TEXAS WATER DEVELOPMENT BOARD

WATER FOR TEXAS

State Water Plan

2027

2027 State Water Plan

Phase I Water Plan Summary to Support 2026 State Water Implementation Fund for Texas Financial Assistance Commitments

L'Oreal Stepney, Chairwoman

W. Brady Franks, Member

Ashley Morgan, Member

Bryan McMath, Executive Administrator

July 23, 2026

TEXAS WATER DEVELOPMENT BOARD

IMPORTANT READER NOTE REGARDING THIS DOCUMENT

Phase I of the 2027 State Water Plan was developed on an accelerated schedule by the Texas Water Development Board (TWDB) to facilitate the State Water Implementation Fund for Texas (SWIFT) program financial assistance commitment deadline of July 2026, well ahead of the statutory deadline of January 5, 2027. The Phase I summary paired with the online Interactive 2027 State Water Plan satisfies all the essential applicable statutory and rule requirements. However, this initial abridged document does not yet include the additional analysis and narrative content that has enhanced previous state water plans. The Phase I summary will serve as the basis for making 2026 SWIFT commitments for projects recommended in the 2026 regional water plans and will provide the foundation for the enriched Phase II version of this plan.

Prior to the final statutory deadline of January 5, 2027, the TWDB intends to consider adoption of a Phase II amendment that will replace this document with a more robust version. Phase II of the 2027 State Water Plan will incorporate the information contained herein but with additional analysis and value-added content more consistent with prior state water plans. Both phases will include public notice, a comment period, and a hearing, the dates of which will be posted on the TWDB website and broadcast to TWDB stakeholders.

The goal of this two-phase approach is to meet SWIFT program deadlines while affording the agency additional time to develop a more robust and informative document than otherwise possible.

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

To all who call Texas home:

Alongside my fellow Board members Brady Franks and Ashley Morgan, and the dedicated staff of the Texas Water Development Board (TWDB), I am honored to present the 2027 State Water Plan. The TWDB understands the importance and responsibility of publishing the state water plan every five years to help ensure sufficient water supplies during drought-of-record conditions, recognizing that water is essential to communities, households, agriculture, businesses, and many other uses.

Fulfilling this obligation requires a disciplined approach grounded in the best available science, data, and analysis, as well as a commitment to produce demand projections that support a credible plan. Adoption of this plan marks the sixth state water plan developed using our unique and widely recognized regional water planning process.

More than 52 million people are expected to live in Texas by 2080. As our state continues to grow, our water planning approach must remain dynamic. Fortunately, Texas designed its water planning process to allow flexibility so the TWDB and regional water planning groups can respond to Texas communities as their needs evolve.

The 2027 State Water Plan was developed in two phases. Phase I was completed on an accelerated timeline to support 2026 financial assistance commitments for the State Water Implementation Fund for Texas (SWIFT)—which has committed more than $17 billion in financial assistance and generated over 2 million acre-feet of new water supplies since the program began in 2015. Phase II incorporates additional and more robust analysis, in line with previous plans, that decision-makers rely upon at the local, regional, and state levels.

Developing the state water plan is truly a collaborative effort that is only possible through the support of our sister agencies, regional water planning group sponsors and staff, technical consultants, water providers, water districts, and professionals representing diverse interest groups. I am especially grateful to the more than 500 regional water planning group members who volunteered their time and expertise throughout the process to help ensure water is available for Texans in the years to come.

I extend my sincere appreciation to the many Texans who offered their time and energy to participate in our bottom-up planning process. Their collective effort and engagement contributed to thousands of recommended strategies and projects that will serve as a roadmap for how Texas will effectively navigate future droughts and water challenges.

Through the vision and leadership of the Texas Legislature, the dedication of our partners, and the support of the people of Texas, together we can ensure a secure water future for Texas.

L’Oreal Stepney, Chairwoman

Acknowledgments

The 2027 State Water Plan would not have been possible without the time, dedication, guidance, and expertise of numerous contributors and organizations throughout Texas. The Texas Water Development Board (TWDB) would like to extend its sincere gratitude and appreciation to everyone who participated in developing the 16 regional water plans and this state water plan: the more than 500 regional water planning group voting members (listed below), their consultants, and their administrative agents (also listed below); staff of the TWDB, Texas Parks and Wildlife Department, Texas Department of Agriculture, Texas Commission on Environmental Quality, Texas State Soil and Water Conservation Board, and other state and federal agencies; and individuals and organizations that provided public input throughout the planning process.

The TWDB would also like to thank the leadership of the State of Texas for their continued support of the state's water planning process.

Regional Water Planning Group Voting Members

(Region – Member) *Planning group chairs at the time the 2026 regional water plans were adopted

A - Allred, Don
A - Auvermann, Ph.D, Brent
A - Baumgardner, Joe
A - Berngen, Herman
A - Britten, Britney
A - Clark, Nolan
A - Coleman, P.E., Jason
A - Cook, Vernon
A - Cooke, Dean
A - Eikner, Megan
A - Gibson, Rick
A - Gilmore, Rusty
A - Green, Glen
A - Guthrie, Janet
A - Hartman, Floyd
A - Hooper, Donny
A - Howell, Ph.D., P.E., Nathan
A - Kidd, Bobbie
A - Krienke, Danny
A - Landis, David
A - Messer, Roy (Hank)
A - Parker, Ph.D., P.E., David
A - Perry, Christa
A - Pool, Dillon
A - Satterwhite, Drew
A - Satterwhite, Kent
A - Shubert, Jason
A - Smith, Lynn
A - Stephens, Beverly
A - Tregellas, Janet
A - Walthour, Steve
A - Weinheimer, Ben*
A - Wiebe, Whitney
A - Williams, C.E.
B - Armstrong, Tamela
B - Banks, Jimmy
B - Brite, J.K. Rooter
B - Christopher, Mark
B - Dodson, Carrie
B - Heaney, Fabian
B - Holub, Tommy
B - Jackson, Randy
B - Johnson, Jim
B - Kennon, Darell
B - Lewis, Steve
B - McGuire, Mike
B - Mesler, Tracy
B - Miller, Kyle*
B - Myers, Dean
B - Ownbey, Heath
B - Parker, Tommy
B - Payne, Jerry
B - Scaling, Wilson
B - Schreiber, Russell
B - Simpson, Gayle
B - Smith, Lynn
B - Teichman, Keith
B - Tole, Risa
B - Whiteman, Randy
B - Zuchlewski, Robert
C - Bailey, David
C - Banks, Kenneth
C - Barksdale, Jay
C - Boyd, Chris
C - Buhman, Dan*
C - Clingenpeel, Glenn
C - Covington, Jenna
C - Darling, Grace
C - Deshmukh, Pritam
C - Dineen III, John Paul
C - Douglas, Gary
C - Gay, Stephen
C - Harder, P.E., Christopher
C - Latham, Harold
C - Laughlin, Russell
C - Lingenfelder, John
C - Maenius, G.K.
C - Mundt, Steve
C - Penk, Matthew
C - Qualls, Denis
C - Rickman, Mike
C - Riley, Bob
C - Satterwhite, Drew
C - Shaffer, Rick
C - Shaw, Doug
C - Sigle, Paul
C - Spicer, Gary
C - Standridge, Connie
C - Starnes, Steve
C - Stevens, Jack
C - Stevenson, John
C - Wagner, P.E., Richard
C - Ward, Kevin
D - Acker, Russell
D - Aikin, David
D - Bartley, Wade
D - Beeler, Allen
D - Belcher, Brandon
D - Bradley, Bruce
D - Brooks, John
D - Bumgarner, Joe
D - Carter, Greg
D - Chumbley, Kevin
D - Coats, Joe
D - Duffee, Donnie
D - Endsley, Andy
D - Fierro, Nicolas
D - Garza, Richard
D - Gwinn, Cindy

D - Hackler, Hattie
D - Henson, Billy
D - Hilliard, Dennis
D - Hurst, Robert
D - King, Conrad
D - LeTourneau, Richard
D - Lisenbee, Howdy
D - McCoy, Janet
D - McPhee, Rolin
D - Milton, Fred
D - Moose, Cory
D - Muse, Ned
D - Nabors, Sharron
D - Ostott, George
D - Parker, Lloyd
D - Staton, Bob
D - Stuart, Cheri
D - Tardiff, Bob
D - Taylor, Harlton
D - Thompson, Jim*
E - Barker, Randy
E - Beard, Tom
E - Bennett, Jeff
E - Black, Thomas
E - Brewster, Becky
E - Butcher, Sterry
E - Butler, Jackie
E - Christianson, Jessica
E - Davidson, Michael
E - Davis, Haley
E - Dunlap, Dan
E - Etzold, David
E - Grijalva, Jerry
E - Hall, Dave
E - Johnson, Jerry
E - Kennedy, John
E - Landeros, Jose
E - Leary, Tim
E - Martinez, Omar
E - Miller, Albert
E - Miller, Jim Ed
E - Mitchell, Scott
E - Nash, Avi
E - Newton, Brad
E - Onsurez, Raquel
E - Ornelas, Jay
E - Palacios, Arlina
E - Ransom, Roberto
E - Reinert, Scott*
E - Reyes, Jesus "Chuy"
E - Sanchez, Mike
E - Smith, VJ
E - Tate, Rick
E - Todd, Teresa
E - Webb, Summer
E - Woodard, Sean
F - Allen, John
F - Arsuffi, Tom
F - Carlile, Jimmy
F - Carter, Gene
F - Deishler, Ben
F - Dierschke, Kenneth
F - Edwards, Ty
F - Ervin, Tommy
F - Gist, Richard
F - Grant, John
F - Guelker, Michelle
F - Halfmann, Kim
F - Hector, Rhetta
F - Kelton, Shane
F - Kilgore, Dusty
F - McWilliams, Scott
F - Olstowski, Henryk
F - Straub, Jr, Raymond
F - Strube, Allison
F - Taylor, Merle
F - Torres, Eli
F - Van Deventer, Gilbert
F - Walker, Cole*
F - Warren, Tim
F - Wight, Schuyler
F - Wilde, Doug
G - Aaron, Dirk
G - Adams, Dale
G - Bayle, Ryan
G - Beseda, Charles
G - Blackburn, David
G - Briggs, Jim
G - Collinsworth, David
G - Cooper, Joe
G - Dunn, Luci
G - Felton, Scott
G - Gardenhire, Alan
G - Holland, Zach
G - Kinard, Kelly
G - McGuire, Mike
G - Myers, Gary
G - Nations, Jennifer
G - Newman, Gary
G - O'Brien, Tommy
G - Peek, Gail
G - Smith, Lynn
G - Spicer, Gary
G - Spurgin, Dale
G - Stem, Wiley
G - Tomacek, Terrill
G - Turner Jones, Kathy
G - Tyer, Lisa
G - Wagner, Patrick
G - Weldon, Kenny
G - Westbrook, Gary
G - Wilson, Wayne*
H - Ashmore, Gary
H - Bailey, David
H - Baker, W.R.
H - Bartos, John R.
H - Blount, John
H - Bredehoft, Arthur
H - Bruner, Robert
H - Brunett, Brad
H - Burch, Carl
H - Chang, Jun
H - Comin, James
H - Cooper, Caleb
H - Evans, Mark*
H - Eyerly, Greg
H - Garrard, Jason
H - Hebert, Bob
H - Henson, Art
H - Hollingsworth, Jake
H - Houston, Jace
H - Istre, Robert
H - Kouba, Sarah
H - Kramer, Ken
H - Langford, Ivan
H - Marcell, Marvin
H - Masterson, Carl
H - Max, Alisa
H - Morrison, James
H - O'Connell, Mike
H - Pierce, Danny
H - Ryder, Byron
H - Schindewolf, Jimmie
H - Smith, Loyd
H - Spear, Aubrey
H - Stultz, Ruth
H - Teer, William (Bill)
H - Turco, Michael
H - Wade, Brandon
H - Wagener, Cyndi
H - Ward, J. Kevin
H - Willcox, Pudge
I - Alders, David
I - Brock, David
I - David, Josh Wilson
I - Davis, Chris
I - Dietz, Kate
I - Dunn, Mark
I - Fussell, Roger
I - Gelwicks, Stevan
I - Gorsich, David
I - Hall, Scott
I - Holcomb, Joe
I - Holcomb, Kelley
I - Jackson, Fred
I - Kimbrough, Bill
I - Martin, John*
I - McBroom, Matthew, Dr.
I - McFarland, John
I - Mettauer, Matthew
I - Miley, David
I - Montagne, David
I - Morgan, Gregory
I - O'Connell, Mike
I - Sanders, Jenny
I - Shank, Monty
I - Snyder, Mike
I - Stanton, Randy
I - Starr, Rob
I - Stelly, Terry
I - Whitworth, Emily
I - Wiesinger, Christopher
J - Buck, Ray
J - Chris, Clark
J - Dickinson, Dell
J - Erlund, Jess W
J - Gonzalez, Otila
J - Graham, Marty
J - Hobbs, Genell
J - Jeffery, David
J - Leiker, Brian
J - Letz, Jonathan*
J - Loveland, Scott
J - Martin, Max
J - Mauk, David
J - McDaniel, Joseph
J - Payne, Marty
J - Robinson, Wes
J - Shahan, Tully
J - Simpton, Jerry
J - Stevens, Jr., Homer T.
J - Sweeten, Lee
J - Trees, Roland
J - Velarde, Carlos

