073 | 11,073 | 11,073 | 6,160 |
| *Vertical Leakage Upper* | 20,447 | 23,434 | 24,146 | 24,304 | 24,266 | 24,149 | 24,002 | 28,006 |
| *Vertical Leakage Lower* | −13,947 | −17,664 | −18,982 | −19,586 | −19,932 | −20,154 | −20,303 | −20,371 |
| *Lateral Flow* | −1,859 | −2,198 | −2,273 | −2,291 | −2,289 | −2,277 | −2,261 | −2,224 |
| *Net from other zones* | 4,641 | 3,572 | 2,891 | 2,427 | 2,045 | 1,718 | 1,438 | 5,411 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Wise County

## Glen Rose Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 39 | 84 | 42 | 27 | 20 | 16 | 13 | 22 |
| *Pumping* | −1,062 | −1,062 | −1,062 | −1,062 | −1,062 | −1,062 | −1,062 | −1,062 |
| *SW and GW Interactions* | −11,926 | −10,691 | −9,917 | −9,355 | −8,911 | −8,538 | −8,219 | −7,188 |
| *Recharge* | 11,703 | 11,703 | 11,703 | 11,703 | 11,703 | 11,703 | 11,703 | 6,548 |
| *Vertical Leakage Upper* | 26,096 | 27,343 | 27,113 | 26,593 | 26,050 | 25,526 | 25,038 | 28,200 |
| *Vertical Leakage Lower* | −11,506 | −14,738 | −15,764 | −16,230 | −16,499 | −16,674 | −16,794 | −16,857 |
| *Lateral Flow* | −1,418 | −1,948 | −2,198 | −2,321 | −2,390 | −2,433 | −2,460 | −2,475 |
| *Net from other zones* | 13,172 | 10,657 | 9,151 | 8,042 | 7,161 | 6,419 | 5,784 | 8,868 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Wise County

## Hensell Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 168 | 81 | 36 | 22 | 15 | 11 | 9 | 13 |
| *Pumping* | −1,617 | −1,617 | −1,617 | −1,617 | −1,617 | −1,617 | −1,617 | −1,617 |
| *SW and GW Interactions* | −9,067 | −8,303 | −7,798 | −7,423 | −7,138 | −6,912 | −6,730 | −6,253 |
| *Recharge* | 7,576 | 7,576 | 7,576 | 7,576 | 7,576 | 7,576 | 7,576 | 4,101 |
| *Vertical Leakage Upper* | 22,063 | 23,768 | 23,785 | 23,499 | 23,199 | 22,922 | 22,678 | 25,262 |
| *Vertical Leakage Lower* | −8,606 | −10,809 | −11,465 | −11,753 | −11,920 | −12,031 | −12,108 | −12,148 |
| *Lateral Flow* | −1,450 | −2,393 | −2,719 | −2,881 | −2,977 | −3,037 | −3,078 | −3,105 |
| *Net from other zones* | 12,007 | 10,566 | 9,601 | 8,865 | 8,302 | 7,854 | 7,492 | 10,009 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Wise County

## Pearsall Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 373 | 167 | 64 | 35 | 23 | 16 | 12 | 12 |
| *Pumping* | −943 | −943 | −943 | −943 | −943 | −943 | −943 | −943 |
| *SW and GW Interactions* | −6,193 | −5,403 | −4,928 | −4,597 | −4,353 | −4,159 | −4,002 | −3,647 |
| *Recharge* | 3,855 | 3,855 | 3,855 | 3,855 | 3,855 | 3,855 | 3,855 | 2,111 |
| *Vertical Leakage Upper* | 17,138 | 17,760 | 17,466 | 17,091 | 16,771 | 16,494 | 16,257 | 17,332 |
| *Vertical Leakage Lower* | −7,364 | −8,878 | −9,253 | −9,423 | −9,526 | −9,594 | −9,643 | −9,666 |
| *Lateral Flow* | −673 | −1,155 | −1,333 | −1,421 | −1,474 | −1,510 | −1,534 | −1,552 |
| *Net from other zones* | 9,101 | 7,727 | 6,880 | 6,247 | 5,771 | 5,390 | 5,080 | 6,114 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Wise County

## Hosston Layer

| | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
|---|---|---|---|---|---|---|---|---|
| *Storage* | 564 | 132 | 51 | 29 | 19 | 13 | 10 | 10 |
| *Pumping* | −5,757 | −5,757 | −5,757 | −5,757 | −5,757 | −5,757 | −5,757 | −5,757 |
| *SW and GW Interactions* | −9,861 | −9,368 | −8,969 | −8,643 | −8,380 | −8,166 | −7,987 | −7,582 |
| *Recharge* | 8,279 | 8,279 | 8,279 | 8,279 | 8,279 | 8,279 | 8,279 | 4,675 |
| *Vertical Leakage Upper* | 18,807 | 19,335 | 18,912 | 18,430 | 18,006 | 17,647 | 17,337 | 20,154 |
| *Vertical Leakage Lower* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Lateral Flow* | −2,171 | −3,253 | −3,547 | −3,695 | −3,787 | −3,850 | −3,895 | −3,918 |
| *Net from other zones* | 16,636 | 16,082 | 15,365 | 14,735 | 14,219 | 13,797 | 13,442 | 16,236 |
| *Net Water Budget* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| *Net leakage* | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Appendix F
# Central Texas GCD Modeling Results for the Llano Uplift DFCs

Appendix F contains the modeling results of work completed by WSP (USA) in 2020 under contract with the Central Texas Groundwater Conservation District to assess the impact of various pumping scenarios on the average drawdowns predicted by the Llano Uplift groundwater availability model (GAM) in groundwater management area (GMA) 8. The main purpose for this analysis was to assess the long-term regional drawdowns predicted by the Llano Uplift GAM based on various pumping scenarios in GMA 8 and to provide insight for selecting proposed Desired Future Conditions (DFC) for the Llano Uplift aquifers in GMA 8 for the 2021 DFC joint planning cycle.

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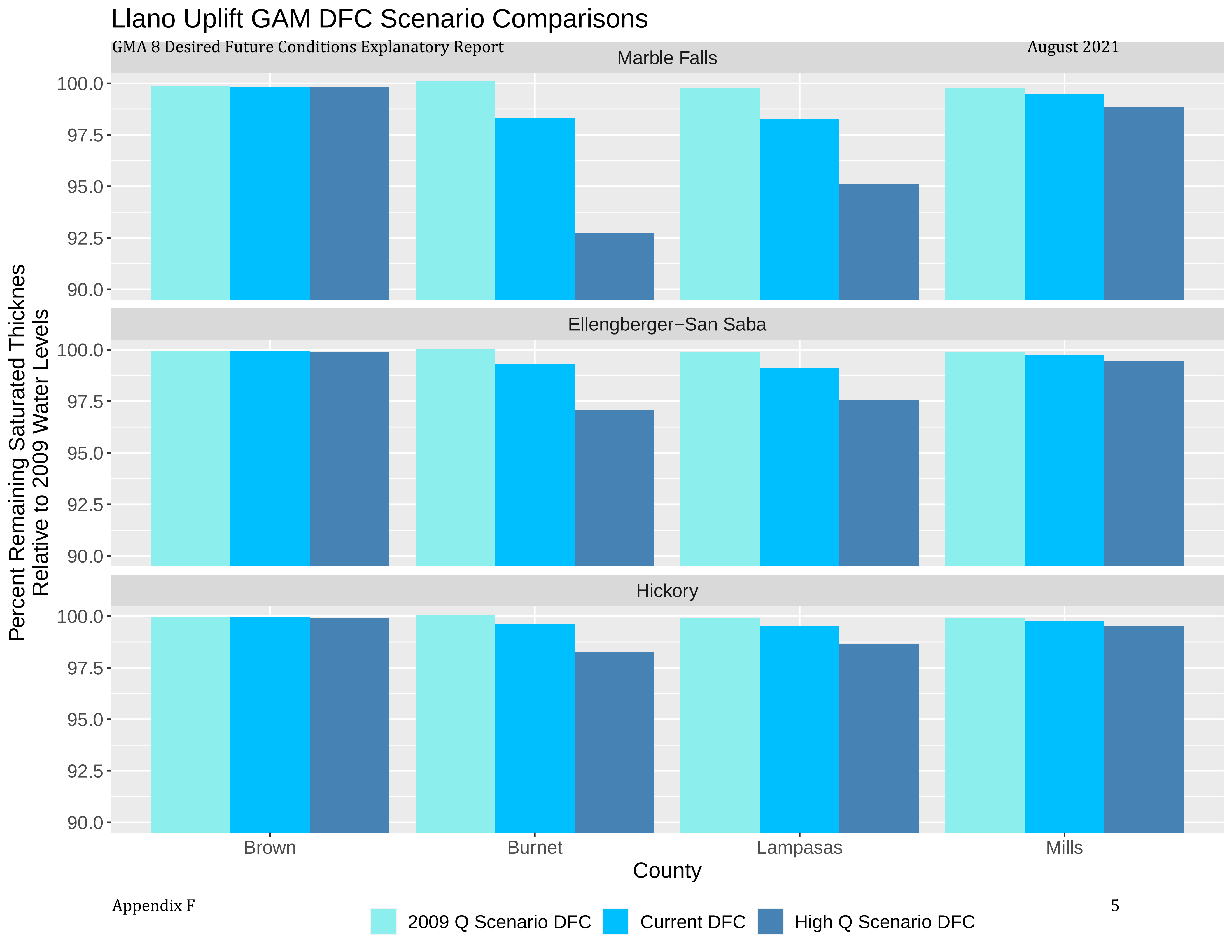
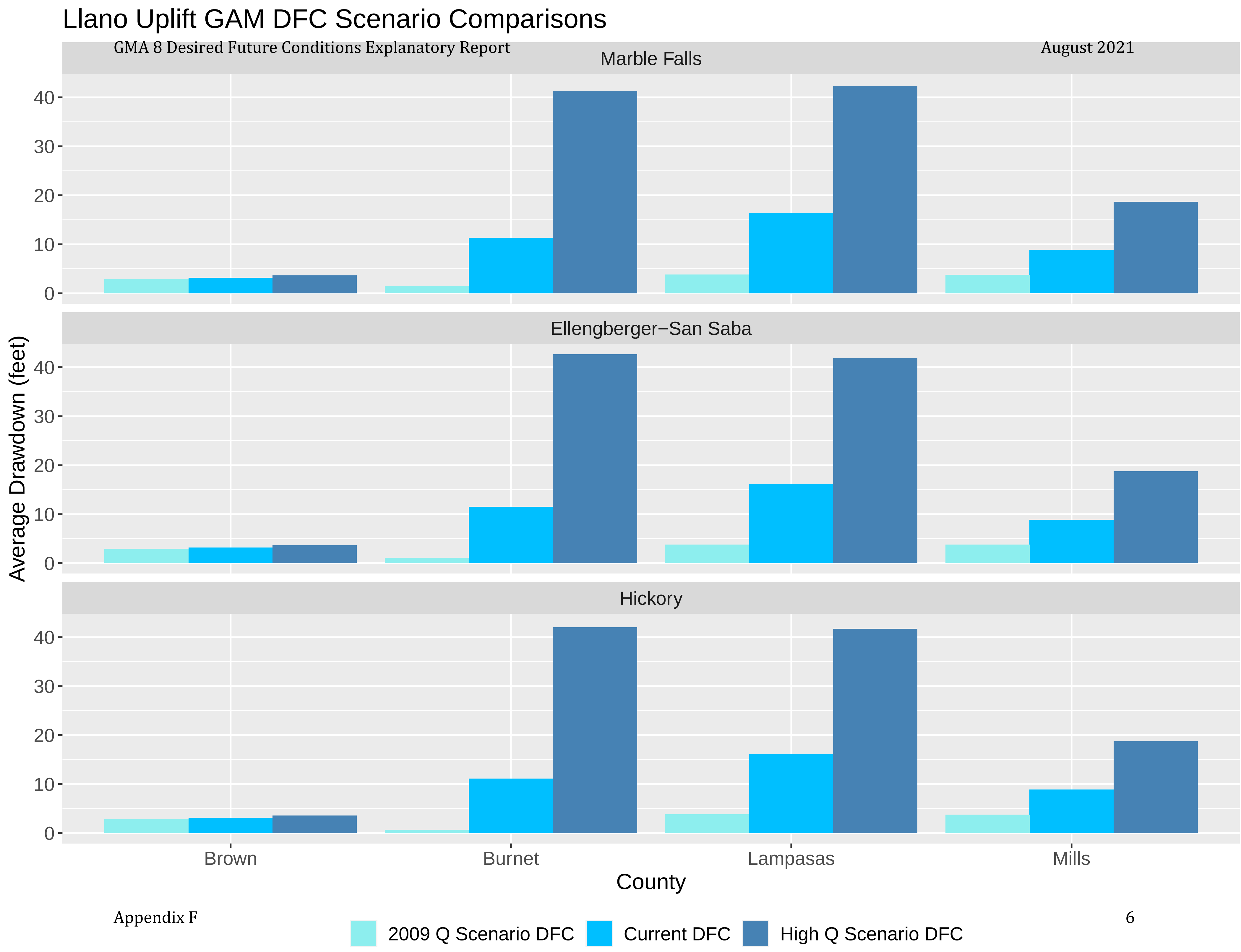
| Current MAG Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **County** | **Aquifer** | **2010** | **2020** | **2030** | **2040** | **2050** | **2060** | **2070** | **2080** |
| **Brown** | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | - |
| **Brown** | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | - |
| **Brown** | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | - |
| **Burnet** | Marble Falls | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | - |
| **Burnet** | Ellenburger-San Saba | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | - |
| **Burnet** | Hickory | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | - |
| **Lampasas** | Marble Falls | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | - |
| **Lampasas** | Ellenburger-San Saba | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | - |
| **Lampasas** | Hickory | 113 | 113 | 113 | 113 | 113 | 113 | 113 | - |
| **Mills** | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | - |
| **Mills** | Ellenburger-San Saba | 499 | 499 | 499 | 499 | 499 | 499 | 499 | - |
| **Mills** | Hickory | 36 | 36 | 36 | 36 | 36 | 36 | 36 | - |

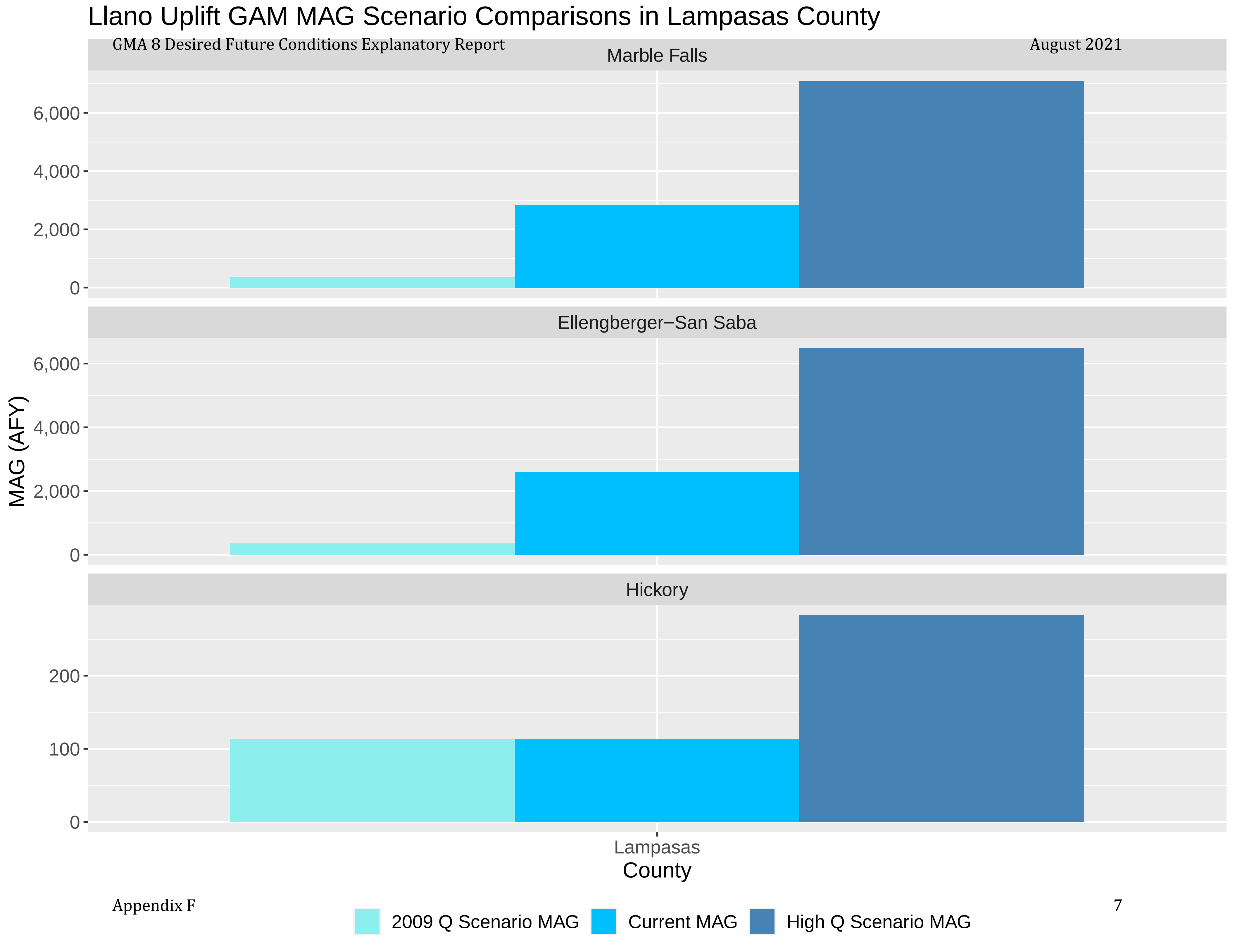
| High Q MAG Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **County** | **Aquifer** | **2010** | **2020** | **2030** | **2040** | **2050** | **2060** | **2070** | **2080** |
| **Brown** | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| **Brown** | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |
| **Brown** | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| **Burnet** | Marble Falls | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 |
| **Burnet** | Ellenburger-San Saba | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 |
| **Burnet** | Hickory | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 |
| **Lampasas** | Marble Falls | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 |
| **Lampasas** | Ellenburger-San Saba | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 |
| **Lampasas** | Hickory | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 |
| **Mills** | Marble Falls | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| **Mills** | Ellenburger-San Saba | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 |
| **Mills** | Hickory | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |

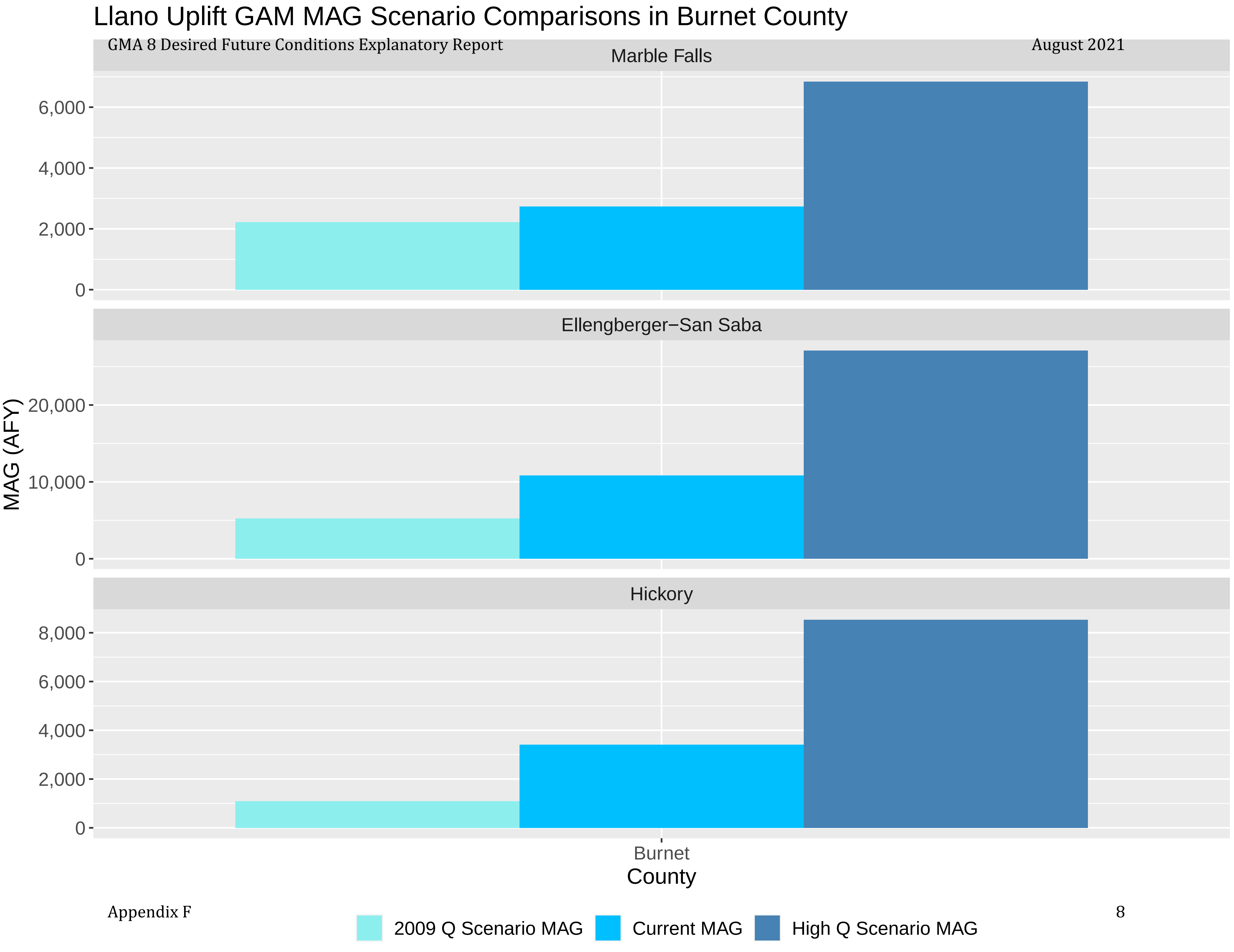
| High Q MAG Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **County** | **Aquifer** | **2010** | **2020** | **2030** | **2040** | **2050** | **2060** | **2070** | **2080** |
| **Brown** | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| **Brown** | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |
| **Brown** | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| **Burnet** | Marble Falls | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 |
| **Burnet** | Ellenburger-San Saba | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 |
| **Burnet** | Hickory | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 |
| **Lampasas** | Marble Falls | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 |
| **Lampasas** | Ellenburger-San Saba | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 |
| **Lampasas** | Hickory | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 |
| **Mills** | Marble Falls | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| **Mills** | Ellenburger-San Saba | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 |
| **Mills** | Hickory | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |

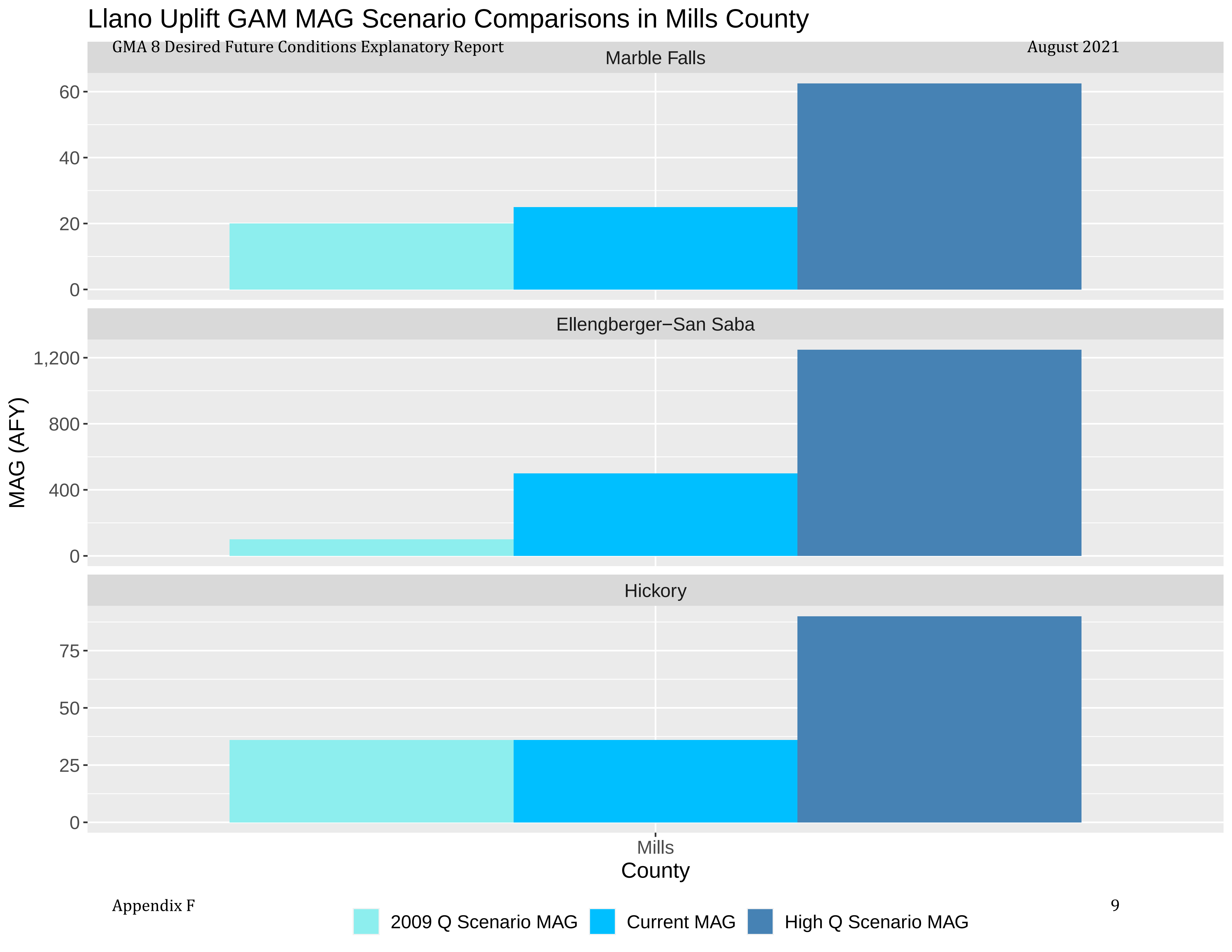
| Llano Uplift DFC Results (Average Drawdown) | | | | |
|---|---|---|---|---|
| **County** | **Scenario** | **Marble Falls** | **Ellenburger-San Saba** | **Hickory** |
| **Brown** | 2009 Q | 2.9 | 2.9 | 2.9 |
| **Brown** | Current Q | 3.2 | 3.2 | 3.1 |
| **Brown** | High Q | 3.6 | 3.6 | 3.6 |
| **Burnet** | 2009 Q | 1.4 | 1.1 | 0.7 |
| **Burnet** | Current Q | 11.3 | 11.5 | 11.1 |
| **Burnet** | High Q | 41.3 | 42.6 | 42.0 |
| **Lampasas** | 2009 Q | 3.8 | 3.8 | 3.8 |
| **Lampasas** | Current Q | 16.4 | 16.2 | 16.1 |
| **Lampasas** | High Q | 42.3 | 41.8 | 41.7 |
| **Mills** | 2009 Q | 3.8 | 3.8 | 3.8 |
| **Mills** | Current Q | 8.9 | 8.9 | 8.9 |
| **Mills** | High Q | 18.7 | 18.7 | 18.7 |

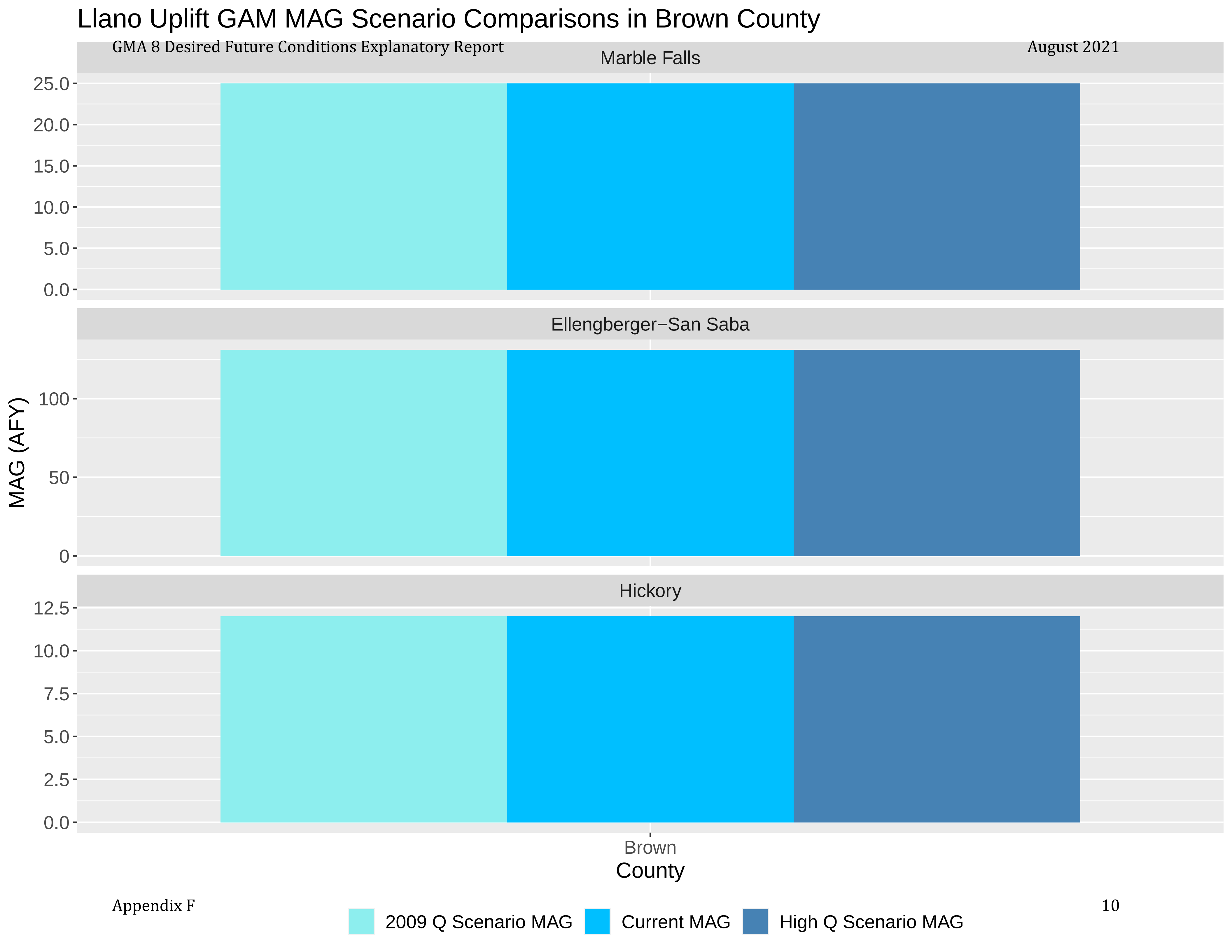

Llano Uplift GAM DFC Scenario Comparisons
Marble Falls
Ellengberger−San Saba
Hickory
100.0
97.5
95.0
92.5
90.0
Percent Remaining Saturated Thicknes
Relative to 2009 Water Levels
Brown
Burnet
Lampasas
Mills
County
2009 Q Scenario DFC
Current DFC
High Q Scenario DFC


Llano Uplift GAM DFC Scenario Comparisons
Marble Falls
Ellengberger−San Saba
Hickory
Average Drawdown (feet)
0
10
20
30
40
Brown
Burnet
Lampasas
Mills
County
2009 Q Scenario DFC
Current DFC
High Q Scenario DFC


Llano Uplift GAM MAG Scenario Comparisons in Lampasas County
Marble Falls
Ellengberger−San Saba
Hickory
MAG (AFY)
6,000
4,000
2,000
0
200
100
Lampasas
County
2009 Q Scenario MAG
Current MAG
High Q Scenario MAG


Llano Uplift GAM MAG Scenario Comparisons in Burnet County
Marble Falls
Ellengberger−San Saba
Hickory
MAG (AFY)
0
2,000
4,000
6,000
10,000
20,000
8,000
Burnet
County
2009 Q Scenario MAG
Current MAG
High Q Scenario MAG


Llano Uplift GAM MAG Scenario Comparisons in Mills County
Marble Falls
Ellengberger−San Saba
Hickory
MAG (AFY)
0
20
40
60
0
400
800
1,200
0
25
50
75
Mills
County
2009 Q Scenario MAG
Current MAG
High Q Scenario MAG


Llano Uplift GAM MAG Scenario Comparisons in Brown County
Marble Falls
Ellengberger−San Saba
Hickory
MAG (AFY)
25.0
20.0
15.0
10.0
5.0
0.0
100
50
0
12.5
10.0
7.5
5.0
2.5
0.0
Brown
County
2009 Q Scenario MAG
Current MAG
High Q Scenario MAG

| Llano Uplift DFC Results (Perc. Sat Thickness Remaining) | | | | |
|---|---|---|---|---|
| **County** | **Scenario** | **Marble Falls** | **Ellenburger-San Saba** | **Hickory** |
| **Brown** | 2009 Q | 99.9 | 99.9 | 99.9 |
| **Brown** | Current Q | 99.8 | 99.9 | 99.9 |
| **Brown** | High Q | 99.8 | 99.9 | 99.9 |
| **Burnet** | 2009 Q | 100.1 | 100.0 | 100.0 |
| **Burnet** | Current Q | 98.3 | 99.3 | 99.6 |
| **Burnet** | High Q | 92.8 | 97.1 | 98.3 |
| **Lampasas** | 2009 Q | 99.8 | 99.9 | 99.9 |
| **Lampasas** | Current Q | 98.3 | 99.1 | 99.5 |
| **Lampasas** | High Q | 95.2 | 97.6 | 98.7 |
| **Mills** | 2009 Q | 99.8 | 99.9 | 99.9 |
| **Mills** | Current Q | 99.5 | 99.8 | 99.8 |
| **Mills** | High Q | 98.9 | 99.5 | 99.5 |

| | | Current MAG Results | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **County** | **Aquifer** | **2010** | **2020** | **2030** | **2040** | **2050** | **2060** | **2070** | **2080** |
| **Brown** | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | - |
| **Brown** | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | - |
| **Brown** | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | - |
| **Burnet** | Marble Falls | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | - |
| **Burnet** | Ellenburger-San Saba | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | - |
| **Burnet** | Hickory | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | - |
| **Lampasas** | Marble Falls | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | - |
| **Lampasas** | Ellenburger-San Saba | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | - |
| **Lampasas** | Hickory | 113 | 113 | 113 | 113 | 113 | 113 | 113 | - |
| **Mills** | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | - |
| **Mills** | Ellenburger-San Saba | 499 | 499 | 499 | 499 | 499 | 499 | 499 | - |
| **Mills** | Hickory | 36 | 36 | 36 | 36 | 36 | 36 | 36 | - |

| | | 2009 Q MAG Results | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **County** | **Aquifer** | **2010** | **2020** | **2030** | **2040** | **2050** | **2060** | **2070** | **2080** |
| **Brown** | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| **Brown** | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |
| **Brown** | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| **Burnet** | Marble Falls | 2,220 | 2,220 | 2,220 | 2,220 | 2,220 | 2,220 | 2,220 | 2,220 |
| **Burnet** | Ellenburger-San Saba | 5,244 | 5,244 | 5,244 | 5,244 | 5,244 | 5,244 | 5,244 | 5,244 |
| **Burnet** | Hickory | 1,088 | 1,088 | 1,088 | 1,088 | 1,088 | 1,088 | 1,088 | 1,088 |
| **Lampasas** | Marble Falls | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 |
| **Lampasas** | Ellenburger-San Saba | 351 | 351 | 351 | 351 | 351 | 351 | 351 | 351 |
| **Lampasas** | Hickory | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 |
| **Mills** | Marble Falls | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| **Mills** | Ellenburger-San Saba | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| **Mills** | Hickory | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |

| High Q MAG Results | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **County** | **Aquifer** | **2010** | **2020** | **2030** | **2040** | **2050** | **2060** | **2070** | **2080** |
| **Brown** | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| **Brown** | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |
| **Brown** | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| **Burnet** | Marble Falls | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 |
| **Burnet** | Ellenburger-San Saba | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 |
| **Burnet** | Hickory | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 |
| **Lampasas** | Marble Falls | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 |
| **Lampasas** | Ellenburger-San Saba | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 |
| **Lampasas** | Hickory | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 |
| **Mills** | Marble Falls | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| **Mills** | Ellenburger-San Saba | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 |
| **Mills** | Hickory | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |

# Appendix G
# Consultant Presentations at GMA 8 Groundwater Planning Meetings:
# July 26, 2019
# November 22, 2019
# February 26, 2020
# May 15, 2020
# August 7, 2020

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# GMA 8
# Joint Groundwater Planning

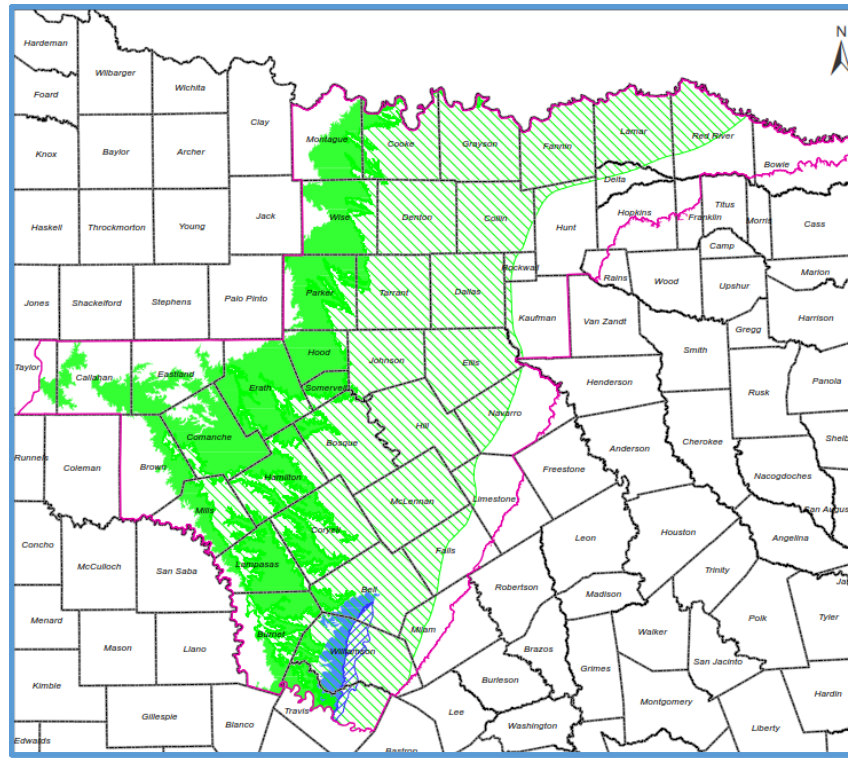
July 26, 2019

# Agenda Item 7

- Discussion and possible action on potential model runs for this planning cycle
- Meeting scheduled with TWDB staff to discuss GMA 8 issues
    - WSP consultant team
    - Joe, Dirk, Drew, and Mitchell
- Modeling Issues

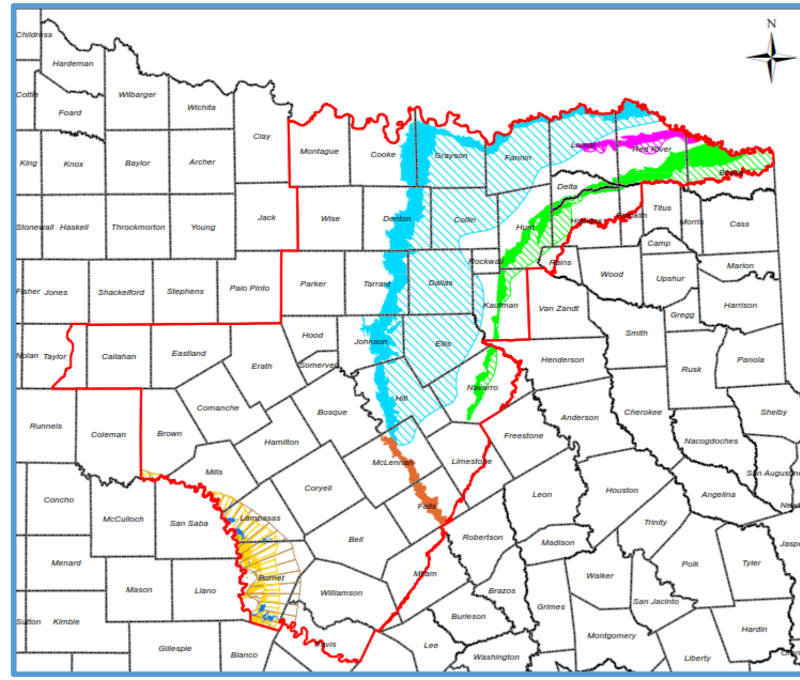
# Major Aquifers

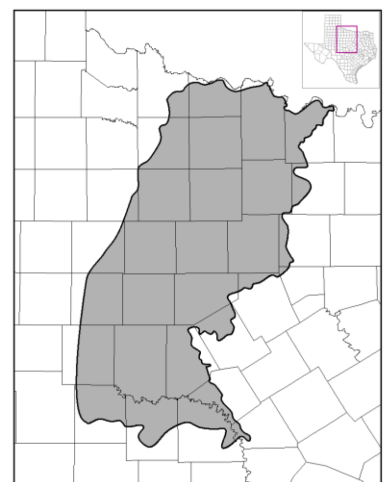
- Northern Trinity Woodbine GAM
  - Trinity
  - Woodbine
  - Current budget allows one updated simulation
- Northern Edwards (BFZ) GAM
  - Edwards BFZ
  - Clearwater UWCD funding



# Minor Aquifers

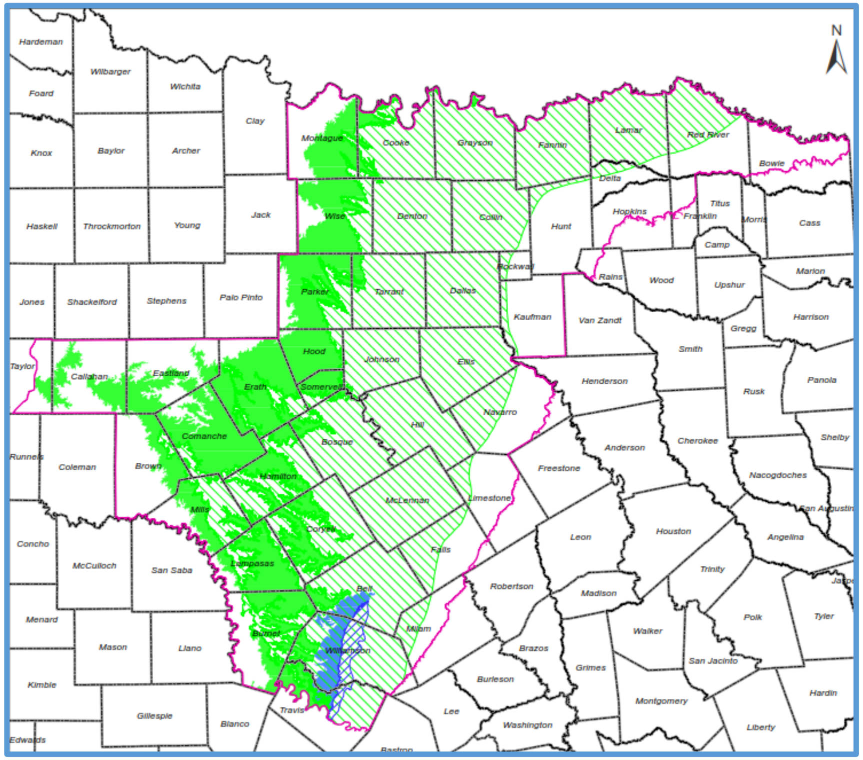
- Llano Uplift Aquifer System GAM
  - Ellenburger-San Saba
  - Hickory
  - Marble Falls
  - No funding in current budget
- Nacatoch Aquifer GAM
  - Non-relevant last round
- Brazos River Alluvium Aquifer GAM
  - Non-relevant last round
- Blossom Aquifer GAM
  - Non-relevant last round
- Cross Timbers Aquifer GAM
  - Cross Timbers
  - GAM likely not ready in this round
  - Relevant or NOT?