J - Villareal, Rene
J - Wiedenfeld, Charles (Charlie)
J - Williams, Gene
J - Wilson, William F. (Feather)
K - Babb, Paul
K - Berglund, Daniel
K - Brasher, Jim
K - Burke, John E.
K - Castleberry, Christianne
K - Churchwell, Kevin
K - Escobar, Vanessa
K - Fauley, Jody
K - Fieseler, Ronald G.
K - Flatten, Charlie
K - Gillam, Lauri
K - Haschke, Karen
K - Johnson, Barbara
K - Lindsay, David
K - Loftus, Tim
K - Ludwig, Jason
K - Lutes, Teresa
K - Luther, Jim
K - Masters, Monica
K - McElroy, Ann
K - Nies, Robert
K - Olewin, Carol
K - Olfers, Charles
K - Reagor, Mike
K - Ruggiero, Rob
K - Sliva, Paul
K - Sodek, Mitchell
K - Sultemeier, James
K - Theodosis, Byron
K - Totten, Jim
K - Tybor, Paul
K - Uecker, Emil
K - Van Dresar, David*
K - Walker, Jennifer
K - Wheelock, David
K - Wilson, William F.
L - Ammerman, Jason
L - Andruss, Tim
L - Bayle, Ryan
L - Beard, Amber
L - Brownlow, Darrell
L - Byrum, John
L - Calhoun, Pat
L - Campbell, Curt*
L - Chavez, Rey
L - Cockerell, Alan
L - Conley, Will
L - Farmer, Debbie
L - Flatten, Charlie
L - Graham, Stephen
L - Graham, Terrell
L - Hilderbran, Vic
L - Janak, Kevin
L - Jungman, Tom
L - Kelso, Ryan
L - Labus, Russell
L - Lord, Glenn
L - Mangold, Scooter
L - McBride, Andrew
L - Metzler, Steve
L - Meyer, Daniel
L - Middleton, Gary
L - Patteson, Kevin
L - Pena, Illiana
L - Pruski, Travis
L - Puente, Robert
L - Puig-Williams, Vanessa
L - Ramos, Humberto
L - Ramsey, Steve
L - Riggs, Weldon
L - Ruiz, Roland
L - Savage, Diane
L - Sengelmann, Greg
L - Simmons, Darren
L - Sowards, Mitchell
L - Stinson, Jonathan
L - Sumpter, Heather
L - Taggart, Tom
L - Taylor, Ian
L - Teague, Aarin
L - Wassenich, Diane
L - Yablonski, Adam
L - Yoxall, Dan
M - Benavides, Nick
M - Bruciak, John
M - Darling, James (Jim)*
M - Dennis, Dennis
M - Farmer, Debbie
M - Flores, Jaime
M - Flores, Jorge
M - Fuentes, David
M - Garza, Carlos
M - Gilbert, Marilyn
M - Hinojosa, Sonny
M - Jarvis, Glenn
M - Latham, Robert
M - McGhee, Donald K.
M - McLemore, Tom
M - Mia, Riazul
M - Murden, Dale
M - Pena, Luis
M - Rathmell, Joe
M - Rodriguez, Jr., Tomas
M - Sanchez, Steven
M - Schuster, Frank
M - Vela, Armando
M - Wilkins, Neal
N - Aldridge, Anna
N - Almaraz, Joe
N - Baggett, Aron
N - Bledsoe, III, Scott*
N - Burns, Chuck
N - Burris, John
N - Camargo, Gene
N - Carillo, Teresa
N - Crull, Carl
N - Dodson, James
N - Dove, Bill
N - Durham, Lavoyger
N - Eddins, Gary
N - Garza, Andy
N - Griffin, William
N - Hubert, Pancho*
N - Kunkel, Robert
N - Marez, John
N - Ramos, Steve
N - Reaves, Barbara
N - Reding, Jr., Thomas
N - Ring, Charles
N - Rosson, Donna
N - Scott, Mark
N - Serrato, Carola
N - Stewart, Lonnie
N - Stockton, William (Bill)
N - Sugarek, Mark
N - Tunnell, Jace
O - Barnes, Melanie
O - Blount, Amber
O - Coleman, Jason
O - DeWit, Harry
O - Devault, Lincoln
O - Dodson, Carrie
O - Franklin, Wood
O - Grotegut, DVM, Chris
O - Hardin, Joey
O - Higgins, Chris
O - Hopper, Ronnie
O - Jones, Shane
O - Kirkpatrick, Mark
O - Lawrence, Michael
O - McElroy, Don
O - Monroe, Alan
O - Morris, Charlie
O - Rainwater, Ken*
O - Sammon, Jeff
O - Satterwhite, Drew
O - Satterwhite, Kent
O - Servantez, Tony
O - Snyder, Jeffrey
O - Spear, Aubrey
O - Steiert, Jim
O - Weems, Neil
O - Weinheimer, Sr., Ben
O - Yeary, Bret
P - Boone, John
P - Brzozowski, Patrick
P - Chandler, Tom
P - Coleman, Jim
P - Cooper, Steve
P - Day, Marie
P - Hafernick, Lee
P - Hudgins, Neil
P - Maloney, Jack
P - McBeth, Bart
P - Migl, James
P - Mitchell, Vance
P - Ottis, Richard
P - Pustka, Edward
P - Shoemate, Robert
P - Skalicky, Gary
P - Skalicky, Michael
P - Sklar, Jill
P - Spenrath, Phillip*
P - Wagner, David
P - Ward, Grace
P - Weinheimer, Ed

Administrative Agents (Sponsors)

A – Panhandle Regional Planning Commission
B – Red River Authority of Texas
C – Trinity River Authority
D – Riverbend Water Resources District
E – Rio Grande Council of Governments
F – Colorado River Municipal Water District
G – Brazos River Authority
H – San Jacinto River Authority
I – City of Nacogdoches
J – Upper Guadalupe River Authority
K – Lower Colorado River Authority
L – San Antonio River Authority
M – Lower Rio Grande Valley Development Council
N – Nueces River Authority
O – South Plains Association of Governments
P – Lavaca-Navidad River Authority

Key Points and Quick Facts

a. **Phase I** of the 2027 State Water Plan along with the associated interactive state water plan meets statutory and rule requirements on an accelerated timeline to support 2026 SWIFT financial assistance commitments. A **Phase II** amendment is planned prior to January 5, 2027, the statutory deadline to incorporate additional and more robust content in line with previously adopted state water plans. This two-phase approach meets critical funding deadlines while allowing time to produce a more comprehensive and informative document.

b. **Texas' state water plans are based on future conditions in the event of a recurrence of the worst recorded droughts**—known as the "drought of record"—a time when, generally, water supplies are lowest and water demands are highest.

c. The TWDB has no regulatory authority, related to the issuance of permits or groundwater management decisions or enforcement of drought contingency plans. The TWDB does not allocate or regulate water resources or supplies, nor is it involved in utility water supply contract decisions with their customers. The TWDB does not provide wholesale or retail water service, nor does it operate water supply infrastructure. The Board provides financial assistance for infrastructure development, collects water-related data, and administers the state's water supply planning process.

d. Heightened interest in potential water use associated with data centers arose later in this five-year planning cycle. In response, **the TWDB is enhancing its data collection and analysis efforts to improve our projections of digital infrastructure facility water demands** for future state water planning cycles. As this sector and our understanding of it grows, this water use category will report and fall more comprehensively within our manufacturing water use projections largely because of direct use reporting by the facilities themselves rather than a utility from which they may purchase water.

e. The Region O water planning group's decision to reflect lower future irrigation demands that more closely track the anticipated declines in the Ogallala Aquifer resulted in a significant reduction in total projected needs and estimated unmet irrigation demands compared to the 2022 State Water Plan. As has been the case in recent state water plans, the scale of current groundwater use in **Region O**—combined with that planning group's updated policy decisions regarding their irrigation demand projections—**played a significant role in driving overall water plan changes** as well as determining the nominal values of total statewide water

demands, needs (potential shortages), and unmet needs. The lower demands more closely track the modeled available groundwater values from the management policies set by the districts in the relevant groundwater management area.

f. **Total nominal costs to implement recommended projects in this plan are $174 billion (2023 dollars), more than double the cost of the 2022 State Water Plan.** A significant increase was expected for a variety of reasons, including: inflation in construction costs since the last plan; the extension of the planning horizon an additional 10 years out to 2080; lingering supply chain impacts following the COVID-19 pandemic, which likely contributed to overall inflation of construction costs over the five-year period; the inclusion the Toledo Bend Reservoir project as a recommended strategy as part of a mediated agreement to an interregional conflict ($9.8 billion added to the total plan cost); the growing backlog of near-term recommended—but not yet implemented—water supply projects that remain in the plan; the broader trend that water supply infrastructure projects are increasingly costly as regions pursue more distant, complex, or marginal sources of supply.

g. Driven by significant population growth, identified **potential municipal shortages (needs) dominate the long-term outlook regarding future water supply gaps**—although they are notably lower in all decades compared to the 2022 State Water Plan. While the state's population continues to increase, this reduction in potential municipal shortages compared to the 2022 State Water Plan is primarily due to lower population growth projections than the prior plan (i.e., still significant, but slower growth) that reflect declining birth rates and recent implementation of certain major water supply projects—including Bois D'Arc Lake and Lake Ralph Hall—that shifted volumes from the 'future strategy supply' side over to the 'existing supplies' side of the planning equation since the last plan.

h. **Conservation and reuse remain cornerstone strategies** in the plan, together accounting for 43 percent of strategy supplies in 2080, underscoring their continued role as cost-effective, largely drought-resilient solutions amid constrained water resources.

i. **Major surface water reservoirs continue to play a significant role** despite the considerable time and resources required to implement them. This is unsurprising as reservoirs are well-established as one of the most efficient means of developing large volumes of the state's surface water, including flood flows. More broadly, development of surface water continues to account for a dominant share (36 percent) of all future water supply strategies—exceeding development of all other water supply sources combined.

j. **The types and magnitudes of recommended water projects remained similar to** prior plans.

k. Since the adoption of the 2022 State Water Plan, the Legislature has made significant appropriations toward several newly established state water supply-focused funding initiatives, including the Texas Water Fund and New Water Supply Fund for Texas. The continued, relative stability of the regional plans indicates that the most feasible water supply options across the planning regions continue to be those grounded in a disciplined, data-driven planning process.

l. **The state water plans do not include any strategies, projects, or costs that are associated with replacing[1], rehabilitating, or maintaining water supply infrastructure that already exists.** All future supplies recommended in these plans are additional water supply volumes, beyond what is currently legally and physically connected to users, including significant conservation and development of new supplies from aquifer storage and recovery, brackish groundwater, seawater desalination, and produced water recycling. Regions continue to consider acquisition of water from states outside Texas, but there are no such strategies recommended at this time.

m. **Texas' population is anticipated to increase 53 percent between 2030 and 2080**—from 34.2 million to 52.3 million—with more than 80 percent of this growth occurring within Regions C, G, H and L.

n. **Total water demands**—including those associated with municipal use—are projected to increase by approximately 6 percent between 2030 and 2080, from nearly 17.4 million to nearly 18.4 million acre-feet per year. This slower rate of growth for the aggregated total demands, as compared to population growth, is influenced by declining irrigation demand projections over the planning horizon.

o. **Texas' existing water supplies**—those that can already be relied on in the event of drought—**are projected to decline by approximately 10 percent between 2030 and 2080**. This comprises a decline from 15.5 million to nearly 14 million acre-feet per year primarily due to depletion of aquifers, with relatively smaller losses in reservoir yield due to sedimentation.

[1] With the exception of water loss mitigation projects that include replacement of portions of an existing leaking water transmission or distribution network and result in an immediate, quantifiable increase in water supply.

p. **Water user groups face potential water shortages** of 3.6 million acre-feet per year in 2030 and 5.8 million acre-feet per year in 2080 in drought-of-record conditions. Municipal shortages account for 20 percent of needs in 2030, increasing to 57 percent by 2080.

q. **Approximately 6,700 water management strategies and 3,000 water management strategy projects** recommended in this plan would provide 2.7 million acre-feet per year in additional water supplies to water user groups in 2030 and almost 7.6 million acre-feet per year in 2080. The potential shortages that would not be met by the plan are primarily irrigation needs that could not be met economically under drought conditions.

r. **Conservation strategies represent approximately 30 percent**, or 2.2 million acre-feet per year, of all recommended water management strategy volumes in 2080 and were recommended for more than half of the water user groups in the plan. This includes practices that reduce everyday water consumption, improve water use efficiency, or reduce water loss, allowing more to be done with the same amount of water and resulting in additional available water supplies.

s. If strategies are not implemented over the next 50 years, approximately one out of four Texans in 2080 would have less than half the municipal water supplies they will require during a drought of record.

t. If Texas does not implement the water supply strategies and projects in the state water plan, a severe drought could cause an estimated $91 billion in economic damages in 2030, and those potential damages are projected to increase to $177 billion per year by 2080.

u. Through SWIFT and other financial assistance programs, the TWDB has delivered to project sponsors more than $5.8 billion toward the implementation of 68 projects that are recommended in the 2022 State Water Plan. These projects represent approximately 1.6 million acre-feet of water supplies, conserved, or maintained. These supplies are planned supply volumes. Supplies may change for various reasons once a project is complete.

Table of Contents

1 Introduction

The 2027 State Water Plan is the sixth plan completed under the regional water planning process and the state's 12th water plan overall—and the first developed using a two-phase approach. It is the culmination of the sixth cycle of regional water planning, comprising the enormous amount of hard work and dedication of more than 500 volunteer planning group members across Texas' 16 regional water planning areas (Figure 1).

The regional water planning process is guided by several fundamental parameters, the most important of which is planning for drought-of-record conditions. The regional water planning groups may opt to plan for drought conditions worse than the drought of record, which is generally when water supplies are lowest and water demands are highest.

The purpose of this planning process is not to identify and replace aged or neglected infrastructure but rather to increase and expand volumes of additional water supplies beyond the existing capacity of current facilities to ensure public health, safety, and welfare in times of severe drought. The process is based on a fundamental expectation that water providers will properly maintain the capacity and function of their existing infrastructure to ensure the design capacity continues to provide existing supplies. The regional and state water plans are expected to exclude replacement[2], rehabilitation, maintenance, or other similar costs or projects.

Additionally, the TWDB has no regulatory authority, related to issuance of permits or groundwater management decisions. The TWDB does not allocate or regulate water resources or supplies, nor is it involved in utility water supply contract decisions with their customers. The TWDB does not provide wholesale or retail water service, nor does it operate water supply infrastructure. The Board provides financial assistance for infrastructure development, collects water-related data, and administers the state's water supply planning process.