# Modeling Runs

- Northern Trinity Woodbine GAM
  - Run 10



# Run 10 Description

- Used TWDB accepted version of the GAM
- Initial conditions set as simulated water levels on January 1, 2010 from transient calibration run
- Adjusted pumping amounts based on GCD input
- No changes to areal distribution of pumping from baseline
- No changes in aquifer assignment of pumping from baseline
- Set pumping so that model code would not automatically reduce pumping amounts

# Run 11 – Update of NTWGAM

- Adjusted pumping amounts based on GCD input
  - Things to consider:
    - Rule changes
    - New permits
    - Anticipated pumping changes
    - Balancing highest practicable and conservation
    - Comments from last round of planning
    - Other
  - We propose that each GCD review the TWDB MAG spreadsheet and adjust pumping estimates
- Vertical adjustment of pumping
  - Run 10 - Set pumping so that model code would not automatically reduce pumping amounts
  - Tell us if you want to adjust

# Questions

# Agenda Item 8

- Discuss plan and schedule for GMA 8 consideration of nine factors required by Texas Water Code Subsections 36.108(d)(1 – 9) in the third round of DFC joint planning

# WSP Team Approach to Presenting Information on Nine Factors

(Texas Water Code Subsections 36.108(d)(1-9))

- Factor presentations – Three GMA 8 Meetings (November 2019, February 2020, and May 2020)
- Focused discussion on factors during each meeting
- WSP Team presentations to guide discussions – GCDs make presentations available during 90-day public comment period
- Factor presentation content to be reflective of explanatory report content
- Re-visit factor discussions as needed when various GAM runs, or DFC statements considered

# Proposed Schedule for Factors

**November 2019**

- Environmental Impacts
- Subsidence Impacts
- Hydrological Conditions

**February 2020**

- Aquifer Uses or Conditions
- Supply Needs & Management Strategies
- Private Property Rights

**May 2020**

- Socioeconomic Impacts
- DFC Feasibility
- Other Relevant Information

# Questions

# Agenda Item 9

- Discuss plan for updating and preparing the GMA 8 explanatory report for the third round of DFC joint planning

# WSP Team Approach to Preparing the Explanatory Report

(Texas Water Code Section 36.108(d-3))

- Use GMA 8 second round of DFC joint planning ER as starting point
- Update ER discussion and appendices as needed
- WSP Team presents and reviews 1st ER draft – August 2020
- GMA 8 considers ER approval – November 2020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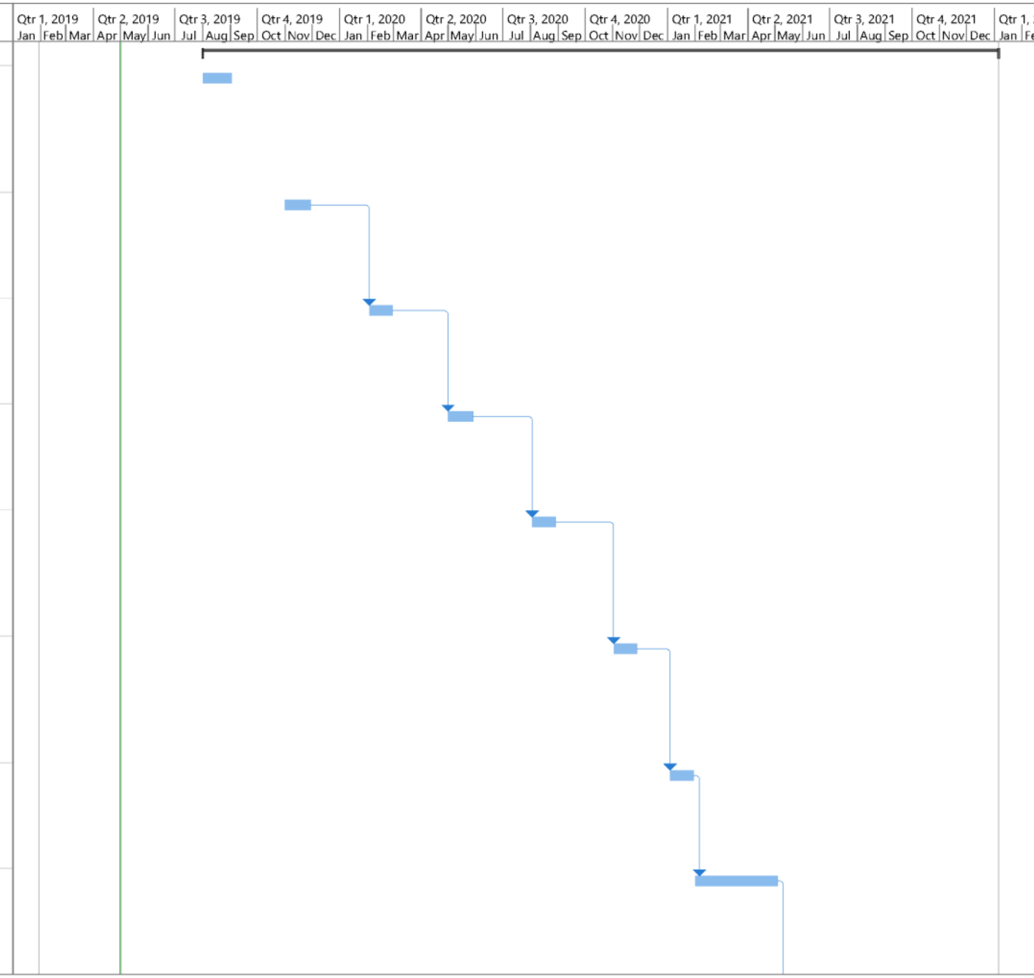
# Questions

# Agenda Item 10

- Discussion and possible action of joint planning schedule

# Planning Schedule

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **GMA 8 Joint Planning Process** | **635 days** | **Thu 8/1/19** | **Wed 1/5/22** |
| 2 | GMA 8 meeting – Review project approach and timeline; present report on requirements of Texas Water Code 36.108; discuss aquifers designated as non-relevant; discuss GAMs to be used for modeling and possible runs; and discuss possible DFCs. | 4.5 wks | Thu 8/1/19 | Mon 9/2/19 |
| 3 | GMA 8 meeting – Provide project update; present baseline GAM runs; present GAM runs on possible GMA 8 DFCs and discuss additional GAM runs needed; present report regarding Texas Water Code Subsections 36.108(d)(1-3). | 4.1 wks | Fri 11/1/19 | Fri 11/29/19 |
| 4 | GMA 8 meeting – Provide project update; present GAM runs on possible GMA 8 DFCs and discuss additional GAM runs needed; present report regarding Texas Water Code Subsections 36.108(d)(4-6). | 4 wks | Mon 2/3/20 | Fri 2/28/20 |
| 5 | GMA 8 meeting – Provide project update; present GAM runs on possible GMA 8 DFCs and discuss additional GAM runs needed; present report regarding Texas Water Code Subsetions 36.108 (d)(7-9). | 4 wks | Fri 5/1/20 | Thu 5/28/20 |
| 6 | GMA 8 meeting – Provide project update; present GAM runs on possible GMA 8 DFCs and discuss additional GAM runs needed; present report regarding proposed non-relevant classifications; and continue discussions of nine factors as needed. | 4 wks | Mon 8/3/20 | Fri 8/28/20 |
| 7 | GMA 8 meeting – Provide project update; present GAM runs on possible GMA 8 DFCs and discuss additional GAM runs needed; begin to identify DFCs to be proposed by GMA 8; and continue discussions of nine factors as needed. | 4 wks | Mon 11/2/20 | Fri 11/27/20 |
| 8 | GMA 8 meeting – Consider action to adopt proposed DFCs and non-relevant aquifer classifications for GMA 8. Action to approve proposed DFCs must be approved by 2/3 vote of GMA 8. | 4 wks | Mon 1/4/21 | Fri 1/29/21 |
| 9 | 90-day public comment period on proposed DFCs/non-relevant aquifers – As applicable, hold public hearings and make available information used to develop the proposed DFCs, including how the nine factors were considered. | 66 days | Mon 2/1/21 | Mon 5/3/21 |




Project: Schedule_GMA8meetin
Date: Wed 5/1/19

Task, Split, Milestone, Summary, Project Summary, Inactive Task, Inactive Milestone, Inactive Summary, Manual Task, Duration-only, Manual Summary Rollup, Manual Summary, Start-only, Finish-only, External Tasks, External Milestone, Deadline, Progress, Manual Progress

Page 1

# Planning Schedule

| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 10 | Texas Water Code Section 36.108 (d), deadline for adoption of proposed DFCs | 0 days | Sat 5/1/21 | Sat 5/1/21 |
| 11 | GCDs compile public comments received during the public comment period; and prepare GCD summary reports and discussion of proposed revisions to DFCs, if applicable. | 4 wks | Tue 5/4/21 | Mon 5/31/21 |
| 12 | GMA 8 meeting – Review GCD public comment summaries and proposed revisions to DFCs, if applicable; and consider GCD suggestions to modify proposed DFCs based on public comments, if applicable. | 4 wks | Tue 6/1/21 | Mon 6/28/21 |
| 13 | GMA 8 Meeting - Review and discuss complete draft explanatory report | 4.5 wks | Fri 7/30/21 | Tue 8/31/21 |
| 14 | GMA 8 meeting – Consider action to adopt final DFCs, non-relevant aquifer classification proposals and the explanatory report for GMA 8. | 4 wks | Wed 11/3/21 | Tue 11/30/21 |
| 15 | Prepare and submit DFCs and explanatory report to TWDB and to each GCD. Submission packet due to the TWDB within 60 days of action to adopt the DFCs. | 20 days | Wed 12/1/21 | Tue 12/28/21 |
| 16 | Texas Water Code Section 36.108(d-3), deadline for final adoption of DFCs | 1 day | Wed 1/5/22 | Wed 1/5/22 |


Project: Schedule_GMA8meetin
Date: Wed 5/1/19

Task | Split | Milestone | Summary | Project Summary | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | External Tasks | External Milestone | Deadline | Progress | Manual Progress

Page 2

# Questions

# GMA 8
# Joint Groundwater Planning

November 22, 2019

Blanton & Associates, Inc.
Environmental Consulting • Planning • Project Management

# Agenda Item 6

## Discussion and possible action of upcoming model run inputs.

- Run 11 – Update of NTWGAM DFC/MAG Run
- GMA 8 representatives met with TWDB
- WSP has received Pumping Updates from:
  - *Upper Trinity GCD*
  - *Southern Trinity GCD (still working)*
- Path forward
  - *Complete updated run and present results at February meeting*

# Summary of August 8, 2019 meeting with TWDB

- MAGs from this round of planning will be used in 2027 State Water Plan (2030-2080)
  - New run will begin in 2010 (no change)
  - WSP will extend DFC Model run to 2080
  - 2070 input will be used for 2071-2080
  - "Leap year" causes confusion in MAGs (WSP will make each year 365.25 days)
  - WSP will update pumping as provided by GCDs
  - WSP will provide files to TWDB as early as possible
- Subsidence vulnerability report should be used when considering the subsidence factor in setting DFCs in this round of joint planning
- For non-relevant aquifers, RWPGs provide groundwater availability estimates (reviewed by TWDB staff)

# Agenda Item 6

## Discussion and possible action of upcoming model run inputs.

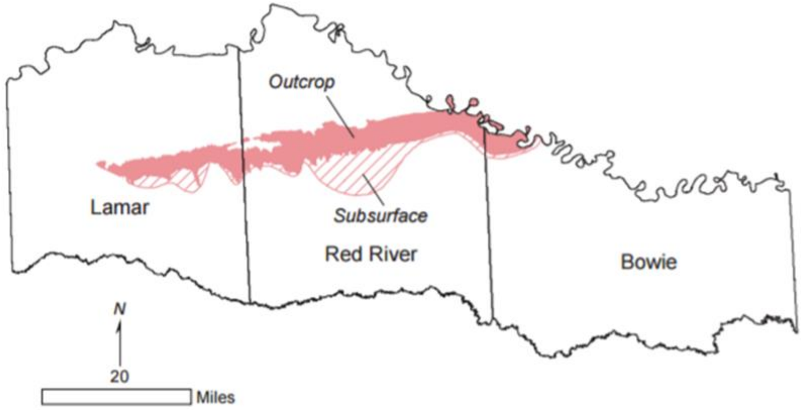
- Upper Trinity GCD updated pumping

| Aquifer | O/D* | County | acft |
|---|---|---|---|
| Glen Rose | Outcrop | Hood | 792 |
| Glen Rose | Downdip | Hood | 125 |
| Paluxy | Outcrop | Hood | 159 |
| Twin Mountains | Outcrop | Hood | 5,025 |
| Twin Mountains | Downdip | Hood | 10,768 |
| Antlers | Outcrop | Montague | 6,114 |
| Antlers | Downdip | Montague | |
| Antlers | Outcrop | Parker | 2,905 |
| Antlers | Downdip | Parker | |
| Glen Rose | Outcrop | Parker | 3,684 |
| Glen Rose | Downdip | Parker | 1,406 |
| Paluxy | Outcrop | Parker | 2,614 |
| Paluxy | Downdip | Parker | 50 |
| Twin Mountains | Outcrop | Parker | 1,294 |
| Twin Mountains | Downdip | Parker | 2,527 |
| Antlers | Outcrop | Wise | 9,106 |
| Antlers | Downdip | Wise | 2,439 |
| **TOTAL** | | | **49,009** |

*O/D refers to the "outcrop" or "downdip" portion of each aquifer

# Review of NON-RELEVANT Aquifers

- The Nacatoch, Blossom and Brazos River Alluvium aquifers were classified as non-relevant for the purposes of joint planning
- DFCs were not adopted for these aquifers


# Questions ?

# Agenda Item 7

- Presentations and discussions regarding Environmental Impacts, Subsidence Impacts, and Hydrological Conditions factors as they relate to Desired Future Conditions pursuant to Texas Water Code Section 36.108(d).

# GMA 8 Schedule to Discuss Nine Factors

**November 2019**

| Environmental Impacts | Subsidence Impacts | Hydrological Conditions |
|---|---|---|

**February 2020**

| Aquifer Uses or Conditions | Supply Needs & Management Strategies | Private Property Rights |
|---|---|---|

**May 2020**

| Socioeconomic Impacts | DFC Feasibility | Other Relevant Information |
|---|---|---|

8

# Hydrological Conditions

# Hydrological Conditions Summary: Water Level Data

— TWDB GWDB water level data

— Define relevant **TWDB** aquifer codes

— Count measurements and throw out null values.

  — *Wells with less than 3 measurements; and*

  — *Wells that do not have a measurement since 2000*

— Selection criteria reduced well locations with water levels from 8,461 to 677 wells used for mapping/hydrographs

— WSP will provide PDFs for GMA 8 posting and review

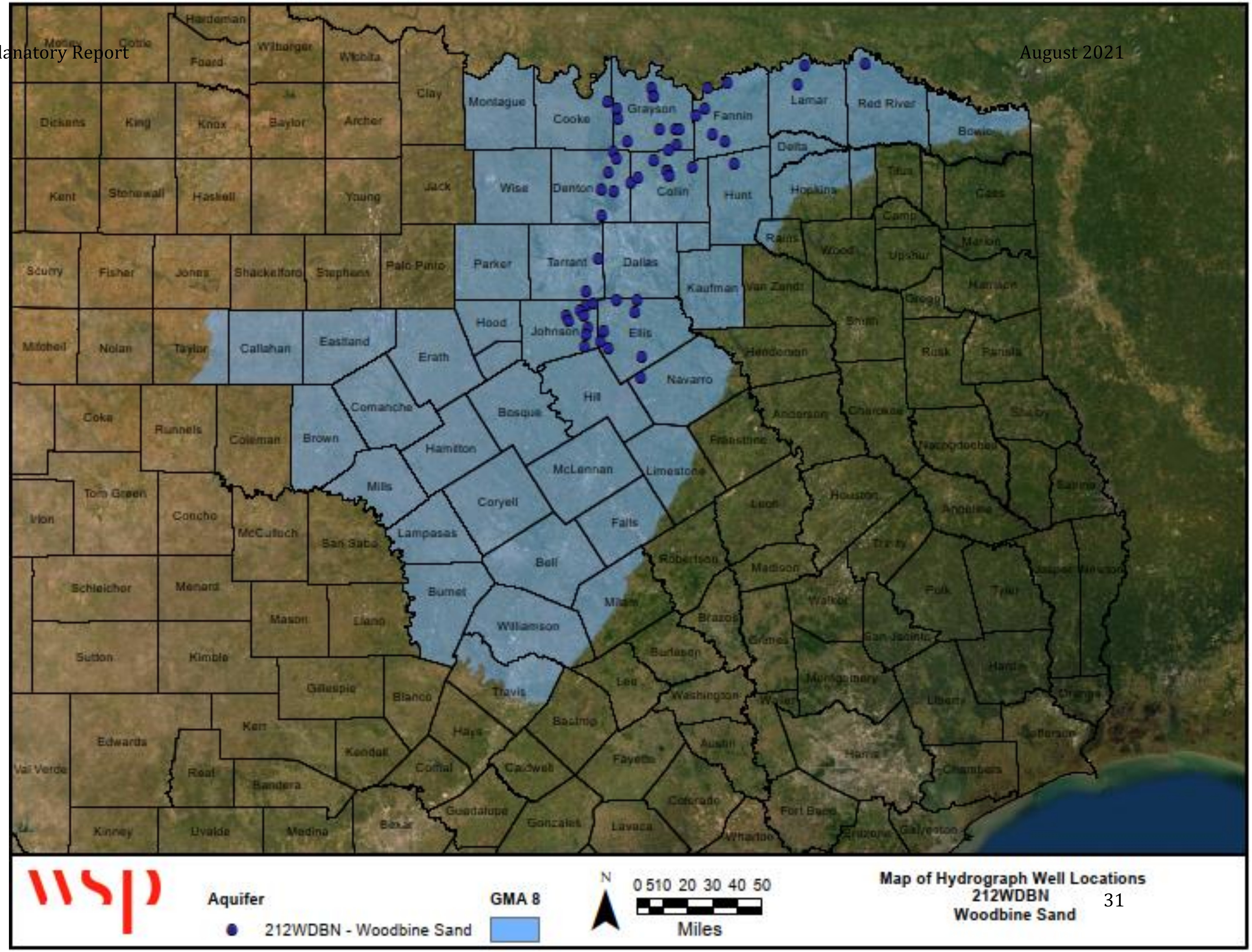
10


Graph of the Number of Wells per GCD and Aquifer
212WDBN - Woodbine Sand
217HSTN - Hosston Formation
218ALRS - Antlers Sand
218CCRK - Cow Creek Limestone
A - Edwards and Associated Limestones - (Balcones Fault Zone Aquifer)
218EDRD - Edwards Limestone
218EDRDA - Edwards and Associated Limestones
218GLRS - Glen Rose Limestone
218GLRSL - Glen Rose Limestone, Lower Member
218GLRSU - Glen Rose Limestone, Upper Member
218HNSL - Hensell Sand Member of Travis Peak Formation
218PLXY - Paluxy Sand
218PRSL - Pearsall Formation
218TVPK - Travis Peak Formation
218TWMT - Twin Mountains Formation
318WCHT - Wichita Formation or Group
Number of Wells
Central Texas GCD
Clearwater UWCD
Middle Trinity GCD
North Texas GCD
Northern Trinity GCD
Prairielands GCD
Red River GCD
Saratoga UWCD
Southern Trinity GCD
Upper Trinity GCD
GCD

11

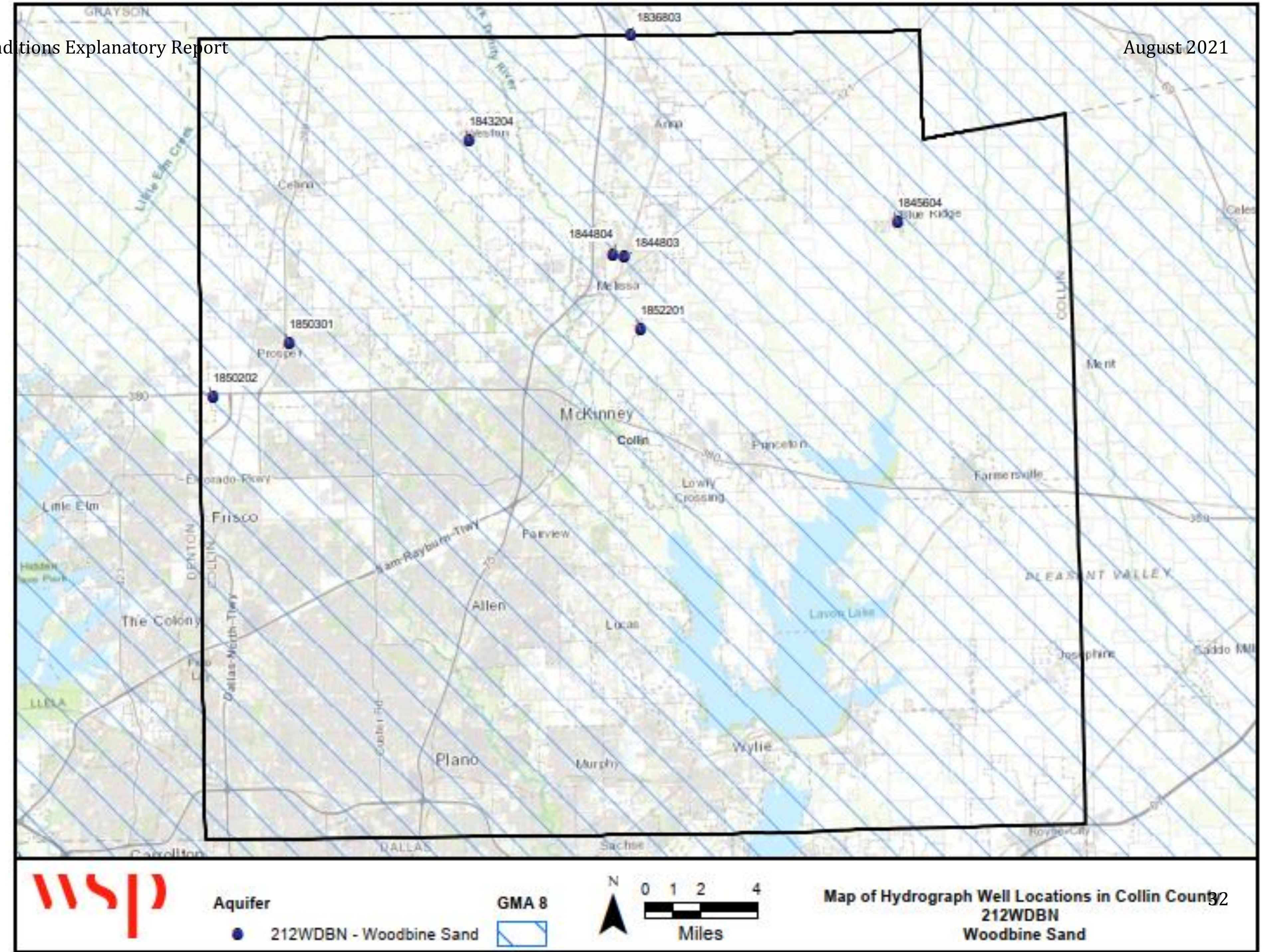
# WOODBINE AQUIFER WELLS WITH HYDROGRAPHS

12



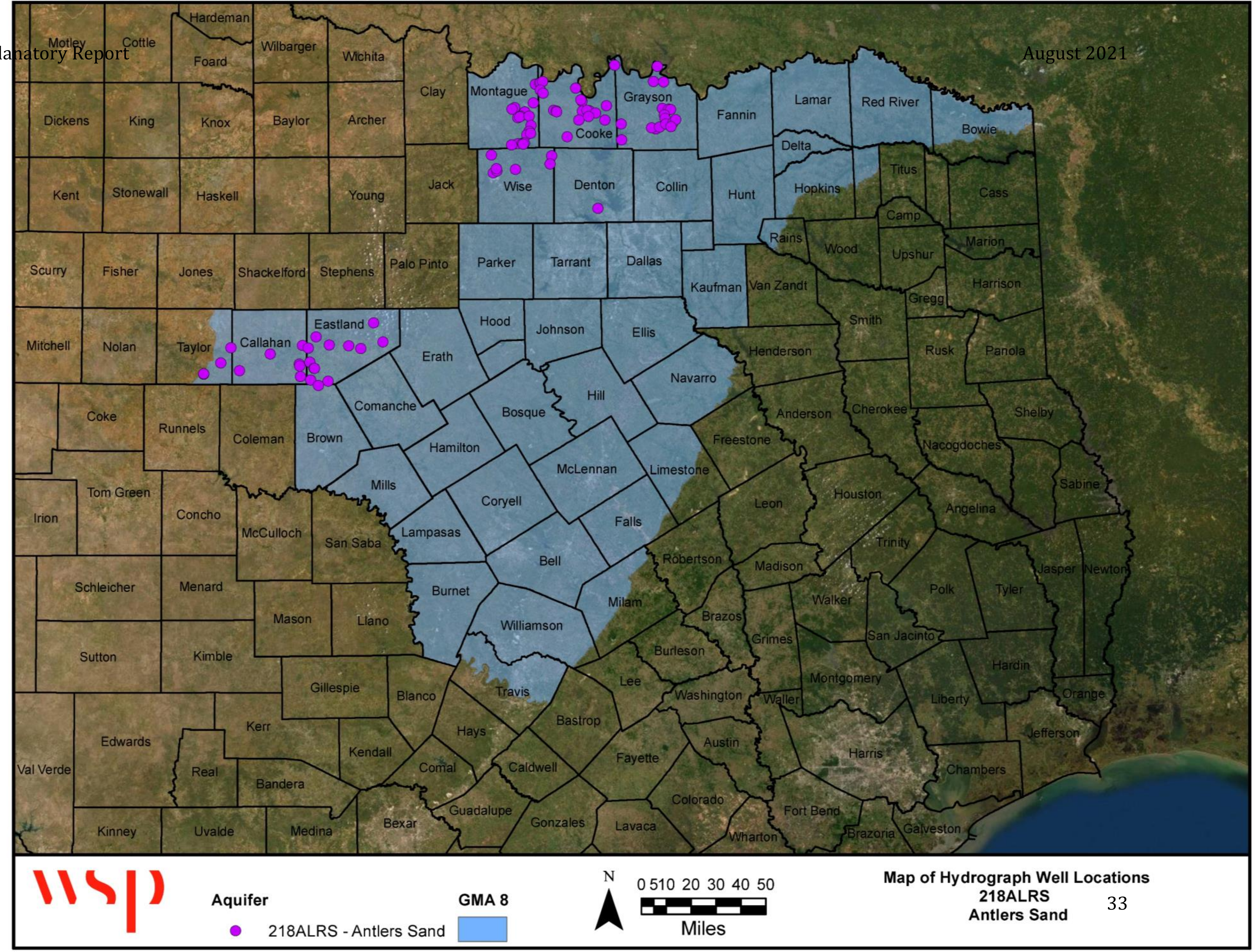
WOODBINE AQUIFER WELLS WITH HYDROGRAPHS IN COLLIN COUNTY

13



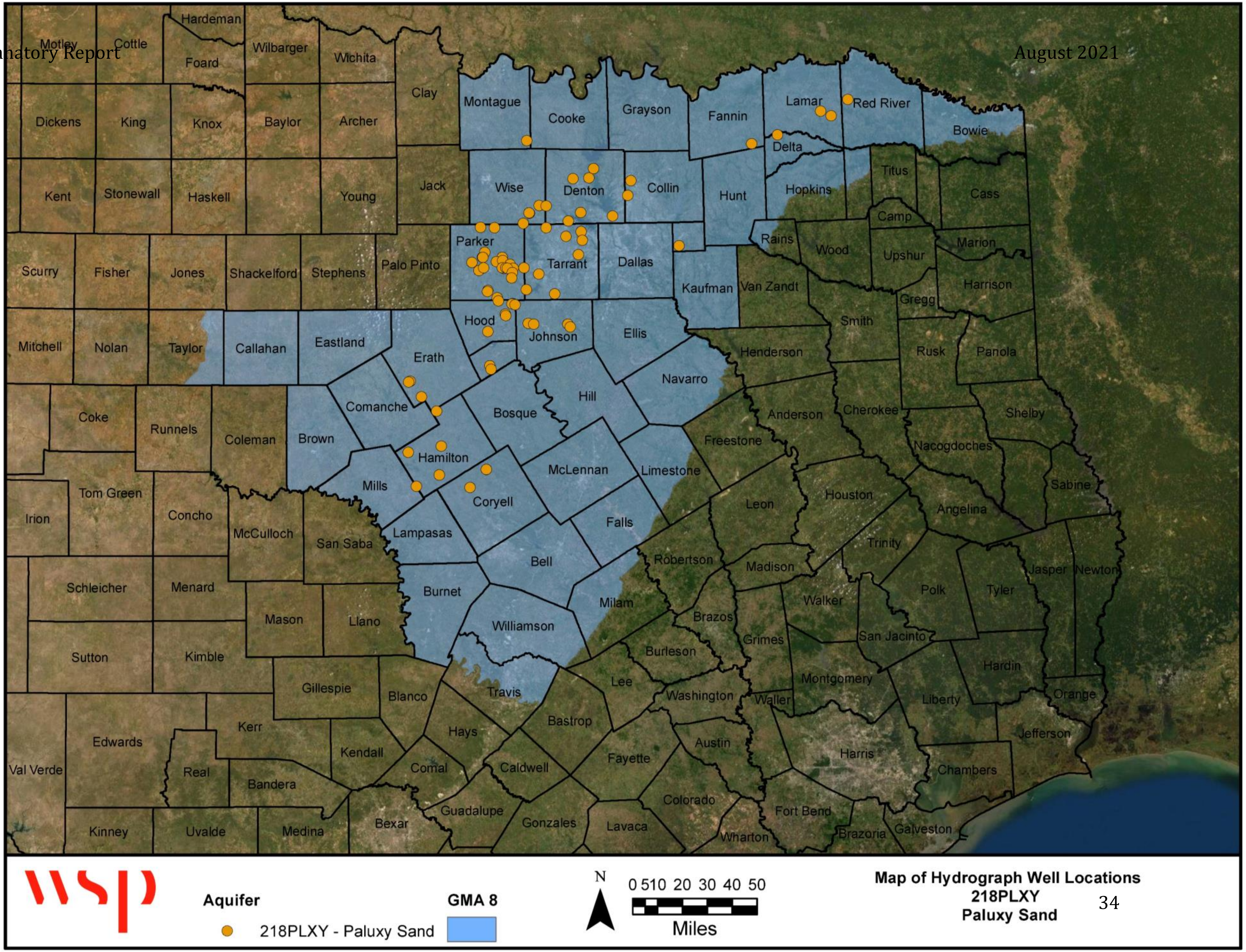
# ANTLERS AQUIFER WELLS WITH HYDROGRAPHS

14



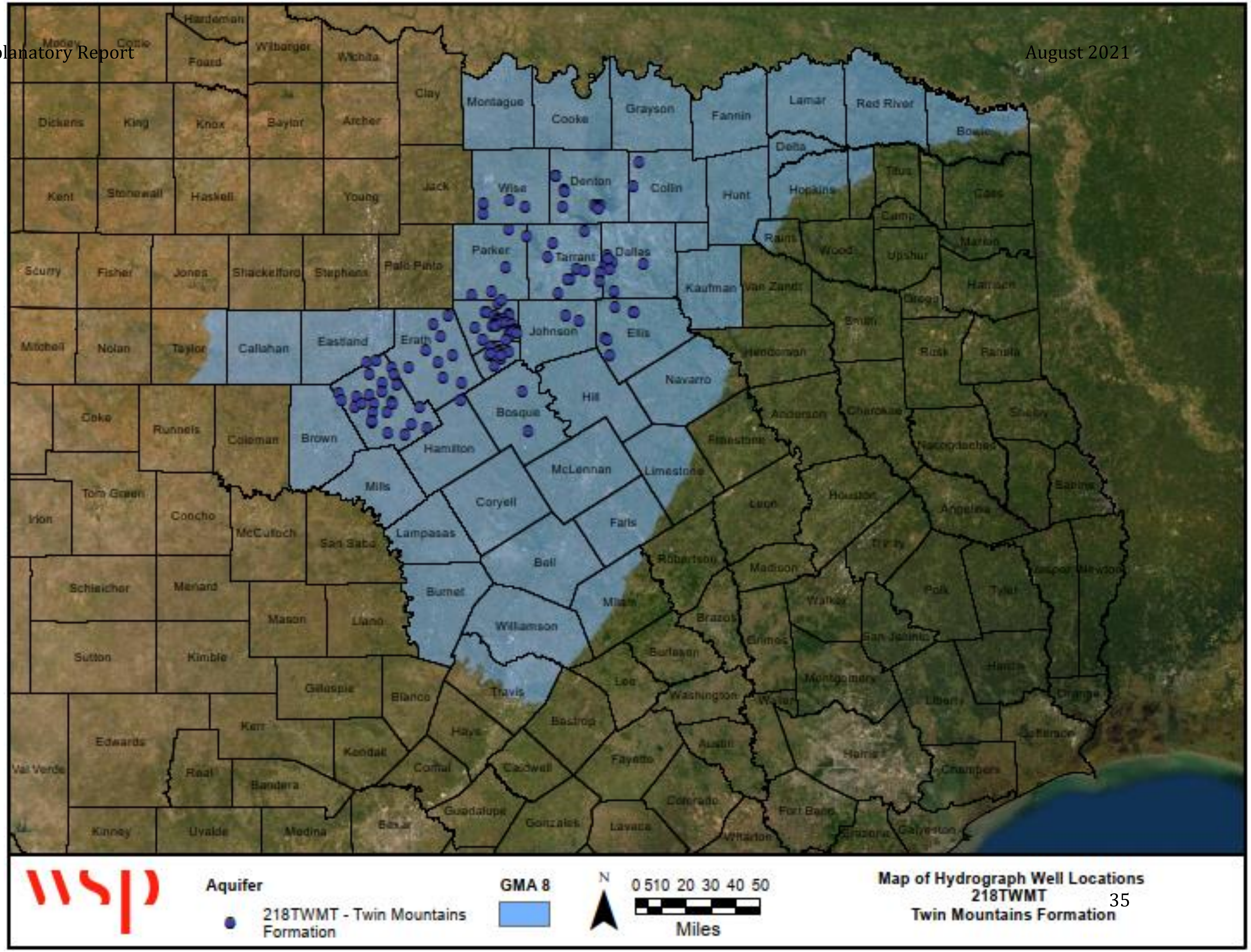
# PALUXY AQUIFER WELLS WITH HYDROGRAPHS

15



# TWIN MOUNTAIN AQUIFER WELLS WITH HYDROGRAPHS

16



# HENSELL AQUIFER WELLS WITH HYDROGRAPHS

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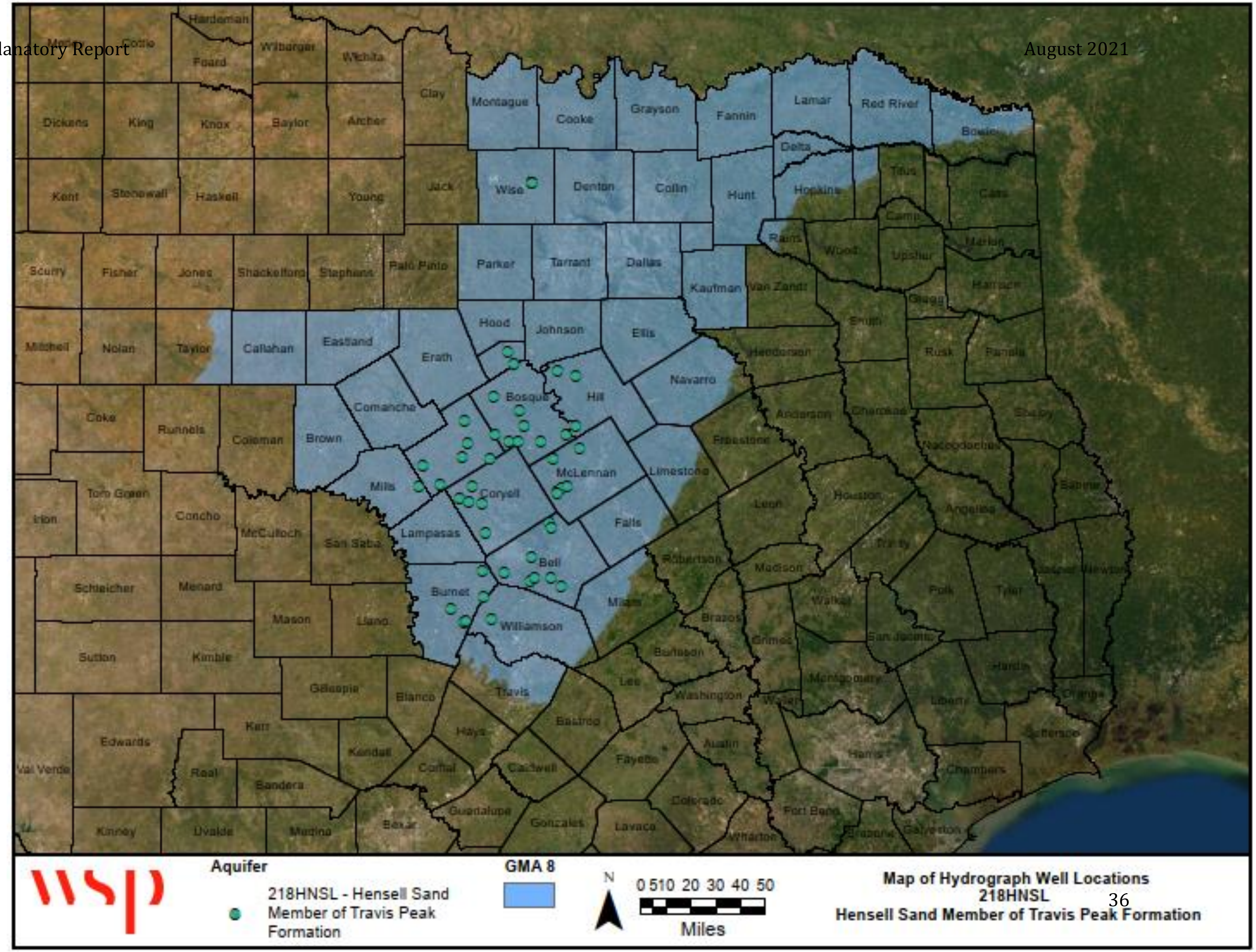
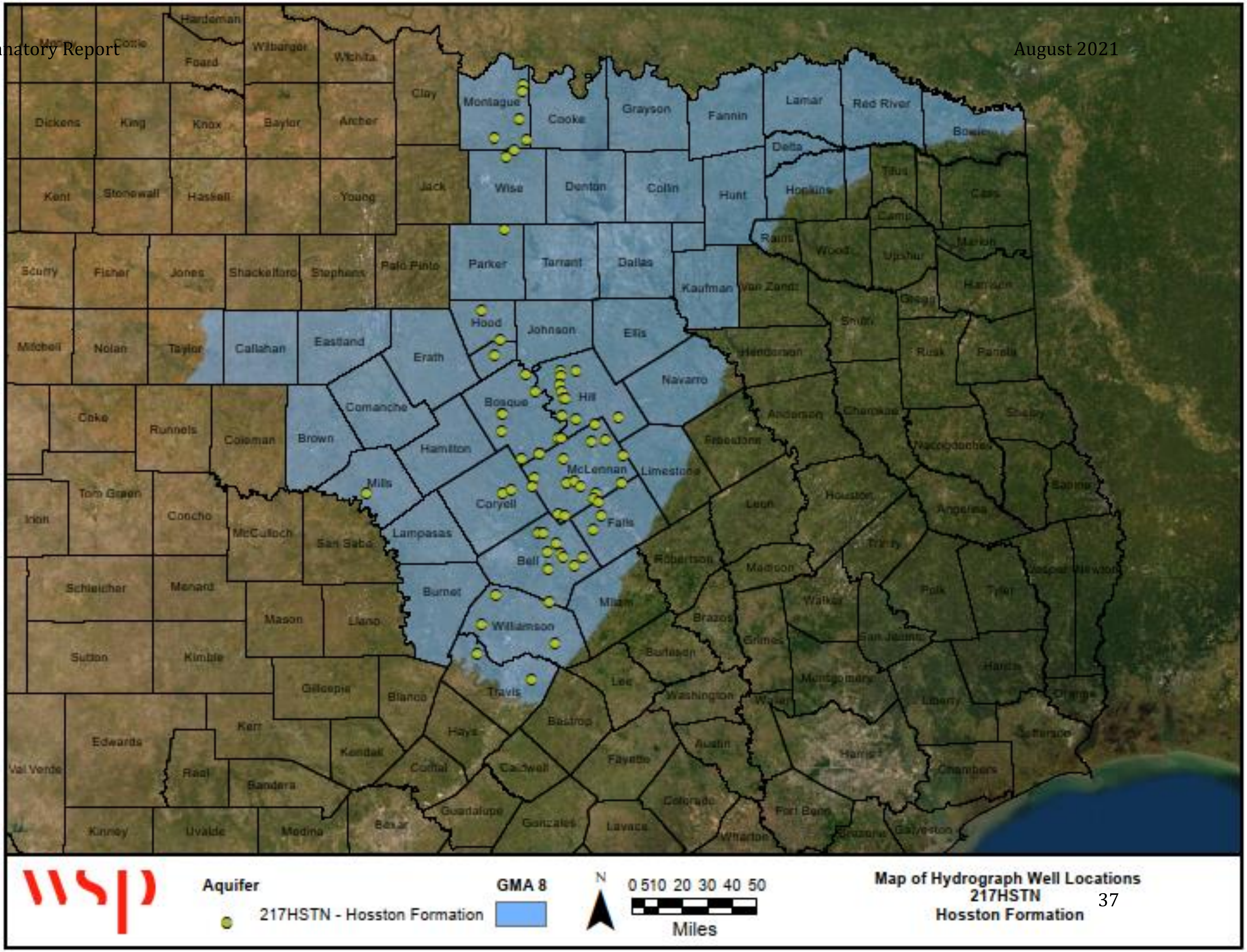
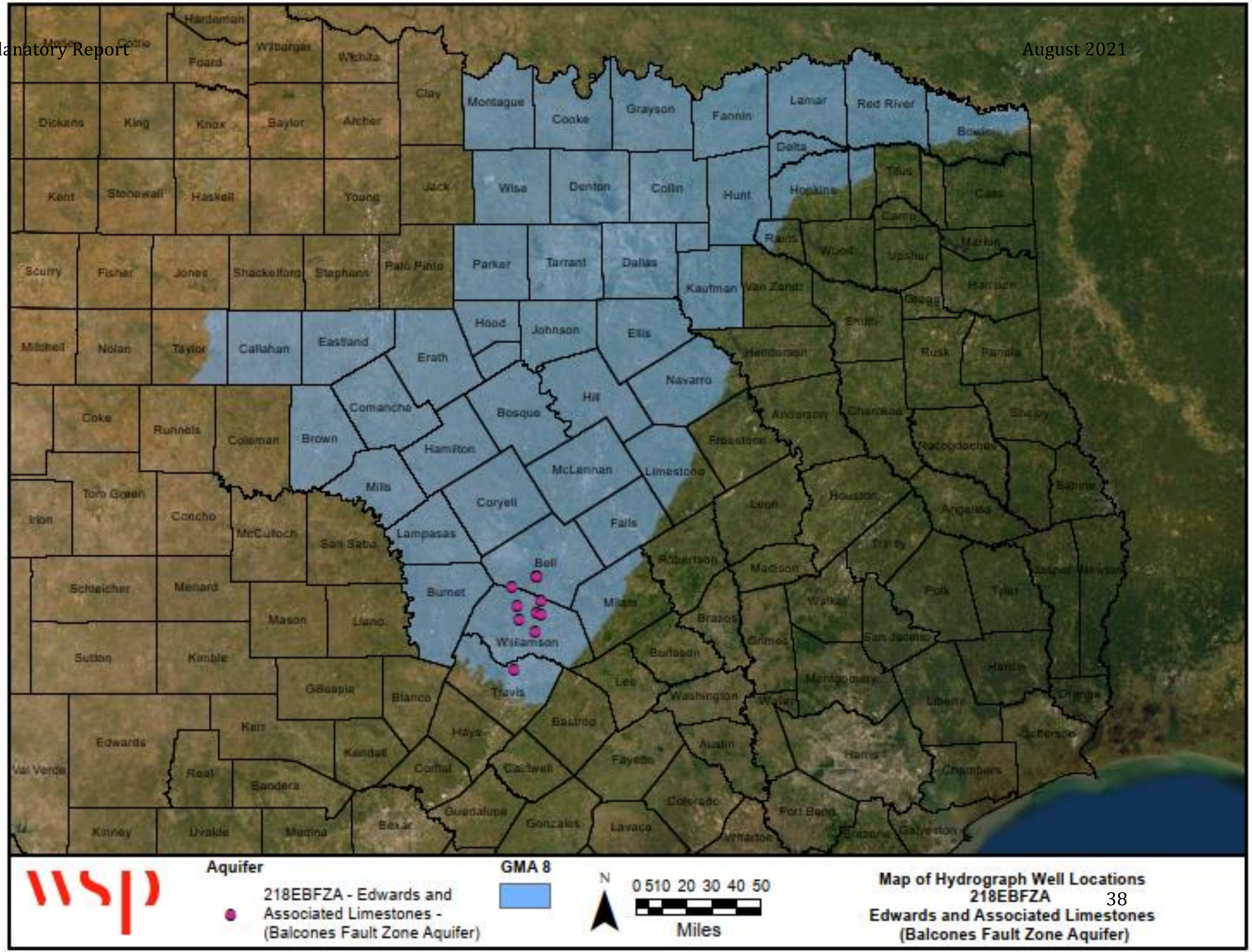


# HOSSTON AQUIFER WELLS WITH HYDROGRAPHS

18



# EDWARDS-BFZ AQUIFER WELLS WITH HYDROGRAPHS

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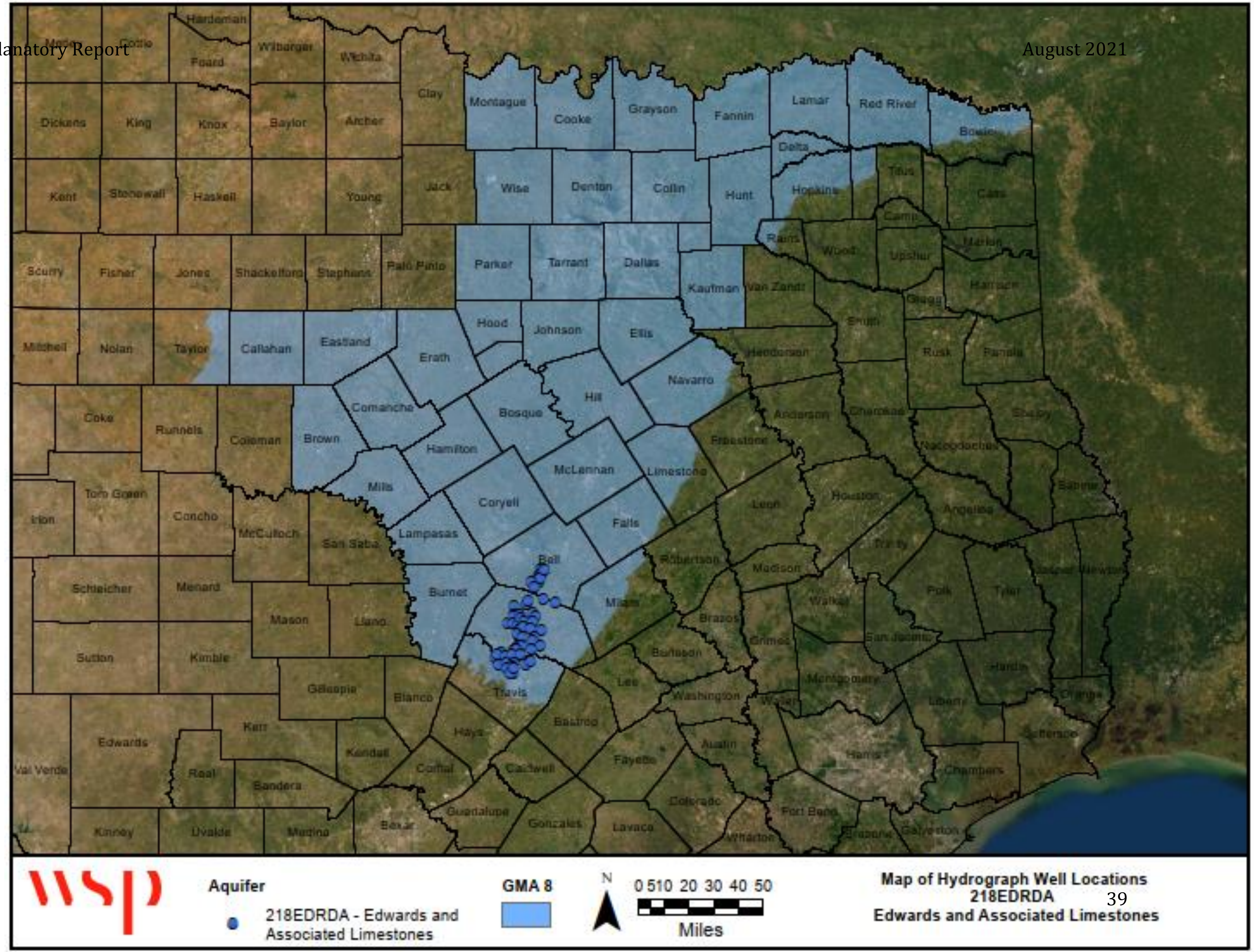
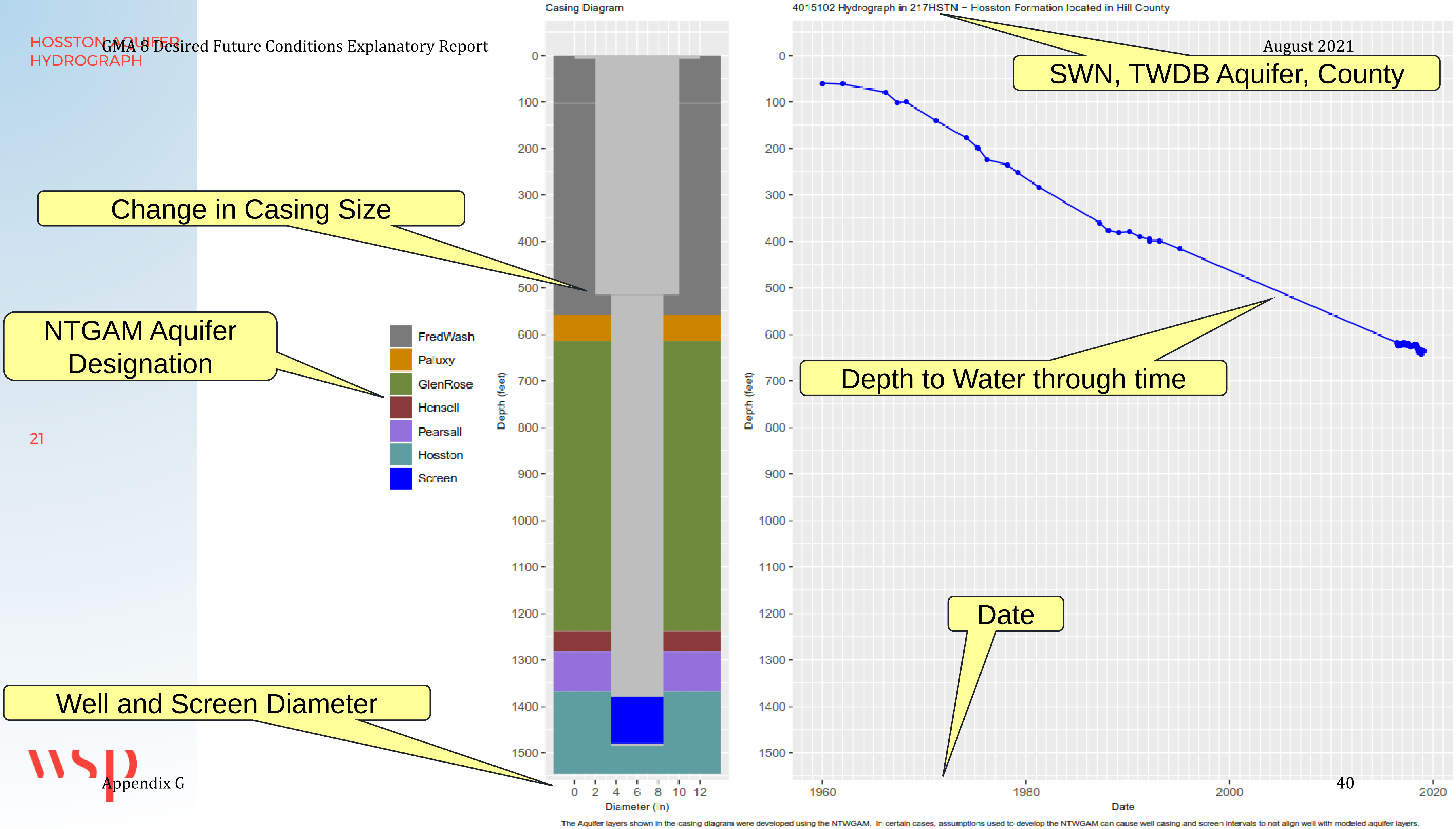
# EDWARDS AND ASSOCIATED LIMESTONES AQUIFER WELLS WITH HYDROGRAPHS

20



# HOSSTON AQUIFER HYDROGRAPH

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HENSELL AQUIFER HYDROGRAPH IN BELL COUNTY

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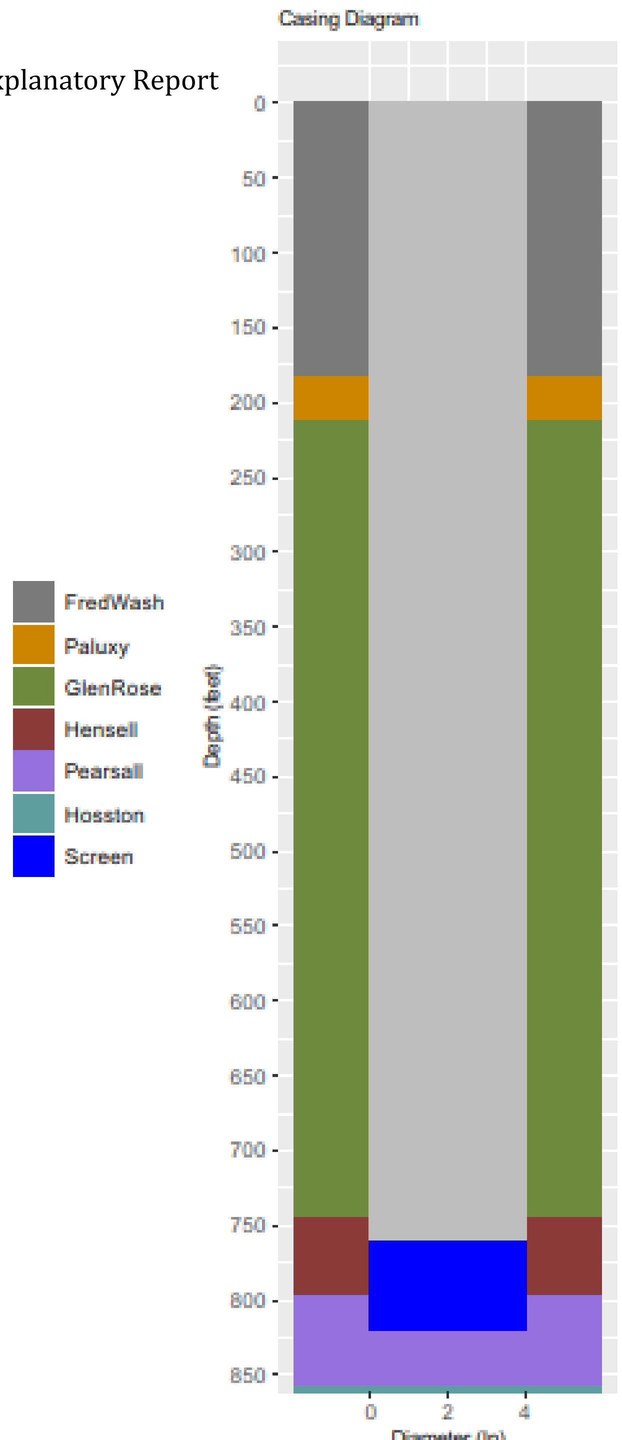


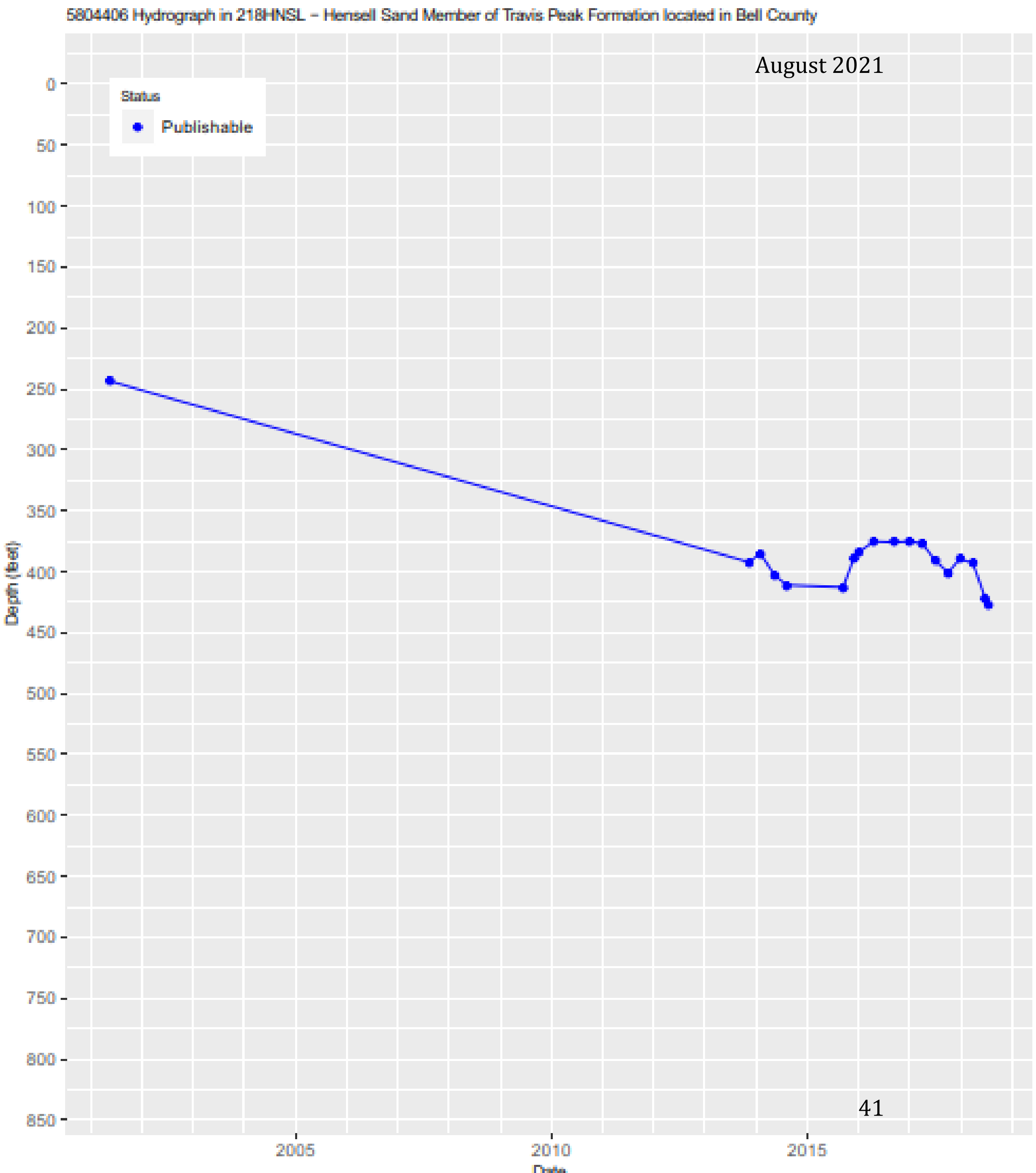

# Subsidence Impacts

# Key Factors Impacting Subsidence

1. Clay layer distribution, thickness, & compressibility
2. Amount and timing of water level changes
3. Lowest historical water level

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# TWDB Subsidence Tool- What Is It?

— Developed in 2017

— Helps GCDs identify risk subsidence due to groundwater pumping

— Capable in identifying risk subsidence in all major/minor aquifers in Texas

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# Subsidence: Using the Tool

— Tool requires a geophysical log, adequate water level data, water quality data, and the DFC

— The log is used to determine aquifer top, bottom, thickness, and clay thickness in the *aquifer*

— Ideally, a predevelopment water level, a 2010 water level, and a current water level is available

— Current GCD or TWDB observation wells are the best candidates.

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# Subsidence

— How Is Subsidence Estimated?
  - *Saturated thickness and extent of clay*
  - *Clay compressibility*
  - *Aquifer lithology*
  - *Pre-consolidation characterization*
  - *Predicted DFC water level decline*

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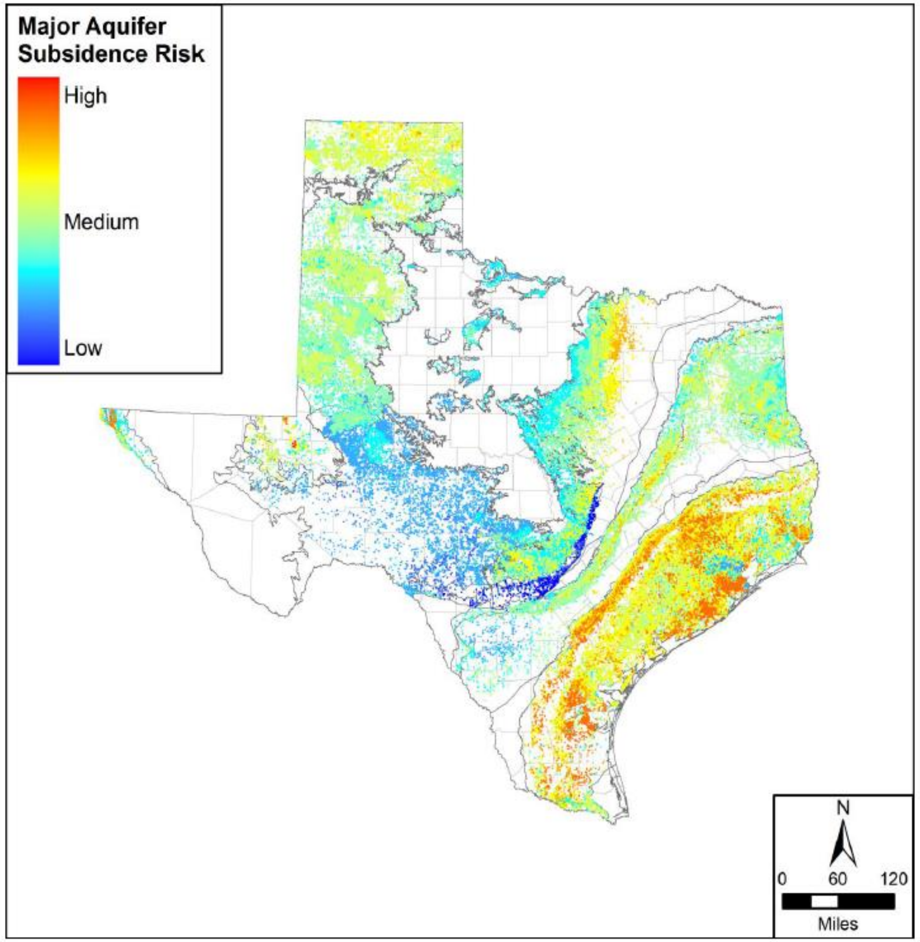
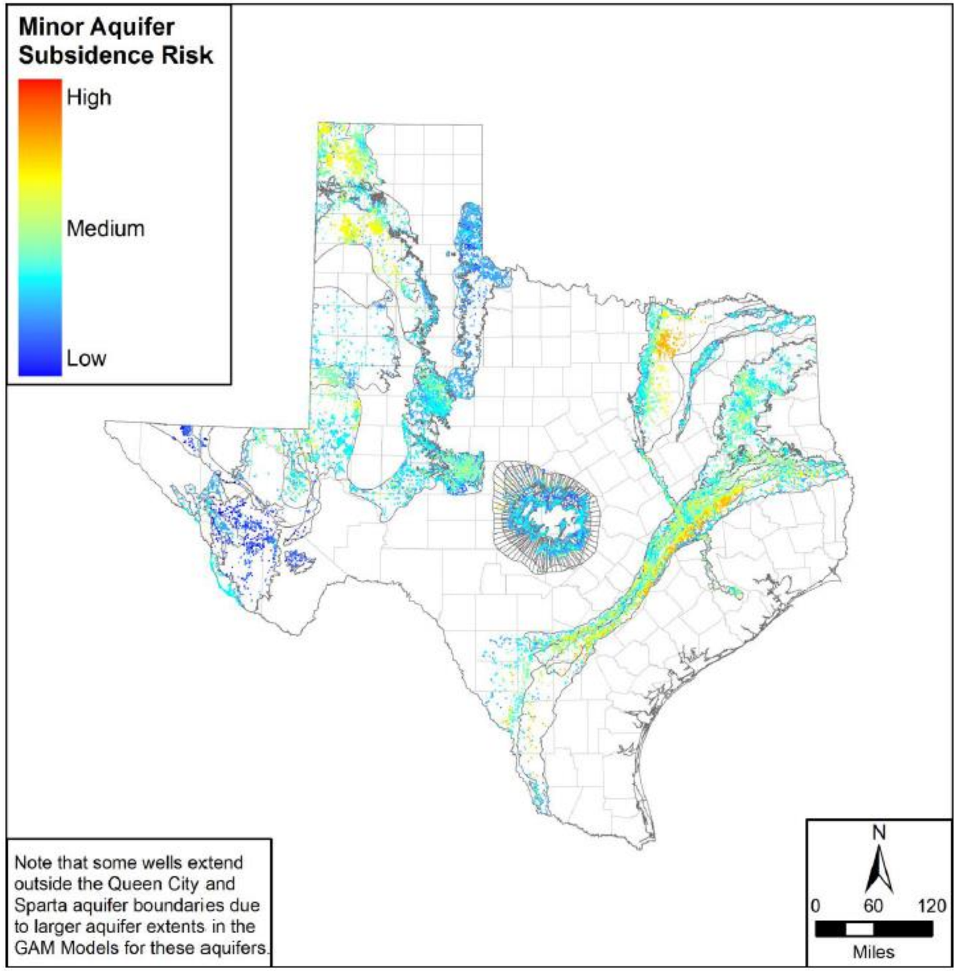
# Visualizing the Subsidence Risk

- 340,000 wells statewide
- “High Risk” include Yegua Jackson and Gulf Coast
- “Low Risk” include igneous and Edwards aquifers
- *The only common characteristic shared by all “High Risk” aquifers is that they all have unconsolidated clastic aquifers*

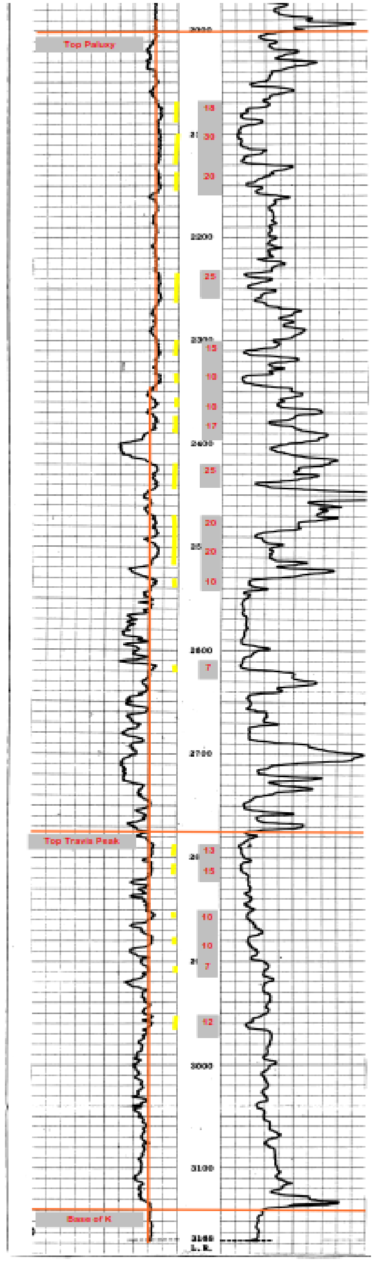


# The Localized Evaluation Process

1. Identify the downdip area
2. Find TWBD or GCD wells that meet available data criteria
3. Analyze logs to determine aquifer thickness and clay thickness
4. Calculate the risk using the tool

**Rockett SUD 33-26-902**
**Clay thickness = 294 feet**

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# Subsidence Calculations

30

| | |
|---|---|
| **Aquifer** | **Trinity** |
| **Report Generated by** | K. Laughlin |
| **Report Date** | 3/13/2019 |
| **Well Name** | 33-26-902 Rockett SUD |
| **Water Levels to Use for Predictions** | Base and Future |

| Location and Water Level Based User Input | User Input Values | Units |
|---|---|---|
| Land Surface (feet MSL) | 592 | feet |
| Aquifer Top (feet MSL) | -1,408 | feet |
| Aquifer Thickness | 1,140 | feet |
| Clay Thickness within Aquifer | 294 | feet |
| Groundwater Temperature | 44 | Degrees Celsius |
| Groundwater Total Dissolved Solids (TDS) | 1,295 | mg/l |
| Predevelopment Water Level (feet MSL) | 32 | feet |
| Current Water Level (feet MSL) | -709 | feet |
| Unsaturated Thickness | 1,301 | feet |
| Preconsolidation (deepest) Water Level (feet MSL) | -603 | feet |
| Base Water Level (feet MSL) | -579 | feet |
| Future Water Level (feet MSL) | -880 | feet |
| Beginning Year for Subsidence Evaluation | 2010 | year |
| Ending Year for Subsidence Evaluation | 2070 | year |

# Subsidence Risk Results

| Aquifer Subsidence Calculations based on overall aquifer information and user supplied input values | | Units |
|---|---|---|
| Water Level Trend | -5.01 | ft/year; negative for decline |
| Predominant Aquifer Lithology | Consolidated Clastic | Description |
| Aquifer Storage Coefficient | 0.0001 | Dimensionless |
| Aquifer Porosity | 25 | Percent |
| Predominant Aquifer Clay Type | Stiff Clay | Type |
| Aquifer Clay Porosity | 50 | Percent |
| Minimum Aquifer Compressibility | 8.96E-05 | $psi^{-1}$ |
| Maximum Aquifer Compressibility | 1.38E-04 | $psi^{-1}$ |
| Minimum Clay Compressibility | 8.96E-04 | $psi^{-1}$ |
| Maximum Clay Compressibility | 1.79E-03 | $psi^{-1}$ |
| Minimum Elastic Specific Storage ($S_{ske}$) | 2.41E-07 | $ft^{-1}$ |
| Maximum Elastic Specific Storage ($S_{ske}$) | 4.57E-07 | $ft^{-1}$ |
| Minimum Inelastic Specific Storage ($S_{skv}$) | 2.41E-05 | $ft^{-1}$ |
| Maximum Inelastic Specific Storage ($S_{skv}$) | 4.57E-05 | $ft^{-1}$ |
| **Total Weighted Risk for Well 0 (low risk) to 10 (high risk)** | **7.66** | |

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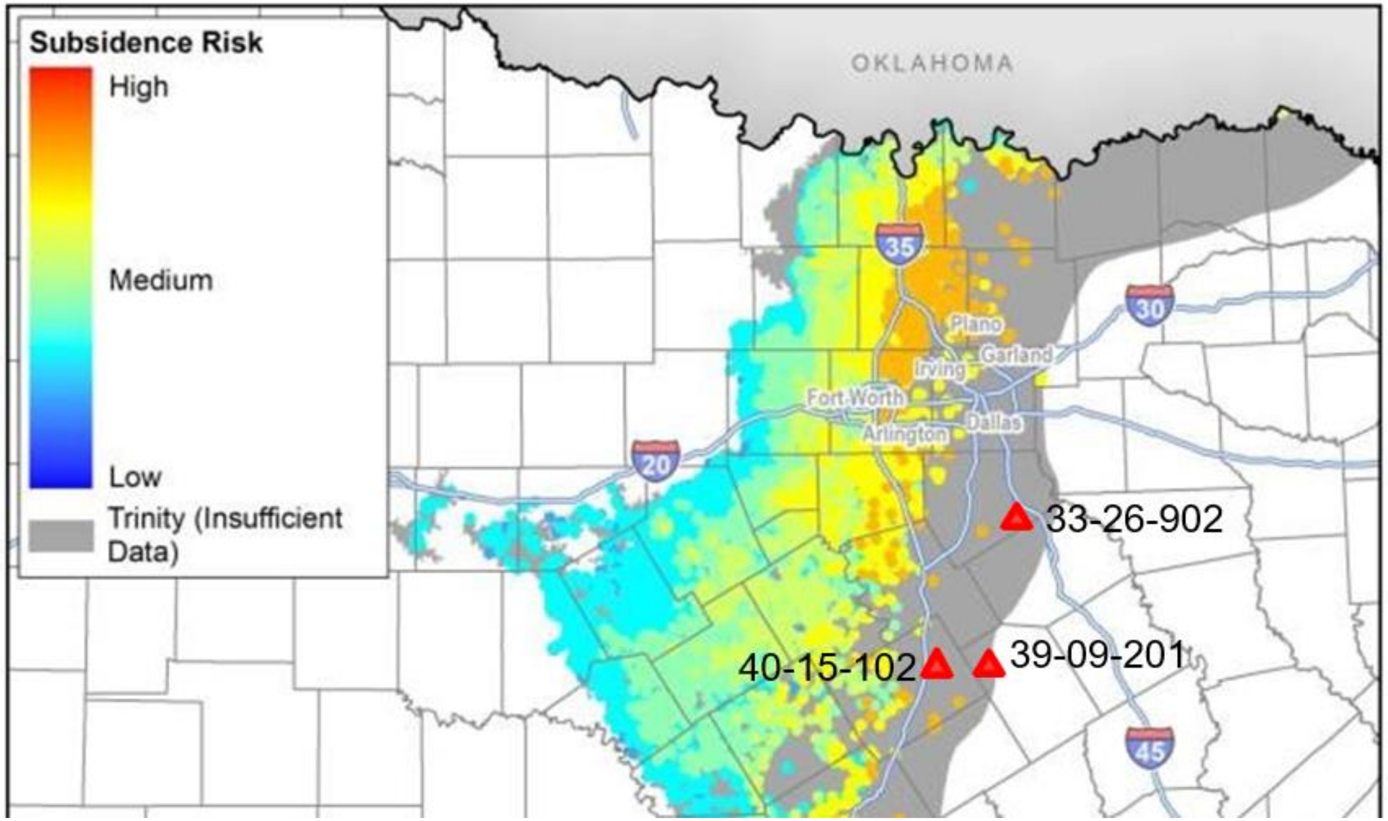
# Prairielands GCD (and nearby)

| Well Owner | State Well ID | Aquifer Thickness (feet) | Clay Thickness (feet) | **Subsidence Risk Score** | Minimum Subsidence (feet) | Maximum Subsidence (feet) |
|---|---|---|---|---|---|---|
| Rockett SUD | 33-26-902 | 1,140 | 668 | **7.66** | 0.6 | 1.2 |
| Penelope WSC | 39-09-201 | 1,440 | 299 | **8.59** | 3.0 | 6.0 |
| Aquilla | 40-15-102 | 835 | 294 | **7.66** | 2.5 | 4.5 |



# Environmental Impacts

# Environmental Impacts: Spring Locations

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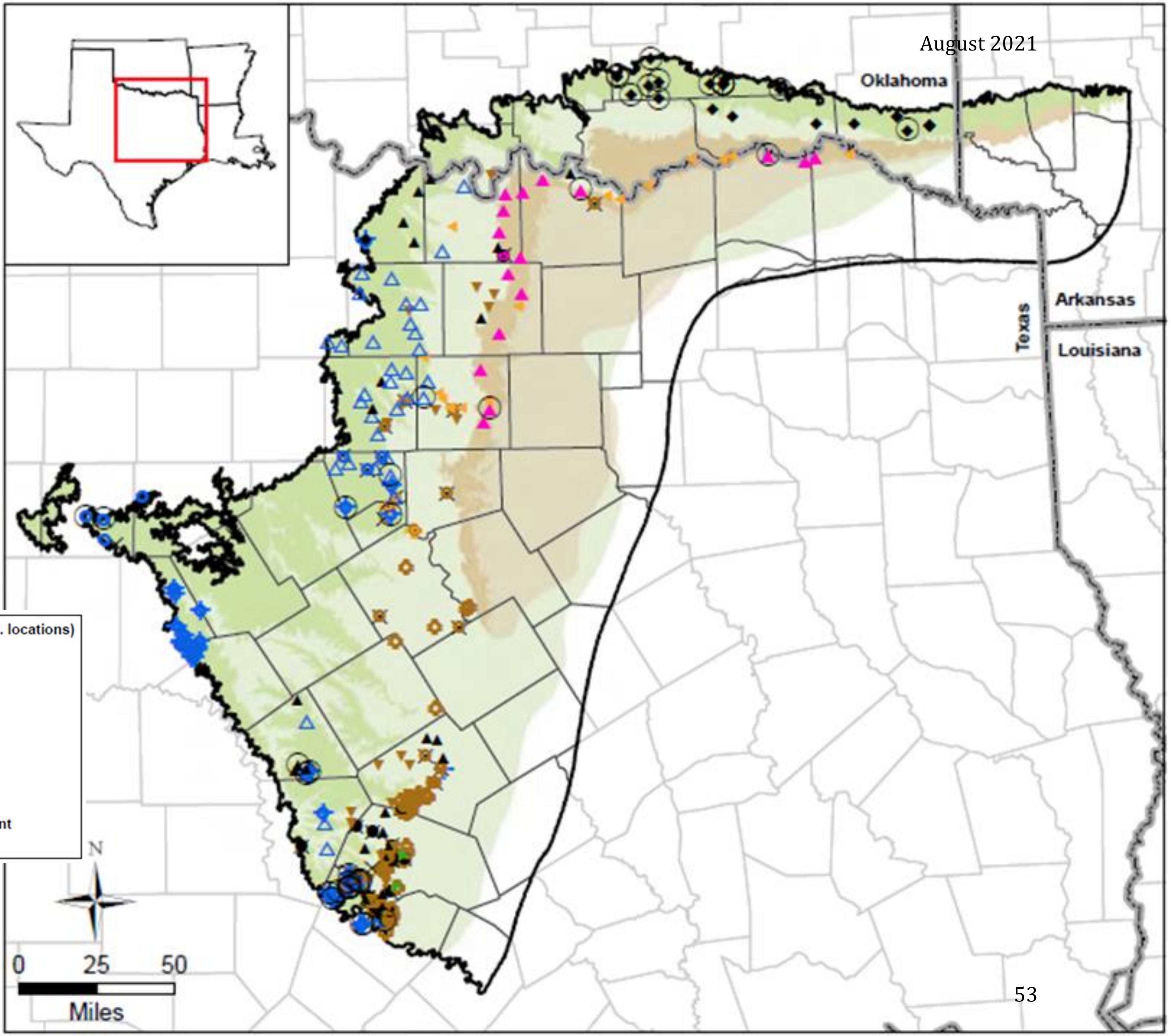

# Environmental Impacts: Spring Discharge and Streamflow

— Southern portion of GMA 8 has the greatest density of springs.

— Most are in the Washita/Fredericksburg, which includes Edwards BFZ.

— Many located in far western extent of GMA 8.

— Springs flow when the water level elevation of the aquifer is higher than the spring elevation.

— Water level declines reduce spring flow in the model

# Environmental Impacts Summary

— NTGAM includes boundary conditions to represent :
  — *Springs*
  — *Ephemeral streams*
  — *Perennial streams*

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— Water budgets from Run 10 in existing ER indicate reduced spring flows and baseflows where DFCs include water level decline in aquifer outcrop areas.

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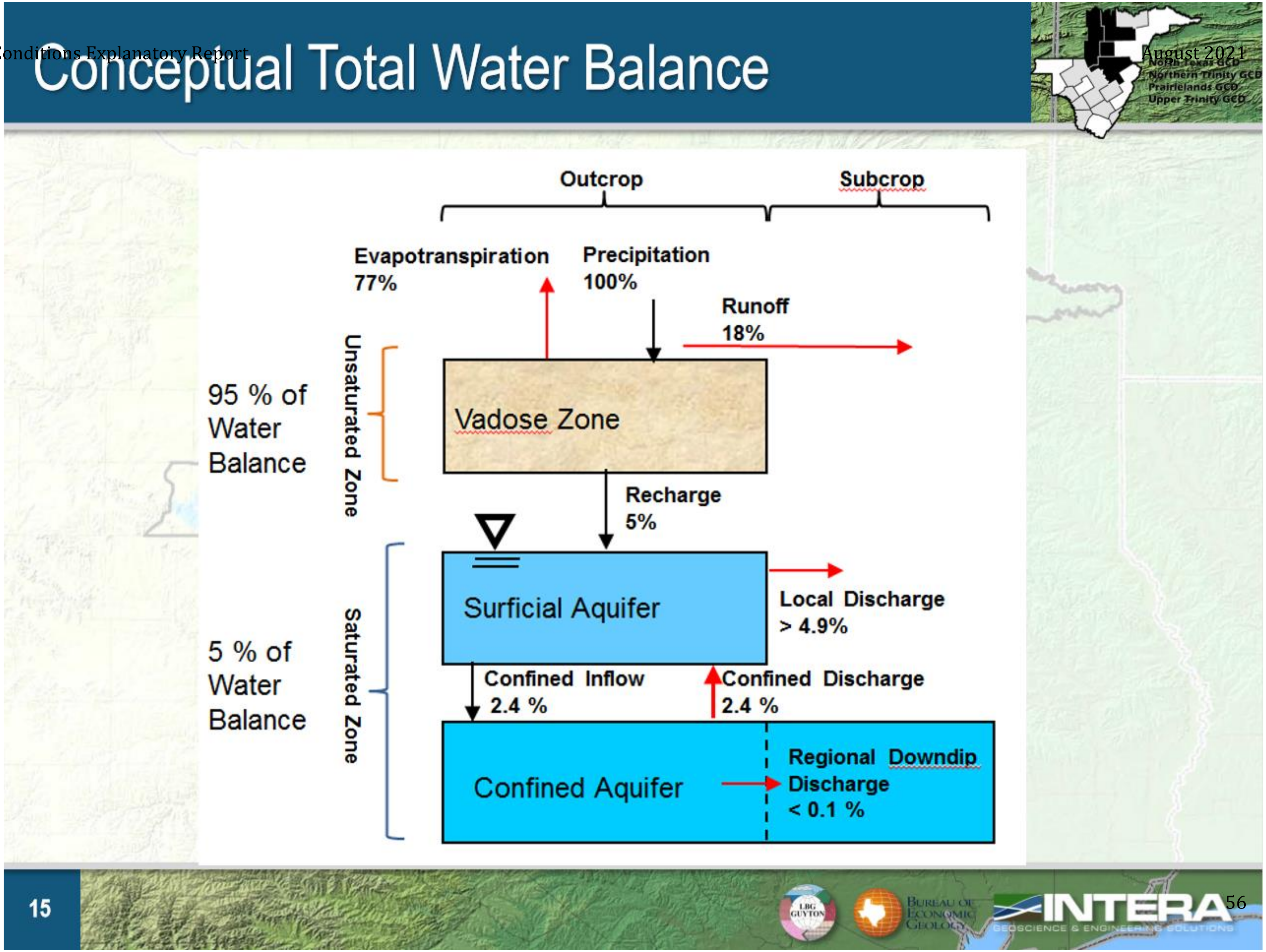
Conceptual Total Water Balance
North Texas GCD
Northern Trinity GCD
Prairielands GCD
Upper Trinity GCD
Outcrop
Subcrop
Evapotranspiration
77%
Precipitation
100%
Runoff
18%
95 % of
Water
Balance
Unsaturated Zone
Vadose Zone
Recharge
5%
Surficial Aquifer
Local Discharge
> 4.9%
5 % of
Water
Balance
Saturated Zone
Confined Inflow
2.4 %
Confined Discharge
2.4 %
Confined Aquifer
Regional Downdip
Discharge
< 0.1 %
15
INTERA
GEOSCIENCE & ENGINEERING SOLUTIONS

# Environmental Impacts: ER Run 10 Water Budget Examples

| NTGCD Run 10 - Johnson County - Wash/Fred Aquifer | | | | | | | |
|---|---|---|---|---|---|---|---|
| Component | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 |
| Lateral Flow | -2,882 | -2,920 | -2,927 | -2,944 | -2,960 | -2,969 | -2,977 |
| Leakage (Above) | 1,105 | 1,022 | 1,039 | 1,068 | 1,096 | 1,122 | 1,140 |
| Leakage (Below) | -4,767 | -4,214 | -4,234 | -4,279 | -4,313 | -4,336 | -4,354 |
| Recharge | 17,488 | 17,488 | 17,488 | 17,488 | 17,488 | 9,023 | 17,488 |
| Perennial | -145 | -125 | -122 | -120 | -119 | -104 | -117 |
| Ephemeral | -15,345 | -14,345 | -13,842 | -13,474 | -13,168 | -12,558 | -12,499 |
| Evapotransipration | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Springs | -22 | -20 | -20 | -19 | -19 | -18 | -18 |
| Reservoir | 122 | 124 | 125 | 127 | 128 | 129 | 130 |
| Wells | -2,554 | -2,554 | -2,554 | -2,554 | -2,554 | -2,554 | -2,554 |
| Flowing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage | 7,093 | 5,636 | 5,140 | 4,800 | 4,514 | 12,356 | 3,854 |
| Total | 92 | 92 | 92 | 92 | 93 | 92 | 93 |

18% decline

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30% decline

| NTGCD Run 10 - Somervell County - Hensell Aquifer | | | | | | | |
|---|---|---|---|---|---|---|---|
| Component | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 |
| Lateral Flow | 2,051 | 1,909 | 1,834 | 1,791 | 1,761 | 1,740 | 1,722 |
| Leakage (Above) | 1,984 | 2,335 | 2,480 | 2,557 | 2,602 | 2,624 | 2,646 |
| Leakage (Below) | -720 | -1,035 | -1,139 | -1,194 | -1,227 | -1,249 | -1,266 |
| Recharge | 308 | 308 | 308 | 308 | 308 | 164 | 308 |
| Perennial | -1,935 | -1,681 | -1,564 | -1,488 | -1,435 | -1,343 | -1,353 |
| Ephemeral | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Evapotransipration | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Springs | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Reservoir | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Wells | -2,127 | -2,127 | -2,127 | -2,127 | -2,127 | -2,127 | -2,127 |
| Flowing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Storage | 440 | 292 | 208 | 154 | 118 | 191 | 70 |
| Total | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

# Summary of Impacts to Springs and Perennial/Ephemeral Streams

| GCD or County | Percent Difference from 2010 to 2070 Perennial | Percent Difference from 2010 to 2070 Ephemeral | Percent Difference from 2010 to 2070 Springs |
|---|---|---|---|
| Clearwater UWCD | 18 | 34 | 79 |
| Middle Trinity GCD | 19 | 16 | 100 |
| ND Brown | 0 | 9 | 11 |
| Central Texas GCD | 35 | 14 | 0 |
| ND Callahan | 0 | 8 | 0 |
| North Texas GCD | 11 | 14 | 18 |
| ND Dallas | 31 | 0 | 0 |
| ND Eastland | 0 | 14 | 0 |
| Prairielands GCD | 29 | 19 | 20 |
| Red River GCD | 7 | 11 | 0 |
| ND Hamilton | 16 | 21 | 0 |
| Upper Trinity GCD | 36 | 21 | 24 |
| ND Jack | 0 | 38 | 0 |
| ND Lamar | 2 | 5 | 16 |
| Saratoga UWCD | 7 | 7 | 3 |
| Southern Trinity GCD | 17 | 26 | 0 |
| ND Mills | -3 | 7 | 0 |
| ND Palo Pinto | 0 | 12 | 0 |
| ND Red River | 4 | 5 | 0 |
| Northern Trinity GCD | 15 | 19 | 28 |
| ND Taylor | 0 | 2 | 0 |
| ND Travis | NA | 22 | 0 |
| ND Williamson | NA | 31 | 0 |
| | | | |

*Positive values indicate decline, and negative values indicate increase

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# Agenda Item 10

- Discussion of possible agenda items and dates for next GMA 8 meeting

# GMA 8 Schedule to Discuss Nine Factors

| November 2019 | | |
|---|---|---|
| Environmental Impacts | Subsidence Impacts | Hydrological Conditions |
| **February 2020** | | |
| Aquifer Uses or Conditions | Supply Needs & Management Strategies | Private Property Rights |
| **May 2020** | | |
| Socioeconomic Impacts | DFC Feasibility | Other Relevant Information |

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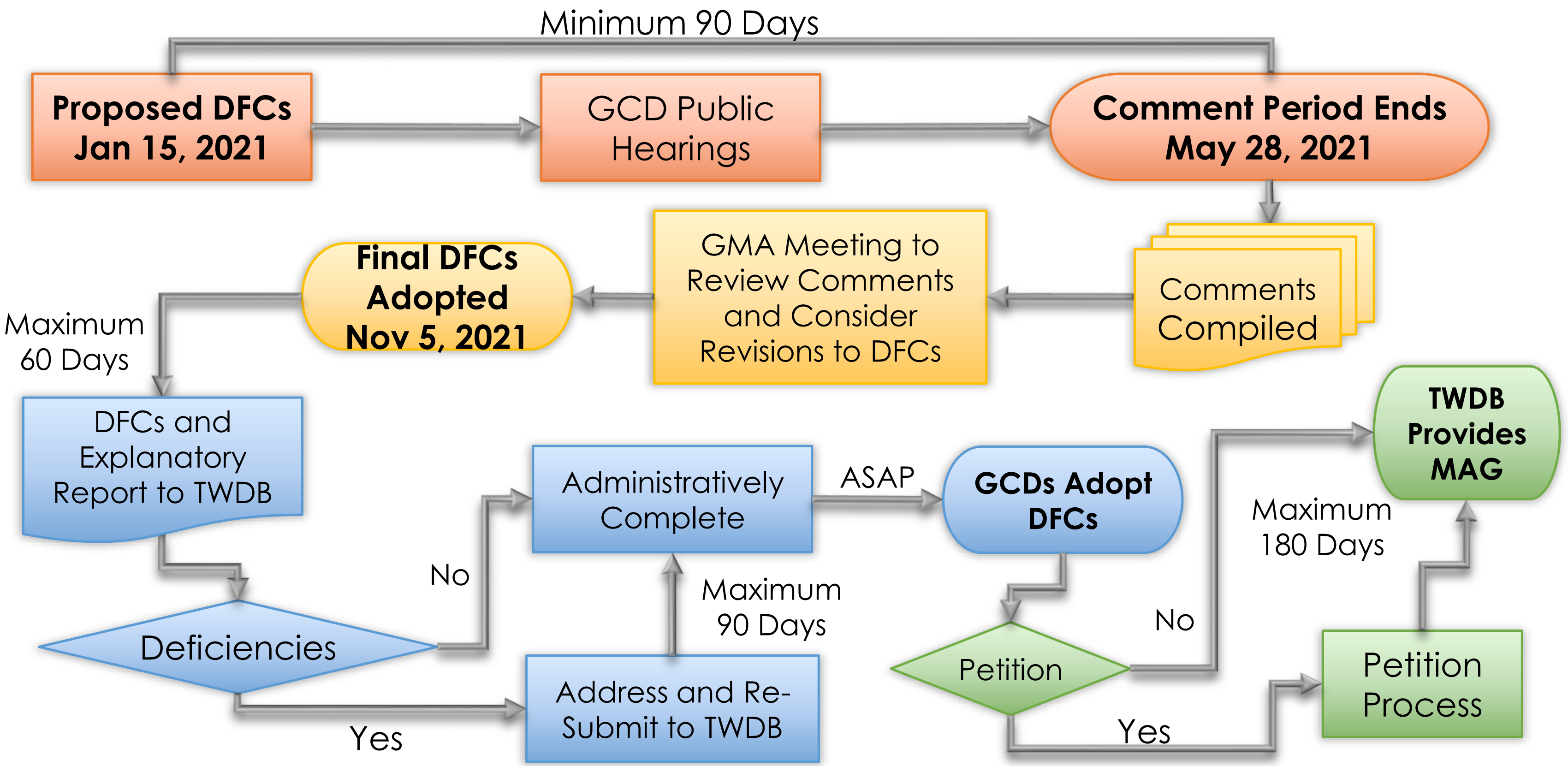
# WSP Team Approach to Preparing the Explanatory Report
## (Texas Water Code Section 36.108(d-3))

- Use GMA 8 second round of DFC joint planning ER as starting point
- Update ER discussion and appendices as needed
- WSP Team presents and reviews 1st ER draft – August 2020
- GMA 8 considers ER approval – November 2020

# Anticipated Timeline for GMA 8 DFC Process



# Thank you!

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# GMA 8 Joint Groundwater Planning Meeting

February 26, 2020

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Blanton & Associates, Inc.
Environmental Consulting • Planning • Project Management

# Agenda Item 6
# Discussion and possible action on results from updated NTWGAM run related to Joint Planning in GMA 8

- Run 11 – Update of NTWGAM DFC/MAG Run
- WSP has received pumping updates from:
  - *Upper Trinity GCD*
  - *Southern Trinity GCD*
  - *Prairielands GCD*

- WSP is working with Central Texas GCD to complete simulations related to impacts in the Llano Uplift aquifers using the Llano Uplift GAM
  - *Central Texas GCD is funding this effort separately*

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# Upper Trinity GCD pumping

| Aquifer | O/D* | County | acft |
|---|---|---|---|
| Glen Rose | Outcrop | Hood | 792 |
| Glen Rose | Downdip | Hood | 125 |
| Paluxy | Outcrop | Hood | 159 |
| Twin Mountains | Outcrop | Hood | 5,025 |
| Twin Mountains | Downdip | Hood | 10,768 |
| Antlers | Outcrop | Montague | 6,114 |
| Antlers | Downdip | Montague | |
| Antlers | Outcrop | Parker | 2,905 |
| Antlers | Downdip | Parker | |
| Glen Rose | Outcrop | Parker | 3,684 |
| Glen Rose | Downdip | Parker | 1,406 |
| Paluxy | Outcrop | Parker | 2,614 |
| Paluxy | Downdip | Parker | 50 |
| Twin Mountains | Outcrop | Parker | 1,294 |
| Twin Mountains | Downdip | Parker | 2,527 |
| Antlers | Outcrop | Wise | 9,106 |
| Antlers | Downdip | Wise | 2,439 |
| **TOTAL** | | | **49,009** |

*O/D refers to the "outcrop" or "downdip" portion of each aquifer

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# Upper Trinity GCD pumping

| Aquifer | O/D | County | Run 10 AFY | Adjustment | Run 11 AFY |
|---|---|---|---|---|---|
| **Glen Rose** | Outcrop | Hood | 654 | 138 | 792 |
| **Glen Rose** | Downdip | Hood | 103 | 22 | 125 |
| **Paluxy** | Outcrop | Hood | 159 | 0 | 159 |
| **Twin Mountains** | Outcrop | Hood | 3,674 | 1,351 | 5,025 |
| **Twin Mountains** | Downdip | Hood | 7,854 | 2,914 | 10,768 |
| **Antlers** | Outcrop | Montague | 3,878 | 2,236 | 6,114 |
| **Antlers** | Downdip | Montague | | | |
| **Antlers** | Outcrop | Parker | 2,899 | 6 | 2,905 |
| **Antlers** | Downdip | Parker | | | |
| **Glen Rose** | Outcrop | Parker | 2,290 | 1,394 | 3,684 |
| **Glen Rose** | Downdip | Parker | 874 | 532 | 1,406 |
| **Paluxy** | Outcrop | Parker | 2,609 | 5 | 2,614 |
| **Paluxy** | Downdip | Parker | 50 | 0 | 50 |
| **Twin Mountains** | Outcrop | Parker | 1,074 | 220 | 1,294 |
| **Twin Mountains** | Downdip | Parker | 2,083 | 444 | 2,527 |
| **Antlers** | Outcrop | Wise | 7,702 | 1,404 | 9,106 |
| **Antlers** | Downdip | Wise | 2,058 | 381 | 2,439 |
| - | - | Total | 37,961 | 11,048 | 49,009 |