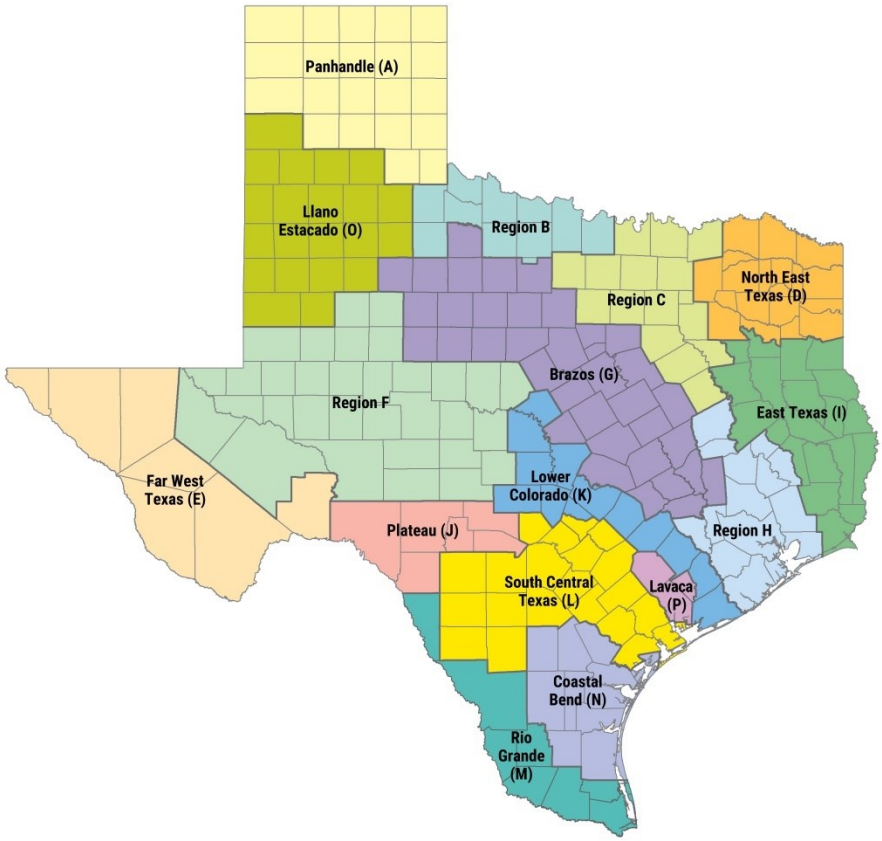
Planning groups conduct evaluations of future water demands, existing supplies, potential water shortages, and feasible water management strategies for wholesale water providers and approximately 3,000 water user groups in six categories (municipal, manufacturing, steam-electric power generation, mining, irrigation, and livestock). Planning groups report the associated data by decade over a 50-year planning period (in this cycle from 2030 to

[2] With the exception of water loss mitigation projects that include replacement of portions of an existing leaking water transmission or distribution network and result in an immediate, quantifiable increase in water supply.

2080) by water user group, county, river basin, and regional water planning area. The regional plans also include drought response information, policy recommendations, information on project implementation, and a comparison to previous plans.

Once the planning groups adopt their regional water plans, the plans are sent to the TWDB for review and approval. The TWDB then prepares the state water plan based on the regional water plans. The state water plan explains the planning methodology, presents data for the entire state, and provides the Board's recommendations to the Texas Legislature. Prior to adopting the final state water plan, the TWDB releases a draft for public comment, publishes its intent to adopt the state water plan in the *Texas Register*, and holds at least one public hearing.

Figure 1. Regional water planning areas



This 2027 State Water Plan – Phase I document, and the 2026 regional water plans upon which it is based, were developed in accordance with the guidance principles outlined in 31 Texas Administrative Code § 358.3 and meet all applicable statutory and rule requirements. The state water plan provides for the orderly development, management, and conservation of water resources and preparation for and response to drought conditions, in order that sufficient water will be available at a reasonable cost to ensure

public health, safety, and welfare; further economic development; and protect the agricultural and natural resources of the entire state.

Section 2 in this plan presents information on local, regional, and state drought planning and response. Section 3 summarizes the methods used to develop the regional water plans, including the projections methodologies for manufacturing and electric power generation water demands tied to projected digital infrastructure facility water use. Section 4 describes the future conditions for water demands, existing water supplies, water needs, recommended water management strategies and projects, socioeconomic impacts of not meeting identified water needs, potential unmet needs, and a brief overview of plan differences as compared to the 2022 State Water Plan. Section 5 summarizes the state's progress in meeting future needs, including information on the implementation of the 2022 State Water Plan. Section 6 presents the TWDB policy recommendations to the Texas Legislature. Appendix A provides a brief history of water planning in Texas and information on Texas water statutes, rules, regulations, and water supply institutions. Appendix B includes summary tables of information presented in the report.

The 2027 State Water Plan can be explored through the interactive state water plan (2027.texasstatewaterplan.org) that is part of the TWDB approved and adopted plan. The interactive site allows stakeholders to take an up-close look at data thematically and at discrete levels. The 2026 regional water plans are also available online at www.twdb.texas.gov/waterplanning/rwp/plans/2026.

2 Drought planning and response

Drought planning and response in Texas occurs at the local, regional, and state levels. Planning and preparations occur at the local level via drought contingency plans, which are required for utilities of a certain size[3]; at the regional level via regional water plans; and at the state level through the state water plan and the state emergency management plan (which includes the state drought preparedness plan).

[3] Under Texas Water Code Chapter 11 and Title 30 of the Texas Administrative Code, Chapter 288, all retail public water suppliers with 3,300 or more connections, irrigation water providers (irrigation districts), and wholesale public water suppliers are required to develop, implement, and submit updated drought contingency plans to the Texas Commission on Environmental Quality (TCEQ) every five years. Retail public water suppliers with less than 3,300 connections must also prepare and adopt an updated drought contingency plan and make the plan available for inspection by the TCEQ but are not required to submit the plan to the TCEQ. (www.tceq.texas.gov/permitting/water_rights/wr_technical-resources/contingency.html)

Regardless of whether drought conditions exist, entities continually implement water conservation plans and water management strategies. When drought conditions exist, entities then implement drought contingency plans and drought management strategies, as necessary. They may also seek emergency funding from the TWDB or the Texas Department of Agriculture. Entities implementing water restrictions as part of their drought contingency plans are required to notify the Texas Commission on Environmental Quality. This information is reported to the Drought Preparedness Council, which coordinates the state's response to drought through the state drought preparedness plan, known as the State of Texas Drought Annex. Disaster proclamations due to drought conditions may also be issued at the state or local level. More information on drought planning, impacts, and resources is available at www.twdb.texas.gov/drought.

2.1 Statewide drought planning and response

Various state agencies support drought planning and response in Texas through their statutorily mandated work and through collaborative efforts as part of councils, task forces, and other collective endeavors. The Texas Water Code lays the foundation for the state's drought response plan for mitigating the effects of drought. It designates the chief of the Texas Department of Emergency Management as the state drought manager, who is responsible for managing and coordinating the drought response component of the state emergency management plan and serves as chair of the Drought Preparedness Council. The information compiled in the regional water plans and summarized in this section serves as the drought response component of the state water plan.

State Drought Preparedness Plan

The state drought preparedness plan, also known as the State of Texas Drought Annex, is prepared by the Drought Preparedness Council and serves as the drought component of the State of Texas Emergency Management Plan. The drought annex pertains to the state's coordination of drought operations expected within the next 6–12 months. It includes a hazard and threat summary analysis and details objectives for the state's drought preparedness, response, and recovery functions. The drought annex defines triggers that activate state response and recovery functions and responsibilities for state agencies (TDEM, 2025).

Drought Preparedness Council

The Drought Preparedness Council is the overarching body dedicated to monitoring Texas drought conditions and facilitating drought response and recovery efforts among local, state, and federal agencies. The Drought Preparedness Council is composed of representatives from at least 14 state entities as well as governor-appointed members.

These entities work closely together at the state level to monitor emerging threats, coordinate resources to respond to local needs, and assist with long-term recovery.

The Council meets regularly to accomplish the following responsibilities:

- Assess and report on drought monitoring and water supply conditions
- Advise the governor on significant drought conditions
- Recommend specific provisions for state response to drought-related disasters be included in the state emergency management plan and the state water plan
- Advise regional water planning groups on drought-related issues in the regional water plans
- Ensure effective coordination among state, local, and federal agencies in drought response planning
- Report biennially to the state legislature on the occurrence of significant drought conditions

The Council coordinates the state's drought preparedness and response through three committees and a specialized task force including the following:

- **Drought Impact Assessment Committee** – coordinates the compilation of information about statewide drought impacts across all sectors as well as appropriate mitigation and response actions.
- **Drought Monitoring and Water Supply Committee** – analyzes current drought and water supply conditions, highlights improvements or degradations, and provides updates to relevant sections of the State of Texas Drought Annex to reflect new drought indices and monitoring tools available for use.
- **Drought Technical Assistance and Planning Committee** – coordinates with regional water planning groups on drought issues and makes recommendations for drought disaster proclamations.
- **Emergency Drinking Water Task Force** – tracks water systems that have been identified as potentially having 180 days or less of potable water, provides support to local water systems, and coordinates assistance and outreach for contingency planning to drought-impacted areas.

As a member of the Drought Preparedness Council, the TWDB chairs the Drought Monitoring and Water Supply Committee and the Drought Technical Assistance and Planning Committee and serves as a member of the Emergency Drinking Water Task Force.

In these roles, the TWDB provides a variety of information and resources to assist with drought response and preparedness:

- **Water Data for Texas Interactive Drought Dashboard** – provides weekly U.S. Drought Monitor data, monthly rainfall and temperature data at county and Hydrologic Unit Code 08 watershed levels, monthly streamflow conditions at Hydrologic Unit Code 08 watershed levels, daily streamflow conditions at certain stream gauges, daily soil moisture conditions, and several drought indices updated at various timesteps (such as monthly Palmer Drought Severity Index; 1-,3-,6-,9-, 12-, and 24-month Standardized Precipitation Index; weekly Quick Drought Response Index; weekly and monthly Evaporative Demand Drought Index; and daily Keetch-Byram Drought Index). waterdatafortexas.org/drought
- **Reservoir conservation storage dashboard** – provides instantaneous, daily, and historical conservation storage for 119 monitored major water supply reservoirs in the state and for Elephant Butte Reservoir in New Mexico. waterdatafortexas.org/reservoirs/statewide
- **Reservoir-specific daily evaporation monitor** – provides daily open-water net evaporation, gross evaporation, and volumetric evaporation for 189 major reservoirs in Texas. dri-apps.projects.earthengine.app/view/twdb-reservoir-evaporation
- **Water Weekly** – summarizes drought conditions across the state. waterdatafortexas.org/drought/twdb-reports
- **Drought and Water Supply Conditions Report to the Drought Preparedness Council** – bi-weekly, monthly, or quarterly (depending on the intensity and extent of drought) updates.
- **Texas Water Conditions Report** – monthly report documenting storage in state reservoirs and groundwater levels in aquifers. www.twdb.texas.gov/surfacewater/conditions/report
- **Drought stakeholder outreach** – provides technical assistance, educational materials, and literature.

When significant drought conditions exist, the chair of the Drought Preparedness Council makes a recommendation to the governor on which counties should be included in a drought disaster proclamation. The chair consults data from the U.S. Drought Monitor (droughtmonitor.unl.edu/) and information from the TWDB, Texas Commission on Environmental Quality, river authorities, groundwater conservation districts, and local officials when making a recommendation. Counties that meet any of the following criteria are recommended for inclusion in the drought disaster proclamation:

- Counties for which any portion of the county is identified as drought stage D3 (extreme drought) or D4 (exceptional drought) per the U.S. Drought Monitor, and any county that has at least 50 percent of the county identified as drought stage D2 (severe drought) or higher for five weeks.
- Counties that have a public water supplier included on the Texas Commission on Environmental Quality 180-day High Priority Water System List.
- Counties where water rights (excluding temporary water rights for surplus water) are suspended or curtailed.
- Counties that have had water supplies curtailed due to water management decisions and are experiencing economic impacts due to these curtailments.
- Counties that include irrigation district service areas that have less than 30 percent of water remaining in the district's account per the Texas Commission on Environmental Quality Rio Grande Watermaster Report.
- Counties that rely heavily on groundwater and have local aquifers in severe drought conditions.

The chair can exercise professional judgement to make a recommendation regarding a county's drought status that may differ from the recommendation derived from the above criteria. Once a declaration has been issued, the Drought Preparedness Council notifies partner agencies and initiates drought response and recovery actions as outlined in the drought annex.

Each planning cycle, the Drought Preparedness Council also makes recommendations to the regional water planning groups on drought-related issues to consider in development of the regional water plans. For the 2026 regional water plans, the Council encouraged regional water planning groups to

- consider planning for drought conditions worse than the drought of record, including scenarios that reflect greater rainfall deficits and/or higher surface temperatures;
- incorporate projected future reservoir evaporation rates in their assessments of future surface water availability; and
- identify utilities within their boundaries that reported having less than 180 days of available water supply to the Texas Commission on Environmental Quality during the current or preceding planning cycle. For systems that appeared on the 180-day list, planning groups should perform the evaluation required by Texas Administrative Code § 357.42(g), if it has not already been completed for that system.

Financial assistance for communities facing drought

The state provides financial assistance with special consideration to entities experiencing drought to help affected communities recover as rapidly as possible from disasters and other emergency situations—including unanticipated reduction of adequate water supply due to prolonged drought.

The TWDB offers funding for urgent need projects through the federal Clean and Drinking Water State Revolving Fund programs. Urgent need projects address unforeseen situations that require immediate attention to protect public health and safety and may be eligible for principal forgiveness. Urgent need situations include prolonged drought-related water supply reductions resulting in a loss of supply within 180 days, catastrophic events resulting in a 20 percent loss in connections or water provided, or other situations as established by the TWDB. The Texas Water Development Fund—a state-funded loan program—is also an option for entities implementing projects in response to drought. Additional information on TWDB financial assistance programs is available online at www.twdb.texas.gov/financial/programs.

In addition to the TWDB, several entities offer financial assistance programs that may be helpful during times of drought:

- The Texas Water Infrastructure Coordinating Committee (twicc.org) is a collaborative endeavor among state and federal government agencies and technical assistance providers that aims to connect water systems with resources for water and wastewater infrastructure projects.
- The U.S. Department of Agriculture offers various disaster assistance programs (www.fsa.usda.gov/programs-and-services/disaster-assistance-program) to help farmers, ranchers, communities, and businesses that have been impacted by natural disasters.
- The Texas Department of Agriculture facilitates the Texas Community Development Block Grant Program for Rural Assistance (texasagriculture.gov/Grants-Services/Rural-Economic-Development/-TxCDBG-Rural-Community-Development-Block-Grant), which includes state urgent need funding for communities meeting eligibility requirements that have been impacted by state-declared disaster events and are not eligible for federal disaster assistance. The agency also operates the Hay Hotline, which helps agricultural producers locate forage and hay supplies for sale.