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# Southern Trinity GCD pumping

| Year | Hosston Run 10 AFY | Adjustement for Hosston | Hosston Run 11 AFY |
|---|---|---|---|
| **2010** | 15,937 | -4,135 | 11,802 |
| **2011** | 15,937 | -4,635 | 11,302 |
| **2012** | 15,937 | -5,361 | 10,576 |
| **2013** | 15,937 | -6,978 | 8,959 |
| **2014** | 15,937 | -8,424 | 7,513 |
| **2015** | 15,937 | -7,565 | 8,372 |
| **2016** | 15,937 | -7,074 | 8,863 |
| **2017** | 15,937 | -7,929 | 8,008 |
| **2018** | 15,937 | -8,130 | 7,807 |
| **2019** | 15,937 | -8,135 | 7,802 |
| **2020-2070** | 15,937 | 0 | 15,937 |

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# Prairielands GCD pumping

| Aquifer | Run 10 AFY | Adjustment | Run 11 AFY |
|---|---|---|---|
| **Woodbine** | 4,642 | -2,475 | 2,168 |
| **Fred/Wash** | 3,112 | -2,822 | 290 |
| **Paluxy** | 3,250 | -1,460 | 1,790 |
| **Glen Rose** | 1,944 | -1,615 | 329 |
| **Hensell** | 3,603 | -3,011 | 593 |
| **Pearsall** | 98 | 2,810 | 2,908 |
| **Hosston** | 13,237 | 8,572 | 21,810 |
| **Total** | 29,887 | 0 | 29,887 |

# Run 11 Results - DFC

- DFC differences between Run 10 and Run 11
- Blue negative values indicate higher water levels
- Red positive values indicate greater drawdowns

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# Run 11 – Change in Drawdown in 2070

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Bell | - | 1 | 4 | - | 10 | 6 | 11 | - |
| Bosque | - | 1 | 11 | - | 70 | 38 | 97 | - |
| Brown | - | 0 | 0 | - | 0 | 0 | 0 | 0 |
| Burnet | - | - | 0 | - | 2 | 0 | 0 | - |
| Callahan | - | - | - | - | - | - | - | 0 |
| Collin | 4 | 15 | 23 | 59 | - | - | - | 36 |
| Comanche | - | 0 | 0 | - | 1 | 0 | 0 | 0 |
| Cooke | 0 | - | - | - | - | - | - | 13 |
| Coryell | - | 0 | 2 | - | 11 | 7 | 14 | - |
| Dallas | -16 | -3 | 20 | 144 | 206 | 71 | 230 | - |
| Delta | - | 10 | 11 | - | 13 | - | - | - |
| Denton | 0 | 1 | 14 | 71 | - | - | - | 26 |
| Eastland | - | - | - | - | - | - | - | 0 |

# Run 11 – Change in Drawdown in 2070

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Ellis | -65 | -30 | 20 | 297 | 251 | 87 | 288 | - |
| Erath | - | 0 | 0 | 2 | 7 | 0 | 7 | 1 |
| Falls | - | 14 | 22 | - | 34 | 31 | 34 | - |
| Fannin | 3 | 14 | 17 | 37 | 23 | - | - | 16 |
| Grayson | 1 | 10 | 16 | 38 | - | - | - | 16 |
| Hamilton | - | 0 | 0 | - | 5 | 2 | 9 | - |
| Hill | -15 | -14 | 16 | - | 201 | 82 | 245 | - |
| Hunt | 14 | 19 | 22 | 40 | 32 | - | - | - |
| Johnson | -13 | -60 | -50 | 61 | 148 | 45 | 219 | - |
| Kaufman | 13 | 44 | 61 | 111 | 125 | 89 | 132 | - |
| Lamar | 1 | 3 | 5 | - | 8 | - | - | 7 |
| Lampasas | - | 0 | 0 | - | 0 | 0 | 1 | - |
| Limestone | - | 22 | 52 | - | 83 | 69 | 83 | - |

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# Run 11 – Change in Drawdown in 2070

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| McLennan | 1 | 8 | 24 | - | 69 | 48 | 78 | - |
| Milam | - | - | 8 | - | 10 | 7 | 10 | - |
| Mills | - | 0 | 0 | - | 2 | 0 | 0 | - |
| Navarro | -30 | -9 | 68 | - | 145 | 101 | 145 | - |
| Red River | 0 | 1 | 2 | - | 3 | - | - | 1 |
| Rockwall | 11 | 33 | 40 | 84 | - | - | - | - |
| Somervell | - | 0 | 0 | 40 | 46 | 3 | 95 | - |
| Tarrant | -2 | -15 | 4 | 79 | - | - | - | 33 |
| Taylor | - | - | - | - | - | - | - | 0 |
| Travis | - | - | 1 | - | 3 | 0 | 2 | - |
| Williamson | - | - | 1 | - | 3 | 1 | 3 | - |

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# Run 11 – Change in Drawdown in 2070

| County | O/D | Paluxy | Glen Rose | Twin Mnts | Antlers |
|---|---|---|---|---|---|
| **Hood** | Downdip | - | 4 | 36 | - |
| **Hood** | Outcrop | 0 | 1 | 9 | - |
| **Montague** | Downdip | - | - | - | - |
| **Montague** | Outcrop | - | - | - | 21 |
| **Parker** | Downdip | 0 | 20 | 34 | - |
| **Parker** | Outcrop | 0 | 7 | 5 | 33 |
| **Wise** | Downdip | - | - | - | 14 |
| **Wise** | Outcrop | - | - | - | 25 |

11

# Run 11 Results

- Drawdown (feet) from 2010 to the end of 2080

12

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Bell | - | 20 | 91 | 0 | 311 | 147 | 348 | 0 |
| Bosque | - | 7 | 61 | 0 | 241 | 169 | 302 | 0 |
| Bowie | - | - | - | 0 | - | 0 | 0 | - |
| Brown | - | 2 | 1 | 0 | 2 | 1 | 1 | 2 |
| Burnet | 0 | 0 | 2 | 0 | 19 | 6 | 21 | 0 |
| Callahan | - | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Collin | 486 | 740 | 383 | 605 | - | 0 | 0 | 623 |
| Comanche | - | 2 | 2 | 0 | 4 | 2 | 3 | 12 |
| Cooke | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 195 |
| Coryell | - | 5 | 17 | 0 | 113 | 74 | 147 | 0 |
| Dallas | 120 | 339 | 300 | 627 | 577 | 422 | 603 | 0 |
| Delta | - | 288 | 207 | 0 | 213 | 0 | 0 | 0 |
| Denton | 20 | 558 | 376 | 803 | 0 | 0 | 0 | 432 |
| Eastland | - | 0 | 0 | 0 | 0 | 0 | 0 | 4 |

13

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Ellis | 8 | 93 | 229 | 646 | 575 | 365 | 617 | 0 |
| Erath | - | 6 | 6 | 8 | 27 | 13 | 40 | 13 |
| Falls | - | 165 | 246 | 0 | 506 | 311 | 512 | 0 |
| Fannin | 262 | 721 | 320 | 429 | 310 | 0 | 0 | 282 |
| Franklin | - | - | - | 0 | - | 0 | 0 | 0 |
| Grayson | 163 | 952 | 377 | 475 | 0 | 0 | 0 | 376 |
| Hamilton | - | 2 | 4 | 0 | 30 | 16 | 44 | 0 |
| Hill | 4 | 28 | 156 | 0 | 512 | 277 | 595 | 0 |
| Hopkins | - | - | - | 0 | - | 0 | 0 | 0 |
| Hunt | 643 | 626 | 344 | 430 | 375 | 0 | 0 | 0 |
| Johnson | -10 | -118 | 13 | 220 | 337 | 177 | 456 | 0 |
| Kaufman | 248 | 345 | 351 | 515 | 471 | 420 | 449 | 0 |
| Lamar | 43 | 103 | 112 | 0 | 131 | 0 | 0 | 139 |
| Lampasas | - | 1 | 1 | 0 | 6 | 1 | 12 | 0 |
| Limestone | - | 214 | 335 | 0 | 489 | 263 | 501 | 0 |

14

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| McLennan | 7 | 46 | 163 | 0 | 547 | 276 | 630 | 0 |
| Milam | 0 | 0 | 230 | 0 | 367 | 247 | 368 | 0 |
| Mills | - | 1 | 1 | 0 | 9 | 2 | 13 | 0 |
| Navarro | 76 | 126 | 315 | 0 | 454 | 373 | 455 | 0 |
| Red River | 2 | 25 | 41 | 0 | 60 | 0 | 0 | 15 |
| Rockwall | 282 | 458 | 374 | 533 | - | 0 | 0 | 0 |
| Somervell | - | 4 | 4 | 73 | 99 | 30 | 180 | 0 |
| Tarrant | 4 | 89 | 159 | 401 | 0 | 0 | 0 | 185 |
| Taylor | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Travis | 0 | 0 | 84 | 0 | 153 | 55 | 158 | 0 |
| Williamson | 0 | 0 | 82 | 0 | 183 | 79 | 187 | 0 |

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# Run 11 Results – Drawdown (2010-2080)

| County | O/D | Paluxy | Glen Rose | Twin Mnts | Antlers |
|---|---|---|---|---|---|
| **Hood** | Downdip | - | 35 | 83 | 0 |
| **Hood** | Outcrop | 5 | 9 | 14 | 0 |
| **Montague** | Downdip | 0 | 0 | 0 | - |
| **Montague** | Outcrop | 0 | 0 | 0 | 40 |
| **Parker** | Downdip | 1 | 52 | 85 | - |
| **Parker** | Outcrop | 6 | 21 | 7 | 44 |
| **Wise** | Downdip | 0 | 0 | 0 | 159 |
| **Wise** | Outcrop | 0 | 0 | 0 | 61 |

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# Questions ?

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# Agenda Item 7

- Presentations and discussions regarding Aquifer Uses or Conditions, Supply Needs & Management Strategies, and Private Property Rights factors as they relate to Desired Future Conditions pursuant to Texas Water Code Section 36.108(d).

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# GMA 8 Schedule to Discuss Nine Factors

**November 2019**

- Environmental Impacts
- Subsidence Impacts
- Hydrological Conditions

**February 2020**

- Aquifer Uses or Conditions
- Supply Needs & Management Strategies
- Private Property Rights

**May 2020**

- Socioeconomic Impacts
- DFC Feasibility
- Other Relevant Information

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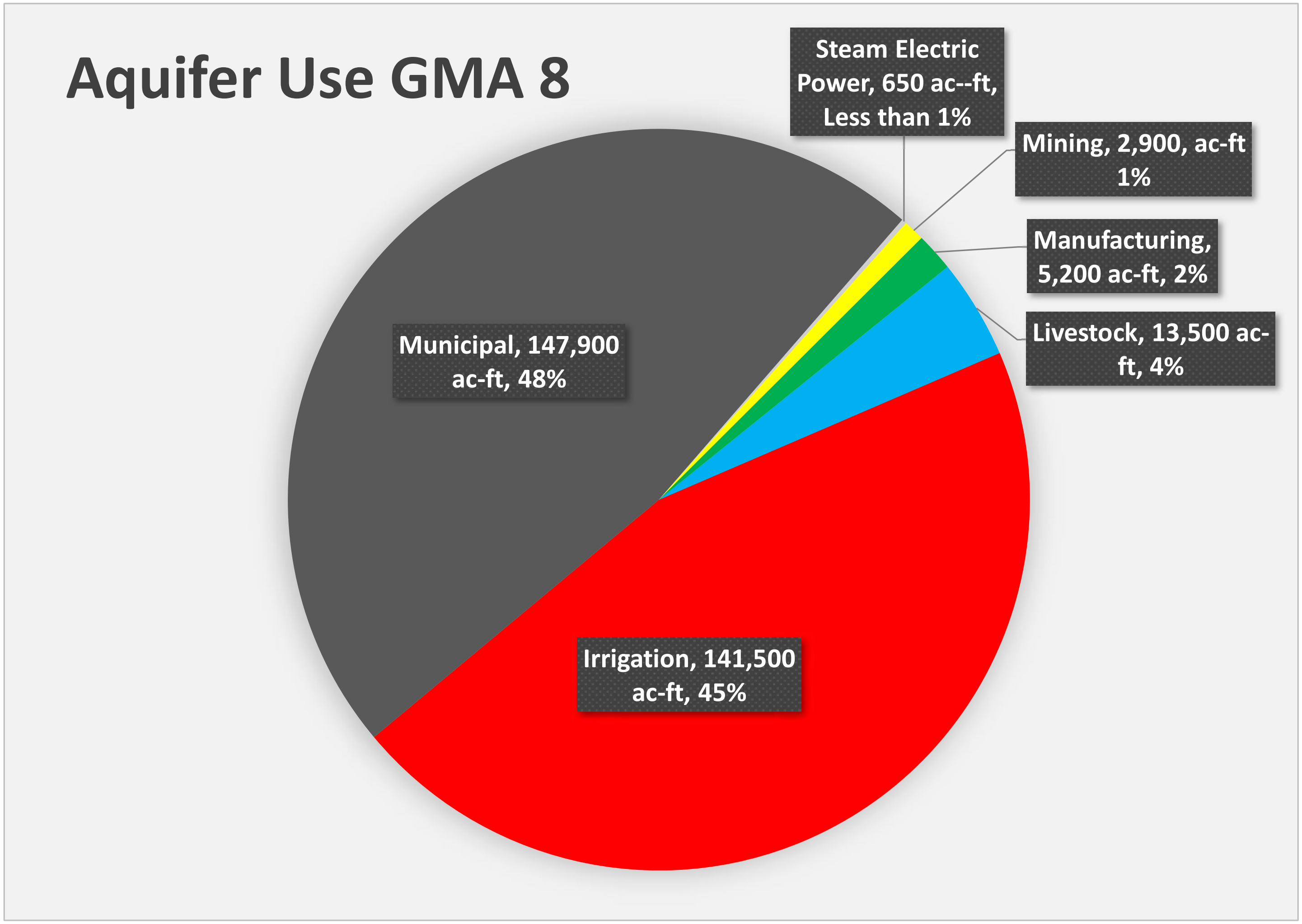
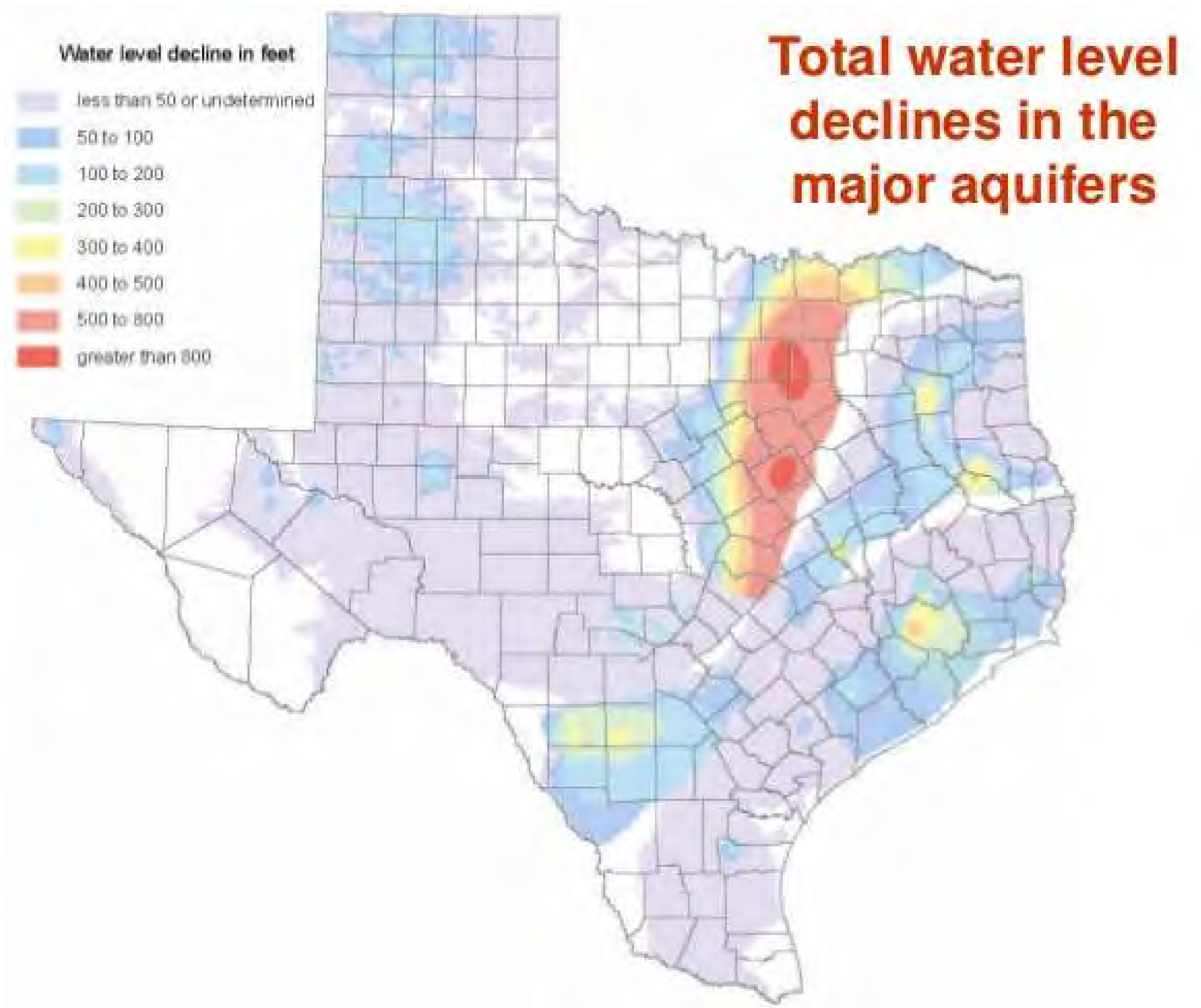
# Aquifer Uses or Conditions

- Aquifer Uses
  - TWDB historic use data
- Aquifer Conditions
  - Water level hydrographs
  - Presented at last meeting and made available

20


Aquifer Use GMA 8
Steam Electric Power, 650 ac--ft, Less than 1%
Mining, 2,900, ac-ft 1%
Manufacturing, 5,200 ac-ft, 2%
Livestock, 13,500 ac-ft, 4%
Municipal, 147,900 ac-ft, 48%
Irrigation, 141,500 ac-ft, 45%


Water level decline in feet
less than 50 or undetermined
50 to 100
100 to 200
200 to 300
300 to 400
400 to 500
500 to 800
greater than 800
Total water level declines in the major aquifers

# Supply Needs & Management Strategies

- Taken from 2017 State Water Plan
- Supply Needs
  - Need = Supply is less than Future Demand
  - Need = Current Supply - Future Demands
- Management Strategies
  - Infrastructure strategies to meet needs
  - 2020 and 2050 strategies

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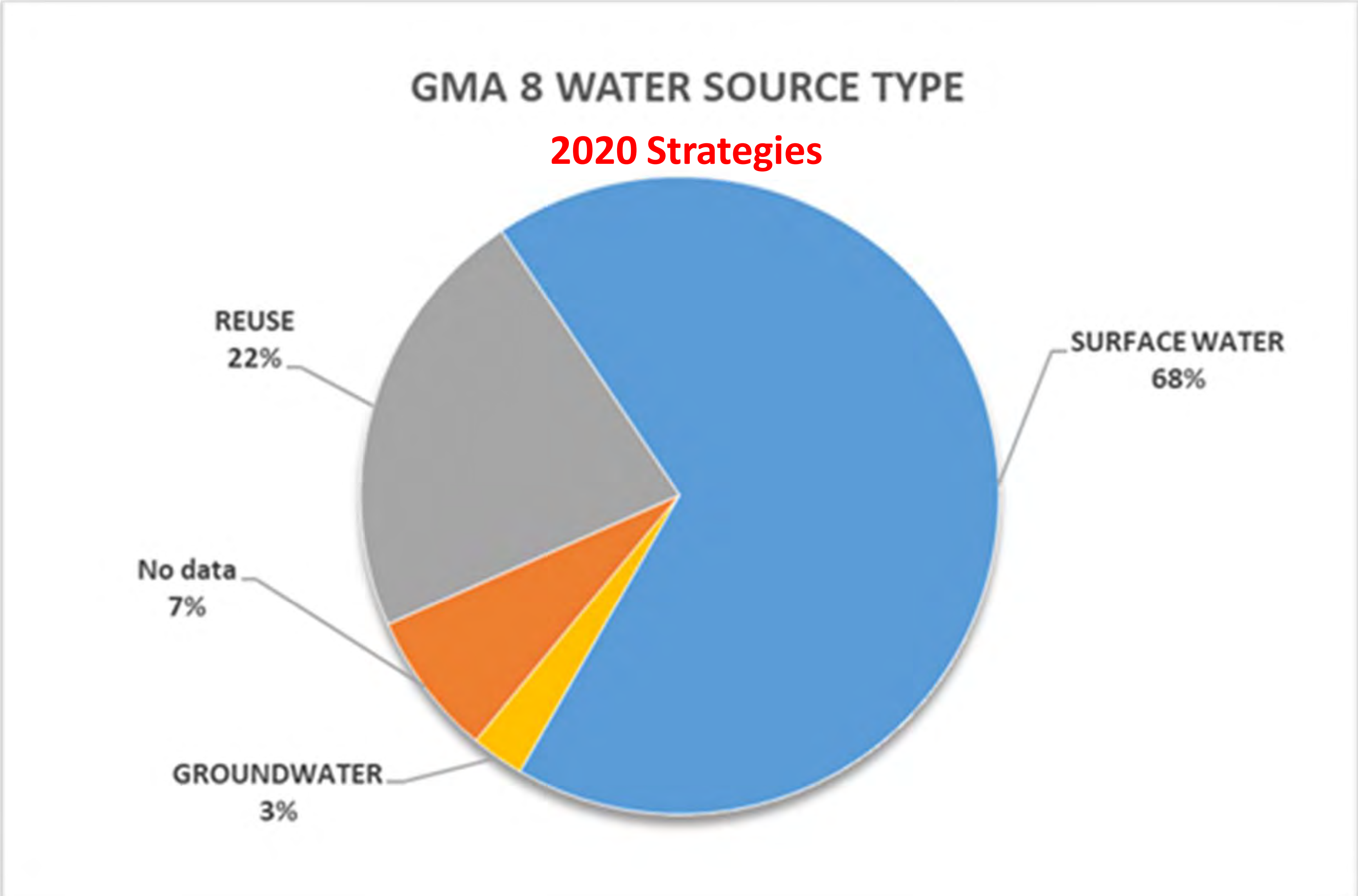
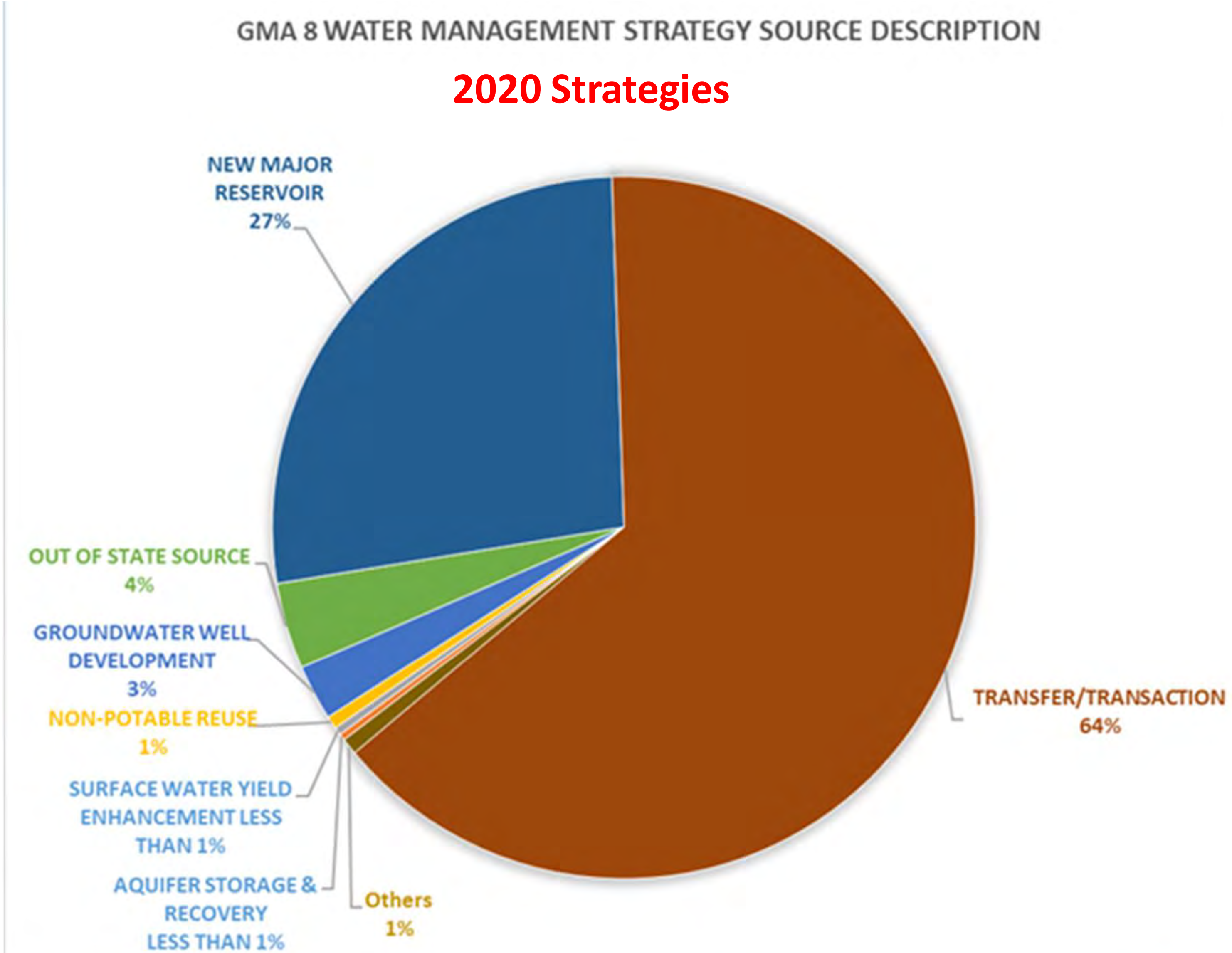
At a glance

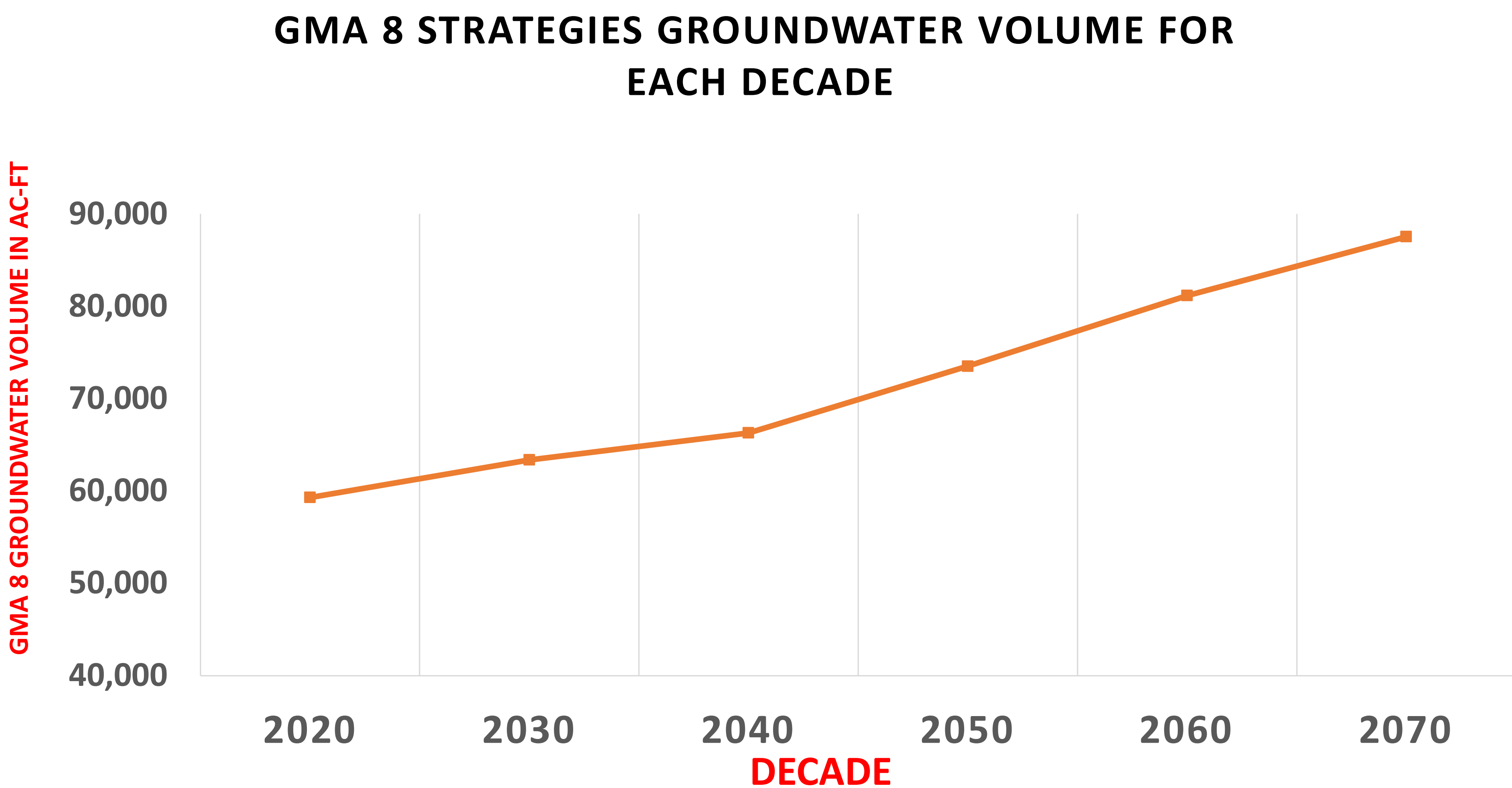
# Water Sources for New Strategies in GMA 8



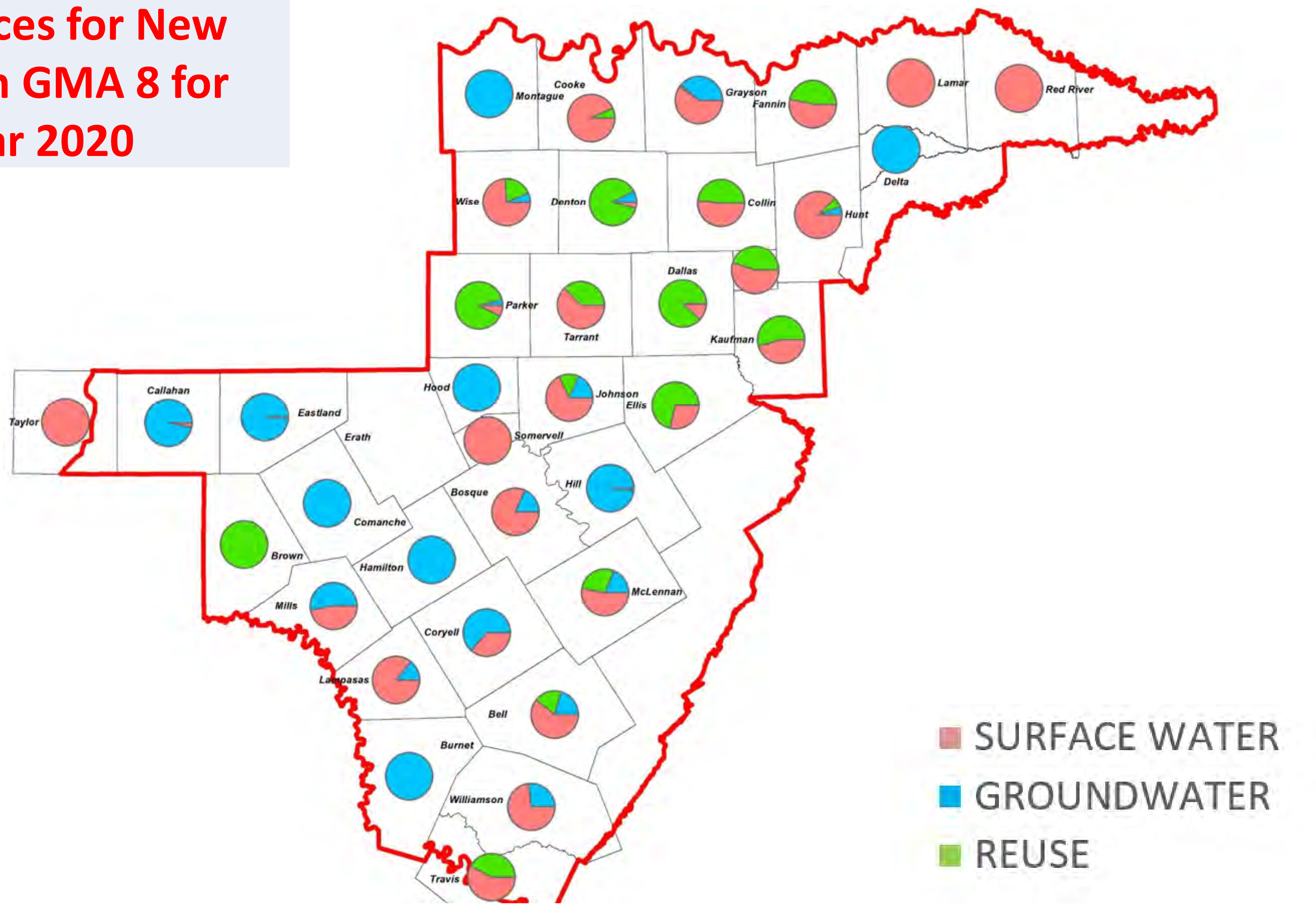
At a glance

# Sources for New Strategies in GMA 8

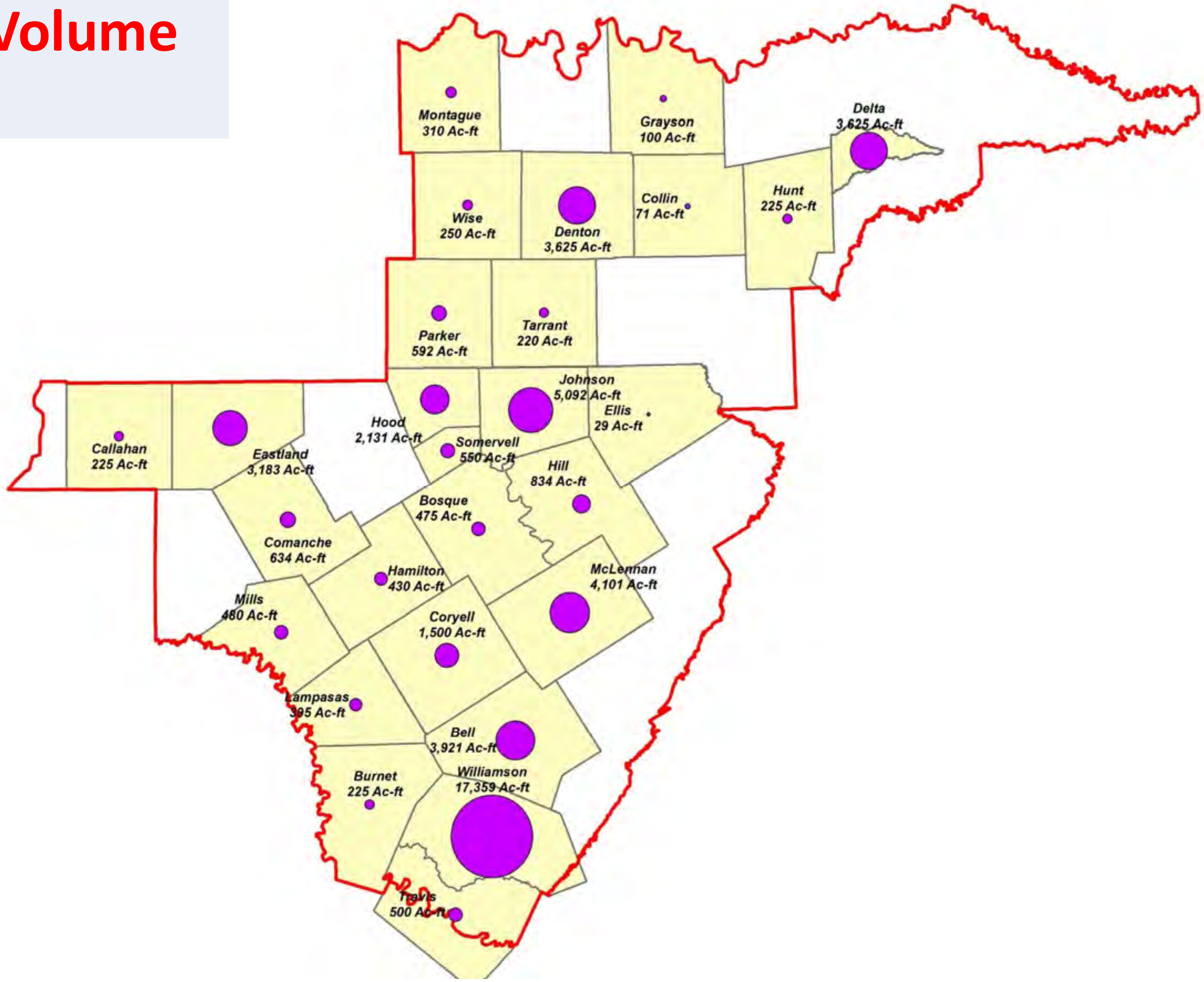



GMA 8 STRATEGIES GROUNDWATER VOLUME FOR EACH DECADE
GMA 8 GROUNDWATER VOLUME IN AC-FT
90,000
80,000
70,000
60,000
50,000
40,000
2020
2030
2040
2050
2060
2070
DECADE

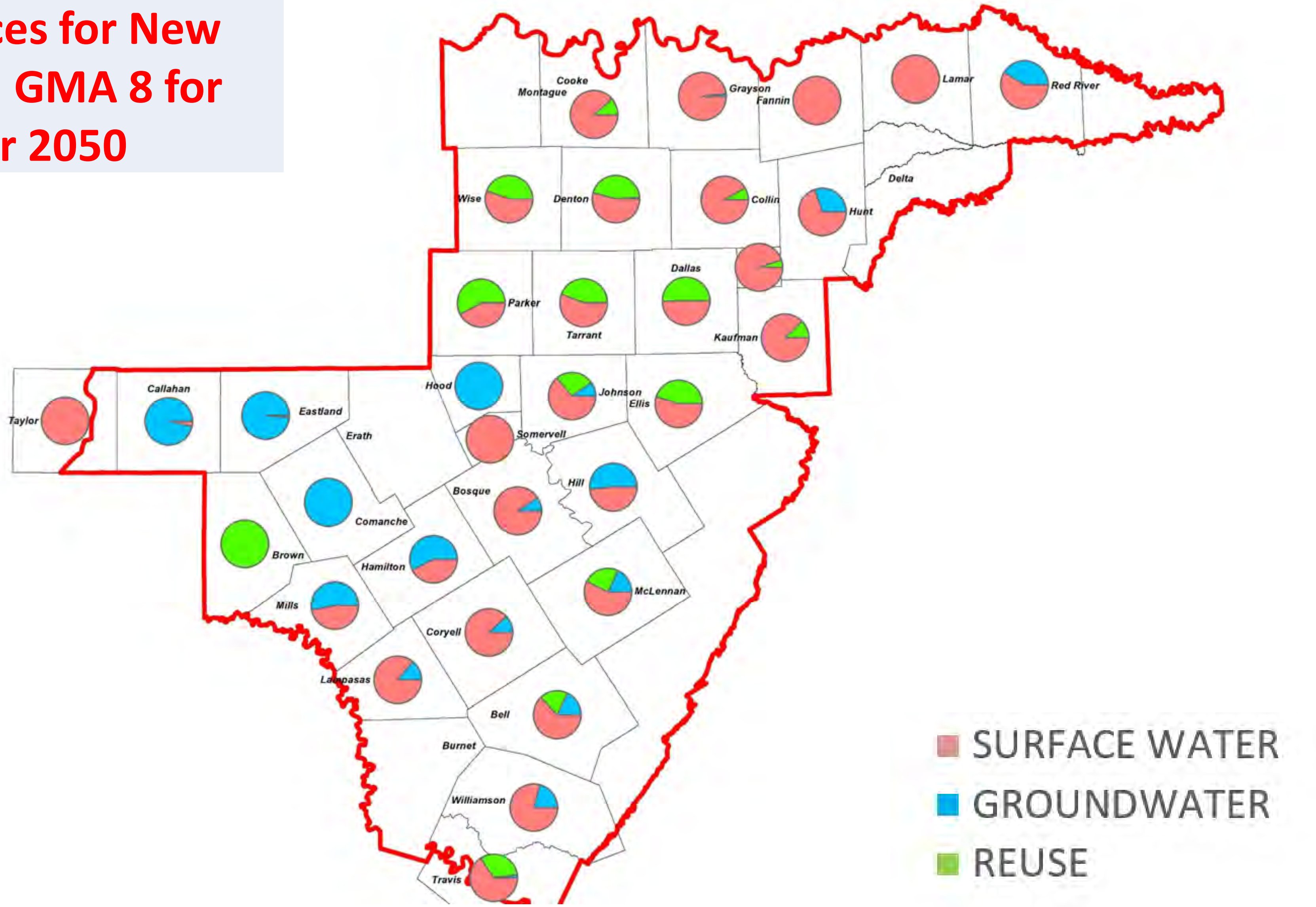
# Water Sources for New Strategies in GMA 8 for the year 2020