2.2 Regional drought planning and response

At the regional level, water planning groups develop water supply plans to ensure water needs will be met during times of drought. Each of the 2026 regional water plans includes a drought response chapter (Chapter 7) where regional drought response activities and recommendations are summarized as well as information on

- drought(s) of record in the planning area;
- drought-related uncertainty;
- current drought preparations and drought response triggers and actions;
- unnecessary or counterproductive drought response efforts;
- existing and potential emergency interconnects;
- emergency responses to local drought conditions or loss of municipal supply;
- drought management water management strategies;
- region-specific model drought contingency plans; and
- drought-related considerations and recommendations.

A summary of the key regional drought planning and response information is included below.

Current regional drought preparations and response

Regional water planning groups review available local drought contingency plans and consolidate information in the regional water plans about how water suppliers in the region identify and respond to drought conditions. The regions also review drought response efforts to identify any that are unnecessary or counterproductive. This involves reviewing available response efforts of neighboring communities for differences that may confuse the public, such as differences in implementation of outdoor watering restrictions.

Five planning groups (Regions B, C, G, I, and M) identified unnecessary or counterproductive drought response efforts that may confuse the public or impede drought response efforts in their regional water plans. A common source of confusion among the public relates to different drought responses and timing within the same region, which can often occur because of the variation in water supply sources used within a region. Additionally, variations in drought stage definitions, the variety of drought triggers in use, and the variety of responses implemented across the region are contributing factors. Not only can these factors create confusion among the public, but they also represent challenges to consider when crafting solutions.

Although local entities are best suited to develop responses tailored to manage local conditions, they must ensure that awareness and coordination occur among water providers and that corresponding communications—especially via mass media—match local drought contingency plans. Targeted public outreach from utilities aimed at educating customers on their source of water supply is an important method in preventing confusion. Regions also recommend that entities utilize information in the regional water plans, including model drought contingency plans, to address inconsistencies in drought response that may confuse the public or impede drought response efforts.

Existing and potential emergency interconnects

Planning groups assessed water infrastructure facilities within their regions to identify existing emergency interconnects between water systems and potential new emergency interconnects. The number of existing emergency connections reported by planning groups has increased since the previous state water plan, and the number of potential new emergency connections has decreased. The 2026 regional water plans identified approximately 1,108 existing emergency connections and 552 potential new emergency connections.

Emergency responses to potential loss of supply for small entities

In accordance with administrative rules, the planning groups evaluated potential emergency responses to local drought conditions or loss of existing supply for two groups:

1) Entities with a population of 7,500 or less that rely on a sole source of water supply (for example, a single reservoir or aquifer).
2) All county-other (small, rural water systems) water user groups.

In response to recommendations from the Drought Preparedness Council, some regions also performed this evaluation for entities in the region that reported having less than 180 days of available water supply to the Texas Commission on Environmental Quality during the current or preceding planning cycle. The evaluation assumed that each entity had only 180 days or less of supply remaining and alternative sources had to be found. This high-level screening served as a guide for identifying potentially vulnerable water user groups and suitable emergency response options.

The most common emergency supply options deemed feasible among the planning groups include

- trucked in water;
- local groundwater wells;
- existing or potential emergency interconnects;

- brackish groundwater development (limited treatment or desalination);
- releases from upstream reservoirs;
- curtailment of water rights; and
- voluntary redistributions from other entities, including irrigation users.

For the temporary emergency response options identified for specific entities, see Chapter 7 of the 2026 regional water plans.

Drought management recommendations by planning groups

Drought management strategies are temporary measures that reduce water use by restricting normal economic or domestic activities, such as car washing and lawn watering. Planning groups, as in past planning cycles, generally deferred to local water providers to implement drought management strategies as part of local drought contingency plans. However, planning groups H, J, K, L, M, and P recommended the following specific, quantified municipal drought management strategies:

- **Region H** – included demand reduction for municipal water user groups required to submit a drought contingency plan to the Texas Commission on Environmental Quality and those municipal users that receive water from a wholesale water provider. Reductions were estimated based on the most recently available drought contingency plan of the water user group or their wholesale water provider and assumed a 50 percent efficacy rate—meaning that only half of the associated drought contingency plan curtailments, for example, would be achieved.
- **Region J** – included demand reductions of 20 percent for specific wells within the Bandera County-Other water user group.
- **Region K** – included demand reductions of 5 percent for all municipal water user groups.
- **Region L** – included demand reductions of 10 percent for all municipal water user groups with identified water needs, unless a water user group requested a more utility-specific demand reduction.
- **Region M** – included demand reductions of 5 percent for all municipal water user groups with water needs or those that are required to submit a drought contingency plan to the Texas Commission on Environmental Quality.
- **Region P** – included varying demand reductions for all municipal water user groups in the region, even though no water needs exist for these entities. Reductions were based on drought contingency plan triggers and responses and the frequency at which a trigger might be reached.

During a drought of record, these collective recommended municipal drought management strategies were assumed to temporarily reduce water use by approximately 75,000 acre-feet per year in 2030 and 133,000 acre-feet per year in 2080.

In some cases, drought management was recommended only as a near-term, stopgap strategy to be displaced in later planning decades by projects that actually provide additional water supply to avoid drought restrictions on water use. Planning groups did not, in general, consider it prudent, sustainable, reliable, and/or economically feasible to adopt a regional plan that would intentionally require restrictions on normal economic and domestic activities, especially when there were feasible alternatives. Most planning groups chose to leave aside the potential volume of water savings from drought management measures as a back-up response or last resort to address uncertainty, such as a drought worse than the benchmark drought of record.

The effectiveness and sustainability of drought measures vary between utilities and sometimes were not considered predictable or reliable enough to quantify for inclusion as a recommended water management strategy. The TWDB evaluated reported water use for systems under drought restrictions and found a noticable reduction in water use associated with those restrictions. Although results vary across systems due to inconsistent reporting and uncertainty regarding restriction duration, the data suggest that drought restructions have contributed to measurable water use reductions. The TWDB will continue its collection of drought restriction data and can provide this information to planning groups for consideration in future regional water plan development.

To support the development and implementation of meaningful drought contingency plans and drought management strategies, various planning groups developed the following drought-related recommendations:

- Regularly monitor state and local drought conditions through the TWDB, Texas Commission on Environmental Quality, Drought Preparedness Council, or the U.S. Drought Monitor.
- Actively maintain or monitor infrastructure to increase system reliability and minimize catastrophic failures.
- Regularly review and update management strategies and drought contingency plans.
- Develop robust drought contingency plans with clear triggers, enforcement mechanisms, and coordination among wholesale providers, local utilities, and customers to ensure consistent drought response.

- Develop uniformly consistent drought stage definitions among users of the same source of water.
- Designate appropriate resources to allow for consistent application of enforcement procedures as established in drought contingency plans.

Region-specific model drought contingency plans

Planning groups develop and include region-specific model drought contingency plans in the regional water plan. Model plans must be consistent with the minimum requirements in 30 Texas Administrative Code, Chapter 288, Subchapter B, which provides requirements on drought contingency plans for public water suppliers, irrigation use, and wholesale water providers. Regions typically based their region-specific plans upon model plans provided by the Texas Commission on Environmental Quality, modified to specific regional conditions. These plans address such requirements as drought stages, triggers and responses, conservation, and emergency response stages. They are intended to assist water users seeking guidance in developing plans with meaningful, applicable triggers and responses for water sources within the region.

2.3 Local drought planning and response

Drought contingency plans are implemented at the local level and focus on potential issues related to retail distribution system capacity rather than the entire supply volume to which the entity has access. The plans contain triggers, which are typically based on supply or demand levels to initiate and terminate each stage, and responses associated with the triggers. They also include descriptions of drought indicators and notification and enforcement procedures. Within five days of implementing any mandatory drought contingency measures, wholesale and retail public water suppliers must notify the Texas Commission on Environmental Quality.

If a state disaster proclamation is issued due to drought conditions, counties included in the disaster proclamation must provide general notice to the chair of each planning group in which the county is located and to each entity in the county required to develop a water conservation plan or drought contingency plan. After receiving such notice, the entities are required to implement their water conservation and drought contingency plans. Additionally, retail public utilities and entities from which those utilities obtain wholesale water service are required to report to the Texas Commission on Environmental Quality when they are reasonably certain their water supply is limited to less than 180 days.

3 Methods

3.1 Population and water demand projections

The first major milestone in the five-year regional water planning process is the development of water demand projections. The TWDB projects water demand across the 50-year planning horizon for municipal and all non-municipal sectors of the Texas economy to determine how much water the state will need during a single-year repeat of drought-of-record conditions. Developing the most likely set of projections for a long-term plan is accomplished through a collaborative process based on best available data that is designed to develop consensus between state agencies, regional water planning groups, and local stakeholders.

The TWDB develops draft population and water demand projections using statewide, uniform methodologies for all 16 regional water planning groups. Historical water use survey data, annual water use estimates, and other data sources are used to project water demand for individual water user groups in six water use categories: municipal, irrigation, livestock, manufacturing, mining, and steam-electric power. The Texas Commission on Environmental Quality, the Texas Department of Agriculture, the Texas Parks and Wildlife Department, representatives from the planning groups, and members of the public review the draft projections and can recommend revisions based on local data and other information before final projections are adopted by the TWDB.

This section describes how projections are developed for the regional and state water plans. Detailed projection methodologies for each water use category are available on the TWDB website at www.twdb.texas.gov/waterplanning/data/projections/methodology.

Population

Population projections are developed solely to support the production of municipal water demands. These projections include the permanent residential population—which includes residents in group quarters or institutional facilities (military, prisons, schools/universities, or nursing homes) that are served by municipal water user groups or that rely on their own water sources.

Population projections are developed in two steps. The permanent residential population is first projected at the county level by the State Demographer of Texas at the Texas Demographic Center using a standard demographic methodology known as a cohort-component method (Texas Demographic Center, 2022). This procedure uses separate cohorts (combinations of age, gender, and racial-ethnic groups) and components of cohort

change (birth rates, survival rates, and migration rates) to estimate future populations by county.

This method provides the TWDB with initial, 30-year projections by county, which the TWDB then extrapolates into the final two planning decades to complete the state water plan's 50-year planning horizon. For the 2026 regional water plans, the population projections developed by the state demographer rely on demographic data from the Texas Department of State Health Services and the U.S. Census Bureau, including the most recent 2020 Census. Once county-level projections are developed, the TWDB distributes them to individual municipal water user groups, including utility service areas and rural areas located within each county.

For the 2026 regional water plans, the draft county population projections follow the trends projected by the Texas Demographic Center, including declining future population for many counties. In previous plans, declining county populations were instead held constant. This change in methodology was implemented to better estimate future municipal water demands and needs (potential shortages), improve the credibility of the state water plan, better inform evaluations of potential funding applications, and better understand financial risks associated with water supply projects funded through TWDB financial assistance programs.

Municipal water demand

Municipal water demand includes water used by a variety of consumers in Texas communities, ranging from single- and multi-family residences to certain nonresidential establishments (commercial, institutional, and light industrial served by municipal providers). Residential, nonresidential, and many commercial consumers use water for similar purposes, such as drinking, cooking, sanitation, cooling, and landscape watering. Municipal water demand projections are calculated by developing population projections for each water user group and multiplying those results by a projected gallons per capita per day that is based on historical dry year water use and projected water efficiency savings.

Irrigation water demand

Irrigation water demand includes the water necessary for irrigation activities—primarily field crops but also orchards, pastures, turf grass farms, vineyards, and self-supplied golf courses. Irrigation demand is specifically water pumped for irrigation, not the water needed or used by the crop or water associated with dry-land farming. The baseline methodology for irrigation water demand projections is to average the most recent five years (2015–2019) of water use estimates and then hold this value constant between 2030 and 2080. However, in certain counties, the total groundwater availability over the planning

period was projected to be less than the groundwater portion of the baseline water demand projections. Where this occurs, the draft demand projections decline in later decades, roughly commensurate with the groundwater availability. Region O, which has the largest irrigation water use in the state, requested significant changes to the TWDB draft irrigation water demand projections to better reflect anticipated near-term and long-term changes in water use in the region.

Livestock water demand

Livestock water demand includes water used in the production of various types of livestock, including cattle (beef and dairy), poultry, hogs, horses, sheep, and goats. The 2030 water demand projections for each county are based on the average of the most recent five years (2015–2019) of water use estimates, though some regions requested to incorporate the dry years from 2010–2014 into the baseline. Water use estimates are calculated by applying a water use coefficient for each livestock category to county-level inventory estimates from the United States Department of Agriculture National Agricultural Statistics Service. The rate of change for projections in each planning area, based on local stakeholder information, was carried forward from the 2022 State Water Plan and applied to the new baseline estimate.

Manufacturing water demand

Manufacturing water demand consists of the water necessary for large production facilities, including those that process chemicals, oil and gas, food, paper, and other materials. The manufacturing water demand projections for each county were anchored on baseline estimates of the highest region-county manufacturing water use in the most recent five years of Water Use Survey data (2015–2019), plus estimated unaccounted-for water use. Volumes of fresh water (surface water and groundwater), reuse water (such as treated effluent), and brackish groundwater used by manufacturing facilities were included in the historical estimates and water demand projections. Saline surface water was not included. The full intake was included in the baseline (minus sales), not consumptive use.

For data centers, AI facilities, and cryptocurrency facilities specifically, the TWDB approach to estimating and forecasting digital infrastructure facility water use starts with the TWDB collecting water use data for all sectors (e.g., municipal, manufacturing) in Texas through its long-standing Water Use Survey. These annual surveys already capture reported direct water use by digital infrastructure facilities either within the municipal category (as commercial use in public water systems) or as self-supplied facilities within the manufacturing sector.

Water in these facilities is used directly onsite, including for cooling, and they indirectly rely on water use tied to electricity generation. The water use rate varies widely depending

on technology, operations, and energy sources. Indirect water use is associated with electricity consumption, which is generally captured within the power generation water use category. For the development of the 2026 Regional Water Plans and 2027 State Water Plan, there was limited data available regarding this category of water use with which to inform our future water demand projections, however none of the 16 planning groups requested any digital infrastructure facility-related adjustments to their water demand projections this planning cycle. The TWDB is enhancing its data collection and analysis efforts to improve our projections of digital infrastructure facility water demands for future state water planning cycles. As this sector grows, this water use category will report and fall more comprehensively within our manufacturing water use projections largely because of direct use reporting. Additionally, The TWDB has no regulatory authority regarding any water use.