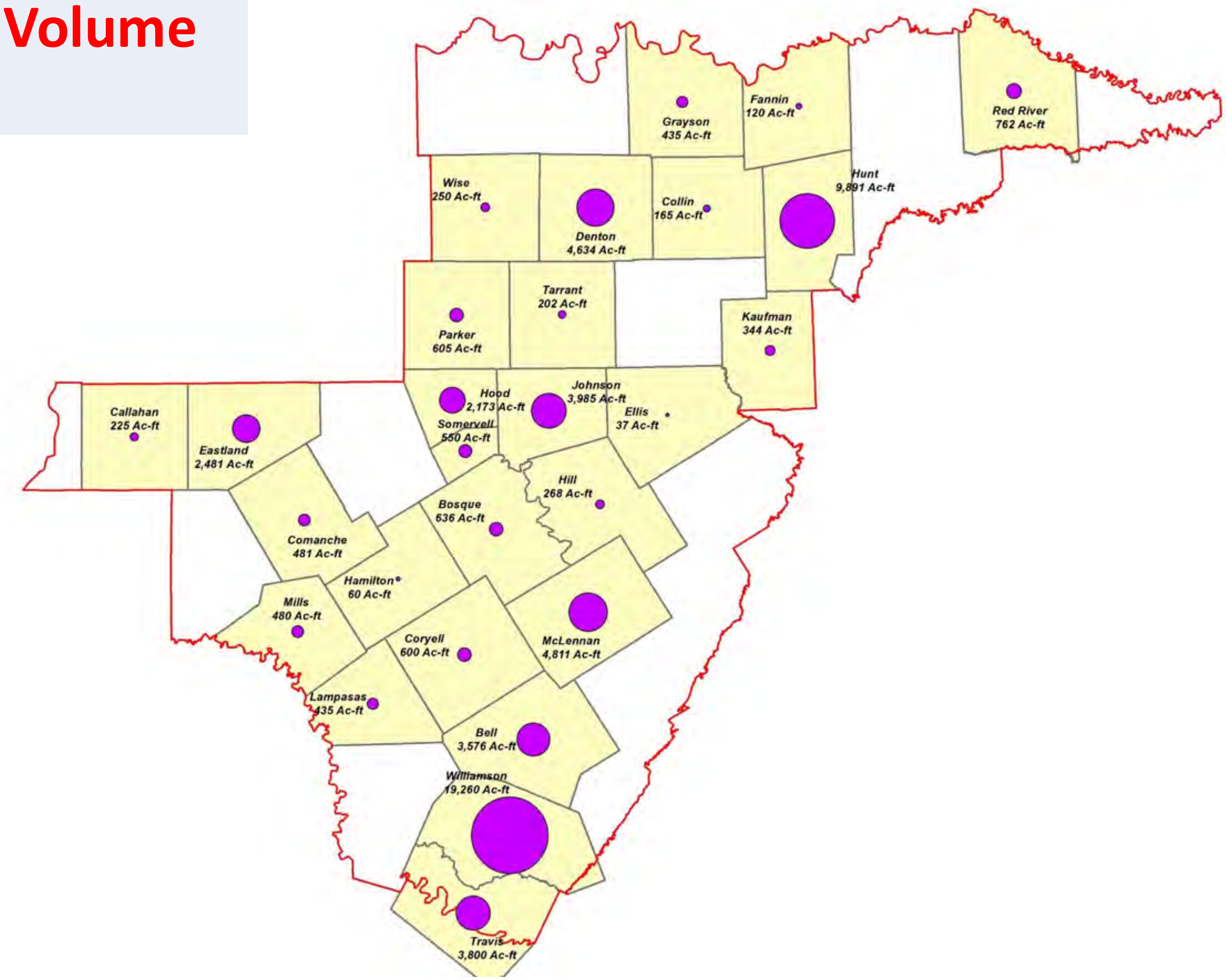
# Groundwater Volume 2020

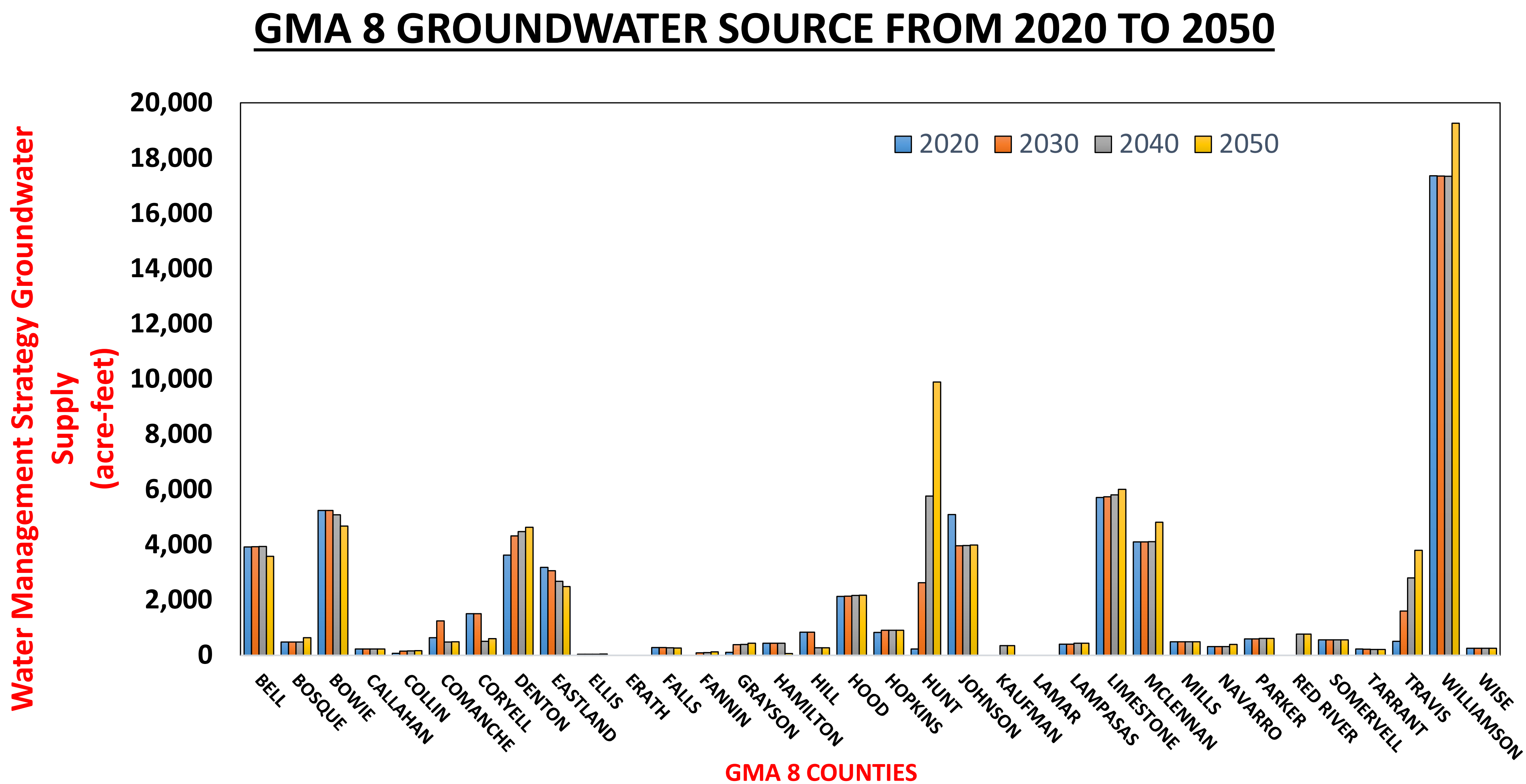


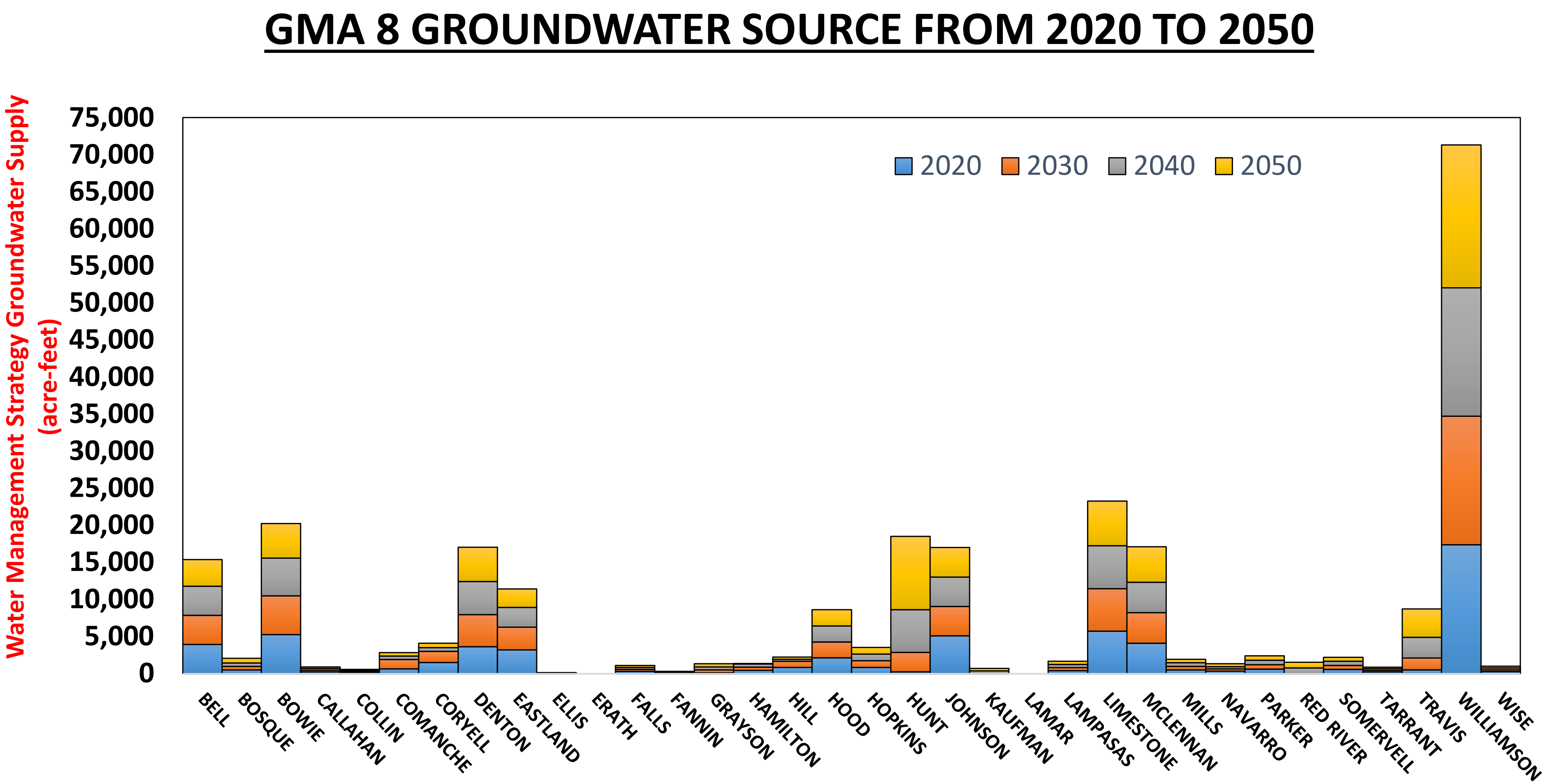
# Water Sources for New Strategies in GMA 8 for the year 2050



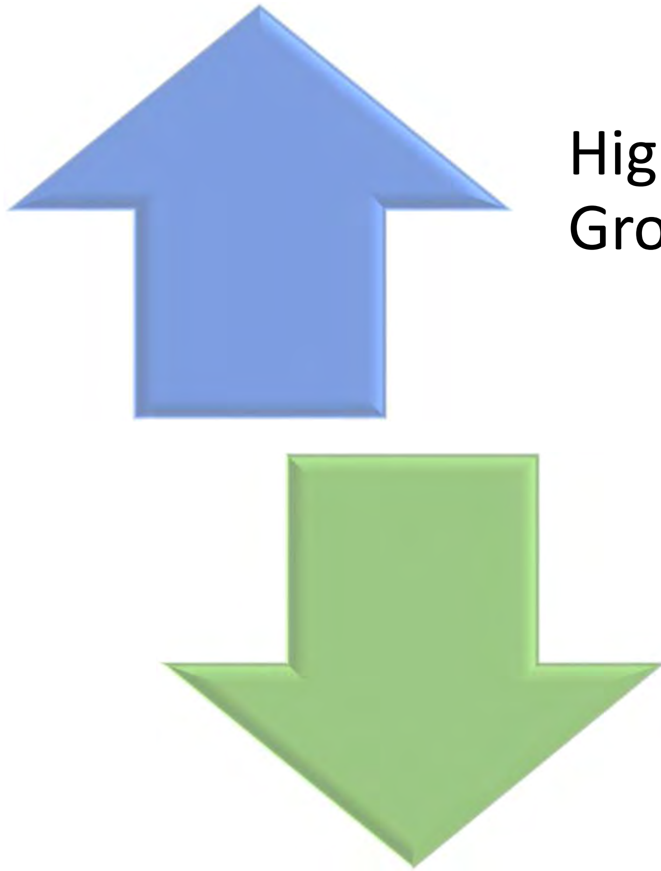
# Groundwater Volume 2050




GMA 8 GROUNDWATER SOURCE FROM 2020 TO 2050
Water Management Strategy Groundwater Supply (acre-feet)
20,000
18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
2020 2030 2040 2050
BELL
BOSQUE
BOWIE
CALLAHAN
COLLIN
COMANCHE
CORYELL
DENTON
EASTLAND
ELLIS
ERATH
FALLS
FANNIN
GRAYSON
HAMILTON
HILL
HOOD
HOPKINS
HUNT
JOHNSON
KAUFMAN
LAMAR
LAMPASAS
LIMESTONE
MCLENNAN
MILLS
NAVARRO
PARKER
RED RIVER
SOMERVELL
TARRANT
TRAVIS
WILLIAMSON
WISE
GMA 8 COUNTIES


GMA 8 GROUNDWATER SOURCE FROM 2020 TO 2050
Water Management Strategy Groundwater Supply (acre-feet)
75,000
70,000
65,000
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
2020
2030
2040
2050
BELL
BOSQUE
BOWIE
CALLAHAN
COLLIN
COMANCHE
CORYELL
DENTON
EASTLAND
ELLIS
ERATH
FALLS
FANNIN
GRAYSON
HAMILTON
HILL
HOOD
HOPKINS
HUNT
JOHNSON
KAUFMAN
LAMAR
LAMPASAS
LIMESTONE
MCLENNAN
MILLS
NAVARRO
PARKER
RED RIVER
SOMERVELL
TARRANT
TRAVIS
WILLIAMSON
WISE
GMA 8 COUNTIES

# Standard for Desired Future Conditions



Highest Practicable Level of Groundwater Production

Conservation, Preservation, Protection, Recharging, and Prevention of Waste of Groundwater, and Control of Subsidence

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# Impact on Interests/Rights in Private Property

## *Today's Meeting:*

Presentations and discussions regarding Aquifer Uses or Conditions, Supply Needs & Management Strategies, and ***Private Property Rights*** factors as they relate to Desired Future Conditions (DFCs) pursuant to Texas Water Code (TWC) § 36.108(d)

- *Discussion of regulatory compliance and technical/policy summary of factor only; no legal analysis, advice or opinions, and no discussion today should be construed as such*
- *Questions regarding legal implications should be directed to GCD legal counsel for appropriate consultation*

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# Impact on Interests/Rights in Private Property

## *Private Property Rights Factor Discussion:*

1. Review TWC § 36.108(d) requirements for private property rights factor consideration
2. Review other TWC considerations
3. Review GMA 8 discussions of private property rights factor during second round of DFC joint planning
4. Other considerations regarding private property rights
5. Next steps in GMA 8 private property rights factor consideration
6. GMA 8 discussion of private property rights factor
7. Questions

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# Impact on Interests/Rights in Private Property

**Private Property Rights Factor - TWC § 38.108(d) requirements**

Before GMA Can Vote on Proposed DFCs, TWC § 36.108(d) requires that:

"(d) Not later than May 1, 2021, and every five years thereafter, the districts shall consider groundwater availability models and other data or information for the management area and shall propose for adoption desired future conditions for the relevant aquifers within the management area. **Before voting on the proposed desired future conditions of the aquifers under Subsection (d-2), the districts shall consider:**

. . .

**(7) the impact on the interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater as recognized under Section 36.002;** . . ."

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# Impact on Interests/Rights in Private Property

**Private Property Rights Factor - TWC § 38.108(d) requirements**

- TWC § 36.002 establishes property owner has vested ownership interest in and right to produce groundwater beneath property.
- TWC § 36.002 does not:
  1) Prohibit GCD from limiting or prohibiting landowner from drilling well due to landowner's failure or inability to comply with GCD's well spacing or tract size requirements
  2) Affect GCD's ability to regulate groundwater production under TWC sections on permits, well spacing or transfers, or special laws governing GCDs
  3) Require GCD rule to allocate to each landowner proportionate share of groundwater available from aquifer based on number of surface acres owned

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# Impact on Interests/Rights in Private Property

## Other TWC Considerations

- TWC § 36.0015(b) establishes purpose of GCDs to manage groundwater resources and affirms as State's preferred method of groundwater management to protect property rights, balance groundwater conservation and development, and use best available science to conserve and develop groundwater through rules.
- TWC § 36.116 gives GCDs authority to regulate well spacing/production.
- GCDs empowered to issue permits and carry out responsibilities consistent with management plans and rules, TWC Chapter 36, and Texas Constitution.
- GCDs continually strike balance between groundwater production to meet current and future needs, while also conserving, preserving and managing resources.
- "Balance Test" is not new to GCDs.

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# Impact on Interests/Rights in Private Property

## Private Property Rights Factor - GMA 8 DFC Joint Planning Second Round Discussions

- GMA 8 GCDS thoroughly discussed and considered impacts on private property throughout second round.
- Formal discussions of private property rights factor and related issues held during GMA 8 meetings –
  - July 29, 2014
  - May 27, 2015
  - March 23, 2016
  - April 1, 2016
- Each GCD also held discussions to consider impacts of proposed DFCs on private property rights.

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# Impact on Interests/Rights in Private Property

## **Private Property Rights Factor - GMA 8 DFC Joint Planning Second Round Discussions**

- From the GMA 8 *Desired Future Conditions Explanatory Report* (February 2017), GMA 8 representatives identified topics/issues to considered by each GCD as DFCs developed –
  - Existing uses of groundwater within GCD
  - Projected future uses of groundwater within GCD
  - Investment-backed expectations of existing users and property owners within GCD
  - Long-term viability of groundwater resources in GMA
  - Availability of water to all properties and ability to allocate the modeled available groundwater (MAG) amounts through rules after DFC adoption
  - Whether immediate cutbacks would be required in setting a particular DFC or whether cutbacks, if any, would need to occur over a certain timeframe

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# Impact on Interests/Rights in Private Property

## Private Property Rights Factor - GMA 8 DFC Joint Planning Second Round Discussions

- GMA 8 representative identified topics/issues to be considered by each GCD as DFCs developed (continued) –
  - For outcrop areas, how outcrop depletes rapidly in dry times, and whether drought rules or triggers based on the DFC/MAG for outcrop could be beneficial to ensure viability of the resource during dry times
  - Economic consequences to existing users (e.g., cost to drop pumps, reconfigure or drill new wells upon water table dropping, etc.). Also, consider economic consequences of less water available to protect existing users from economic consequences relevant to existing users – reaching a balance between these two dynamics

# Impact on Interests/Rights in Private Property

## Private Property Rights Factor - GMA 8 DFC Joint Planning Second Round Discussions

- GMA 8 representative identified topics/issues to be considered by each GCD as DFCs developed (continued) –
  - Review sustainability GAM run versus additional GAM runs that provide for more pumping from an aquifer, and how those two differ with respect to private property rights
  - Focus on finding a balance, as defined by each GCD, between all of these considerations

**All of these topics/issues considered by GMA 8 GCDs during the second round of joint planning continue to be relevant considerations in this third round.**

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# Impact on Interests/Rights in Private Property

## **Private Property Rights Factor - GMA 8 DFC Joint Planning Second Round Discussions**

- GMA 8 survey tool developed and used by each GMA 8 GCD to initiate and document this factor's (and socioeconomic factor's) consideration.
- Ten GMA 8 GCDs discussed proposed DFCs impacts on private property.
- Post-Oak Savannah GCD – Proposed DFCs not applicable to GCD.
- Northern Trinity GCD – Did not discuss how proposed DFCs may impact ability of existing well owners and property owners who have yet to drill a well.
- All completed surveys provided documentation of multiple meeting dates where this factor was discussed at length by each GCD's board of directors.
- Some completed surveys included supporting documentation/reports.
- All remaining GCD responses to the survey were affirmative as summarized in Table 24 of the GMA 8 *Desired Future Conditions Explanatory Report* (February 2017).

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# Impact on Interests/Rights in Private Property

## Private Property Rights Factor - GMA 8 DFC Joint Planning Second Round Discussions

Table 24. Summary of GMA 8 Survey regarding impacts of proposed DFCs on private property rights.

| GMA 8 Survey questions regarding impacts of proposed DFCs on private property rights | GMA 8 GCD Survey Responses | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | CTGCD | CUWCD | MTGCD | NTGCD | Ntrinty GCD | POSGCD | PGCD | RRGCD | SUWCD | STGCD | UTGCD |
| Did your GCD discuss and consider the impacts of proposed DFC options on interests and rights in private property, including ownership and the rights of management area landowners and their lessees and assigns in groundwater? | Y | Y | Y | Y | Y | NA | Y | Y | Y | Y | Y |
| | | | | | | | | | | | |
| Did your GCD discuss how proposed DFCs may impact the ability of both: (1) existing well owners, and (2) property owners who have not yet drilled a well but may have an expectation of being able to do so in the future, to recover their investment-backed expectations from their investments in their water wells and their investments in their properties? | Y | Y | Y | Y | N | NA | Y | Y | Y | Y | Y |
| | | | | | | | | | | | |
| Did your GCD discuss how proposed DFCs may impact the availability of water to all properties overlying the aquifer in your district, and whether property owners of various economic means will be able to complete affordable water wells with sufficient well yields for projected uses, or whether affordable water from alternative water supplies would be available to those properties? | Y | Y | Y | Y | Y | NA | Y | Y | Y | Y | Y |

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# Impact on Interests/Rights in Private Property

## Other Considerations Regarding Private Property Rights

### *GMA and GCD Continuing DFC and Annual Joint Planning Efforts*

- DFC process is “iterative.”
- Through annual joint planning, GCDs can discuss new or emerging issues that may involve reevaluating, revising, and/or reconsidering DFCs.
- GCDs propose DFCs no later than every five years; meet to consider DFCs at least annually to collectively respond to changed circumstances, consider potential impacts to factors, and make adaptive management adjustments to either DFCs or MAGs.
- Process can be costly and time-consuming for GCDs.
- GCDs actively engaged in management activities and programs to carry out statutory mission and manage aquifers.

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# Impact on Interests/Rights in Private Property

## Other Considerations Regarding Private Property Rights

***GMA and GCD Continuing DFC and Annual Joint Planning Efforts (continued)***

- GCDs implement various management strategies to address aquifer management issues to identify ways to improve and share resources.
- Statutes are flexible to develop locally-responsive management programs and management strategies and incentives - management zones, water conservation, reuse and rainwater harvesting - further reduce demand, help achieve DFCs, and consider potential impacts.

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# Impact on Interests/Rights in Private Property

## Next Steps in GMA 8 Private Property Rights Factor Consideration

- Are GMA 8 Survey results regarding impacts of proposed DFCs on private property rights still reflective of today's issues?
- Once actual DFCs are being considered and reviewed relative to the nine factors, WSP Team to develop presentation of impacts of proposed DFCs on nine factors.
- Information from presentations to be incorporated into the GMA 8 Desired Future Conditions Explanatory Report.

# Impact on Interests/Rights in Private Property

## Questions?

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# Agenda Item 12

- Discussion of possible agenda items and dates for next GMA 8 meeting
  - *Presentation of Central Texas GCD run results for Llano Uplift aquifers*
  - *Discussion of final 3 of 9 factors (Socioeconomic, Feasibility, and other)*
  - *Discussion and possible action on DFCs for:*
    - Trinity
    - Woodbine
    - Edwards
    - Llano Uplift Aquifer (Hickory, Ellenburger, and Marble Falls)
  - *Discussion and possible action on designation of Non-Relevant Aquifers*

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# GMA 8 Schedule to Discuss Nine Factors

**November 2019**

- Environmental Impacts
- Subsidence Impacts
- Hydrological Conditions

**February 2020**

- Aquifer Uses or Conditions
- Supply Needs & Management Strategies
- Private Property Rights

**May 2020**

- Socioeconomic Impacts
- DFC Feasibility
- Other Relevant Information

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# Thank you!

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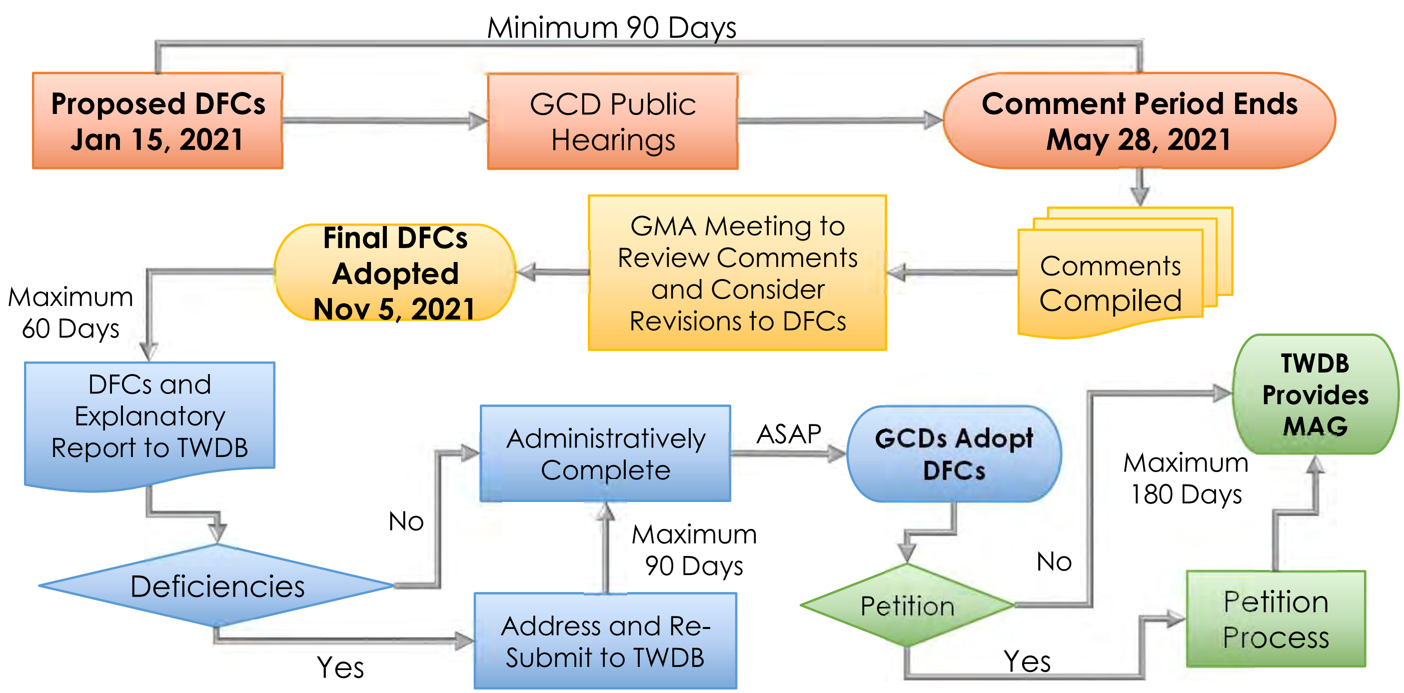
# Anticipated Timeline for GMA 8 DFC Process

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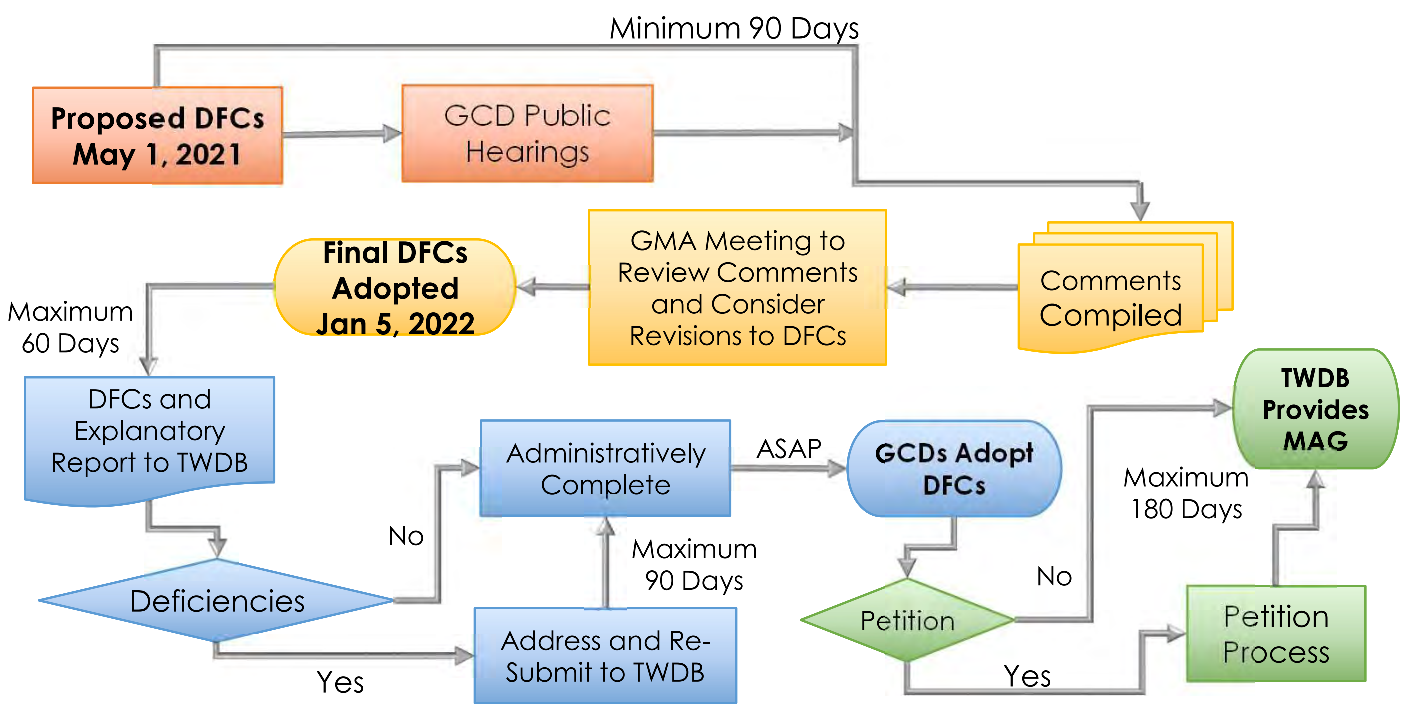
# DFC Process
# (TWC Sec. 36.108 & 31 TAC Ch. 356)

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# GMA 8
# Joint Groundwater Planning Meeting

May 15, 2020

# Agenda Item 6
# Discussion and possible action on results from updated NTWGAM run related to Joint Planning in GMA 8. Discussion will include changes made in Upper Trinity GCD, Prairielands GCD, Southern Trinity GCD, Clearwater UWCD, Central Texas GCD, and Williamson and Travis County

- Run 11 – Update of NTWGAM DFC/MAG Run
- WSP has received pumping updates from:
  - *Upper Trinity GCD, Southern Trinity GCD, Prairielands GCD, Central Texas GCD (funded thru GMA 8 contract)*
  - *Clearwater UWCD, Travis and Williamson County (funded separately by Clearwater UWCD)*
- WSP has completed simulations for Central Texas GCD related to impacts in the Llano Uplift aquifers using the Llano Uplift GAM
  - *Central Texas GCD is funding this effort separately*

# Summary of Run 11

- MAGs from this round of planning will be used in 2027 State Water Plan (2030-2080)

- Run 11
  - Begins in 2010 (no change)
  - Model extended to 2080
  - 2070 input will be used for 2071-2080
  - Each year is 365.25 days to remove leap year change in MAG
  - Pumping has been updated as provided by GCDs
  - One drought of record included from 2078-2080
  - WSP will provide files to TWDB as early as possible

# Upper Trinity GCD Pumping

| Aquifer | O/D | County | Run 10 AFY | Adjustment | Run 11 AFY |
|---|---|---|---|---|---|
| **Glen Rose** | Outcrop | Hood | 654 | 138 | 792 |
| **Glen Rose** | Downdip | Hood | 103 | 22 | 125 |
| **Paluxy** | Outcrop | Hood | 159 | 0 | 159 |
| **Twin Mountains** | Outcrop | Hood | 3,674 | 1,351 | 5,025 |
| **Twin Mountains** | Downdip | Hood | 7,854 | 2,914 | 10,768 |
| **Antlers** | Outcrop | Montague | 3,878 | 2,236 | 6,114 |
| **Antlers** | Outcrop | Parker | 2,899 | 6 | 2,905 |
| **Glen Rose** | Outcrop | Parker | 2,290 | 1,394 | 3,684 |
| **Glen Rose** | Downdip | Parker | 874 | 532 | 1,406 |
| **Paluxy** | Outcrop | Parker | 2,609 | 5 | 2,614 |
| **Paluxy** | Downdip | Parker | 50 | 0 | 50 |
| **Twin Mountains** | Outcrop | Parker | 1,074 | 220 | 1,294 |
| **Twin Mountains** | Downdip | Parker | 2,083 | 444 | 2,527 |
| **Antlers** | Outcrop | Wise | 7,702 | 1,404 | 9,106 |
| **Antlers** | Downdip | Wise | 2,058 | 381 | 2,439 |
| | | Total | 37,961 | 11,048 | 49,009 |

# Southern Trinity GCD pumping

| Year | Hosston Run 10 AFY | Adjustement for Hosston | Hosston Run 11 AFY |
|---|---|---|---|
| **2010** | 15,937 | -4,135 | 11,802 |
| **2011** | 15,937 | -4,635 | 11,302 |
| **2012** | 15,937 | -5,361 | 10,576 |
| **2013** | 15,937 | -6,978 | 8,959 |
| **2014** | 15,937 | -8,424 | 7,513 |
| **2015** | 15,937 | -7,565 | 8,372 |
| **2016** | 15,937 | -7,074 | 8,863 |
| **2017** | 15,937 | -7,929 | 8,008 |
| **2018** | 15,937 | -8,130 | 7,807 |
| **2019** | 15,937 | -8,135 | 7,802 |
| **2020-2080** | 15,937 | 0 | 15,937 |

# Prairielands GCD Pumping

| Aquifer | Run 10 AFY | Adjustment | Run 11 AFY |
|---|---|---|---|
| **Hensell** | 3,603 | -3,206 | 397 |
| **Pearsall** | 98 | 1,848 | 1,946 |
| **Hosston** | 13,237 | 1,358 | 14,595 |
| **Total** | 16,938 | 0 | 16,938 |

# Clearwater UWCD Pumping

| Aquifer | Run 10 AFY | Adjustment | Run 11 AFY |
|---|---|---|---|
| **Glen Rose** | 972 | -697 | 275 |
| **Hensell** | 1,097 | 3 | 1,100 |
| **Hosston** | 7,179 | 721 | 7,900 |
| **Total** | 9,248 | 27 | 9,275 |

# Central Texas GCD Pumping

| Aquifer | Run 10 AFY | Adjustment | Run 11 AFY |
|---|---|---|---|
| **Glen Rose** | 424 | -276 | 148 |
| **Hensell** | 1,891 | 773 | 2,664 |
| **Hosston** | 1,381 | -493 | 888 |
| **Total** | 3,696 | 4 | 3,700 |

# Travis County Pumping

| Aquifer | Run 10 AFY | Adjustment | Run 11 AFY |
|---|---|---|---|
| **Glen Rose** | 973 | -873 | 100 |
| **Hensell** | 1,144 | 1,156 | 2,300 |
| **Hosston** | 2,799 | 1,401 | 4,200 |
| **Total** | 4,916 | 1,684 | 6,600 |

# Williamson County Pumping

| Aquifer | Run 10 AFY | Adjustment | Run 11 AFY |
|---|---|---|---|
| Glen Rose | 689 | -539 | 150 |
| Hensell | 752 | 848 | 1,600 |
| Hosston | 1,934 | -184 | 1,750 |
| Total | 3,375 | 125 | 3,500 |

# Run 11 Results - DFC

- DFC differences between Run 10 and Run 11 (compare 2070 results)
- Blue negative values indicate higher water levels
- Red positive values indicate greater drawdowns

# Change in Drawdown in 2070

## (Difference between Run 10 and Run 11)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Bell | - | -1 | -4 | - | 32 | 4 | 37 | - |
| Bosque | - | 0 | 3 | - | 18 | 8 | 27 | - |
| Brown | - | 0 | 0 | - | 0 | 0 | 0 | 0 |
| Burnet | - | - | 0 | - | 2 | 1 | -1 | - |
| Callahan | - | - | - | - | - | - | - | 0 |
| Collin | 1 | 4 | 7 | 16 | - | - | - | 11 |
| Comanche | - | 0 | 0 | - | 1 | 0 | 0 | 0 |
| Cooke | 0 | - | - | - | - | - | - | 9 |
| Coryell | - | 0 | 0 | - | 6 | 3 | 8 | - |
| Dallas | 2 | 5 | 10 | 34 | 45 | 12 | 48 | - |
| Delta | - | 2 | 3 | - | 3 | - | - | - |
| Denton | 0 | 1 | 6 | 22 | - | - | - | 11 |
| Eastland | - | - | - | - | - | - | - | 0 |

Blue negative values indicate higher water levels

Red positive values indicate greater drawdowns

# Change in Drawdown in 2070
## (Difference between Run 10 and Run 11)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Ellis | 3 | 6 | 13 | 66 | 57 | 13 | 63 | - |
| Erath | - | 0 | 0 | 1 | 4 | -1 | 2 | 1 |
| Falls | - | 8 | 15 | - | 33 | 16 | 34 | - |
| Fannin | 0 | 3 | 4 | 9 | 6 | - | - | 4 |
| Grayson | 0 | 3 | 4 | 10 | - | - | - | 5 |
| Hamilton | - | 0 | 0 | - | 1 | 0 | 2 | - |
| Hill | 1 | 2 | 9 | - | 55 | 17 | 64 | - |
| Hunt | 3 | 4 | 5 | 10 | 8 | - | - | - |
| Johnson | 0 | 1 | 3 | 23 | 43 | -11 | 86 | - |
| Kaufman | 9 | 13 | 16 | 25 | 28 | 20 | 30 | - |
| Lamar | 0 | 1 | 1 | - | 2 | - | - | 2 |
| Lampasas | - | 0 | 0 | - | 0 | 0 | 0 | - |
| Limestone | - | 7 | 19 | - | 27 | 20 | 28 | - |

Blue negative values indicate higher water levels

Red positive values indicate greater drawdowns

# Change in Drawdown in 2070
## (Difference between Run 10 and Run 11)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| McLennan | 0 | 3 | 9 | - | 26 | 15 | 30 | - |
| Milam | - | - | 18 | - | 54 | 20 | 54 | - |
| Mills | - | 0 | 0 | - | 2 | 0 | 0 | - |
| Navarro | 6 | 6 | 20 | - | 36 | 26 | 35 | - |
| Red River | 0 | 0 | 0 | - | 1 | - | - | 0 |
| Rockwall | 5 | 9 | 11 | 20 | - | - | - | - |
| Somervell | - | -1 | -1 | 18 | 11 | -10 | 35 | - |
| Tarrant | 0 | 1 | 9 | 26 | - | - | - | 26 |
| Taylor | - | - | - | - | - | - | - | 0 |
| Travis | - | - | 0 | - | 68 | 12 | 69 | - |
| Williamson | - | - | -3 | - | 39 | 10 | 40 | - |

Blue negative values indicate higher water levels

Red positive values indicate greater drawdowns

# Run 11 Results – DFC Values for Run 11

- DFC values are calculated the same as Run 10
- DFC is taken as the average drawdown from the start of the model run (2010) until the end of the model run (2080)
- The DFC values are averaged over each county and GCD

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Bell | - | 17 | 83 | 0 | 333 | 145 | 375 | 0 |
| Bosque | - | 6 | 53 | 0 | 189 | 139 | 232 | 0 |
| Brown | - | 2 | 1 | 0 | 2 | 1 | 1 | 2 |
| Burnet | 0 | 0 | 2 | 0 | 19 | 7 | 21 | 0 |
| Callahan | - | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Collin | 482 | 729 | 366 | 560 | - | 0 | 0 | 596 |
| Comanche | - | 2 | 2 | 0 | 4 | 2 | 3 | 12 |
| Cooke | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 191 |
| Coryell | - | 5 | 15 | 0 | 107 | 70 | 141 | 0 |
| Dallas | 137 | 346 | 288 | 515 | 415 | 362 | 419 | 0 |
| Delta | - | 279 | 198 | 0 | 202 | 0 | 0 | 0 |
| Denton | 20 | 558 | 367 | 752 | 0 | 0 | 0 | 416 |
| Eastland | - | 0 | 0 | 0 | 0 | 0 | 0 | 4 |

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Ellis | 76 | 128 | 220 | 413 | 380 | 290 | 390 | 0 |
| Erath | - | 6 | 6 | 8 | 25 | 12 | 35 | 14 |
| Falls | - | 159 | 238 | 0 | 505 | 296 | 511 | 0 |
| Fannin | 259 | 709 | 305 | 400 | 291 | 0 | 0 | 269 |
| Grayson | 163 | 943 | 364 | 445 | 0 | 0 | 0 | 364 |
| Hamilton | - | 2 | 4 | 0 | 26 | 14 | 38 | 0 |
| Hill | 20 | 45 | 149 | 0 | 365 | 211 | 413 | 0 |
| Hunt | 631 | 610 | 326 | 399 | 350 | 0 | 0 | 0 |
| Johnson | 4 | -57 | 66 | 184 | 235 | 120 | 329 | 0 |
| Kaufman | 242 | 311 | 305 | 427 | 372 | 349 | 345 | 0 |
| Lamar | 42 | 100 | 107 | 0 | 125 | 0 | 0 | 132 |
| Lampasas | - | 1 | 1 | 0 | 6 | 1 | 11 | 0 |
| Limestone | - | 199 | 301 | 0 | 433 | 214 | 445 | 0 |

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnts | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| McLennan | 6 | 41 | 148 | 0 | 504 | 242 | 582 | 0 |
| Milam | 0 | 0 | 241 | 0 | 412 | 261 | 412 | 0 |
| Mills | - | 1 | 1 | 0 | 9 | 2 | 13 | 0 |
| Navarro | 110 | 139 | 266 | 0 | 343 | 295 | 343 | 0 |
| Red River | 2 | 24 | 40 | 0 | 57 | 0 | 0 | 15 |
| Rockwall | 275 | 433 | 343 | 466 | - | 0 | 0 | 0 |
| Somervell | - | 4 | 4 | 50 | 64 | 17 | 120 | 0 |
| Tarrant | 6 | 105 | 163 | 348 | 0 | 0 | 0 | 177 |
| Taylor | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Travis | 0 | 0 | 83 | 0 | 219 | 68 | 226 | 0 |
| Williamson | 0 | 0 | 78 | 0 | 220 | 89 | 225 | 0 |
| McLennan | 6 | 41 | 148 | 0 | 504 | 242 | 582 | 0 |

# Run 11 Results – Drawdown (2010-2080)

| County | O/D | Paluxy | Glen Rose | Twin Mnts | Antlers |
|---|---|---|---|---|---|
| Hood | Downdip | - | 39 | 72 | 0 |
| Hood | Outcrop | 6 | 9 | 13 | 0 |
| Montague | Downdip | 0 | 0 | 0 | - |
| Montague | Outcrop | 0 | 0 | 0 | 40 |
| Parker | Downdip | 2 | 50 | 68 | - |
| Parker | Outcrop | 6 | 20 | 7 | 42 |
| Wise | Downdip | 0 | 0 | 0 | 154 |
| Wise | Outcrop | 0 | 0 | 0 | 59 |

# Questions ?

# Agenda Item 7

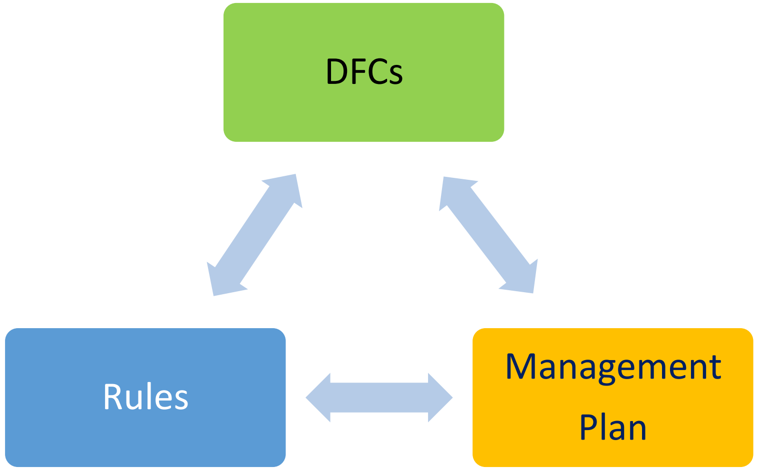
- Presentation and discussion regarding Socioeconomic Impacts, Feasibility of Desired Future Conditions (DFCs), and Other Relevant Information factors as they relate to Desired Future Conditions (DFCs) adoption pursuant to Texas Water Code Section 36.108(d)

# GMA 8 Schedule to Discuss Nine Factors

| | | |
|---|---|---|
| **November 2019** | | |
| Environmental Impacts | Subsidence Impacts | Hydrological Conditions |
| **February 2020** | | |
| Aquifer Uses or Conditions | Supply Needs & Management Strategies | Private Property Rights |
| **May 2020** | | |
| Socioeconomic Impacts | DFC Feasibility | Other Relevant Information |

# Feasibility of Achieving the DFC

- Physical Achievability
  - Is the DFC physically possible within the aquifer?
  - ➢ Groundwater Availability Models help ensure that DFCs are generally physically achievable in the aquifer
- Regulatory Achievability
  - Can the DFC be achieved via GCD management plan and rules?
  - Does the regulated community and stakeholders agree with the management approach required to achieve the DFC?
  - ➢ Have GCDs implemented Rules and have an approved Management Plan?

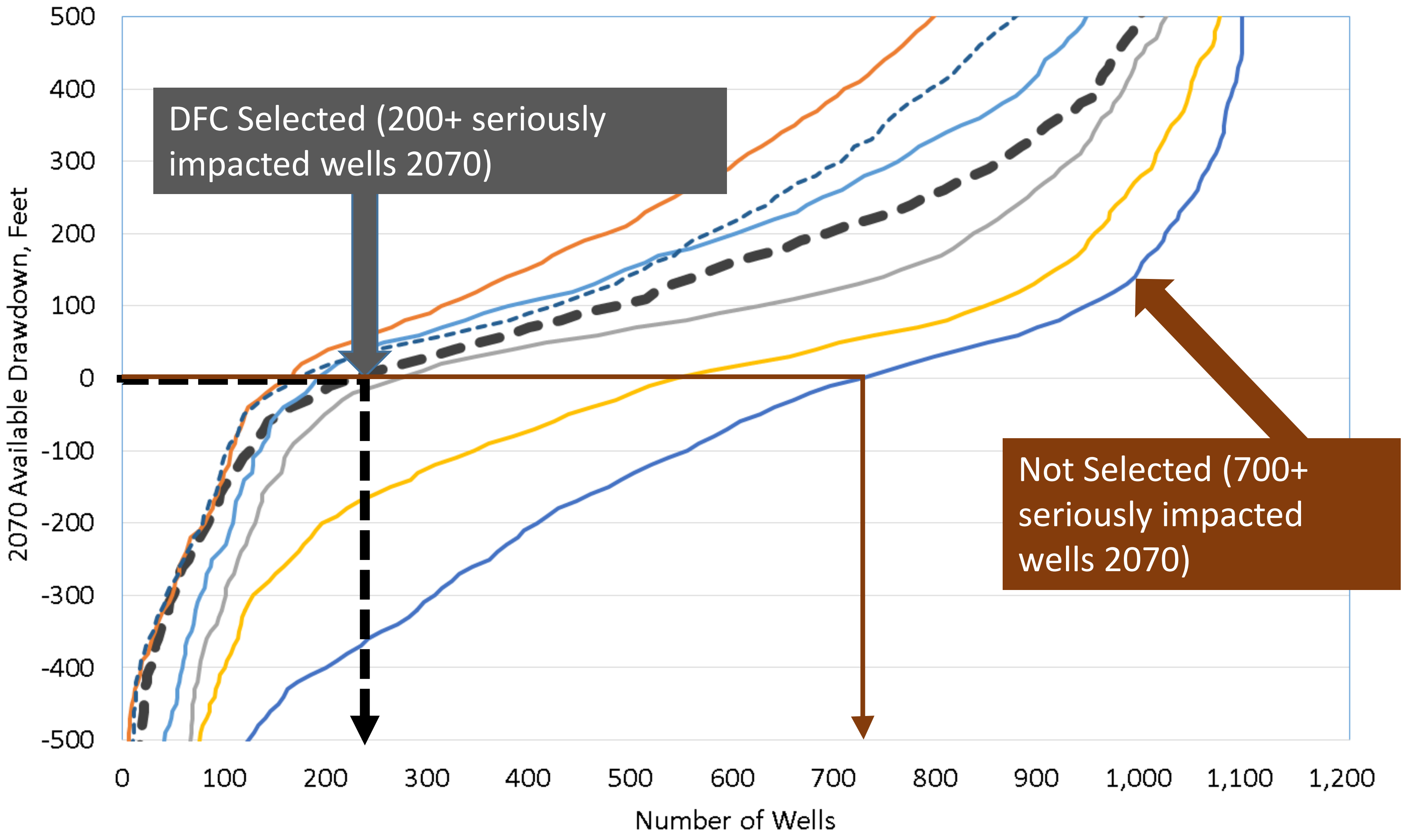


# Standard for Desired Future Conditions

Highest Practicable Level of Groundwater Production

Conservation, Preservation, Protection, Recharging, and Prevention of Waste of Groundwater, and Control of Subsidence

# Public Water Supply Well Impacts



# Socioeconomic Impacts

## *Today's Meeting:*

***Socioeconomic Impacts*** factor as it relates to Desired Future Conditions (DFCs) pursuant to Texas Water Code (TWC) § 36.108(d) -

1. Review TWC § 36.108(d) requirements for socioeconomic impacts factor considerations
2. Review 31 Texas Administrative Code (TAC), Chapter 357, regional and state water plan socioeconomic considerations
3. Review GMA 8 socioeconomic impacts factor discussion during second round of DFC joint planning
4. Discuss next steps in GMA 8 socioeconomic impacts factor consideration

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# Socioeconomic Impacts

## Socioeconomic Impacts Factor - TWC § 38.108(d) requirements

Before GMA votes on proposed DFCs, TWC § 36.108(d) requires that:

"(d) Not later than May 1, 2021, and every five years thereafter, the districts shall consider groundwater availability models and other data or information for the management area and shall propose for adoption desired future conditions for the relevant aquifers within the management area. **Before voting on the proposed desired future conditions of the aquifers under Subsection (d-2), the districts shall consider:**

. . .