Because the annual TWDB Water Use Survey focuses on the major water users within the manufacturing category, it may not capture all firms with significant water use. Therefore, the baseline water demand was adjusted to add potential non-surveyed water use, i.e., unaccounted-for water use. This estimated non-surveyed water use was determined using the U.S. Census Bureau County Business Pattern dataset, which provides the number of firms within various categories for manufacturing sectors statewide. The unaccounted-for water use was then distributed to each county and added to the historical baseline water use for the county.

Once the baseline volume was established, the draft projections were developed using a statewide production growth proxy representing consistent incremental change to ensure the accommodation of potential near-term economic and manufacturing sector production growth. Since the first projected decade (2030) is more than ten years from the baseline water use data, the statewide annual historical water use rate of change from 2010–2019 was applied to adjust the baseline value to the initial year of projections value (2030). For each planning decade after 2030, a statewide manufacturing growth proxy—based on the historical number of establishments in the manufacturing sector from 2010–2019 in the County Business Patterns dataset—was applied annually to project increases in manufacturing water demands.

Mining water demand

Mining water demand includes water used for oil and gas development, as well as extraction of coal, lignite, sand aggregate, and other resources. Projections do not include water use required for transporting or refining materials. Mining water demand projections were based upon the TWDB 2022 Mining Water Use Study conducted in partnership with the United States Geological Survey and the University of Texas at Austin Bureau of

Economic Geology (BEG, 2022). The study provided a comprehensive and quantitative assessment of mining water use for oil and gas, aggregates, and coal and lignite mining, and it served as an update to a similar study in 2011–2012 conducted by the Bureau of Economic Geology.

Each mining type utilized a different projection methodology. Oil and gas projections were developed using projected total recoverable resources, historical well inventory, volume of water per well, and average number of wells drilled each year, which was then distributed over the planning horizon. Aggregate production is a function of statewide population. Coal and lignite mining is tied to the life of the power plant that purchases from the mine.

The results of the TWDB 2022 Mining Water Use Study served as the draft projections. Regional water planning groups then reviewed and requested revisions to the projections based on local knowledge of oil and gas water use trends and/or new aggregate mining operations.

Steam-electric power water demand

Steam-electric power water demand consists of water used for the purpose of generating utility-scale power. A generation facility typically diverts surface water, uses it for cooling purposes, and then returns a large portion to a body of water. Renewable energy facilities, landfill gas, and battery power plants were not included in the water demand projections because they do not use significant volumes of water in producing energy.

Water demand projections for 2030 were based on the highest county-aggregated historical steam-electric power water use in the most recent five years of survey data (2015–2019). Volumes of fresh water (surface water and groundwater), reuse (such as treated effluent), and brackish groundwater were included in the historical estimates and demand projections. Furthermore, the demand projections were based on consumptive use, not the entire withdrawal. The anticipated water use for future power generation facilities listed in state and federal reports was added to the demand projections from the anticipated operation date through 2080. Subsequent demand projections, after proposed facilities were included, were held constant throughout the planning period to reflect increasing trends in using renewable energy and more water-efficient technology.

The TWDB is enhancing its data collection and analysis efforts to improve our projections of digital infrastructure facility water demands for future state water planning cycles. As this sector grows, this water use category will report and fall more comprehensively within our manufacturing water use projections largely because of direct use reporting. Long term forecasting for these types of facilities remains difficult due to rapidly evolving

technologies, diverse energy sources, increasing onsite generation, and the proprietary nature of facility siting.

3.2 Water supply estimates

The state water plan is mandated to prepare for and respond to drought conditions. Essential to this process is estimating how much water Texans will have to meet their water demands during drought conditions, without over allocating any water sources. During development of the regional plans, each water planning group must identify all water sources within their planning area and their associated annual availability volumes. Planning groups also quantify the subset of that total water availability volume that is already physically connected and legally accessible to water user groups, which is referred to as existing water supply. To help to ensure that no water source would be oversubscribed in a drought, the TWDB performs a detailed, statewide accounting of all assigned existing water supply volumes.

Default methods to estimate water supply availabilities are described below. Planning groups may seek approval from the TWDB Executive Administrator for a hydrologic variance to modify the default hydrologic assumptions to more accurately reflect the region's source availability and associated existing water supplies. Approved hydrologic assumptions for the 2026 regional water plans are available on the TWDB website at www.twdb.texas.gov/waterplanning/rwp/planningdocu/2026/hydroassumptions.asp.

Surface water

Surface water availability is determined using the Texas Commission on Environmental Quality's surface water availability models (WAMs), which estimate the monthly and annual water volumes that can be diverted each year in drought-of-record conditions, all of which assume a repeat of the historic hydrologic record. The default model for planning purposes, known as WAM Run 3, conservatively assumes that all existing water rights are fully used without returning any flows to the river, unless a water rights permit requires such returns, and is adjusted to consider the impacts due to sedimentation on reservoir yields. The overall surface water availability in Texas is represented as the sum of all firm yields from reservoirs, approved safe yields, and run-of-river availabilities as determined by the planning groups.

Groundwater

Modeled available groundwater volumes account for most of the groundwater availability considered in this plan, including fresh and brackish groundwater. These volumes are the result of the groundwater management area joint planning process and effectively set the planning limits for what volumes of groundwater planning groups have to work with for

aquifers with desired future conditions. For these aquifers, planning groups have no say in determining groundwater availability. For aquifers and portions of aquifers that do not have desired future conditions, planning groups determine the availability in consultation with the TWDB.

An exception to this is Texas Water Code § 16.053(e)(2-a), which allows a regional water planning group to define all groundwater availability within its region if there are no groundwater conservation districts within the regional water planning area. This exception is only applicable to the North East Texas Regional Water Planning Group (Region D). The groundwater availability values estimated by Region D were reviewed by the TWDB to ensure physical compatibility with the desired future conditions in groundwater conservation districts within co-located groundwater management areas.

Other sources

The vast majority of Texas' water supply comes from river basins and aquifers, but seawater, groundwater stored in aquifer storage and recovery projects, and reclaimed wastewater for reuse represent other widely available sources of water.

Seawater availability is generally limited only by the ability to legally access it along the coast. Groundwater stored in aquifer storage and recovery projects is accounted for separately from conventional groundwater for planning purposes. Aquifer storage and recovery source availability is limited to the percent recovery of the project, which is site specific and dependent upon the physical characteristics of the aquifer and groundwater geochemistry. The availability of reclaimed wastewater for reuse, on the other hand, changes over time and is limited by the amount of wastewater generated by water users at any given time unless a water use permit or agreement states otherwise. Produced water, the byproduct of oil and gas extraction, accounts for a small amount of reuse water sources utilized as current or future supply in this plan.

3.3 Selecting water management strategies and projects

Each planning group identifies and evaluates feasible water management strategies for potential inclusion in its recommended set of strategies. In doing so, planning groups are required to consider key factors, including: (1) the quantity of water supply provided; (2) the reliability of that supply under drought of record conditions; (3) the cost of the supply, including financing and mitigation costs; and (4) impacts on water quality and on water, agricultural, and natural resources.

Evaluations of feasible strategies are conducted under drought of record conditions and must honor all existing water rights—the same benchmark conditions used to evaluate projected water demands and existing supplies. Planning groups must also evaluate

conservation and drought management measures for all water user groups with identified needs.

The strategies ultimately recommended vary based on the magnitude and nature of identified needs, geographic location, available water resources, associated impacts, and implementation costs. Some strategies can be implemented with limited or no capital investment, while others require significant infrastructure, such as pipelines, wells, pump stations, diversion facilities, or water treatment plants.

Cost estimates presented in the state water plan are planning level estimates developed using a standardized methodology, including the Texas Water Development Board Uniform Costing Model, to ensure consistent treatment of key cost components across regions and project types. These estimates are intended to provide a comparable, statewide basis for evaluating strategies and are not equivalent to project-specific engineering estimates.

Actual project costs may vary—potentially significantly—based on factors such as project design, site-specific conditions (e.g., geotechnical, environmental, and right of way constraints), permitting requirements, market conditions (including labor and materials), procurement approach, and timing of implementation. Accordingly, these estimates should be interpreted as order of magnitude planning values rather than precise cost forecasts.

Planning groups estimate capital costs and associated unit costs using common cost elements and methodologies. This is the third planning cycle in which groups have used a standardized cost estimation tool (Version 3.01) developed under a TWDB contract, which has improved consistency and comparability across projects. The tool is updated each cycle to reflect current cost conditions, and planning groups may incorporate more detailed, project-specific estimates where available, adjusted to a common dollar year. The Uniform Costing Model does not apply a discrete contingency percentage; instead, contingency is embedded within broader cost factors.”

Following evaluation, each planning group recommends a set of water management strategies and associated projects and documents its selection process in its regional water plan.

3.4 Water quality and protection of state resources

The regional water plans are required to describe major impacts on water quality and how the plans are consistent with the long-term protection of water, agricultural, and natural resources.

Potential impacts on water quality

To assess how water management strategies could potentially affect water quality, planning groups identified key water quality parameters within their regions. These parameters were generally based on surface and groundwater quality standards, the list of impaired waters developed by the Texas Commission on Environmental Quality, and input from local and regional water management entities and the public.

Planning groups presented high-level assessments of how implementing strategies could potentially affect the water quality of surface water and groundwater sources. The planning groups used different approaches, including categorical assessments (such as low, moderate, high) or numerical impact classifications (such as 1, 2, 3, 4, 5).

To evaluate the potential impacts of the recommended water management strategies on surface water quality, the planning groups commonly used the Texas Surface Water Quality Standards, which include the following:

- **Total dissolved solids (salinity)**: For most purposes, total dissolved solids is a direct measure of salinity. Salinity concentration determines whether water is acceptable for drinking water, livestock, or irrigation.
- **Nutrients**: Nutrients are chemical constituents, most commonly as a form of nitrogen or phosphorus, that can occur in high concentrations, contributing to the overgrowth of aquatic vegetation and impacting water uses.
- **Dissolved oxygen**: Dissolved oxygen concentrations must be sufficient to support existing, designated, presumed, and attainable aquatic life uses in classified water body segments.
- **Bacteria**: Some bacteria, although not generally harmful, indicate potential contamination by feces of warm-blooded animals.
- **Toxicity**: Toxicity is the occurrence of adverse effects to living organisms due to exposure to a wide range of toxic materials.

The water quality indicators that planning groups commonly used to evaluate groundwater quality impacts of the recommended water management strategies include the following:

- **Total dissolved solids (salinity)**: As noted above, total dissolved solids is a measure of the salinity of water and represents the amount of minerals dissolved in water.
- **Nitrates**: Although nitrates are naturally occurring nutrients, elevated levels generally result from human activities, such as overuse of fertilizer and improper disposal of human and animal waste.

- **Arsenic**: Although arsenic can occur both naturally and through human contamination, most arsenic in Texas groundwater is naturally occurring.
- **Radionuclides**: A radionuclide is an atom with an unstable nucleus that emits radiation, which occurs naturally in several Texas aquifers.

Water management strategies for water supply are subject to the Texas Commission on Environmental Quality Public Drinking Water and Water Quality standards, permitting, monitoring, assessment, treatment, sampling, and other requirements or methods used to address water quality problems related to water supply.

Protecting the state's water, agricultural, and natural resources

In developing the regional plans, planning groups honored all existing water rights and contracts. Additionally, they considered conservation strategies based on identified best management practices for all water user groups with a water supply need or that relied on an inter-basin transfer. Planning groups also accounted for environmental flow standards adopted by the Texas Commission on Environmental Quality, Consensus Criteria for Environmental Flow Needs, and/or, when available, site-specific studies. Regional plans do not include any recommended strategies incompatible with the desired future conditions of aquifers or that divert greater-than-permitted surface water volumes.

Planning groups quantified and considered the impacts of water management strategies on agricultural resources. In developing the plans, planning groups were also required to consider and, when feasible, recommend water management strategies to meet the water supply needs of irrigated agriculture and livestock production. Recommended strategies involving conversion or transfer of water associated with existing water right permits either being used for agricultural purposes or from rural areas were based on assumed future voluntary transactions between willing buyers and sellers.

In considering the protection of natural resources, planning groups included estimated costs of anticipated mitigation requirements for project construction and quantified the potential impacts of water management strategies related to environmental factors. These factors were quantified and summarized primarily based on existing data and the potential to avoid or mitigate impacts. Some categorized assessments as high, moderate, or low based on underlying quantified impacts or quantified ranges of impacts. For example, a low impact rating indicated that impacts could generally be avoided or mitigated relatively easily. In contrast, an impact rated as high generally indicated that impacts would be significant with the potential for substantial mitigation requirements.

In their environmental reviews, planning groups also considered a variety of factors, including the volume of discharge a strategy would produce, the number of acres of

habitat potentially affected, changes to streamflow, and changes to bay and estuary inflow patterns. The groups also relied on identifying the number of endangered or threatened species or cultural sites occurring within the vicinity of the recommended projects.

The emphasis of these evaluations varied by region based on the type of project under consideration and the relevant resources affected. Evaluations included project-by-project evaluations as well as cumulative, region-wide impact analyses. In general, most planning groups relied on existing information and data generated as part of the technical evaluations of such strategies as flow frequency data, land cover, and habitat maps to evaluate the impacts of water management strategies on agricultural and natural resources.

3.5 Socioeconomic impacts of not meeting needs

Insufficient water supplies would negatively affect public health and safety, existing businesses and industry, and future economic development in Texas. Because of water's importance to the state, planning groups are required to include the economic and social impacts of not mitigating future water needs in their water plans. At the request of the planning groups, the TWDB assisted with this requirement by assessing the potential socioeconomic impacts of not meeting water needs and providing that information to each region.

The economic impact portion of the analysis measures potential impacts of not meeting identified water needs, including effects of economic losses to regions from reduced economic output for agricultural, industrial, and commercial water uses. The TWDB performed the analysis using a static economic impact modeling software package, IMPLAN (Impact for Planning Analysis), as well as other economic analysis techniques. This analysis represents a snapshot estimate of statewide socioeconomic impacts in the event of a single-year repeat of the drought of record, with the fundamental assumption that no water management strategies were implemented to reduce the identified water needs. This simplified analysis does not assess impacts from longer-term, persistent water supply shortages, particularly the stunting impacts that would be associated with high-growth regions.

The social impact portion of the analysis focuses on potential demographic effects, including changes in population and school enrollment, by incorporating results from potential job losses if water needs are not met. The analysis estimates how changes in a region's economy could affect patterns of migration from a region. This relied partially on a simplified ratio of job and net population losses calculated for the state as a whole, based on a recent study of how job layoffs impact the labor market population (Foote and others,

2015). Additional information on the socioeconomic impact analysis methodology and data sources is available on the TWDB website at www.twdb.texas.gov/waterplanning/data/analysis.

3.6 Uncertainty

Planning factors, such as population, water demand, supply, needs, and water management strategies, all involve uncertainty that can be difficult to quantify, and some uncertainties remain inherently unknowable or unmodeled in the regional planning process. To address the most critical risk, plans are developed around conditions expected during a repeat of the drought of record, assuming high demand and limited supply and identifying strategies to manage resulting shortages.

Because regional water plans are updated every five years, they can incorporate new data and improve their accuracy over time, particularly for near-term time horizons. Beyond this foundation, planning groups use additional measures to address uncertainty and mitigate the risk of future water shortages, including conservative assumptions, diversified portfolios and alternatives, emergency interconnects, holding drought management strategies in reserve, adaptive planning, and aligning implementation with actual demand growth.

4 Results

This section provides a statewide summary of planning task results divided into sections that discuss the steps to identify needs and how those needs will be addressed. Section 4.1 summarizes the results of projected population, water demand, and water supplies, and their respective resulting needs. Section 4.2 summarizes recommended water management strategies and projects, unmet needs, and the social and economic impact of not meeting needs under drought-of-record conditions.

Summary tables for all results are included in Appendix B. To view results at more discrete levels, including by region, county, or water user group[4], visit the interactive 2027 State Water Plan website (2027.texasstatewaterplan.org). For region- and county-level socioeconomic impact analysis results by water use category, visit the TWDB socioeconomic impact analysis dashboard (www.twdb.texas.gov/waterplanning/data/analysis).

[4] Includes results for major water providers that are water user groups.

4.1 Population, water demand, water supplies, and potential shortages

- Texas' population is anticipated to increase 53 percent between 2030–2080, from 34.2 million to 52.3 million, with more than 80 percent of this growth occurring within Regions C, G, H and L. Water demands are projected to increase less significantly—by approximately 6 percent between 2030–2080—from nearly 17.4 million to nearly 18.4 million acre-feet per year (Figure 2, Table B-1).
- Texas' annual water availability—the maximum volume of raw water that can be withdrawn annually from each source—is projected to decline by approximately 9 percent between 2030–2080, from nearly 24.8 million to 22.4 million acre-feet per year (Table B-2).
- Texas' existing water supplies—those that can already be relied on in the event of drought—are projected to decline by approximately 10 percent between 2030–2080, from 15.5 million to nearly 14.0 million acre-feet per year primarily due to depletion of aquifers, with relatively small losses in reservoir yield due to sedimentation (Figure 3, Table B-3).
- Water user groups face a potential water shortage of 3.6 million acre-feet per year in 2030 and 5.8 million acre-feet per year in 2080 in drought-of-record conditions (Figure 4, Table B-4).

Figure 2. Projected annual water demand by water use category (acre-feet)

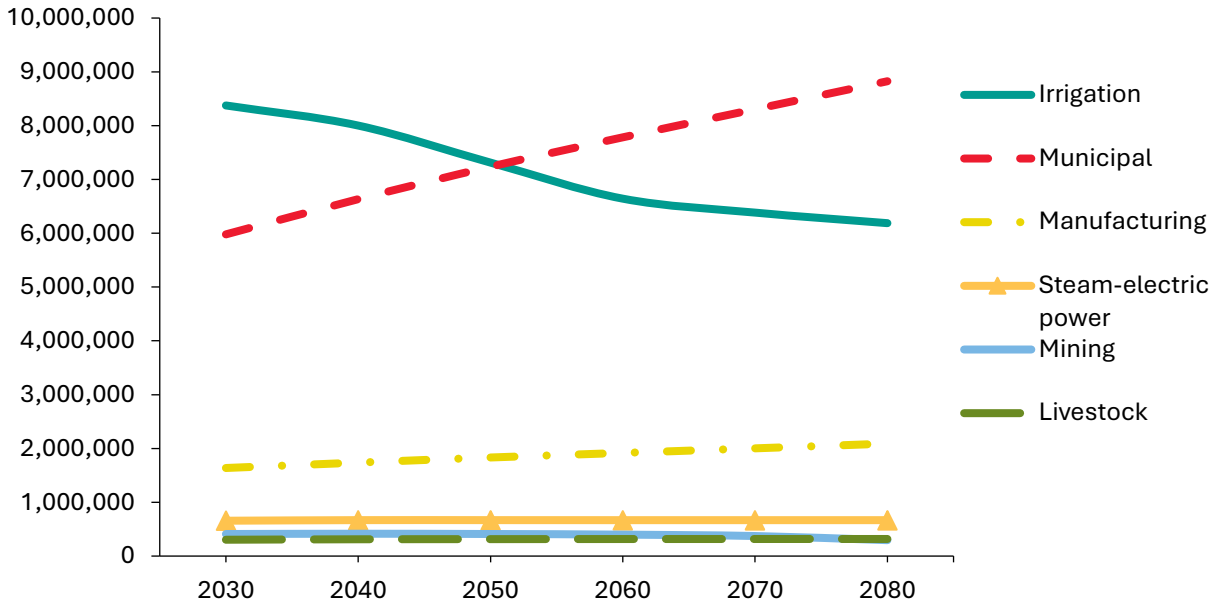


Figure 3. Projected annual existing supply by water use category (acre-feet)

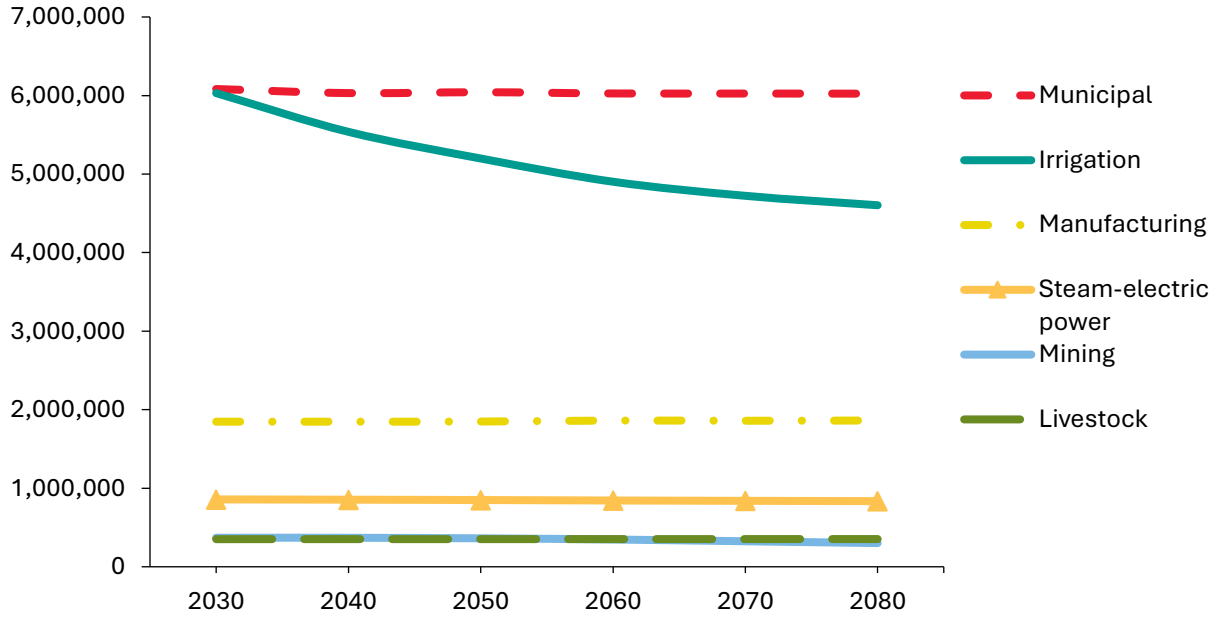
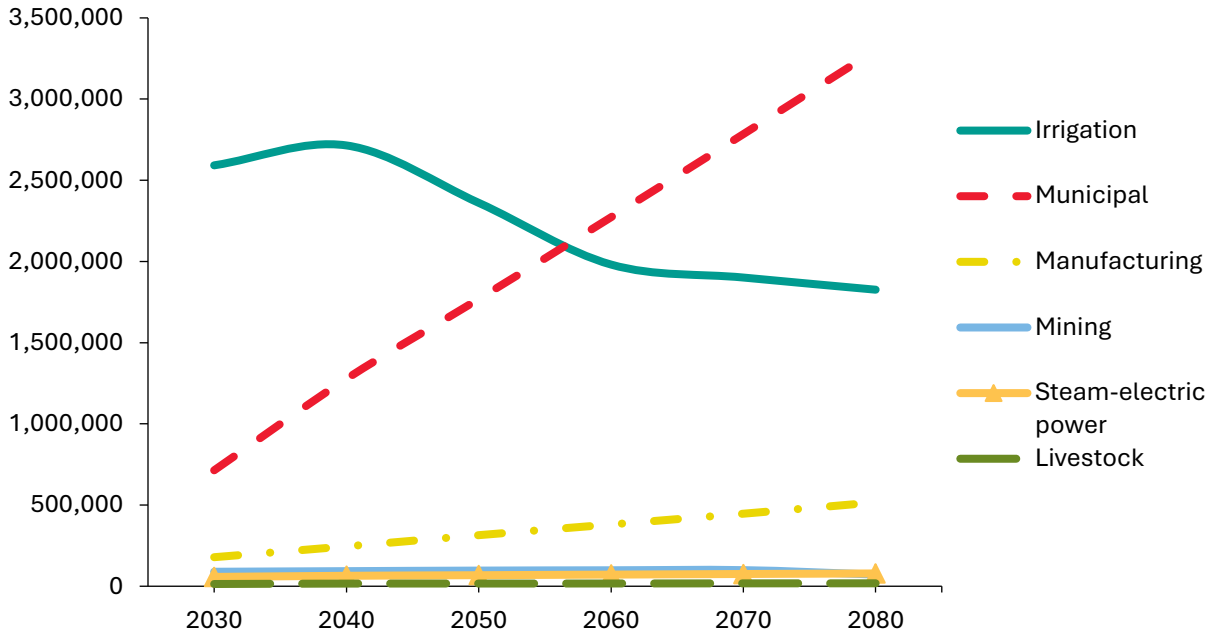


Figure 4. Projected annual water needs by water use category (acre-feet)



4.2 Recommended strategies and projects, unmet needs, and socioeconomic impacts of not meeting needs

- Approximately 6,700 water management strategies recommended in this plan would provide 2.7 million acre-feet per year in additional water supplies to water user groups in 2030 and almost 7.6 million acre-feet per year in 2080 (Figure 5, Table B-5).
- Conservation strategies represent approximately 30 percent, or 2.2 million acre-feet per year, of all recommended water management strategy volumes in 2080 and were recommended for more than half of the water user groups in the plan (Figure 6).
- The estimated capital cost to design, construct, and implement the more than 3,000 recommended water management strategy projects by 2080 is nearly $174 billion in 2023 dollars, without accounting for future inflation.
- If strategies are not implemented over the next 50 years, approximately one-quarter of Texas' population in 2080 would have less than half the municipal water supplies they will require during a drought of record.
- If Texas does not implement the water supply strategies and projects in the state water plan, a severe drought could cause $91 billion in economic

damages in 2030, and those damages are projected to increase to $177 billion per year by 2080 (Table B-6).

- Statewide unmet needs are projected to decline from about 2.4 million acre-feet per year in 2030 to 1.6 million acre-feet per year in 2080 (Table B-7). This represents the amount of needs that water users will face even if all recommended strategies and projects in this plan are implemented.

Figure 5. Projected annual water management strategy supplies by water use category (acre-feet)

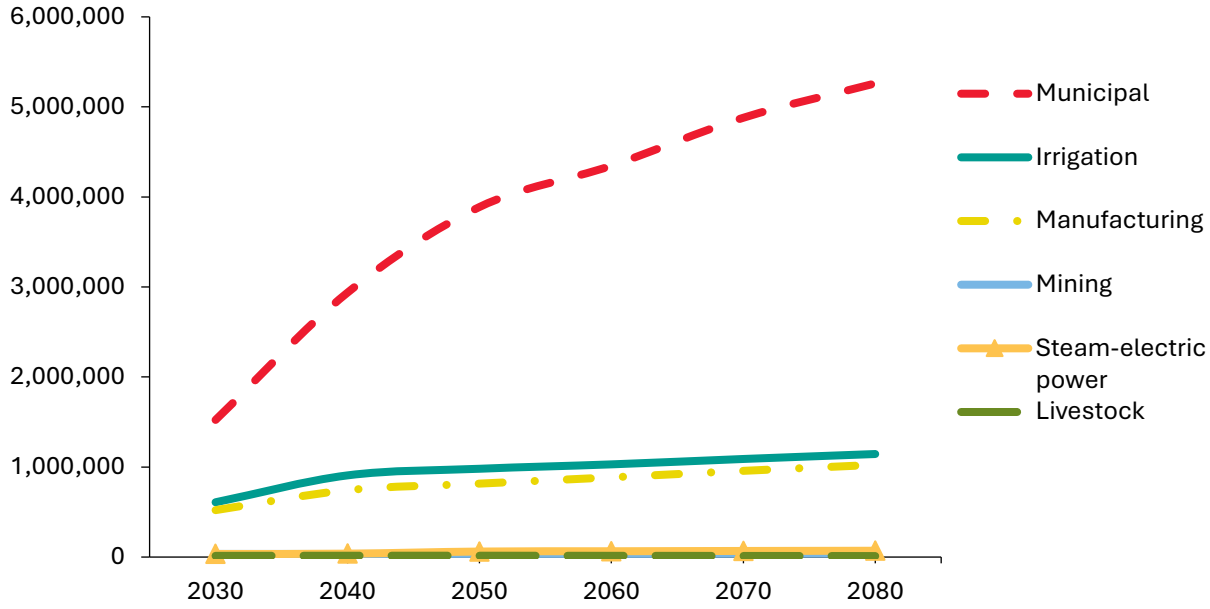
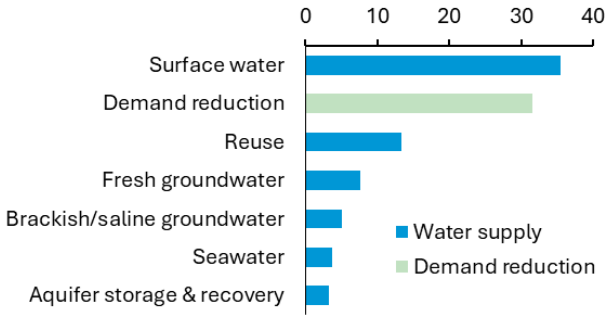