**(6) socioeconomic impacts reasonably expected to occur**. . ."

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# Socioeconomic Impacts

## Socioeconomic Impacts Factor – Title 31, TAC, Chapter 357

Regional and state water planning in Texas considers socioeconomic impacts in accordance with statutory guidance:

- 31 TAC § 357.11(j) states that "Upon request, the EA will provide technical assistance to RWPGs, including on water supply and demand analysis, methods to evaluate the social and economic impacts of not meeting needs, and regarding Drought Management Measures and water conservation practices."
- 31 TAC § 357.33(c) states that "The social and economic impacts of not meeting Water Needs shall be evaluated by RWPGs and reported for each RWPA."

# Socioeconomic Impacts

## Socioeconomic Impacts Factor – Title 31, TAC, Chapter 357

- The regional water planning analysis is based on water supply needs from the regional water plans and consists of a series of point estimates of 1-year droughts at 10-year intervals.
- The socioeconomic impacts analysis attempts to measure impacts that may be anticipated if water user groups do not meet their identified water supply needs associated with a drought-of-record for one year.
- For the socioeconomic impact analysis, multiple impacts are examined, including (1) sales, income, and tax revenue, (2) jobs, (3) population, and (4) school enrollment.
- Results from the analysis are incorporated into the final regional water plans, and comprehensively presented in the subsequent state water plan.

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# Socioeconomic Impacts

## Socioeconomic Impacts Factor – Title 31, TAC, Chapter 357

- TWDB prepared information for use by RWPGs for the 2016 regional water plans – Regions B, C, D, F, G, and H.
- TWDB prepared information for use by RWPGs for the 2021 RWPG initially prepared regional water plans.
- New to 2021 planning cycle, TWDB developed an interactive dashboard to view region and county level socioeconomic impacts.
- While TWDB assessments are useful to understand importance of meeting projected water needs, analyses **do not** evaluate socioeconomic impacts of proposed DFCs at the GMA level and a similar analysis does not exist.
- DFCs result in groundwater availability amounts for potential water management strategies that can meet some of the water supply needs and, therefore, are indirectly tied to this discussion for regional and state water planning.

# Socioeconomic Impacts

## Socioeconomic Impacts Factor - GMA 8 DFC Joint Planning Second Round Discussions

- GMA 8 GCDS thoroughly discussed and considered socioeconomic impacts throughout second round.
- Formal discussions of socioeconomic impacts factor were held during GMA 8 meetings –
  - May 27, 2015
  - April 1, 2016
- Each GCD also held discussions to consider socioeconomic impacts of proposed DFCs.

# Socioeconomic Impacts

## Socioeconomic Impacts Factor - GMA 8 DFC Joint Planning Second Round Discussions

- Information regarding socioeconomic impacts reasonably expected to occur as a result of the proposed DFCs was developed by District Representatives utilizing a survey tool developed specifically for use by GMA 8.
- The survey tool was used by individual District Representatives to discuss and consider socioeconomic impacts of DFCs under consideration with each GMA 8 GCD board of directors.
- The GMA 8 survey asked individual GCDs for “yes or no” responses to a set of questions and, for certain questions, requested any additional information that the GCD considered during discussions of potential socioeconomic impacts.
- Survey results were summarized in Table 23 of the GMA 8 Desired Future Conditions Explanatory Report (February 2017).

# Socioeconomic Impacts

## Socioeconomic Impacts Factor – GMA 8 DFC Joint Planning Second Round Discussions

Table 23. Summary of GMA 8 survey regarding socioeconomic impacts of proposed DFCs.

| Survey questions regarding socioeconomic impacts of proposed DFCs | GMA 8 GCD Survey Responses | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | CTGCD | CUWCD | MTGCD | NTGCD | Ntrinty GCD | POSGCD | PGCD | RRGCD | SUWCD | STGCD | UTGCD |
| Has your GCD identified any socioeconomic studies that relate directly or indirectly to the Section 36.108 (d)(6) planning criterion that should be considered by GMA 8 as part of the joint planning process? | Y | Y | N | N | N | Y | N | N | N | Y | Y |
| Did your GCD discuss and consider the information provided by the Texas Water Development Board on socioeconomic impacts of not meeting needs included in the applicable 2011 regional water plans and the 2012 state water plan? | Y | Y | Y | Y | N | Y | Y | Y | N | Y | Y |
| From a qualitative perspective, both positive and negative socioeconomic impacts may potentially result from implementation of proposed DFCs. Did your GCD discuss the potential socioeconomic impacts that may result from proposed DFCs due to a need for conversion to an alternative supply, including increased costs associated to infrastructure, operation, and maintenance? | Y | Y | Y | Y | Y | NA | Y | Y | Y | Y | Y |
| Did your GCD discuss how proposed DFCs may reduce/eliminate the costs of lowering pumps and either deepening existing wells or drilling new wells? | Y | Y | Y | Y | Y | NA | Y | Y | Y | Y | Y |
| Did your GCD discuss the potential that proposed DFCs may serve to sustain/enhance economic growth due to assurances provided by a diversified water portfolio? | Y | Y | Y | Y | Y | NA | Y | Y | Y | Y | Y |
| Did your GCD discuss how proposed DFCs may result in short-term reduction in utility rates due to reduction in cost of alternative water management strategy implementation? | N | Y | Y | Y | N | NA | Y | Y | Y | Y | Y |
| Did your GCD discuss how proposed DFCs may result in significant but unquantified production costs due to lowering of artesian water levels in local aquifers? | Y | Y | Y | Y | Y | NA | Y | Y | Y | Y | Y |

# Socioeconomic Impacts

## Socioeconomic Impacts Factor - GMA 8 DFC Joint Planning Second Round Discussions

- Survey responses illustrated that the GCDs in GMA 8 held focused discussions during multiple properly noticed board of directors' meetings on the socioeconomic impacts of proposed DFCs within their individual GCDs.
- Survey responses clearly indicated that GMA 8 GCDs recognized that in their deliberation and adoption of DFCs, management plans, and rules, it is critical to evaluate all policy decisions based, in part, on the potential socioeconomic impacts of the policy question under consideration.

# Socioeconomic Impacts

## Socioeconomic Impacts Factor - GMA 8 DFC Joint Planning Second Round Discussions

- Potential socioeconomic impacts considered included: impacts of lowering water levels on costs of production including increased pumping lifts, decreasing well yields and potential need for additional wells, potential for and additional costs of developing alternative supplies, and the need to meet water supply needs in order to avoid socioeconomic impacts of water shortages.
- Overall, almost all the questions regarding whether a GCD's board of directors considered a specific aspect of socioeconomic impacts potentially resulting from proposed DFCs were answered in the affirmative (61 – yes; 4 – no).

# Socioeconomic Impacts

## Socioeconomic Impacts Factor - GMA 8 DFC Joint Planning Second Round Discussions

- Due to the absence of non-exempt pumping in the Northern Trinity and Woodbine aquifers in Post Oak Savannah GCD, the District's responses to questions pertaining to socioeconomic impacts of proposed DFCs were determined to be "not applicable."
- Five GCDs provided specific information regarding additional socioeconomic impact studies deemed to be relevant to the individual GCD. GCDs submitting district-specific information on socioeconomic impacts included Central Texas GD, Clearwater UWCD, Post Oak Savannah GCD, Southern Trinity GCD, and Upper Trinity GCD.

**All the topics/issues considered by GMA 8 GCDs during the second round of joint planning continue to be relevant considerations in this third round.**

# Socioeconomic Impacts

## Next Steps in GMA 8 Socioeconomic Impacts Factor Consideration

- Are there additional socioeconomic impacts for proposed DFCs identified by GMA 8 GCDs, or are those considered during second round still reflective of today's issues?
- Once actual DFCs are being considered and reviewed relative to the nine factors, WSP Team to develop presentation of impacts of proposed DFCs on nine factors.
- Information from presentations to be incorporated into the GMA 8 Desired Future Conditions Explanatory Report.

# Socioeconomic Impacts

## Questions?

# Agenda Item 10

- Discussion of possible agenda items and dates for next GMA 8 meeting
  - *Presentation of Central Texas GCD run results for Llano Uplift aquifers*
  - *Discussion of slivers as per TWDB*
  - *Discussion and possible action on DFCs for:*
    - Trinity
    - Woodbine
    - Edwards
    - Llano Uplift Aquifer (Hickory, Ellenburger, and Marble Falls)
  - *Discussion and possible action on designation of Non-Relevant Aquifers*

Thank you!

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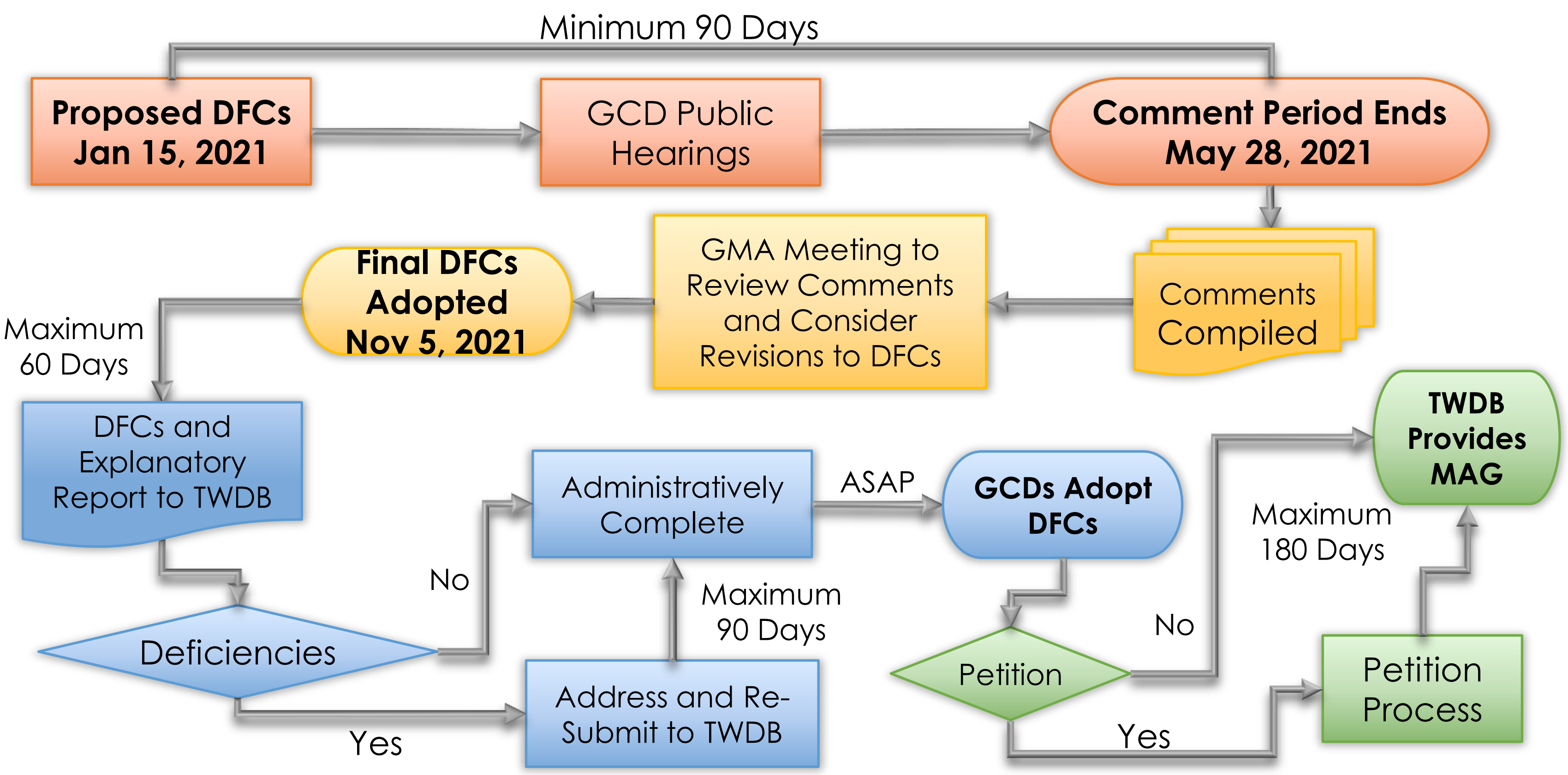
# Anticipated Timeline for GMA 8 DFC Process

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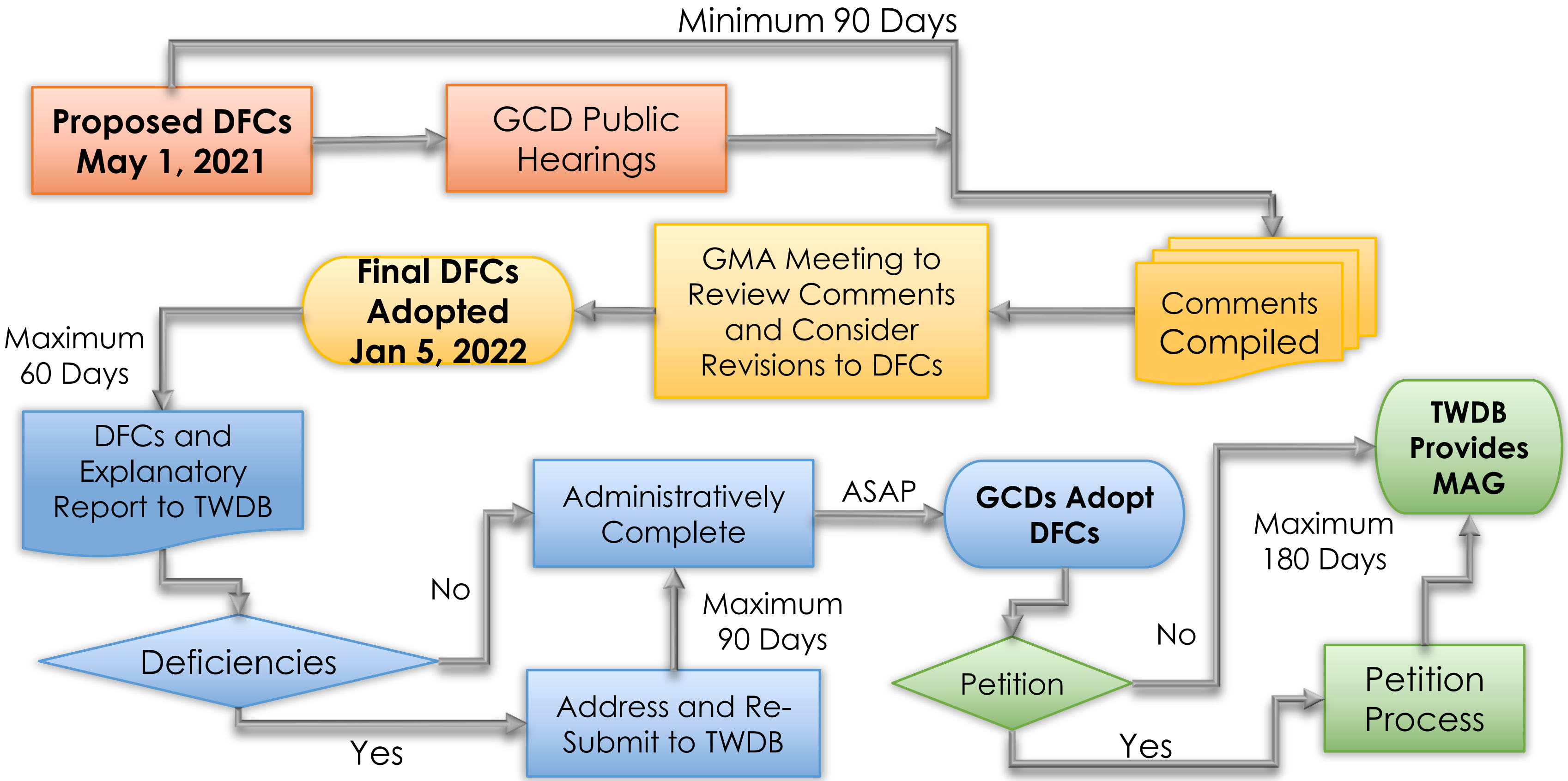
# DFC Process
# (TWC Sec. 36.108 & 31 TAC Ch. 356)



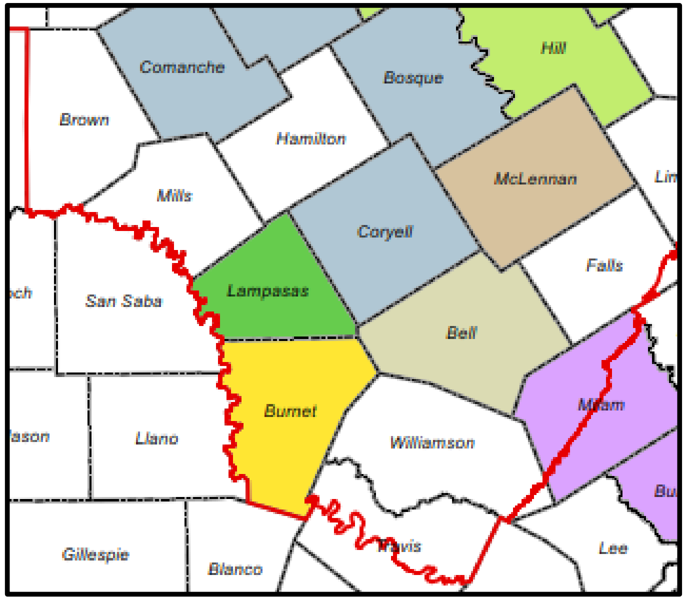
# GMA 8
# Joint Groundwater Planning Meeting

August 7, 2020

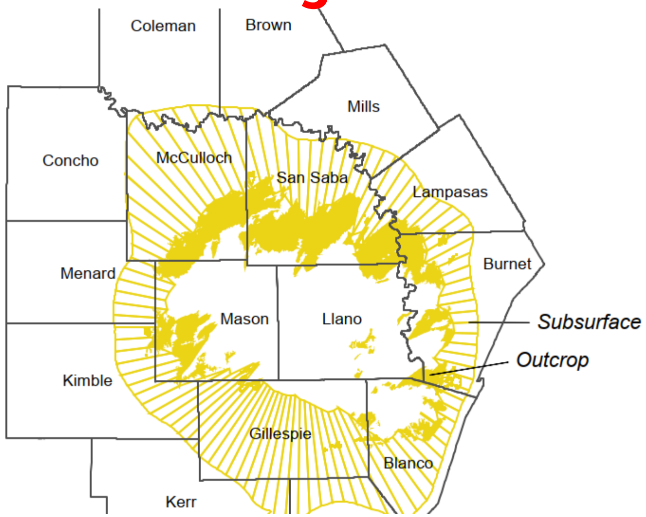
# Agenda Item 6
# Discussion and possible action on results from the Central Texas Llano Uplift model run

- WSP completed simulations for Central Texas GCD related to impacts from various pumping in the aquifers using the Llano Uplift GAM
- Central Texas GCD funded this effort separately from the GMA 8 budget

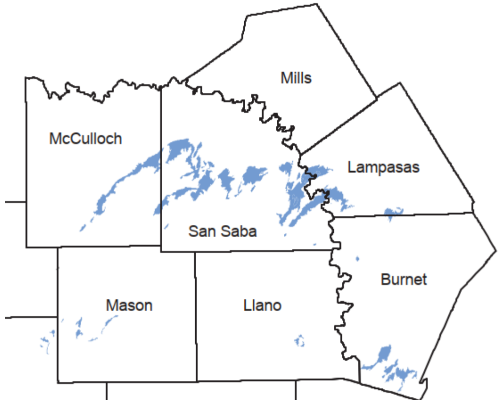
**Southern portion of GMA 8**



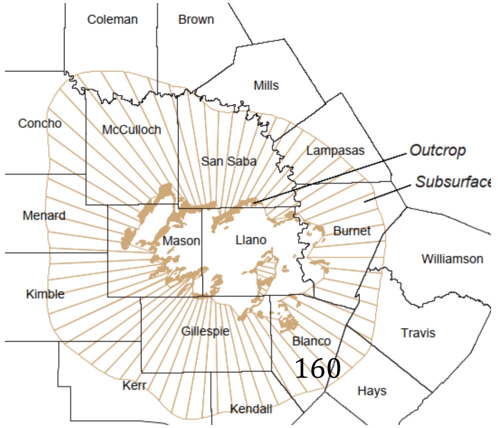

**Ellenburger**




**Marble Falls**




**Hickory**



# Central Texas Llano Uplift model runs

- **History:** Previous DFC statements based on percent remaining saturated thickness

- **Objective:** Assess impact of various levels of pumping and develop a DFC statement for Llano Uplift aquifers based on average drawdown

- **Approach:** develop 3 scenarios of various pumping to assess impacts in the each aquifer
  - *Scenario A = 2009 pumping*
  - *Scenario B = Current MAG*
  - *Scenario C = 2.5 x Current MAG*

# Scenario A - Llano Uplift model runs 2009 pumping

| | | 2009 Q MAG Results | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| County | Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
| Brown | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| Brown | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |
| Brown | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Burnet | Marble Falls | 2,220 | 2,220 | 2,220 | 2,220 | 2,220 | 2,220 | 2,220 | 2,220 |
| Burnet | Ellenburger-San Saba | 5,244 | 5,244 | 5,244 | 5,244 | 5,244 | 5,244 | 5,244 | 5,244 |
| Burnet | Hickory | 1,088 | 1,088 | 1,088 | 1,088 | 1,088 | 1,088 | 1,088 | 1,088 |
| Lampasas | Marble Falls | 363 | 363 | 363 | 363 | 363 | 363 | 363 | 363 |
| Lampasas | Ellenburger-San Saba | 351 | 351 | 351 | 351 | 351 | 351 | 351 | 351 |
| Lampasas | Hickory | 113 | 113 | 113 | 113 | 113 | 113 | 113 | 113 |
| Mills | Marble Falls | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |
| Mills | Ellenburger-San Saba | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mills | Hickory | 36 | 36 | 36 | 36 | 36 | 36 | 36 | 36 |

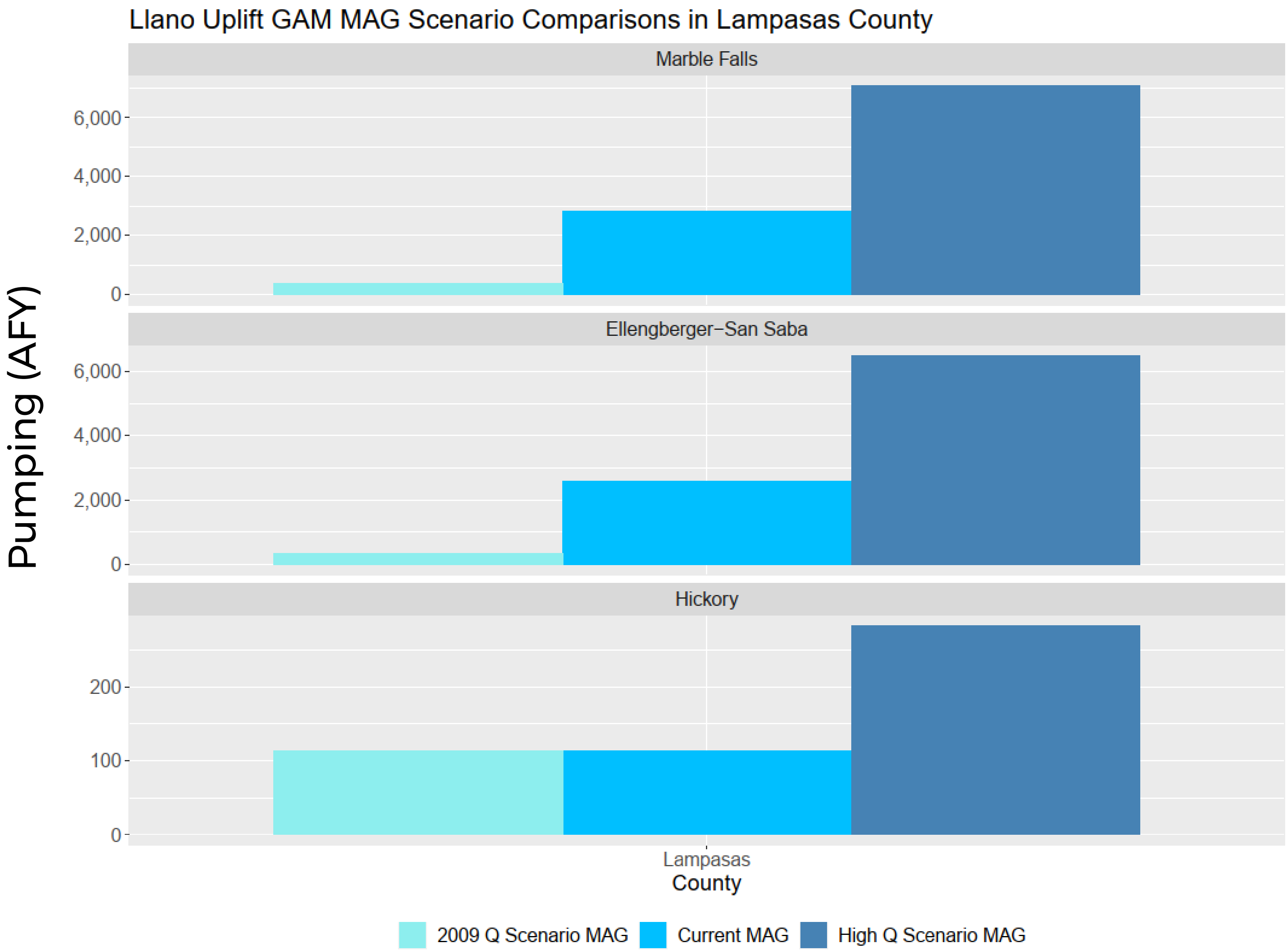
# Scenario B - Llano Uplift model runs Current MAG pumping

| | | Current MAG Results | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| County | Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
| Brown | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | - |
| Brown | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | - |
| Brown | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | - |
| Burnet | Marble Falls | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | 2,738 | - |
| Burnet | Ellenburger-San Saba | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | 10,834 | - |
| Burnet | Hickory | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | 3,415 | - |
| Lampasas | Marble Falls | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | 2,839 | - |
| Lampasas | Ellenburger-San Saba | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | 2,595 | - |
| Lampasas | Hickory | 113 | 113 | 113 | 113 | 113 | 113 | 113 | - |
| Mills | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | - |
| Mills | Ellenburger-San Saba | 499 | 499 | 499 | 499 | 499 | 499 | 499 | - |
| Mills | Hickory | 36 | 36 | 36 | 36 | 36 | 36 | 36 | - |

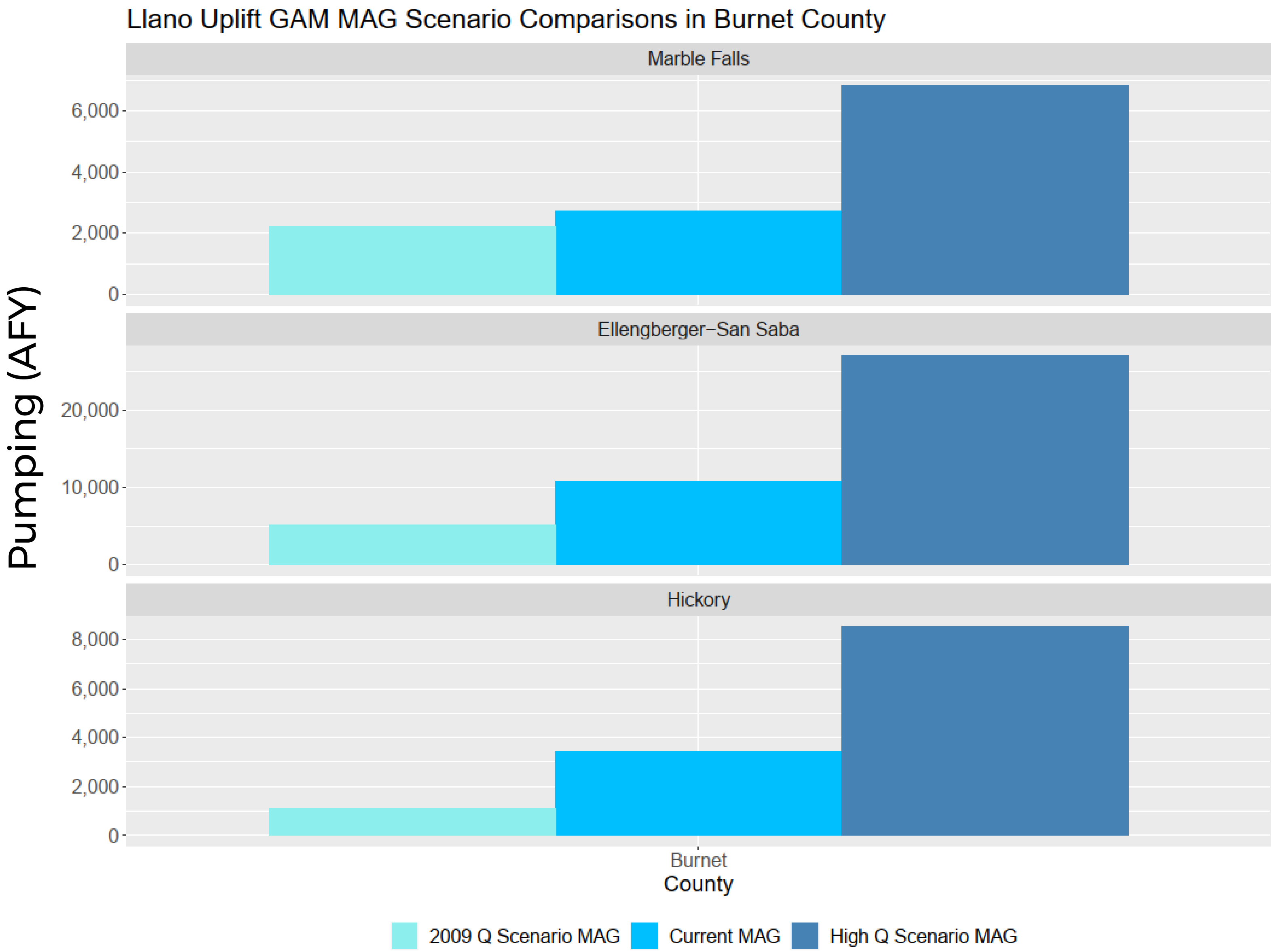
# Scenario C - Llano Uplift model runs 2.5 x Current MAG pumping

| | | High Q MAG Results | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| County | Aquifer | 2010 | 2020 | 2030 | 2040 | 2050 | 2060 | 2070 | 2080 |
| Brown | Marble Falls | 25 | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| Brown | Ellenburger-San Saba | 131 | 131 | 131 | 131 | 131 | 131 | 131 | 131 |
| Brown | Hickory | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Burnet | Marble Falls | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 | 6,845 |
| Burnet | Ellenburger-San Saba | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 | 27,086 |
| Burnet | Hickory | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 | 8,538 |
| Lampasas | Marble Falls | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 | 7,097 |
| Lampasas | Ellenburger-San Saba | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 | 6,487 |
| Lampasas | Hickory | 283 | 283 | 283 | 283 | 283 | 283 | 283 | 283 |
| Mills | Marble Falls | 63 | 63 | 63 | 63 | 63 | 63 | 63 | 63 |
| Mills | Ellenburger-San Saba | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 | 1,248 |
| Mills | Hickory | 90 | 90 | 90 | 90 | 90 | 90 | 90 | 90 |

# Lampasas County - Llano Uplift model runs Pumping Scenarios by aquifer



# Burnet County - Llano Uplift model runs Pumping Scenarios by aquifer



# Llano Uplift model run results from 3 scenarios

**Q = Pumping**
**Current = current MAG**

| Llano Uplift DFC Results (Average Drawdown) | | | | |
|---|---|---|---|---|
| **County** | **Scenario** | **Marble Falls** | **Ellenburger-San Saba** | **Hickory** |
| **Brown** | 2009 Q | 2.9 | 2.9 | 2.9 |
| **Brown** | Current Q | 3.2 | 3.2 | 3.1 |
| **Brown** | High Q | 3.6 | 3.6 | 3.6 |
| **Burnet** | 2009 Q | 1.4 | 1.1 | 0.7 |
| **Burnet** | Current Q | 11.3 | 11.5 | 11.1 |
| **Burnet** | High Q | 41.3 | 42.6 | 42.0 |
| **Lampasas** | 2009 Q | 3.8 | 3.8 | 3.8 |
| **Lampasas** | Current Q | 16.4 | 16.2 | 16.1 |
| **Lampasas** | High Q | 42.3 | 41.8 | 41.7 |
| **Mills** | 2009 Q | 3.8 | 3.8 | 3.8 |
| **Mills** | Current Q | 8.9 | 8.9 | 8.9 |
| **Mills** | High Q | 18.7 | 18.7 | 18.7 |

# Central Texas GCD Proposal for Llano Uplift Aquifer DFCs based on results of Scenario B

| Proposed Llano Uplift DFCs (Average feet of Drawdown in 2080) | | | |
|---|---|---|---|
| **County** | Marble Falls | Ellenburger-San Saba | Hickory |
| **Brown** | 3 | 3 | 3 |
| **Burnet** | 11 | 12 | 11 |
| **Lampasas** | 16 | 16 | 16 |
| **Mills** | 9 | 9 | 9 |

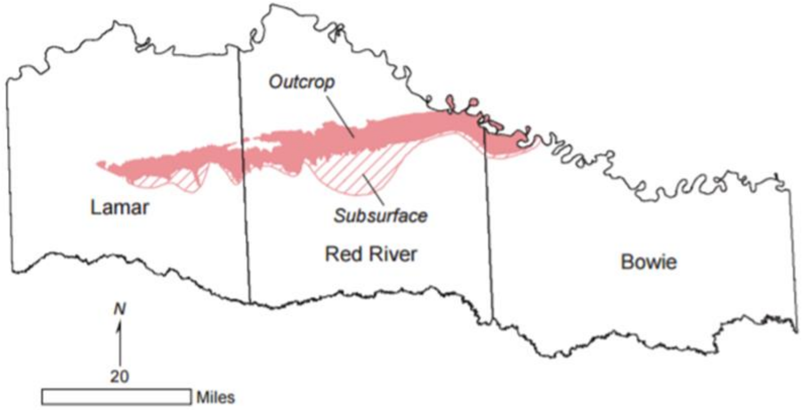
## Proposed Action for Agenda Item 6

In the current round of planning, GMA 8 adopts the results from Scenario B using the Llano Uplift Aquifer GAM as the DFCs for the Llano Uplift Aquifers

# Agenda Item 7
# Discuss and possible action regarding GMA 8 declaration of non-relevant aquifers

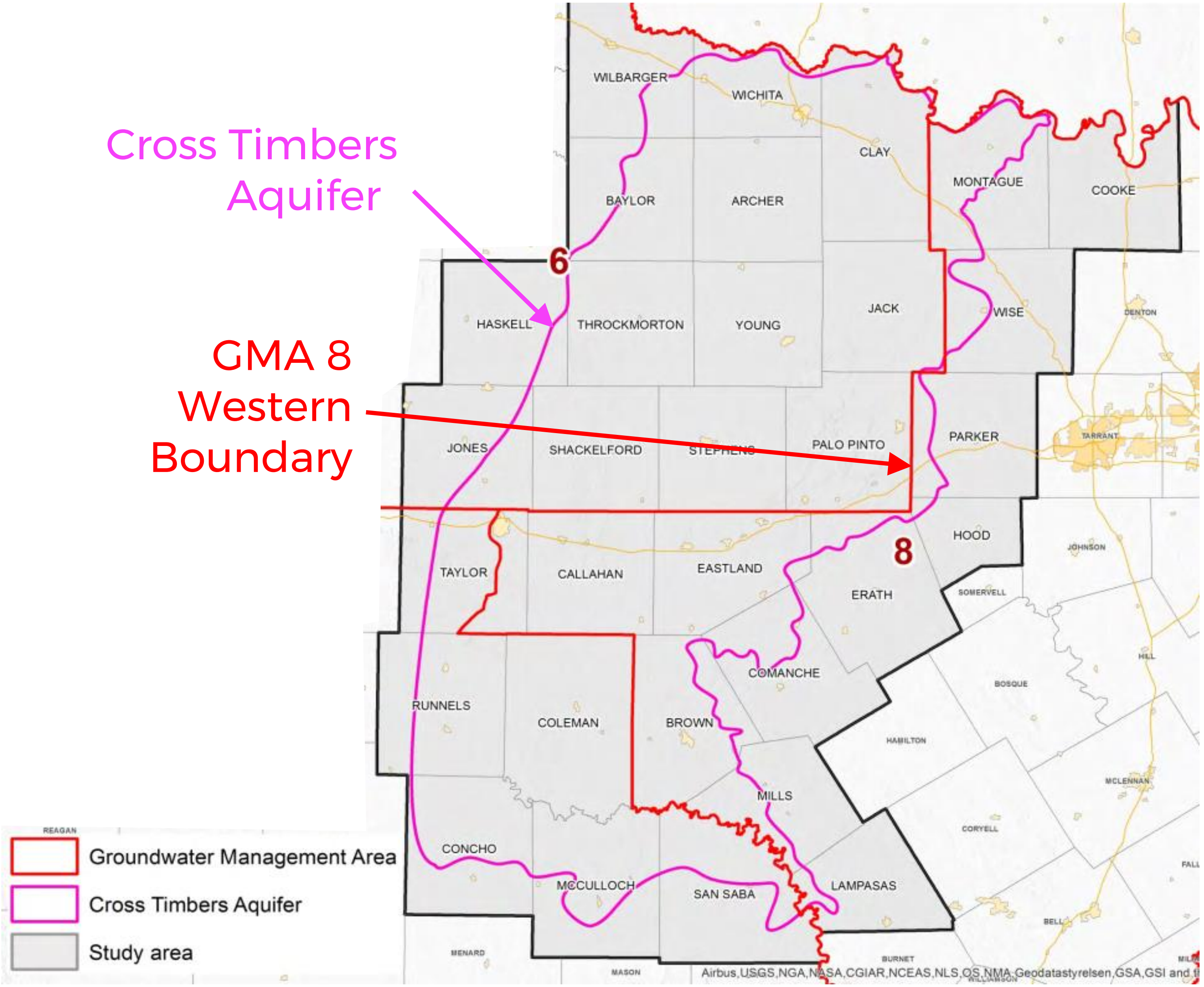
# Review of NON-RELEVANT Aquifers (last round)

- The Nacatoch, Blossom and Brazos River Alluvium aquifers were classified as non-relevant for the purposes of joint planning
- DFCs were not adopted for these aquifers


# New NON-RELEVANT Aquifer

- Cross Timbers Aquifer
  - GAM Conceptual Model under development
  - Non-relevant
  - Will be added to Explanatory Report

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# Proposed Action for Agenda Item 7

- In the current round of planning, GMA 8 determines that Nacatoch, Blossom, Brazos River Alluvium, and Cross Timbers Aquifers be declared non-relevant for purposes of Joint Groundwater Planning

# Agenda Item 8
# Presentation, discussion and possible action on options for Desired Future Conditions statements and next steps to establish proposed Desired Future Conditions.

## Northern Trinity and Woodbine Aquifers

— *Run 11 – Update of NTWGAM DFC/MAG Run*

— *WSP has received pumping updates from Upper Trinity GCD, Southern Trinity GCD, Prairielands GCD, Central Texas GCD (funded thru GMA 8 contract)*

— *Pumping projections also updated for Clearwater UWCD, Central Texas GCD, Travis and Williamson County (funded separately by Clearwater UWCD)*

## Edwards Balcones Fault Zone Aquifer

— *Clearwater UWCD recommends re-adopting current DFCs*

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnt | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Bell | - | 17 | 83 | 0 | 333 | 145 | 375 | 0 |
| Bosque | - | 6 | 53 | 0 | 189 | 139 | 232 | 0 |
| Brown | - | 2 | 1 | 0 | 2 | 1 | 1 | 2 |
| Burnet | 0 | 0 | 2 | 0 | 19 | 7 | 21 | 0 |
| Callahan | - | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Collin | 482 | 729 | 366 | 560 | - | 0 | 0 | 596 |
| Comanche | - | 2 | 2 | 0 | 4 | 2 | 3 | 12 |
| Cooke | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 191 |
| Coryell | - | 5 | 15 | 0 | 107 | 70 | 141 | 0 |
| Dallas | 137 | 346 | 288 | 515 | 415 | 362 | 419 | 0 |
| Delta | - | 279 | 198 | 0 | 202 | 0 | 0 | 0 |
| Denton | 20 | 558 | 367 | 752 | 0 | 0 | 0 | 416 |
| Eastland | - | 0 | 0 | 0 | 0 | 0 | 0 | 4 |

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnt | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| Ellis | 76 | 128 | 220 | 413 | 380 | 290 | 390 | 0 |
| Erath | - | 6 | 6 | 8 | 25 | 12 | 35 | 14 |
| Falls | - | 159 | 238 | 0 | 505 | 296 | 511 | 0 |
| Fannin | 259 | 709 | 305 | 400 | 291 | 0 | 0 | 269 |
| Grayson | 163 | 943 | 364 | 445 | 0 | 0 | 0 | 364 |
| Hamilton | - | 2 | 4 | 0 | 26 | 14 | 38 | 0 |
| Hill | 20 | 45 | 149 | 0 | 365 | 211 | 413 | 0 |
| Hunt | 631 | 610 | 326 | 399 | 350 | 0 | 0 | 0 |
| Johnson | 4 | -57 | 66 | 184 | 235 | 120 | 329 | 0 |
| Kaufman | 242 | 311 | 305 | 427 | 372 | 349 | 345 | 0 |
| Lamar | 42 | 100 | 107 | 0 | 125 | 0 | 0 | 132 |
| Lampasas | - | 1 | 1 | 0 | 6 | 1 | 11 | 0 |
| Limestone | - | 199 | 301 | 0 | 433 | 214 | 445 | 0 |

# Run 11 Results – Drawdown (2010-2080)

| County | Woodbine | Paluxy | Glen Rose | Twin Mnt | Travis Peak | Hensell | Hosston | Antlers |
|---|---|---|---|---|---|---|---|---|
| McLennan | 6 | 41 | 148 | 0 | 504 | 242 | 582 | 0 |
| Milam | 0 | 0 | 241 | 0 | 412 | 261 | 412 | 0 |
| Mills | - | 1 | 1 | 0 | 9 | 2 | 13 | 0 |
| Navarro | 110 | 139 | 266 | 0 | 343 | 295 | 343 | 0 |
| Red River | 2 | 24 | 40 | 0 | 57 | 0 | 0 | 15 |
| Rockwall | 275 | 433 | 343 | 466 | - | 0 | 0 | 0 |
| Somervell | - | 4 | 4 | 50 | 64 | 17 | 120 | 0 |
| Tarrant | 6 | 105 | 163 | 348 | 0 | 0 | 0 | 177 |
| Taylor | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Travis | 0 | 0 | 83 | 0 | 219 | 68 | 226 | 0 |
| Williamson | 0 | 0 | 78 | 0 | 220 | 89 | 225 | 0 |
| McLennan | 6 | 41 | 148 | 0 | 504 | 242 | 582 | 0 |

# Run 11 Results – Drawdown (2010-2080)

| County | O/D | Paluxy | Glen Rose | Twin Mnt | Antlers |
|---|---|---|---|---|---|
| Hood | Downdip | - | 39 | 72 | 0 |
| Hood | Outcrop | 6 | 9 | 13 | 0 |
| Montague | Downdip | 0 | 0 | 0 | - |
| Montague | Outcrop | 0 | 0 | 0 | 40 |
| Parker | Downdip | 2 | 50 | 68 | - |
| Parker | Outcrop | 6 | 20 | 7 | 42 |
| Wise | Downdip | 0 | 0 | 0 | 154 |
| Wise | Outcrop | 0 | 0 | 0 | 59 |

# Presentation of DFCs from NTWGAM Run 11

## DFC Tables in previous Explanatory Report

- Aquifer-Wide scale
- GCD scale
- County scale
- Outcrop and Downdip for UTGCD

# Proposed Action for Agenda Item 8

## Northern Trinity and Woodbine Aquifers

— *For the current round of planning, GMA 8 adopts the results of Run 11 as proposed DFCs for the Northern Trinity and Woodbine Aquifers*

## Edwards (BFZ) Aquifer

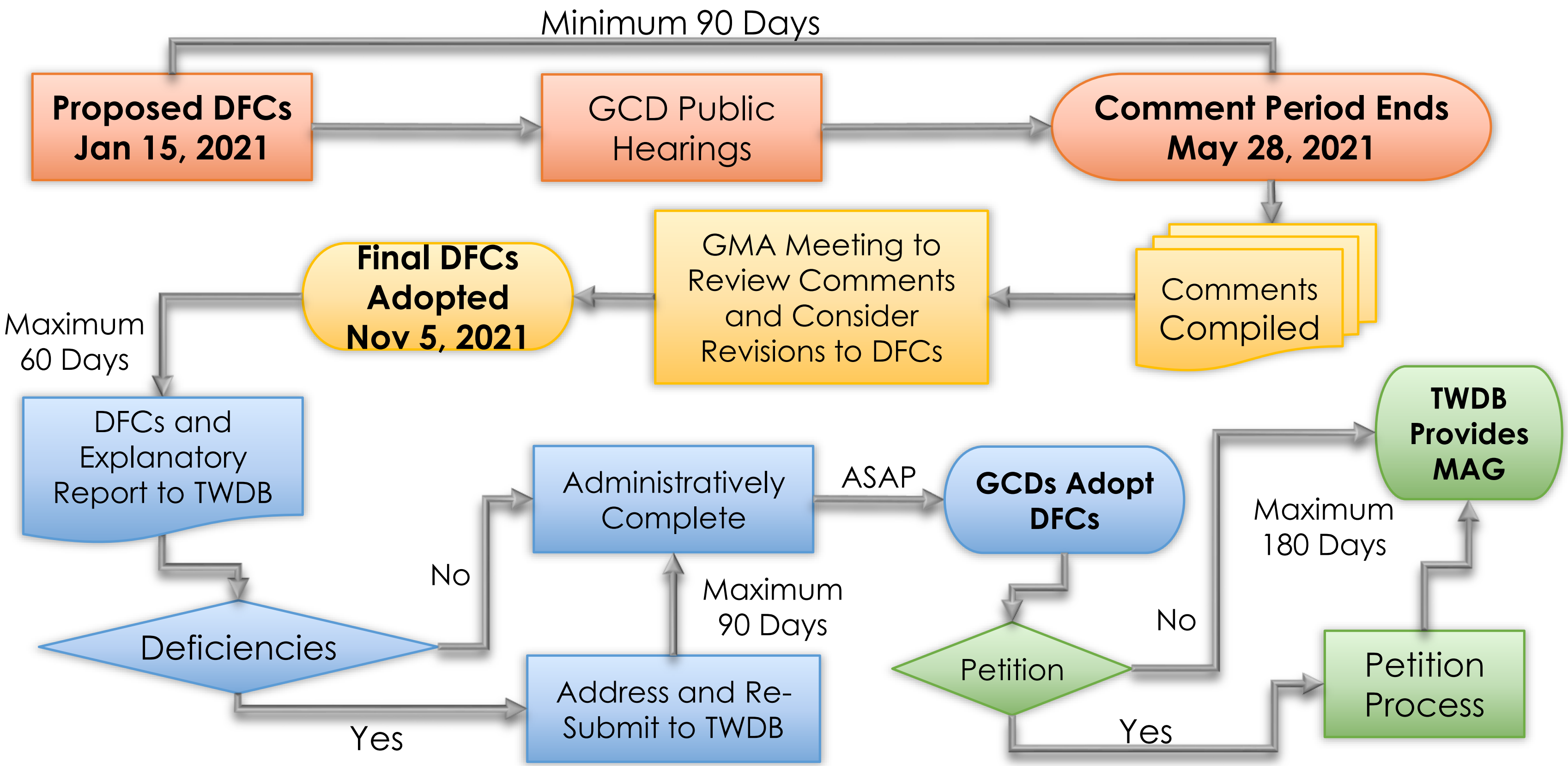
— *For the current round of planning, GMA 8 proposes the current DFCs for the Edwards BFZ Aquifer as defined in Resolution 2017-01 as the proposed DFCs*

| County | Edwards (BFZ) DFC |
|---|---|
| **Bell** | Maintain at least 100 acre-feet per month of stream/spring flow in Salado Creek during a repeat of the drought of record |
| **Travis** | Maintain at least 42 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record |
| **Williamson** | Maintain at least 60 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record |

# Agenda Item 9
# Discussion and possible action on margin of error language for the Desired Future Conditions Statement.

- Due to the nature of the drawdown calculations, TWDB suggests that the GMA provide "variance assumptions"
- For example, if the variation of averaged drawdowns calculated by the TWDB is within 5 percent of the proposed DFCs values, then the TWDB assumes the model results are consistent with the proposed DFCs.

# Anticipated Timeline for GMA 8 DFC Process



# Agenda Item 13
# Discussion of possible agenda items and dates for next GMA 8 meeting

- Review 9 factors
- Approve DFC resolutions for each Aquifer
  - Draft resolutions will be sent to GCDs at least 2 weeks prior to meeting

Thank you!

wsp.com

# Appendix H
# Consultant Presentation at GMA 8 Joint Groundwater Planning Meeting:
# October 27, 2020

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GMA 8
Joint Groundwater
Planning Meeting
October 27, 2020
Blanton & Associates, Inc.

## Agenda Item 7
## Presentation and discussion of the 9 factors pursuant to Texas Water Code Section 36.108(d).

- WSP Team has discussed 9 factors in three previous meetings

- Minor DFC changes have occurred due to minor changes in GAM runs

- Briefly review 9 factors before considering adoption of proposed DFCs

wsp

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# Standard for Desired Future Conditions

Highest Practicable Level of Groundwater Production

Conservation, Preservation, Protection, Recharging, and Prevention of Waste of Groundwater, and Control of Subsidence

3

# Previous GMA 8 Meetings Discussing Nine Factors

**November 2019**

Environmental Impacts

Subsidence Impacts

Hydrological Conditions

**February 2020**

Aquifer Uses or Conditions

Supply Needs & Management Strategies

Private Property Rights

**May 2020**

Socioeconomic Impacts

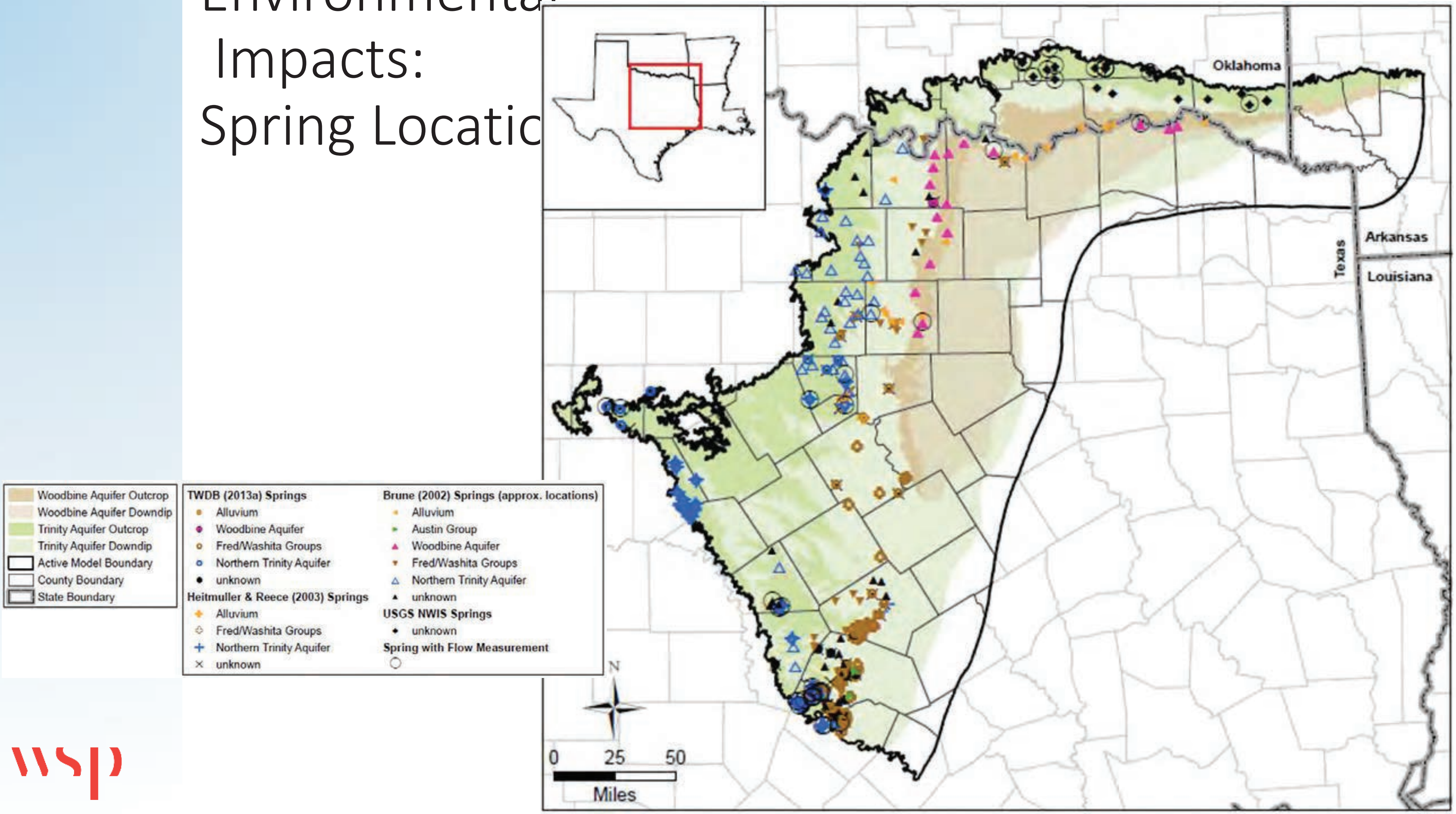
DFC Feasibility

Other Relevant Information

4


Environmental
Impacts
5

Environmental Impacts: Spring Locatic

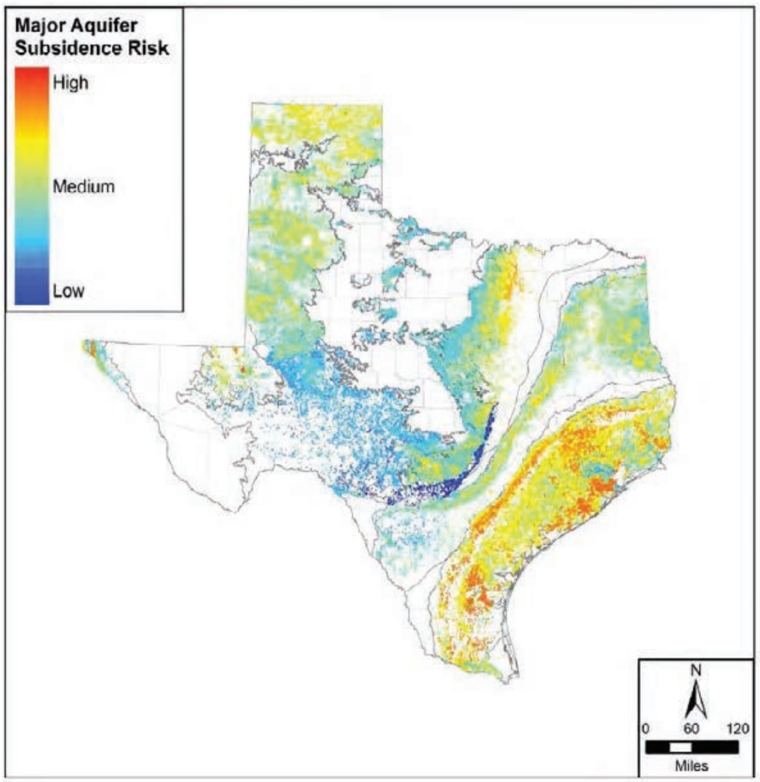


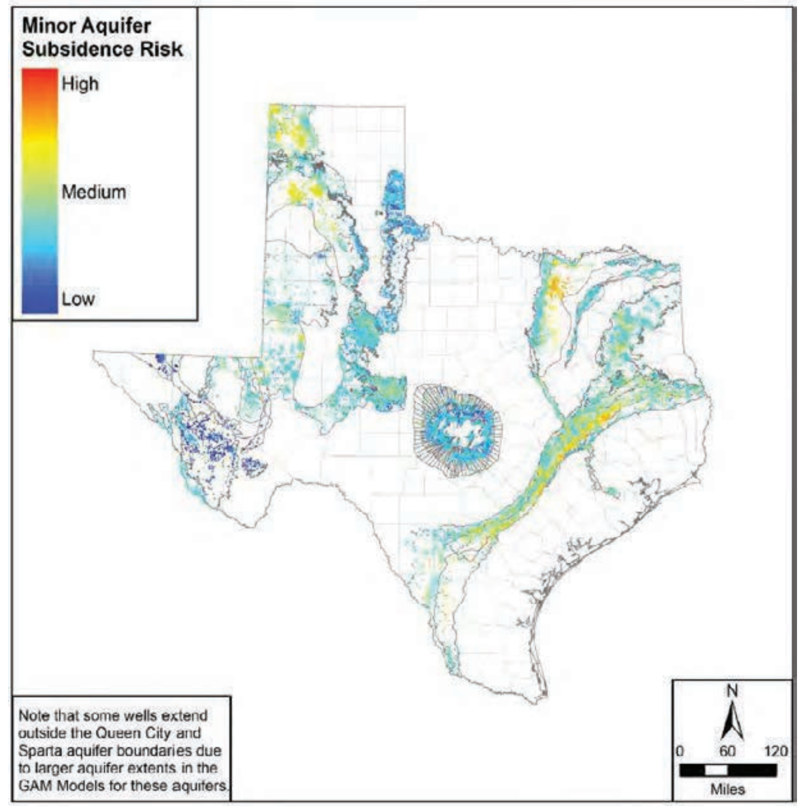
# Environmental Impacts: Spring Discharge and Streamflow

- Southern portion of GMA 8 has the greatest density of springs.
- Most are in the Washita/Fredericksburg, which includes Edwards BFZ.
- Many located in far western extent of GMA 8.
- Springs flow when the water level elevation of the aquifer is higher than the spring elevation.
- Run 11 impacts to springs and streams is very similar to Run 10 in previous round of planning


Subsidence Impacts
8

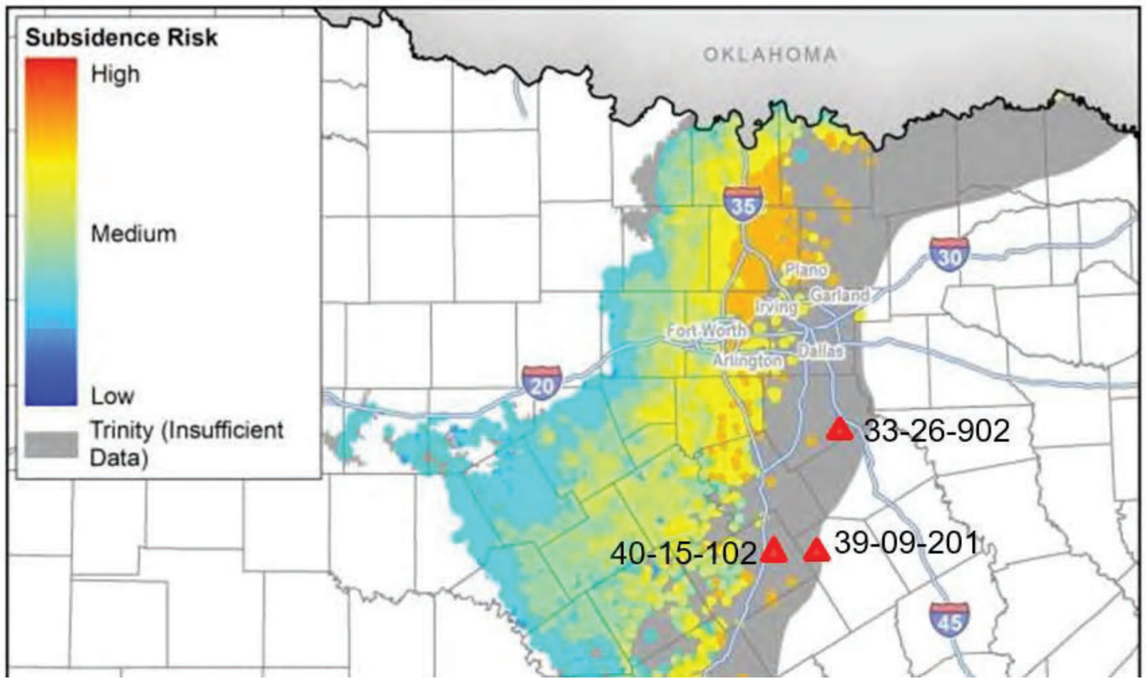
# Visualizing the Subsidence Risk



# Examples of Subsidence Estimates

| Well Owner | State Well ID | Aquifer Thickness (feet) | Clay Thickness (feet) | **Subsidence Risk Score** | Minimum Subsidence (feet) | Maximum Subsidence (feet) |
|---|---|---|---|---|---|---|
| Rockett SUD | 33-26-902 | 1,140 | 668 | **7.66** | 0.6 | 1.2 |
| Penelope WSC | 39-09-201 | 1,440 | 299 | **8.59** | 3.0 | 6.0 |
| Aquilla | 40-15-102 | 835 | 294 | **7.66** | 2.5 | 4.5 |

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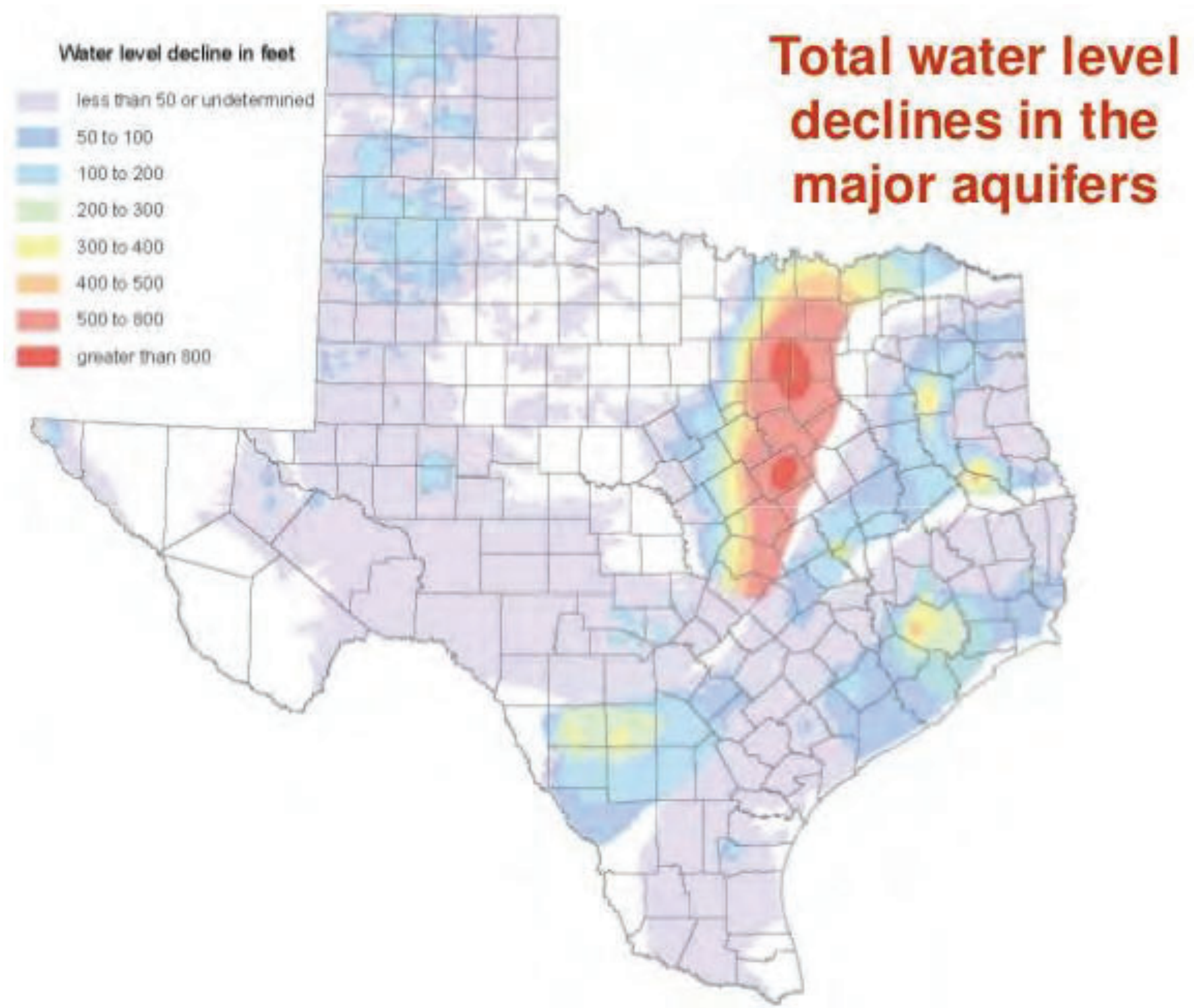
# Hydrological Conditions

11


Water level decline in feet
less than 50 or undetermined
50 to 100
100 to 200
200 to 300
300 to 400
400 to 500
500 to 800
greater than 800
Total water level declines in the major aquifers

# Hydrological Conditions

- TWDB GWDB water level data
- Define relevant **TWDB** aquifer codes
- Count measurements and throw out null values.
  - Wells with less than 3 measurements; and
  - Wells that do not have a measurement since 2000
- Selection criteria reduced well locations with water levels from 8,461 to 677 wells used for mapping/hydrographs

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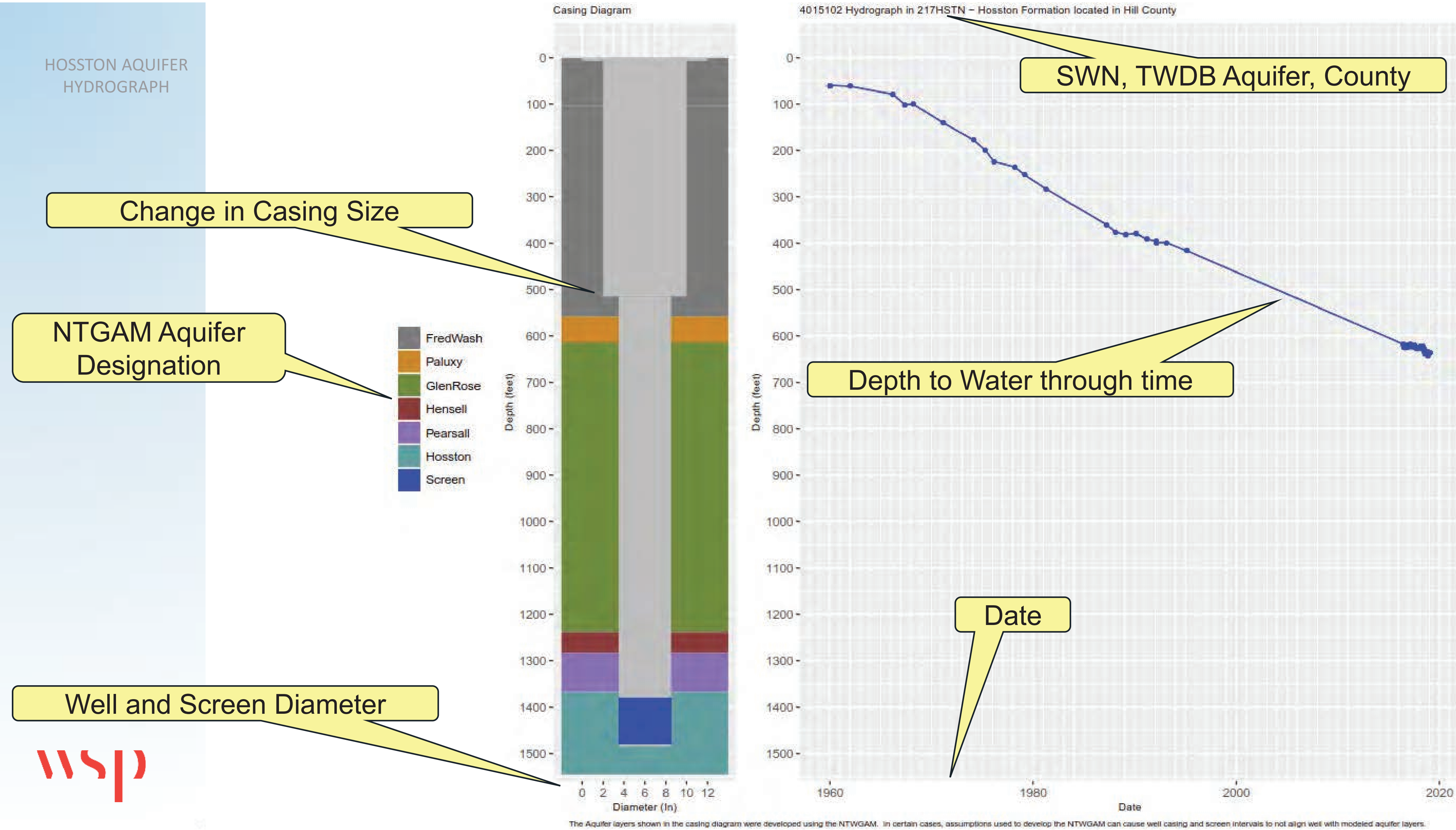
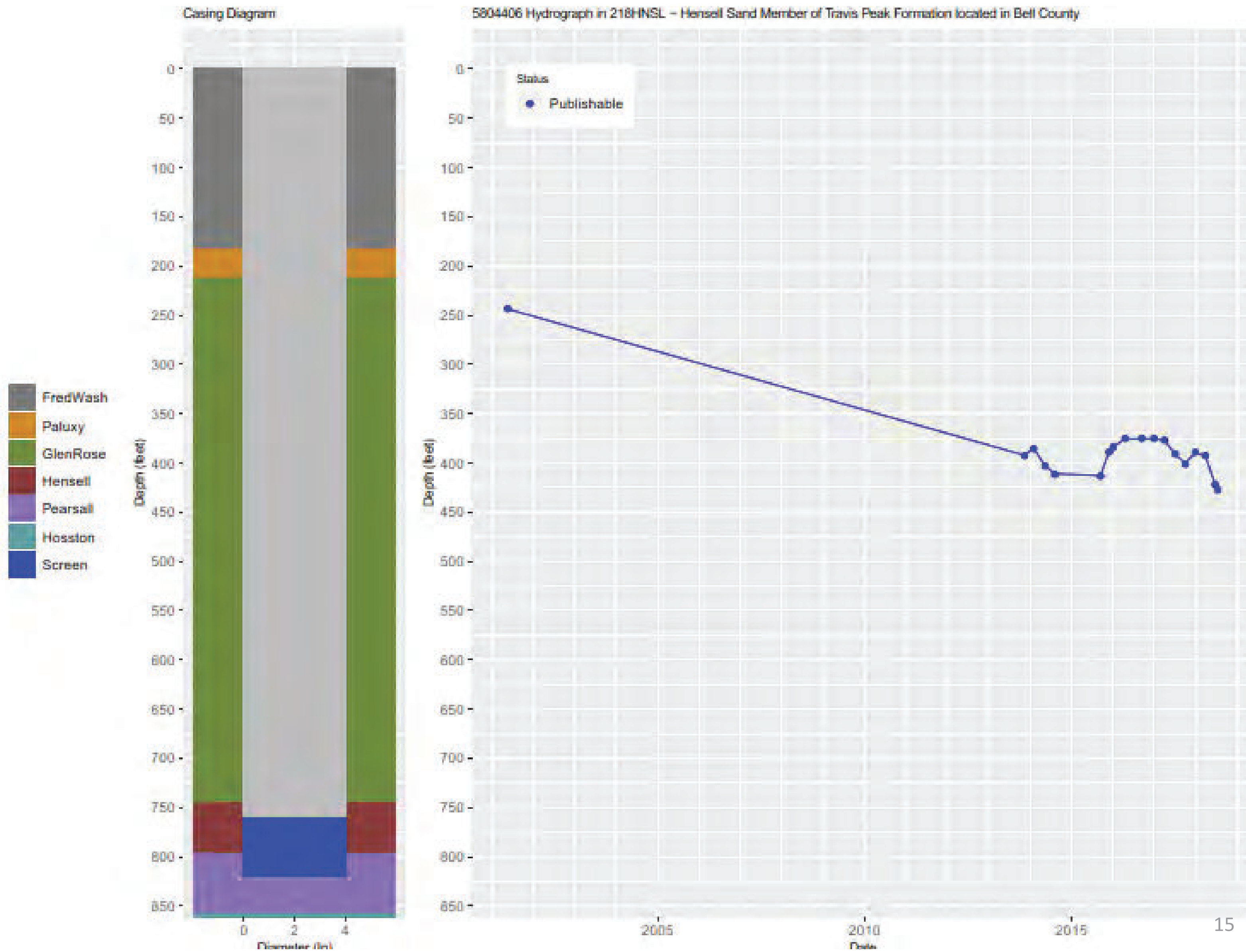
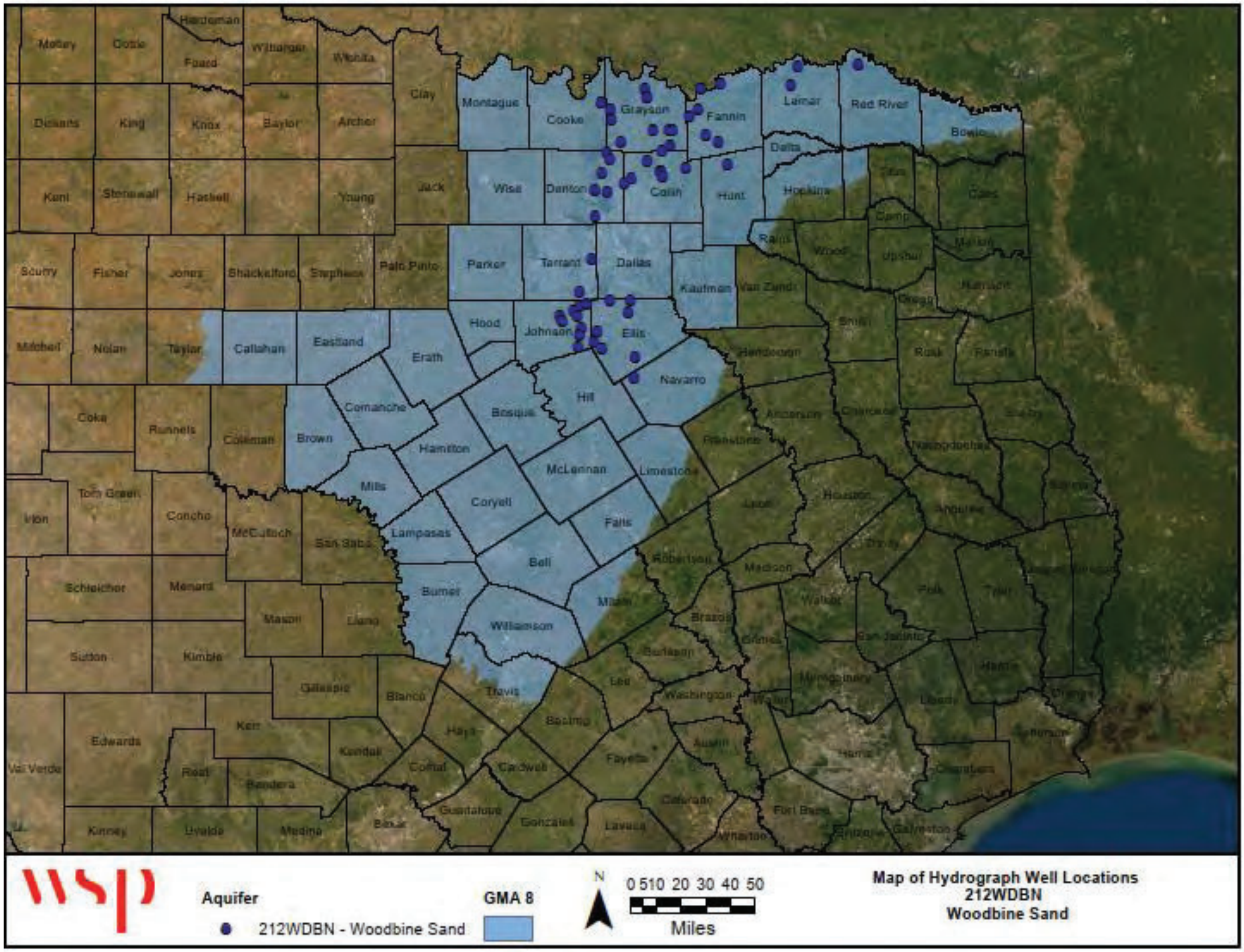

HOSSTON AQUIFER HYDROGRAPH
Casing Diagram
4015102 Hydrograph in 217HSTN − Hosston Formation located in Hill County
SWN, TWDB Aquifer, County
Change in Casing Size
NTGAM Aquifer Designation
Depth to Water through time
Date
Well and Screen Diameter
FredWash
Paluxy
GlenRose
Hensell
Pearsall
Hosston
Screen
Depth (feet)
Diameter (In)
Date
The Aquifer layers shown in the casing diagram were developed using the NTWGAM. In certain cases, assumptions used to develop the NTWGAM can cause well casing and screen intervals to not align well with modeled aquifer layers.

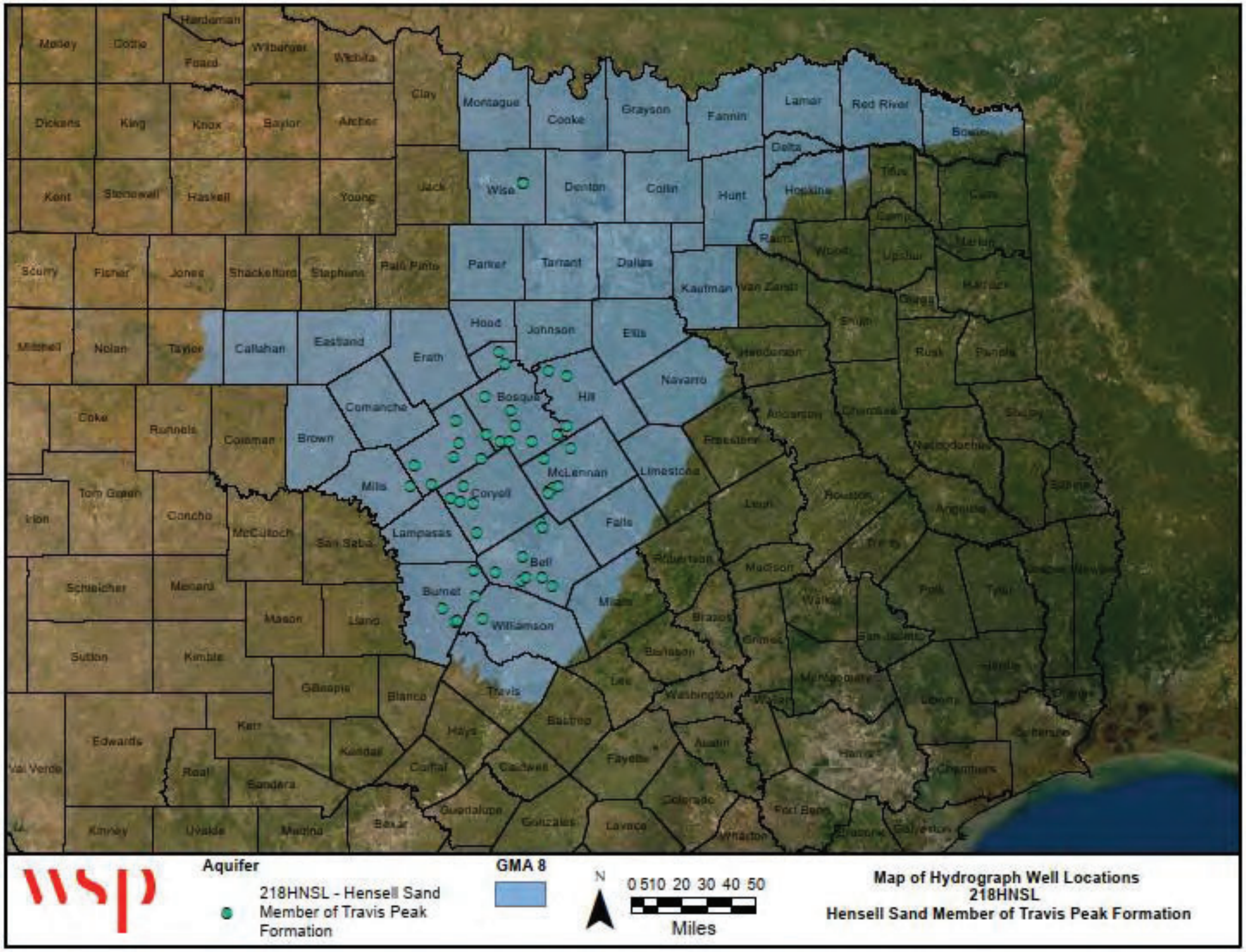
HENSELL AQUIFER HYDROGRAPH IN BELL COUNTY



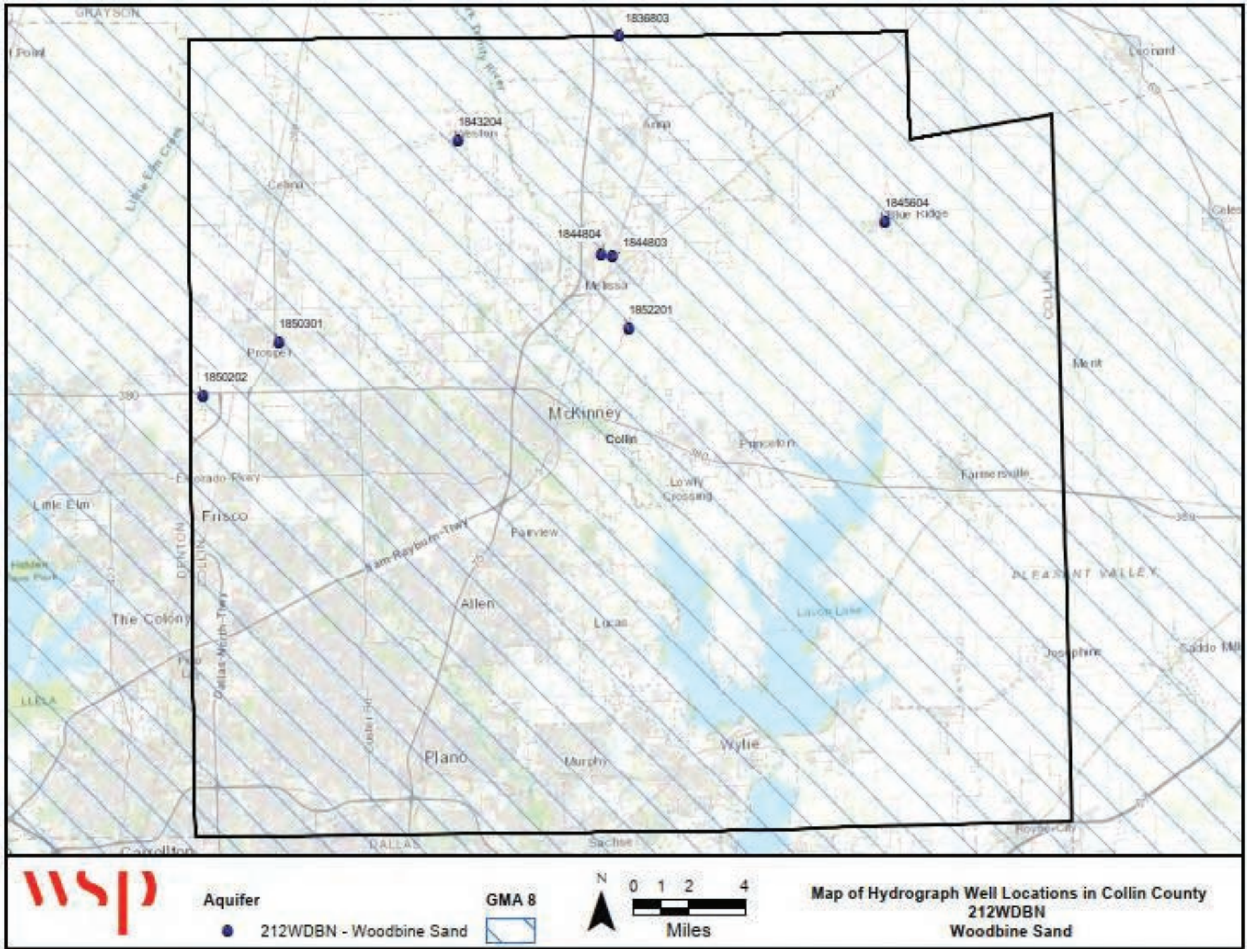
## WOODBINE AQUIFER WELLS WITH HYDROGRAPHS



HENSELL AQUIFER WELLS WITH HYDROGRAPHS



## WOODBINE AQUIFER WELLS WITH HYDROGRAPHS IN COLLIN COUNTY

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# Total Estimated Recoverable Storage (TERS)

### Hickory Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Brown | 55,000 | 165,000 |
| Burnet | 1,650,000 | 4,950,000 |
| Lampasas | 700,000 | 2,100,000 |
| Mills | 157,500 | 472,500 |
| Travis | 8,250 | 24,750 |
| Williamson | 4,250 | 12,750 |
| Total | 2,575,000 | 7,725,000 |

### Ellenburger – San Saba Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Brown | 55,000 | 165,000 |
| Burnet | 1,650,000 | 4,950,000 |
| Lampasas | 700,000 | 2,100,000 |
| Mills | 157,500 | 472,500 |
| Travis | 8,250 | 24,750 |
| Williamson | 4,250 | 12,750 |
| Total | 2,575,000 | 7,725,000 |

### Marble Falls Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Burnet | 9,500 | 28,500 |
| Lampasas | 9,750 | 29,250 |
| Total | 19,250 | 57,750 |

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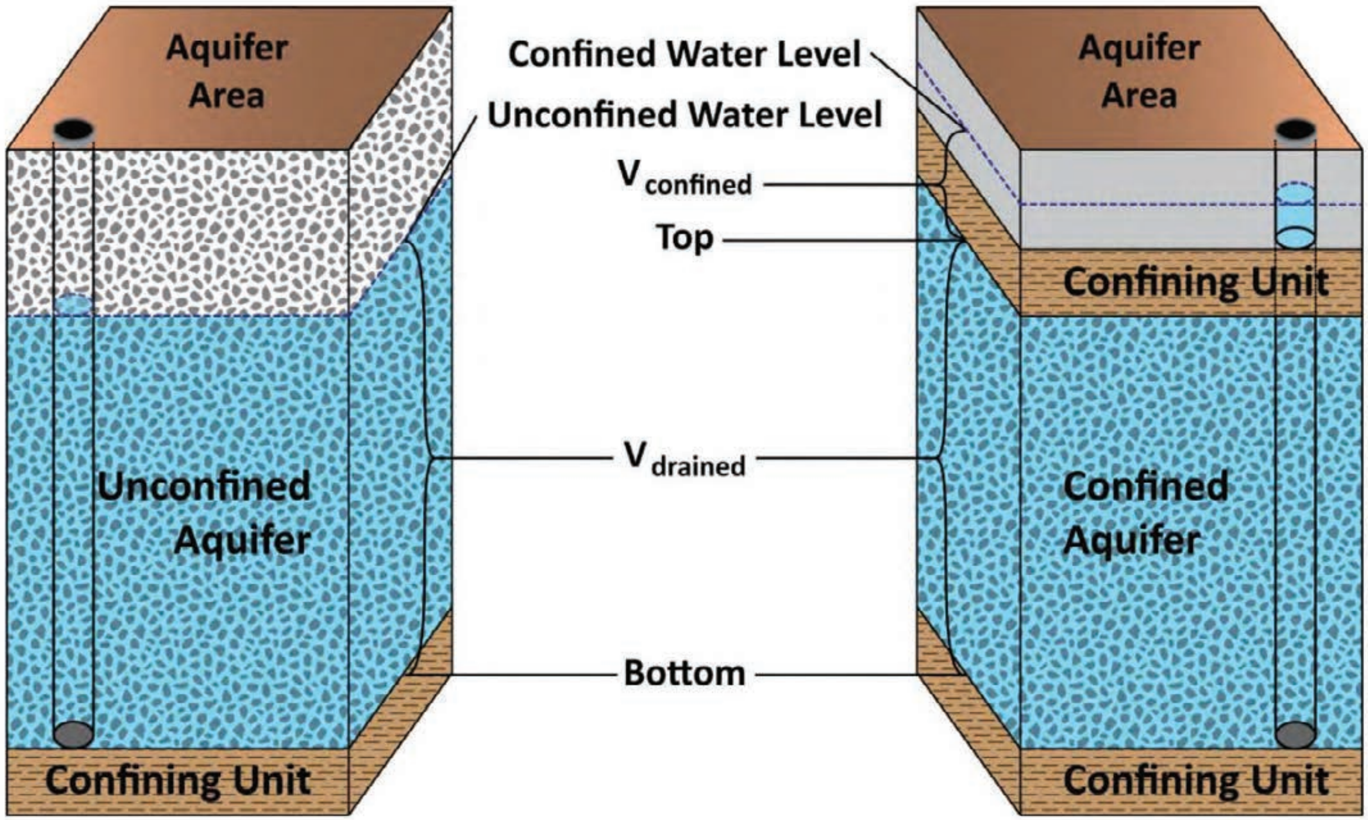
## Total Estimated Recoverable Storage (TERS)

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# Total Estimated Recoverable Storage (TERS)

## Trinity Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Bell | 14,750,000 | 44,250,000 |
| Bosque | 10,000,000 | 30,000,000 |
| Brow | 650,000 | 1,950,000 |
| Burnet | 2,750,000 | 8,250,000 |
| Callahan | 450,000 | 1,350,000 |
| Collin | 22,000,000 | 66,000,000 |
| Comanche | 2,075,000 | 6,225,000 |
| Cooke | 11,250,000 | 33,750,000 |
| Coryell | 8,500,000 | 25,500,000 |
| Eastland | 400,000 | 1,200,000 |
| Ellis | 19,500,000 | 58,500,000 |
| Erath | 5,000,000 | 15,000,000 |
| Falls | 9,000,000 | 27,000,000 |
| Fannin | 19,750,000 | 59,250,000 |
| Grayson | 15,750,000 | 47,250,000 |
| Hamilton | 5,500,000 | 16,500,000 |
| Hill | 13,000,000 | 39,000,000 |
| Hood | 2,750,000 | 8,250,000 |
| Hunt | 3,000,000 | 9,000,000 |
| Johnson | 8,750,000 | 26,250,000 |
| Kaufman | 2,350,000 | 7,050,000 |
| Lamar | 19,250,000 | 57,750,000 |
| Lampasas | 3,000,000 | 9,000,000 |
| Limestone | 2,750,000 | 8,250,000 |
| McLennan | 14,750,000 | 44,250,000 |
| Milam | 5,500,000 | 16,500,000 |
| Mills | 2,125,000 | 6,375,000 |
| Montague | 1,950,000 | 5,850,000 |
| Navarro | 9,750,000 | 29,250,000 |
| Parker | 5,500,000 | 16,500,000 |
| Red River | 11,000,000 | 33,000,000 |
| Rockwall | 1,225,000 | 3,675,000 |
| Somervell | 1,500,000 | 4,500,000 |
| Tarrant | 12,250,000 | 36,750,000 |
| Taylor | 157,500 | 472,500 |
| Travis | 9,750,000 | 29,250,000 |
| Williamson | 19,250,000 | 57,750,000 |
| Wise | 5,000,000 | 15,000,000 |
| Total | 339,882,500 | 1,019,647,500 |

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# Total Estimated Recoverable Storage (TERS)

## Edwards (Balcones Fault Zone) Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Bell | 2,750 | 8,250 |
| Travis | 1,475 | 4,425 |
| Williamson | 19,500 | 58,500 |
| Total | 23,725 | 71,175 |

## Woodbine Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Collin | 8,000,000 | 24,000,000 |
| Cooke | 300,000 | 900,000 |
| Dallas | 7,500,000 | 22,500,000 |
| Denton | 2,225,000 | 6,675,000 |
| Ellis | 6,250,000 | 18,750,000 |
| Fannin | 9,750,000 | 29,250,000 |
| Grayson | 8,000,000 | 24,000,000 |
| Hill | 1,675,000 | 5,025,000 |
| Hunt | 2,050,000 | 6,150,000 |
| Johnson | 1,125,000 | 3,375,000 |
| Kaufman | 1,175,000 | 3,525,000 |
| Lamar | 5,250,000 | 15,750,000 |
| McLennan | 225,000 | 675,000 |
| Navarro | 850,000 | 2,550,000 |
| Red River | 1,125,000 | 3,375,000 |
| Rockwall | 11,500 | 34,500 |
| Tarrant | 1,325,000 | 3,975,000 |
| Total | 56,836,500 | 170,509,500 |

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# Total Estimated Recoverable Storage (TERS)

## Nacatoch Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Bowie | 525,000 | 1,575,000 |
| Delta | 25,000 | 75,000 |
| Ellis | 17 | 50 |
| Franklin | 1,825 | 5,475 |
| Hopkins | 82,500 | 247,500 |
| Hunt | 137,500 | 412,500 |
| Kaufman | 30,000 | 90,000 |
| Lamar | 3,000 | 9,000 |
| Navarro | 23,750 | 71,250 |
| Rains | 4,500 | 73,500 |
| Red River | 145,000 | 435,000 |
| Rockwall | 70 | 210 |
| Total | 978,162 | 2,934,485 |

## Blossom Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Bowie | 227,500 | 682,500 |
| Lamar | 242,500 | 727,500 |
| Red River | 1,300,000 | 3,900,000 |
| Total | 1,770,000 | 5,310,000 |