Figure 6. Recommended water management strategy supply volumes by water resource and strategy type in 2080

Share by water resource (percent)



Share by strategy type

Strategy type	Strategy supplies (acre-feet)	Percent share of strategy supplies
Agricultural conservation	916,494	12.1%
Aquifer recharge	9,799	0.1%
Aquifer storage & recovery	238,233	3.2%
Direct potable reuse	139,852	1.9%
Drought management	132,924	1.8%
Groundwater desalination	276,887	3.7%
Groundwater wells & other	679,765	9.0%
Indirect reuse	606,456	8.0%
Industrial conservation	73,583	1.0%
Municipal conservation water loss mitigation	472,614	6.3%
Municipal conservation water use reduction	779,871	10.3%
New major reservoir	676,053	9.0%
Other direct reuse	249,853	3.3%
Other strategies	125,158	1.7%
Other surface water	1,880,944	24.9%
Seawater desalination	277,542	3.7%
Water recycling reuse	14,251	0.2%
Texas	**7,550,279**	**100.0%**

4.3 Notable changes since the 2022 State Water Plan

- Total annual statewide water demand is projected to be about 1.1 million acre-feet per year lower in 2030 and 1.2 million acre-feet per year lower by 2070 (a 6 percent decrease in both decades) as compared to the 2022 State Water Plan. Changes are primarily due to updated projection methodologies, lower birth rates, and revisions from the planning groups—mainly the revised demands by Region O to better reflect the anticipated rate of decline for irrigation water use in the region.
- Total annual source availability decreased 1.4 million acre-feet in 2030 and 1.2 million acre-feet in 2070 (a nearly 6 percent and 5 percent reduction, respectively) as compared to the 2022 State Water Plan. Many factors affect estimates of water availability over time, including policy decisions on source management, modeling assumptions, and new or updated data. The decline in availability between plans is largely due to the removal of brackish run of river sources in the Neches and Sabine river basins to more accurately align with availability modeling and projected demands for the brackish sources.

- Total annual statewide existing supplies are relatively consistent between the plans. Existing supplies in this plan increased approximately 1 percent in 2030 and almost 3 percent in 2070 as compared to the 2022 State Water Plan.
- Total annual statewide water need is projected to be about 1.2 million acre-feet per year lower in 2030 and 1.6 million acre-feet per year lower in 2070 (a 24 percent and 23 percent decrease, respectively) as compared to the 2022 State Water Plan. The net change in needs is mainly driven by revised demand projections, particularly for irrigation in Region O.
- The anticipated total strategy supplies directly associated with water user groups in the 2070 decade decreased from 7.8 million acre-feet in the 2022 State Water Plan to 7.0 million acre-feet in this plan, primarily due to a lower volume of need to address in 2070 than in the 2022 State Water Plan. Implementation of major water supply projects since the last plan—including Bois D'Arc Lake and Lake Ralph Hall—also contributes to the decrease since strategy supplies transition to existing supply once a strategy and associated projects are implemented.
- The total capital costs of all recommended strategies increased significantly from $81 billion in the previous plan to $174 billion. The increase in costs between planning cycles is due to a combination of factors, including the inclusion of additional projects, refinement of projects through the planning phases, general inflation, increased construction costs, the extension of the planning horizon to the year 2080, and unimplemented near-term projects from previous plans that continue to be carried forward.
- Total annual statewide unmet needs are approximately 15 percent lower in 2030 and 34 percent lower in 2070 than the 2022 plan. The net change is due almost entirely to reduced irrigation unmet needs, driven by the revised methodology for projecting irrigation demands in Region O in this plan.

5 Progress in meeting future needs

Regional water planning groups assist in evaluating the state's progress in meeting future water needs by assessing the previously recommended water management strategies implemented during the five-year planning cycle. The state water plan also includes information on state water plan projects funded since adoption of the previous state water plan, an analysis of whether projects were implemented in the decade in which they were needed, and any impediments that resulted in projects not being implemented on time.

5.1 Implementation of the 2022 State Water Plan

Planning groups reported on the implementation of water management strategies and projects from the 2022 State Water Plan in the 2026 regional water plans. To do this, the planning groups surveyed the project sponsors and reported on the extent to which water infrastructure projects had progressed toward planning, design, or construction phases.

They also gathered information on strategies that do not require new infrastructure development. Examples include demand reduction strategies (conservation and drought management) and other supply development strategies, such as utilization of unallocated supplies, contract purchases, and voluntary redistributions or transfers that use existing infrastructure.

Because water management strategies, particularly those involving infrastructure projects, can require several years to fully implement, strategy (and project) progress was categorized in two ways:

1) Implemented – when a strategy is fully capable of meeting water needs as planned.
2) Progress toward implementation – includes any type of implementation step to start project construction (including such pre-construction activity as negotiating contracts, applying for and securing financing or state and federal permits, or conducting preliminary engineering studies) or achieve a portion of the total anticipated conservation savings from a strategy.

Statewide implementation progress of the 2022 State Water Plan is presented as a relative count compared to the total for two distinct categories: recommended projects (approximately 2,400) and strategies not associated with a project (approximately 1,700).

The planning groups reported implementation survey information for approximately 1,300 projects, accounting for 54 percent of the recommended projects in the 2022 State Water Plan. Of the projects that were reported on, about 5 percent were reported as fully implemented, 66 percent had some degree of implementation progress, 22 percent had no implementation, and 7 percent were reported as no longer being pursued.

Planning groups also reported, separate from the recommended projects, the implementation survey information for 828 strategies not associated with a project. Of these, about 3 percent were reported as fully implemented, 91 percent had some form of implementation progress, 5 percent had no implementation, and 1 percent were reported as no longer being pursued.

Strategies reported as fully implemented represent just over 1 percent of the total number of recommended water management strategies without an associated project in the 2022 State Water Plan. The water supplies associated with these fully implemented strategies now appear as existing supply on the supply side of the planning equation in this current water plan. Strategies reported as only partially implemented represent about 45 percent of the total number of strategies that don't require capital investments in the 2022 State Water Plan. Overall, the survey results point to a growing backlog of projects that need to be implemented ahead of the onset of the next drought. The lack of implementation of strategies by sponsors leaves the associated communities vulnerable to drought.

5.2 Impediments to implementation of the 2022 State Water Plan

To better understand why some water management strategy projects are not implemented in the decade in which they are needed, the planning groups are required to collect information regarding impediments to implementation and do so via surveys sent to the project sponsors.

Planning groups mentioned several categories of impediments to implementation, including lack of a project sponsor, shifts in timelines, economic feasibility and financing, contracting and permitting constraints, and water supply constraints. Other less commonly identified impediments included lack of drought conditions as a decision driver, site selection challenges, and challenges with property and easement acquisition. Because even technically and economically feasible projects, especially large ones, require significant effort to implement, the impediments reported by planning groups do not necessarily indicate a project will not be implemented. Rather, the identified impediments indicate that implementation may take longer than previously anticipated and potentially delay the online date.

Of the 2022 State Water Plan projects prioritized for funding through the SWIFT program since 2021, approximately 32 percent of projects had an online decade of 2020 in the 2022 State Water Plan and applied for funding after their decade of need. Of these prioritized projects with a 2020 online decade, only 67 percent completed the full SWIFT application process and received funding. For various reasons, several entities submitted abridged applications for prioritization and then decided not to submit a full application, and others submitted a full application but then withdrew before receiving a funding commitment.

Impediments to implementation reported for these projects included financing impediments, water supply/water rights constraints, and delays in acquiring easements and completing construction. The remaining 68 percent of the projects prioritized for funding through the SWIFT program since 2021 were applying for funding prior to their

decades of need as reported in the 2022 State Water Plan, with the vast majority of those having an online decade of 2030.

5.3 Funding of the 2022 State Water Plan

Since adopting the 2022 State Water Plan, the TWDB has delivered to project sponsors more than $5.8 billion toward the implementation of 68 state water plan projects recommended in the 2022 State Water Plan (Table B-10). These projects represent approximately 1.6 million acre-feet of water supplied, conserved, or maintained.[5] The TWDB has funded recommended water management strategies through several funding programs including the State Water Implementation Fund for Texas, Texas Water Development Fund, Rural Water Assistance Fund, Water Loan Assistance Fund, and the Clean and Drinking Water State Revolving Funds.

6 Recommendations

The state water plan serves as a guide to state water policy, includes legislative recommendations, and may include policy statements on various issues related to water planning and implementation. By statute[6], the Board must consider making recommendations that it believes are needed to facilitate voluntary water transfers and to identify river and stream segments of unique ecological value and sites of unique value for reservoir construction. No recommendations regarding voluntary water transfers are included in this plan.

In developing legislative recommendations for this plan, the TWDB considered recommendations contained in the 2026 regional water plans. Regional water planning groups made more than 500 regulatory, administrative, and legislative recommendations in the adopted 2026 regional water plans to

- facilitate the orderly development, management, and conservation of water resources;

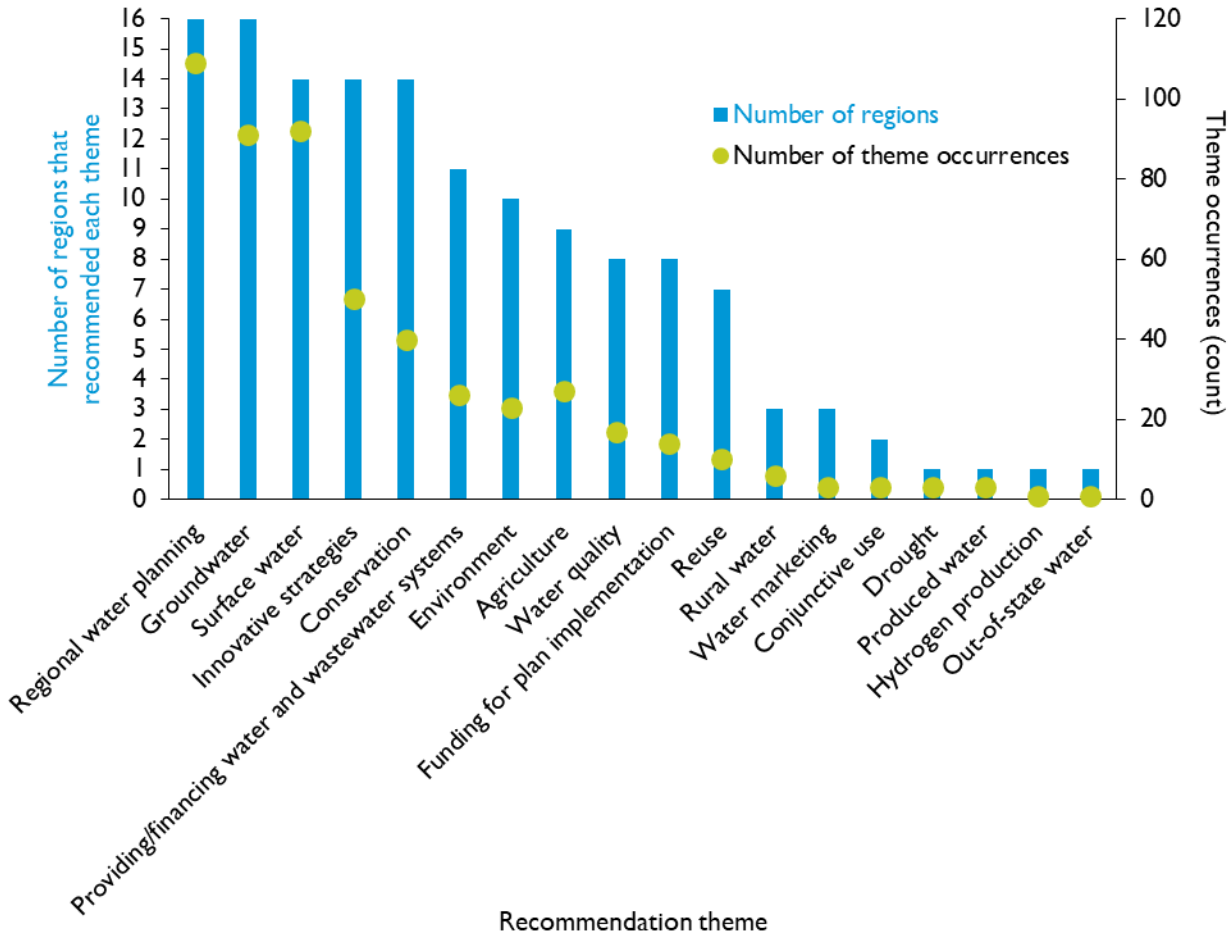
[5] The above supplies are planned supply volumes. Supplies may change for various reasons once a project is complete.

[6] Texas Water Code Sec. 16.051(e): "…The plan shall include legislative recommendations that the board believes are needed and desirable to facilitate more voluntary water transfers. The plan shall identify river and stream segments of unique ecological value and sites of unique value for the construction of reservoirs that the board recommends for protection under this section."

- facilitate preparation for and response to drought conditions so that sufficient water will be available at a reasonable cost to ensure public health, safety, and welfare;
- further economic development; and
- protect the agricultural and natural resources of the state and regional water planning areas.

Figure 7 provides a generalized summary of the broad range of planning group recommendation themes. Detailed recommendations can be found in Chapter 8 within each of the regional water plans, which are available on the TWDB website (www.twdb.texas.gov/waterplanning/rwp/plans/2026).

Figure 7. Summary of administrative, legislative, and regulatory recommendations made by the regional water planning groups



Along with general policy and statutory recommendations, planning groups also made recommendations in the 2026 regional water plans for designating river and stream

segments of unique ecological value and unique sites for reservoir construction; however, the Texas Legislature is responsible for officially designating these sites.

Planning groups may recommend designating all or parts of river and stream segments of unique ecological value located within their planning areas. These recommendations are based upon several criteria:

- Biological function
- Hydrologic function
- Riparian conservation areas
- High water quality
- Exceptional aquatic life
- High aesthetic value
- Threatened or endangered species/unique communities

The recommendations include physical descriptions of the stream segments, maps, and other supporting documentation. The planning groups coordinate each recommendation with the Texas Parks and Wildlife Department and include, when available, the Department's evaluation of the river or stream segment in their final plans.