## Brazos River Alluvium Aquifer in GMA 8

| County | 25 percent of Total Storage (acre-feet) | 75 percent of Total Storage (acre-feet) |
|---|---|---|
| Bosque | 2,400 | 7,200 |
| Falls | 40,000 | 120,000 |
| Hill | 1,650 | 4,950 |
| McLennan | 22,500 | 67,500 |
| Milam | 2,175 | 6,525 |
| Total | 68,725 | 206,175 |

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# Aquifer Uses and Conditions

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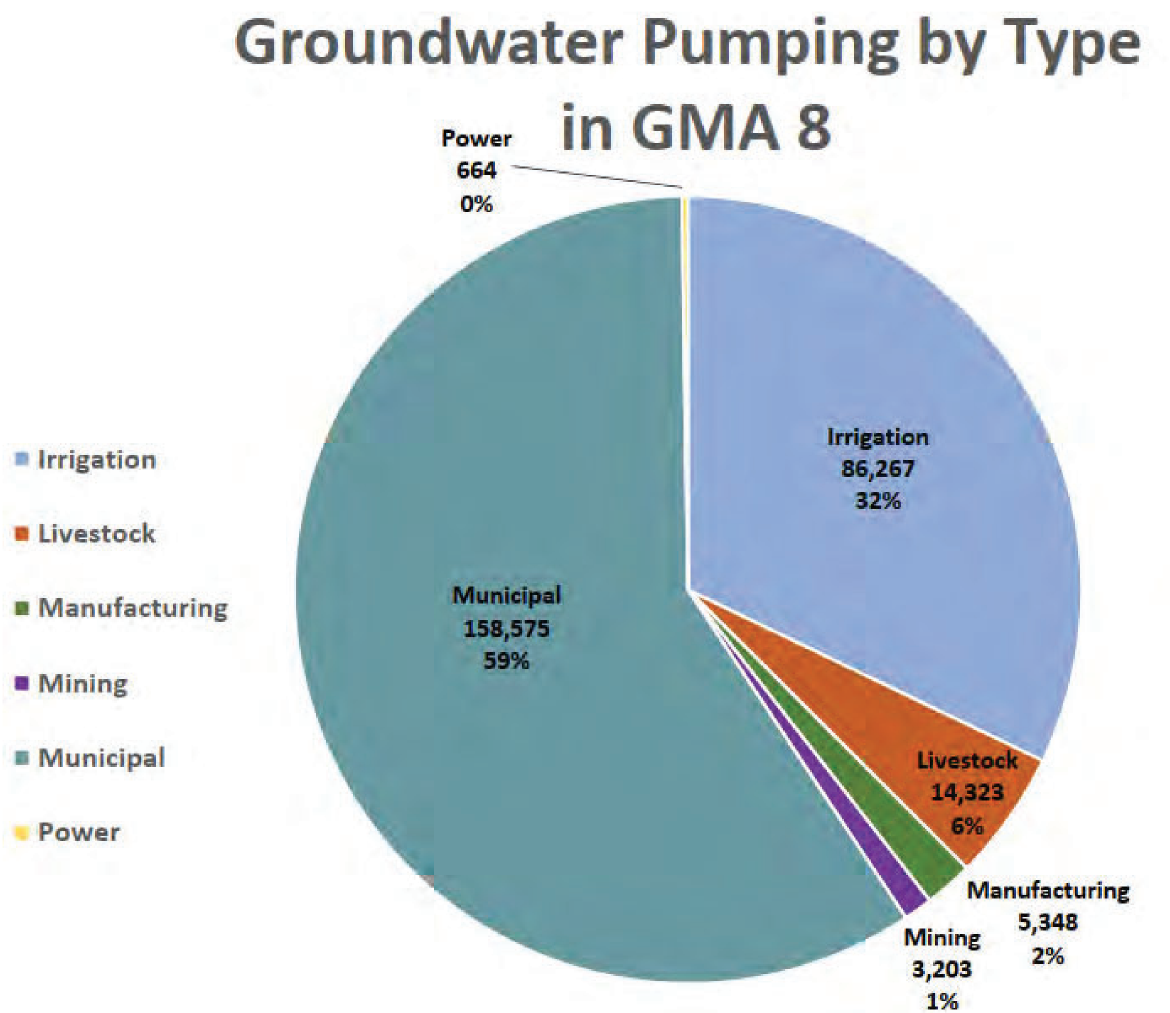


5-year average for years 2014-2018

# Supply Needs & Management Strategies

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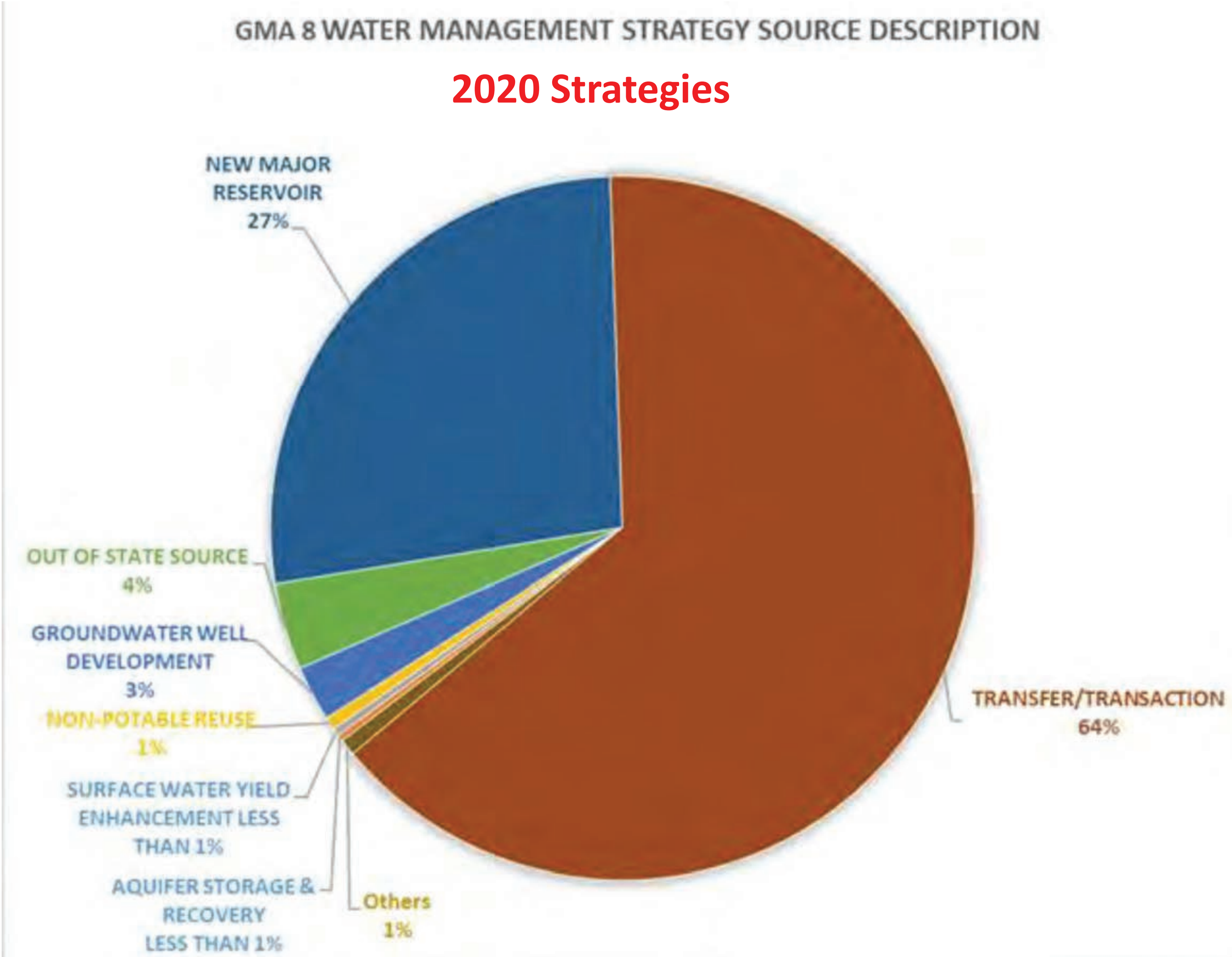
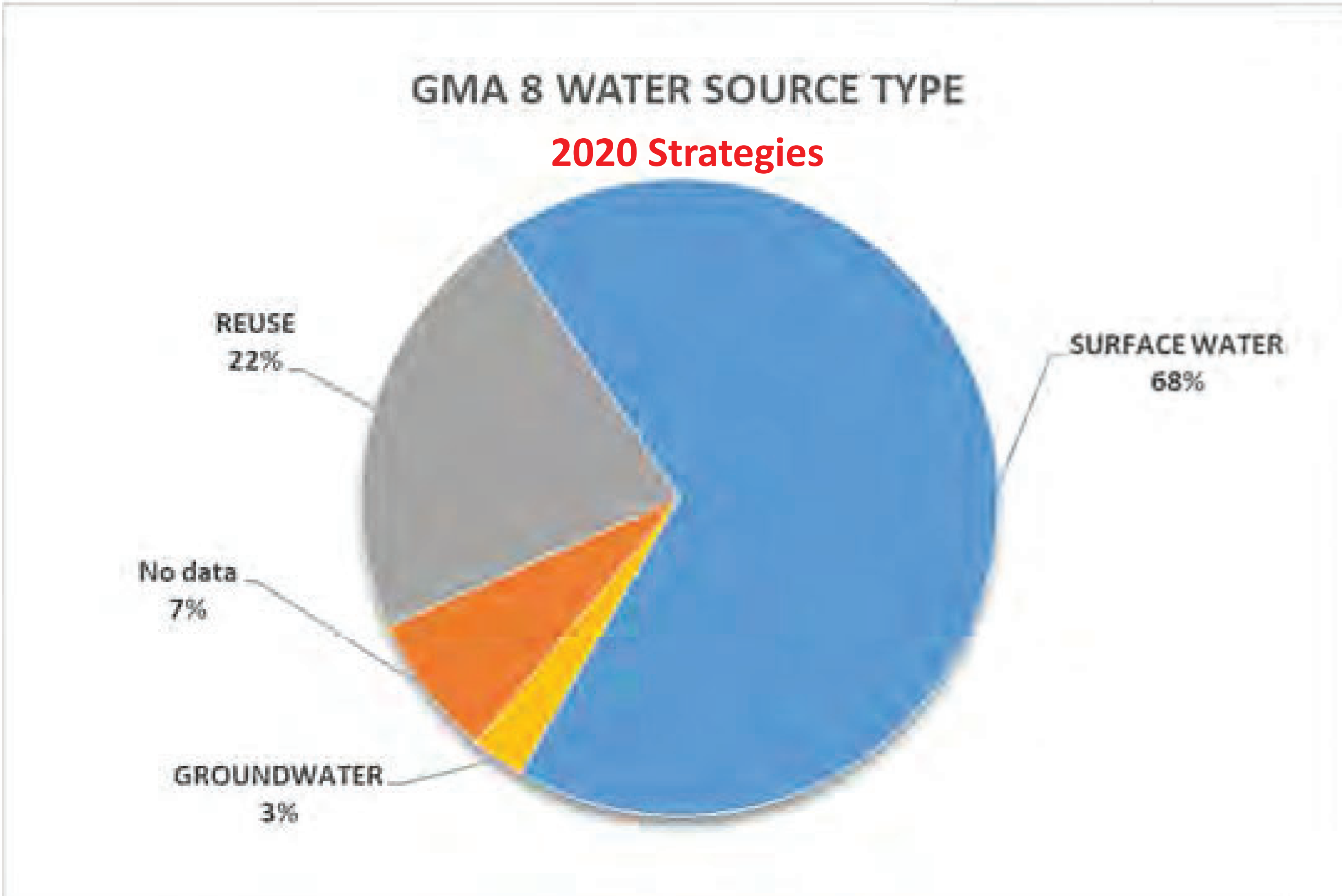
At a glance

# Sources for New Strategies in GMA 8



At a glance

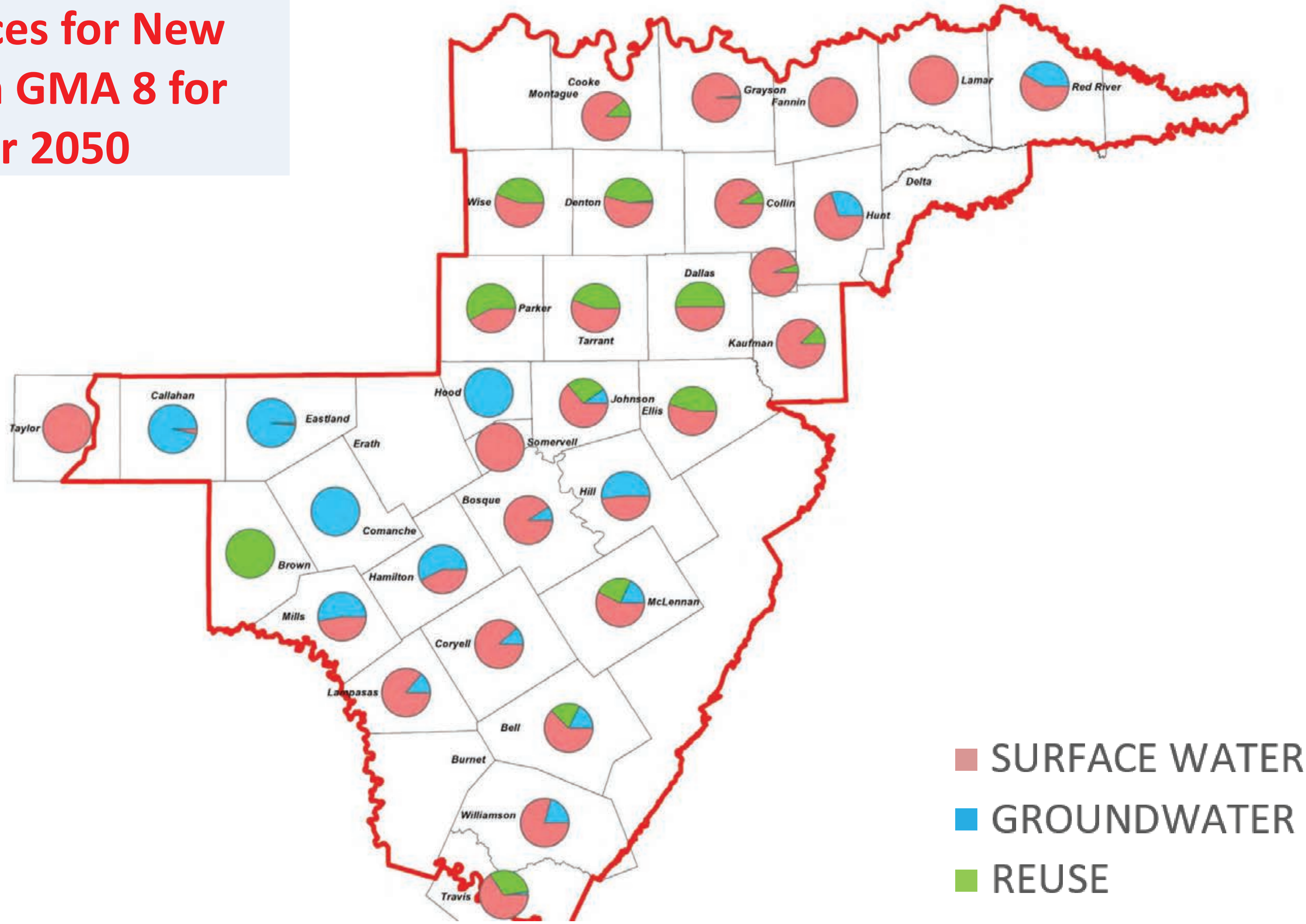
# Water Sources for New Strategies in GMA 8



# Supply Needs & Management Strategies

- Supply Needs
  - Need = Supply is less than Future Demand
  - Need = Current Supply - Future Demand
- Management Strategies
  - Infrastructure strategies to meet needs
  - 2020 and 2050 strategies

# Water Sources for New Strategies in GMA 8 for the year 2050

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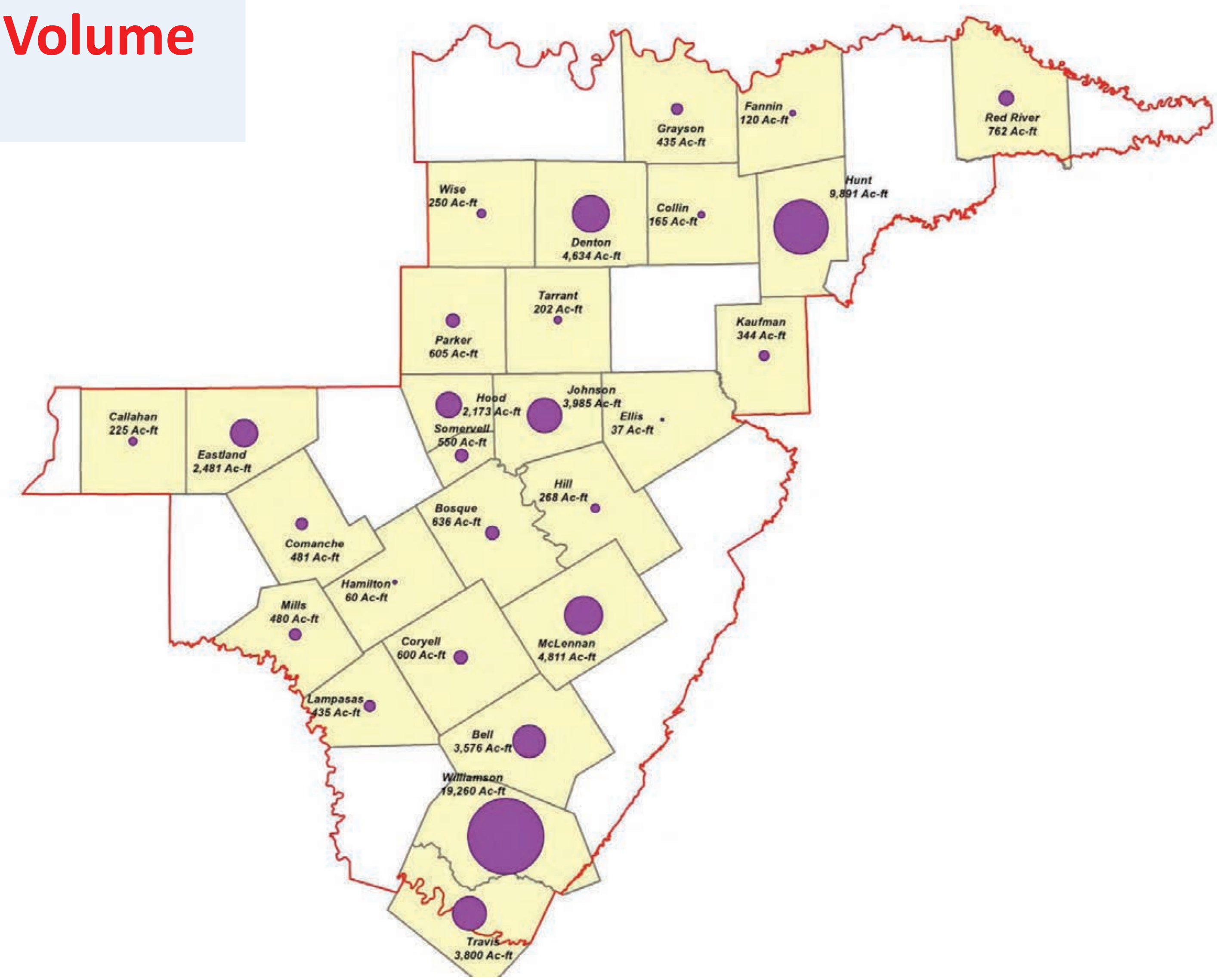
# Groundwater Volume 2050



# Socioeconomic Impacts

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# Socioeconomic Impacts

- Socioeconomic impacts considered:
  - Impacts of lowering water levels on costs of production.
  - Decreasing well yields and potential need for additional wells.
  - Potential for and additional costs of developing alternative supplies.
  - Need to meet water supply needs to avoid impacts of water shortages.

- Both positive and negative socioeconomic impacts may result.

- Socioeconomic impacts considered in management plan and rule updates.

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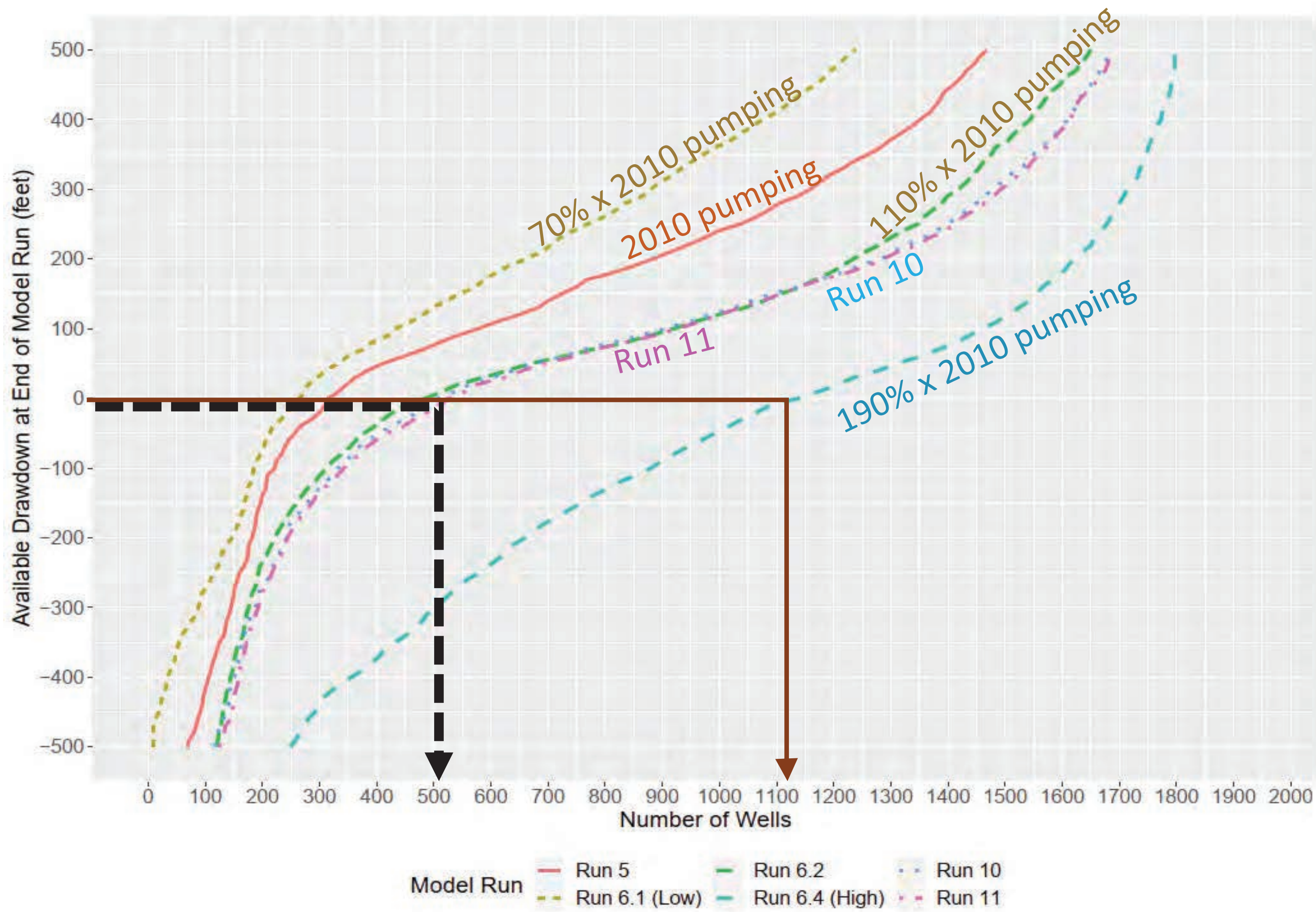
# Public Water Supply Well Impacts



# Impacts on Private Property

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# Impact on Interests/Rights in Private Property

- Private property rights impacts considered:
  - Impacts on property rights of landowners and their lessees.
  - Expectations of existing and future well owners to recover reasonable investments in their water wells and properties.
  - Availability of affordable water of sufficient yield to all properties overlying the aquifer.
  - Availability of affordable water from alternative water supplies.
- Both positive and negative impacts to private property rights may result.
- Private property rights impacts considered in management plan, rule updates, and permit decisions.

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# DFC Feasibility

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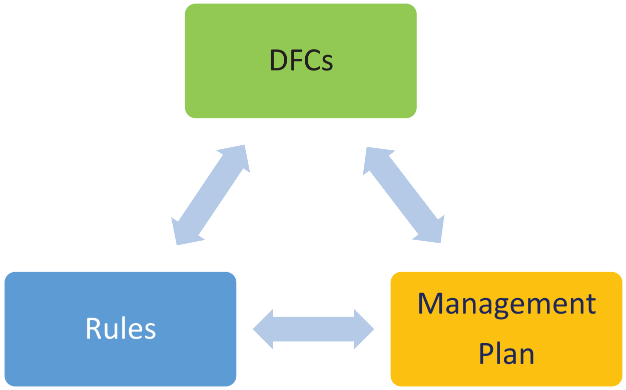
# Feasibility of Achieving the DFC

- Physical Achievability
  - Is the DFC physically possible within the aquifer?
  - ➢ Groundwater Availability Models help ensure that DFCs are generally physically achievable in the aquifer

- Regulatory Achievability
  - Can the DFC be achieved via GCD management plan and rules?
  - Does the regulated community and stakeholders agree with the management approach required to achieve the DFC?
  - ➢ Have GCDs implemented Rules and have an approved Management Plan?



# Agenda Item 8
# Discussion and possible action on margin of error language for the Desired Future Conditions Statement.

- Due to the nature of the drawdown calculations, TWDB suggests that the GMA provide “variance assumptions”
- Proposed language for DFC Model Run submittal to TWDB:
  - *GMA 8 assumes the model results are consistent with the proposed DFCs if the average drawdowns calculated by the TWDB are within 5 percent or 5 feet (whichever is larger) of the proposed DFCs drawdown values.*

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# Agenda Item 9
# Discussion and possible action on a resolution to adopt proposed Desired Future Conditions.

— *Resolution was included in GMA 8 Packet*
— *Version 1 of Attachment B of the Resolution was sent to GCDs on 10/16/2020*
— *Only comments received were from Central Texas GCD regarding Table 7*
— *Those comments were integrated into Table 7 as shown below:*

Table 7 - GMA 8 DFCs adopted at a county scale for the Llano Uplift Aquifers based on total average feet of drawdown. Planning period from January 1, 2010 through December 31, 2080.

| County | Ellenburger-San Saba Aquifer | Hickory Aquifer | Marble Falls Aquifer |
|---|---|---|---|
| Brown | 3 | 3 | 3 |
| Burnet | 12 | 11 | 11 |
| Lampasas | 16 | 16 | 16 |
| Mills | 9 | 9 | 9 |

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# Agenda Item 9 Attachment B

Attachment B: Desired Future Conditions (DFCs) adopted by District Representatives in GMA 8 for all relevant aquifers.

Table 1 – GMA 8 DFCs adopted at an aquifer-wide scale for Northern Trinity and Woodbine aquifers based on total average feet of drawdown (both unconfined and confined drawdown). Planning period from January 1, 2010 through December 31, 2080

| GMA 8 Adopted DFCs -Aquifer-Wide Scale | |
|---|---|
| Woodbine | 146 |
| Paluxy | 193 |
| Glen Rose | 148 |
| Twin Mountain | 345 |
| Travis Peak | 207 |
| Hensell | 148 |
| Hosston | 262 |
| Antlers | 193 |

Table 2 - GMA 8 DFCs adopted at a GCD scale for Northern Trinity and Woodbine aquifers (except for Upper Trinity GCD, see Table 3 below for Upper Trinity GCD) based on total average feet of drawdown (both unconfined and confined drawdown). Planning period from January 1, 2010 through December 31, 2080.

| GMA 8 Adopted DFCs - GCD Scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| GCD | Wood-bine | Paluxy | Glen Rose | Twin Mtn | Travis Peak | Hensell | Hosston | Antlers |
| Central Texas GCD | — | — | 2 | — | 19 | 7 | 21 | — |
| Clearwater UWCD | — | 17 | 83 | — | 333 | 145 | 375 | — |
| Middle Trinity GCD | — | 5 | 20 | 8 | 98 | 58 | 108 | 12 |
| North Texas GCD | 123 | 465 | 300 | 485 | — | — | — | 305 |
| Northern Trinity GCD | 6 | 105 | 163 | 348 | — | — | — | 177 |
| Post Oak Savannah GCD | — | — | 241 | — | 412 | 261 | 412 | — |
| Prairielands GCD | 35 | 44 | 142 | 170 | 323 | 201 | 364 | — |

| GMA 8 Adopted DFCs - GCD Scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| GCD | Wood-bine | Paluxy | Glen Rose | Twin Mtn | Travis Peak | Hensell | Hosston | Antlers |
| Red River GCD | 209 | 830 | 335 | 405 | 291 | — | — | 321 |
| Saratoga UWCD | — | 2— | 1 | — | 6 | 1 | 11 | — |
| Southern Trinity GCD | 6 | 41 | 148 | — | 504 | 242 | 582 | — |

Table 3 - GMA 8 DFCs adopted for Upper Trinity GCD for Northern Trinity and Woodbine aquifers based on total average feet of drawdown, discretized based on outcrop and downdip extent. Planning period from January 1, 2010 through December 31, 2080.

| GMA 8 Adopted DFCs - Upper Trinity GCD | | |
|---|---|---|
| **Antlers** | **Outcrop** | 47 |
| | **Downdip** | 154 |
| **Paluxy** | **Outcrop** | 6 |
| | **Downdip** | 2 |
| **Glen Rose** | **Outcrop** | 15 |
| | **Downdip** | 45 |
| **Twin Mtn** | **Outcrop** | 10 |
| | **Downdip** | 70 |

Table 4 - GMA 8 DFCs adopted at a county scale for Northern Trinity and Woodbine aquifers (except for Upper Trinity GCD counties, see Table 5 below for these counties) based on total average feet of drawdown (both unconfined and confined drawdown). Planning period from January 1, 2010 through December 31, 2080.

| GMA 8 Adopted DFCs - County Scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| County | Wood-bine | Paluxy | Glen Rose | Twin Mtn | Travis Peak | Hensell | Hosston | Antlers |
| **Bell** | — | 17 | 83 | — | 333 | 145 | 375 | — |
| **Bosque** | — | 6 | 53 | — | 189 | 139 | 232 | — |
| **Bowie** | — | — | — | — | — | — | — | — |
| **Brown** | — | 2 | 1 | — | 2 | 1 | 1 | 2 |
| **Burnet** | — | — | 2 | — | 19 | 7 | 21 | — |
| **Callahan** | — | — | — | — | — | — | — | 1 |
| **Collin** | 482 | 729 | 366 | 560 | — | — | — | 596 |
| **Comanche** | — | — | 2 | — | 4 | 2 | 3 | 12 |

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# Agenda Item 9 Attachment B

| GMA 8 Adopted DFCs - County Scale | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| County | Wood-bine | Paluxy | Glen Rose | Twin Mtn | Travis Peak | Hensell | Hosston | Antlers |
| Cooke | 2 | — | — | — | — | — | — | 191 |
| Coryell | — | 5 | 15 | — | 107 | 70 | 141 | — |
| Dallas | 137 | 346 | 288 | 515 | 415 | 362 | 419 | — |
| Delta | — | 279 | 198 | — | 202 | — | — | — |
| Denton | 22 | 558 | 367 | 752 | — | — | — | 416 |
| Eastland | — | — | — | — | — | — | — | 4 |
| Ellis | 76 | 128 | 220 | 413 | 380 | 290 | 390 | — |
| Erath | — | 6 | 6 | 8 | 25 | 12 | 35 | 14 |
| Falls | — | 159 | 238 | — | 505 | 296 | 511 | — |
| Fannin | 259 | 709 | 305 | 400 | 291 | | | 269 |
| Franklin | — | — | — | — | — | — | — | — |
| Grayson | 163 | 943 | 364 | 445 | | | | 364 |
| Hamilton | — | 2 | 4 | — | 26 | 14 | 38 | — |
| Hill | 20 | 45 | 149 | — | 365 | 211 | 413 | — |
| Hopkins | — | — | — | — | — | — | — | — |
| Hunt | 631 | 610 | 326 | 399 | 35 | — | — | — |
| Johnson | 4 | -57 | 66 | 184 | 235 | 120 | 329 | — |
| Kaufman | 242 | 311 | 305 | 427 | 372 | 349 | 345 | — |
| Lamar | 42 | 100 | 107 | — | 125 | — | — | 132 |
| Lampasas | — | — | 1 | — | 6 | 1 | 11 | — |
| Limestone | — | 199 | 301 | — | 433 | 214 | 445 | — |
| McLennan | 6 | 41 | 148 | — | 504 | 242 | 582 | — |
| Milam | — | — | 241 | — | 412 | 261 | 412 | — |
| Mills | — | 1 | 1 | — | 9 | 2 | 13 | — |
| Navarro | 110 | 139 | 266 | — | 343 | 2995 | 343 | — |
| Rains | — | — | — | — | — | — | — | — |
| Red River | 2 | 24 | 40 | — | 57 | — | — | 15 |
| Rockwall | 275 | 433 | 343 | 466 | — | — | — | — |
| Somervell | — | 4 | 4 | 50 | 64 | 17 | 120 | — |
| Tarrant | 6 | 105 | 163 | 348 | — | — | — | 177 |
| Taylor | — | — | — | — | — | — | — | 0 |
| Travis | — | — | 83 | — | 219 | 68 | 226 | — |
| Williamson | — | — | 78 | — | 220 | 89 | 225 | — |

Table 5 - GMA 8 DFCs adopted at a county scale for Upper Trinity GCD counties for Northern Trinity and Woodbine aquifers based on total average feet of drawdown for outcrop and downdip areas. Planning period from January 1, 2010 through December 31, 2080.

| GMA 8 Adopted DFCs - Upper Trinity GCD by county (O-Outcrop, D-Downdip) | | | | |
|---|---|---|---|---|
| County | Antlers | Paluxy | Glen Rose | Twin Mtn |
| Hood -O | — | 6 | 9 | 13 |
| Hood-D | — | — | 39 | 72 |
| Montague-O | 40 | — | — | — |
| Montague-D | — | — | — | — |
| Parker-O | 42 | 6 | 20 | 7 |
| Parker-D | — | 2 | 50 | 68 |
| Wise-O | 60 | — | — | — |
| Wise-D | 154 | — | — | — |

Table 6 - GMA 8 DFCs adopted the Edwards (BFZ) Aquifer. Planning period from January 1, 2010 through December 31, 2080. DFCs are in cubic feet per month spring/stream flow in Bell, Travis, and Williamson counties.

| County | DFC |
|---|---|
| Bell | Maintain at least 100 acre-feet per month of stream/spring flow in Salado Creek during a repeat of the drought of record |
| Travis | Maintain at least 42 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record |
| Williamson | Maintain at least 60 acre-feet per month of aggregated stream/spring flow during a repeat of the drought of record |

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Agenda Item 9 Attachment B

Table 7 - GMA 8 DFCs adopted at a county scale for the Llano Uplift Aquifers based on total average feet of drawdown. Planning period from January 1, 2010 through December 31, 2080.

| County | Ellenburger-San Saba Aquifer | Hickory Aquifer | Marble Falls Aquifer |
|---|---|---|---|
| Brown | 3 | 3 | 3 |
| Burnet | 12 | 11 | 11 |
| Lampasas | 16 | 16 | 16 |
| Mills | 9 | 9 | 9 |


Thank you!
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# Appendix I
# GCD Public Comments Summaries

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To: Mr. Joe B. Cooper | GMA 8 Chairman

From: Mitchell Sodek | Central Texas GCD General Manager

Date: July 2, 2021

Re: **Summary of written comments, any suggested revisions, and basis for any such revision on proposed DFCs**

The Central Texas Groundwater Conservation District (CTGCD) Board of Directors (CTGCD Board) held a public hearing on proposed Desired Future Conditions (DFCs) on January 22, 2021 and accepted written public comment during a 90 day comment period, which closed on February 15, 2021. CTGCD received one timely submission of written comment by Felps LLC for the proposed DFCs. At the January 22, 2021 public hearing, Felps LLC provided oral comments substantially the same as its written comments. The written comments in their entirety can be found as attachment A, which were provided to the CTGCD Board on April 13th, 2021. A summary of these comments is described as follows:

- *Request that the existing 90% of saturated thickness DFC be readopted by District since the use of 12 ft drawdown DFC is based on extremely flawed science.*

- *The District included technical failures for the Proposed Ellenburger-San Saba Aquifer DFC:*
    - *A. generating pumping files that are fundamentally flawed;*
    - *B. using the Llano Uplift Model which has a +/- 57 standard error when predicting water levels;*
    - *C. using a deeply flawed water management strategy;*
    - *D. not including proper and accurate water recharge files;*
    - *E. not properly activated/inactivated cells for ESS MAG Calculations;*
    - *F. not properly including spring flow; and*
    - *G. failing to properly calibrate the Llano Uplift Model with historical pumping amounts.*

- *The District failed to consider compliance issues with Proposed Ellenburger-San Saba Aquifer DFC:*
    - *A. aquifer use and conditions;*
    - *B. water supply needs and strategies;*
    - *C. impacts on spring flow and surface water; and*
    - *D. the impact on property owners and lessees.*

The CTGCD Board, Staff, Legal Counsel, and Hydrogeologic Consultant (INTERA) reviewed the comments. In response to the comments, the District requested and INTERA produced two technical memos, which were presented to the CTGCD Board on April 30, 2021 and are included in this summary as attachment B "Role of CTGCD in Development and Update of the LUAS GAM" and attachment C "Proposed Additional MAG Run." On April 30, 2021 the CTGCD Board voted to approve INTERA to execute an additional MAG Run and analysis of public water supply systems as outlined in attachment C. Note that the lettering system used in attachments B and C is consistent with the above comment summary.

On June 28, 2021 INTERA presented attachment D "Findings from Additional MAG Run" to the CTGCD Board with the results from the additional MAG run and analysis of public water supply systems for consideration of water supply needs and water management strategies. Based on the findings from INTERA and the CTGCD Board's review of the comments, the CTGCD Board: (1) adopted this summary of written comments (including Attachments A-D) with no revision to the proposed DFCs, (2) submits this summary of written comments to GMA 8, including in the submission package to GMA 8, the "WEL" pumping file and analysis of public water supply systems for consideration of water supply needs and water management strategies for GMA 8 to include in the explanatory report; and; finds, after the CTGCD Board's consideration of the comments in their entirety, that matters described in the comments not fully addressed in this summary, if any, are deemed not relevant.

**List and Links to Attachments:**

attachment A -Written comments received - Link

attachment B- "Role of CTGCD in Development and Update of the LUAS GAM" - Link

attachment C- "Proposed Additional MAG Run" - Link

attachment D- "Findings from Additional MAG Run"- Link

Link "WEL" file

Link to All attachments

# CLEARWATER UNDERGROUND WATER CONSERVATION DISTRICT

## Summary Report Submitted to Groundwater Management Area 8 Pursuant to Texas Water Code § 36.108(d-2)

The Clearwater Underground Water Conservation District ("District") Board of Directors held a public hearing on the proposed desired future conditions ("DFCs") relevant to the District pursuant to Texas Water Code § 36.108(d-2) on January 13, 2021. The public hearing was noticed and held in compliance with Texas Water Code § 36.063. The District provided a detailed review of the proposed DFCs relevant to the District during the public hearing and allowed both verbal and written comment to be provided both before and after the public hearing.

The District did not receive any verbal or written comments before or after the public hearing. The District therefore does not have a "summary of relevant comments received" as set forth in Texas Water Code § 36.108(d-2). The District Board of Directors does not recommend any changes to the proposed DFCs for the District, and requests that Groundwater Management Area 8 proceed with final adoption of the DFCs for the District as those proposed for adoption by Groundwater Management Area 8 on October 27, 2020.

# MIDDLE TRINITY GROUNDWATER CONSERVATION DISTRICT

## Summary Report Submitted to Groundwater Management Area 8 Pursuant to Texas Water Code § 36.108(d-2)

The Middle Trinity Groundwater Conservation District ("District") Board of Directors held a public hearing on the proposed desired future conditions ("DFCs") relevant to the District pursuant to Texas Water Code § 36.108(d-2) on December 3, 2020. The public hearing was noticed and held in compliance with Texas Water Code § 36.063. The District provided a detailed review of the proposed DFCs relevant to the District during the public hearing, and allowed both verbal and written comment to be provided both before and after the public hearing.

The District did not receive any verbal or written comments before or after the public hearing. The District therefore does not have a "summary of relevant comments received" as set forth in Texas Water Code § 36.108(d-2). The District Board of Directors does not recommend any changes to the proposed DFCs for the District, and requests that Groundwater Management Area 8 proceed with final adoption of the DFCs for the District as those proposed for adoption by Groundwater Management Area 8 on October 27, 2020.

# NORTHERN TRINITY GROUNDWATER CONSERVATION DISTRICT

## Summary Report Submitted to Groundwater Management Area 8 Pursuant to Texas Water Code § 36.108(d-2)

The Northern Trinity Groundwater Conservation District ("District") Board of Directors held a public hearing on the proposed desired future conditions ("DFCs") relevant to the District pursuant to Texas Water Code § 36.108(d-2) on January 26, 2021. The public hearing was noticed and held in compliance with Texas Water Code § 36.063. The District provided a detailed review of the proposed DFCs relevant to the District during the public hearing, and allowed both verbal and written comment to be provided both before and after the public hearing.

The District did not receive any verbal or written comments before or after the public hearing. The District therefore does not have a "summary of relevant comments received" as set forth in Texas Water Code § 36.108(d-2). The District Board of Directors does not recommend any changes to the proposed DFCs for the District, and requests that Groundwater Management Area 8 proceed with final adoption of the DFCs for the District as those proposed for adoption by Groundwater Management Area 8 on October 27, 2020.

INTERA Incorporated
9600 Great Hills Trail Suite 300W
Austin, Texas 78759 USA
512.425.2000

May 7, 2021

Mr. Gary Westbrook , General Manager
Post Oak Savannah Groundwater Conservation District
310 E. Avenue C
Milano, TX 76556

**RE: GMA 8 Proposed Desired Future Conditions for the Trinity Aquifer for Milam County**

Dear Gary:

This memo is to convey that the 90-day public comment has closed on the proposed Desired Future Conditions (DFCs) for GMA and POSGCD did not receive any public comment. Based on our technical analysis of the GMA 8 documents, the proposed DFCs have been properly calculated using GMA 8's Run 10 for the Northern Trinity & Woodbine Groundwater Availability Model (GAM).

Table 1 compares the current and proposed DFCs for the four aquifers in that comprise the Trinity Aquifer in GMA 8 and in Milam County. All four proposed DFCs are higher than the current DFCs. The average increase among the four aquifers for the Proposed DFC is 17% more than the Current DFCs .

Table 1 Proposed DFC for the Trinity Aquifer in Milam County

| Aquifer | Current DFC. | Proposed DFC |
|---|---|---|
| | Average Drawdown (ft) between January 2010 and December 2070 | Average Drawdown (ft) between January 2010 and December 2080 |
| Glen Rose | 212 | 241 |
| Travis Peak | 345 | 412 |
| Hensell | 229 | 261 |
| Hosston | 345 | 412 |

POSGCD has no registered Trinity wells and there is no planned pumping the Trinity Aquifer in Milam County. All of the drawdown associated with the proposed DFCs is caused by pumping outside of Milam County.

We believe that the GMA 8 consultants have properly performed their tasks as requested by the member GMA 8 and endorse POSGCD's adoption of the Proposed DFC, pending acceptance by the POSGCD Board of Directors.

Sincerely,

Steven C Young

Steven Young, PG PE
Principal Geoscientist

# SARATOGA UNDERGROUND WATER CONSERVATION DISTRICT

## Summary Report Submitted to Groundwater Management Area 8 Pursuant to Texas Water Code § 36.108(d-2)

The Saratoga Underground Water Conservation District ("District") Board of Directors held a public hearing on the proposed desired future conditions ("DFCs") relevant to the District pursuant to Texas Water Code § 36.108(d-2) on January 19, 2021. The public hearing was noticed and held in compliance with Texas Water Code § 36.063. The District provided a detailed review of the proposed DFCs relevant to the District during the public hearing, and allowed both verbal and written comment to be provided both before and after the public hearing.

The District did not receive any verbal or written comments before or after the public hearing. The District therefore does not have a "summary of relevant comments received" as set forth in Texas Water Code § 36.108(d-2). The District Board of Directors does not recommend any changes to the proposed DFCs for the District, and requests that Groundwater Management Area 8 proceed with final adoption of the DFCs for the District as those proposed for adoption by Groundwater Management Area 8 on October 27, 2020.

# SOUTHERN TRINITY GROUNDWATER CONSERVATION DISTRICT

## Summary Report Submitted to Groundwater Management Area 8 Pursuant to Texas Water Code § 36.108(d-2)

The Southern Trinity Groundwater Conservation District ("District") Board of Directors held a public hearing on the proposed desired future conditions ("DFCs") relevant to the District pursuant to Texas Water Code § 36.108(d-2) on January 28, 2021. The public hearing was noticed and held in compliance with Texas Water Code § 36.063. The District provided a detailed review of the proposed DFCs relevant to the District during the public hearing, and allowed both verbal and written comments to be provided before and during the public hearing.

The District did not receive any substantive verbal or written comments before or during the public hearing. The District, therefore, does not have a "summary of relevant comments received" as set forth in Texas Water Code § 36.108(d-2). The District Board of Directors does not recommend any changes to the proposed DFCs for the District, and requests that Groundwater Management Area 8 proceed with final adoption of the DFCs for the District as those proposed for adoption by Groundwater Management Area 8 on October 27, 2020.

# UPPER TRINITY GROUNDWATER CONSERVATION DISTRICT

## Summary Report Submitted to Groundwater Management Area 8 Pursuant to Texas Water Code § 36.108(d-2)

The Upper Trinity Groundwater Conservation District ("District") Board of Directors held a public hearing on the proposed desired future conditions ("DFCs") relevant to the District pursuant to Texas Water Code § 36.108(d-2) on January 25, 2021. The public hearing was noticed and held in compliance with Texas Water Code § 36.063. The District provided a detailed review of the proposed DFCs relevant to the District during the public hearing, and allowed both verbal and written comment to be provided both before and after the public hearing.

The District did not receive any verbal or written comments before or after the public hearing. The District therefore does not have a "summary of relevant comments received" as set forth in Texas Water Code § 36.108(d-2). The District Board of Directors does not recommend any changes to the proposed DFCs for the District, and requests that Groundwater Management Area 8 proceed with final adoption of the DFCs for the District as those proposed for adoption by Groundwater Management Area 8 on October 27, 2020.