A planning group may also recommend a site as unique for reservoir construction based upon the following criteria:

- If site-specific reservoir development is recommended as a specific water management strategy or in an alternative long-term scenario in an adopted regional water plan
- If location, hydrology, geology, topography, water availability, water quality, environmental, cultural, and current development characteristics, or other pertinent factors make the site uniquely suited: (a) for reservoir development to provide water supply for the current planning period; or (b) to meet needs beyond the 50-year planning period

Based on planning groups' recommendations and other policy considerations, the TWDB makes the following recommendations for consideration by the Texas Legislature.

Legislative Recommendation 1: Unique stream segment designation

The legislature should designate the five river or stream segments of unique ecological value as recommended by the 2026 regional water plans (Alamito Creek, Black Cypress Bayou, Black Cypress Creek, Pecan Bayou, and Terlingua Creek) for protection under Texas Water Code § 16.051(f).

Summary of the recommendation

Pursuant to Texas Water Code § 16.051(e) and § 16.053(e)(6), state and regional water plans shall identify river and stream segments of unique ecological value that they recommend for protection. By statute, this designation solely means that a state agency or political subdivision of the state may not finance the construction of a reservoir in a specific river or stream segment that the legislature has designated as having unique ecological value (TWC § 16.051(f)). Such designations are determined by the legislature.

The recommendation is for the following five stream segments:

- **Alamito Creek** in Presidio County solely within the boundary of the Alamito Creek Preserve managed by the Dixon Water Foundation—approximately a 3.5-mile stream segment.
- **Black Cypress Bayou** in Marion and Cass counties from the confluence with Big Cypress Bayou in south central Marion County upstream to the confluence of Black Cypress Creek east of Avinger in southern Cass County.
- **Black Cypress Creek** in Cass and Morris counties from the confluence with Black Cypress Bayou east of Avinger in southern Cass County upstream to its headwaters located 4 miles northeast of Daingerfield in the eastern part of Morris County.
- **Pecan Bayou** in Red River County from 2 miles south of Woodland in northwestern Red River County east to the Red River, approximately 1 mile west of the eastern Bowie County line.
- **Terlingua Creek** in Brewster County solely within the boundary of Big Bend National Park—approximately a 5-mile stream segment. The reach of Terlingua Creek recommended as an ecologically unique stream segment is only that portion of the creek located within Big Bend National Park. Terlingua Creek transects Big Bend National Park from the confluence with the Rio Grande to the Big Bend National Park boundary located about 5 miles north of the river.

As put forward in the 2026 North East Texas (Region D) Regional Water Plan, the recommendation for designation of the Black Cypress Bayou, Black Cypress Creek, and Pecan Bayou stream segments is conditioned upon legislation containing the following clarifying provisions:

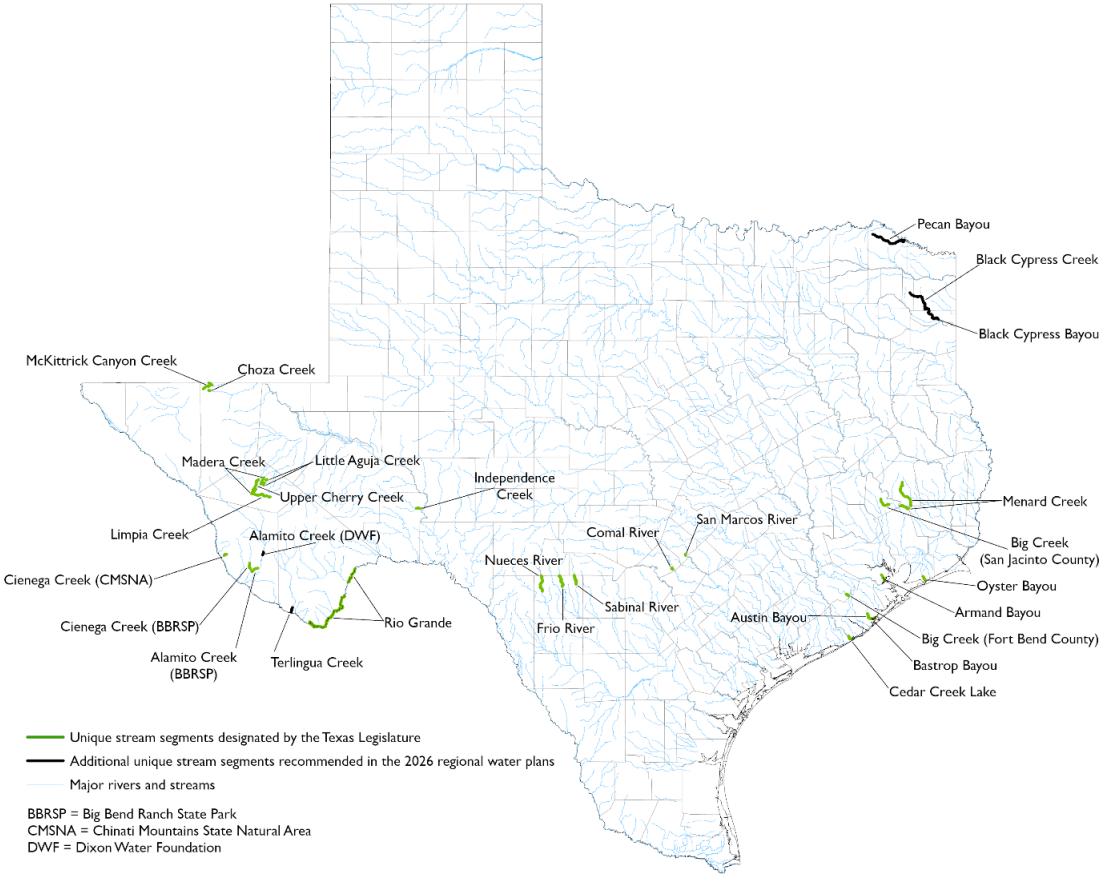
1) A provision affirming that the only constraint that may result from the ecologically unique stream segment designation is that constraint described in the Texas Water

Code § 16.051(f), which prohibits a state agency or political subdivision of the state from financing the construction of a reservoir in a designated stream segment.

2) A provision stating that the constraint described in Texas Water Code § 16.051(f) does not apply to a weir, diversion, flood control, drainage, water supply, or recreation facility currently owned by a political subdivision.
3) A provision stating that this designation will not constrain the permitting, financing, construction, operation, maintenance, or replacement of any water management strategy recommended or designated as an alternative to meet projected needs for additional water supply in the 2026 Regional Water Plan for the North East Texas Water Planning Region.
4) A provision affirming that this designation is not related to the "wild and scenic" federal program or to any similar initiative that could result in "buffer zones," inadvertent takings, or overreaching regulation.
5) A provision stating that all affected landowners shall retain all existing private property rights.
6) A provision recognizing that the unique ecological value of the designated segment is due, in part, to the conscientious, voluntary stewardship of many landowners on the adjoining properties.

Senate Bill 3, passed by the 80th Texas Legislature, designated 19 stream segments recommended in the 2007 State Water Plan, and the 84th Texas Legislature designated an additional five segments from the 2012 State Water Plan with passage of House Bill 1016. Some of these designated stream segments included multiple, separate reaches of the same stream (Figure 8).

Figure 8. Unique stream segments previously designated by the Texas Legislature and additional recommended segments



Legislative Recommendation 2: Unique reservoir site designation

The legislature should designate for protection under Texas Water Code § 16.051(g) four sites of unique value for constructing reservoirs as recommended in the 2026 regional water plans: Coryell County Off-Channel Reservoir, Millers Creek Off-Channel Reservoir (also known as Lake Creek Reservoir), George Parkhouse Reservoir I (South), and George Parkhouse Reservoir II (North).

Summary of the recommendation

Pursuant to Texas Water Code § 16.051(e) and § 16.053(e)(6), the state and regional water plans shall identify sites of unique value for reservoir construction. This authority also relates to the state's general interest in reservoir development as codified in the Texas Constitution:

> "It is hereby declared to be the policy of the State of Texas to encourage the optimum development of the limited number of feasible sites available for the

> construction or enlargement of dams and reservoirs for conservation of the public waters of the state, which waters are held in trust for the use and benefit of the public, and to encourage the optimum regional development of systems built for the filtration, treatment, and transmission of water and wastewater." – Texas Constitution, Article 3, § 49-d(a)

Texas Water Code § 16.051(g) gives the legislature authority to designate a site of unique value for constructing a reservoir. By statute, once a reservoir site is designated for protection, a state agency or political subdivision of the state may not obtain a fee title or an easement that would significantly prevent the construction of a reservoir. Without such designation, actions by state or local government entities could compromise the viability of these sites for future reservoir development.

Not all regions of Texas have access to the same types of water resources or have them in similar proportion. For many water users, development of reservoirs is an important means for providing large volumes of renewable, affordable water supply. As evidenced in the 2026 regional water plans and this state water plan, surface water resources, including the development of additional major reservoirs, will continue to play an essential role in Texas' water plans throughout and beyond the current planning horizon.

Approximately 36 percent of all recommended water management strategy supplies in 2080 are associated with surface water, the majority of which is associated with existing and future reservoirs. Meeting a significant share of Texas' future water needs by developing the most promising reservoir sites requires a stable, long-term commitment to the protection of these sites.

Designation of sites of unique value for reservoir construction by the Texas Legislature provides an important measure of protection for these sites for future development. While the legislature's designation of unique sites does prevent some actions that could threaten the development of a reservoir, it does not guarantee protection of the sites, for example, against federal actions.

Prior to the 80th Texas Legislature, three unique reservoir sites had been previously designated: the 76th Texas Legislature designated Allens Creek Reservoir with the passage of Senate Bill 1593; the 77th Texas Legislature designated Post Reservoir in 2001 with House Bill 3096; and the 78th Texas Legislature designated Lake Columbia in 2003 with the passage of Senate Bill 1362 (Figure 9).

With the passage of Senate Bill 3 in 2007, the 80th Texas Legislature designated an additional 19 reservoir sites with a provision whereby the designations would expire on September 1, 2015, "unless there is an affirmative vote by a proposed project sponsor to

make expenditures necessary in order to construct or file applications for permits required in connection with the construction of the reservoir under federal or state law" (Texas Water Code § 16.051(g-1)). With the passage of House Bill 1042 in 2015, the 84th Texas Legislature re-designated the Lake Ringgold reservoir site as unique.

The Texas Legislature should consider designating the following four additional reservoir sites for protection: Coryell County Off-Channel Reservoir, Millers Creek Off-Channel Reservoir, George Parkhouse Reservoir I (South), and George Parkhouse Reservoir II (North) (Figure 10). These reservoir sites were recommended for designation in the 2026 regional water plans and have never been previously designated by the legislature as having unique value for the construction of reservoirs.

Figure 9. Unique reservoir sites previously designated by the Texas Legislature

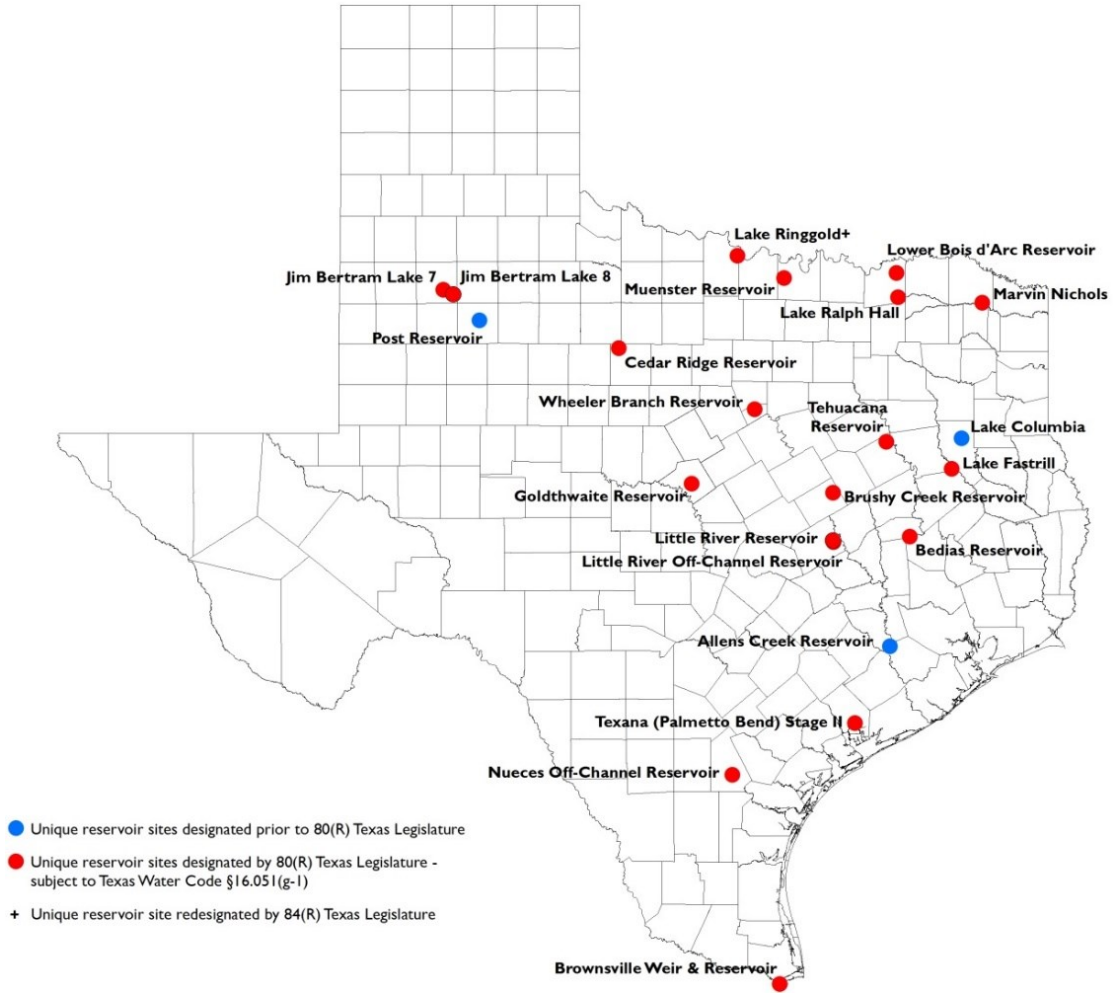
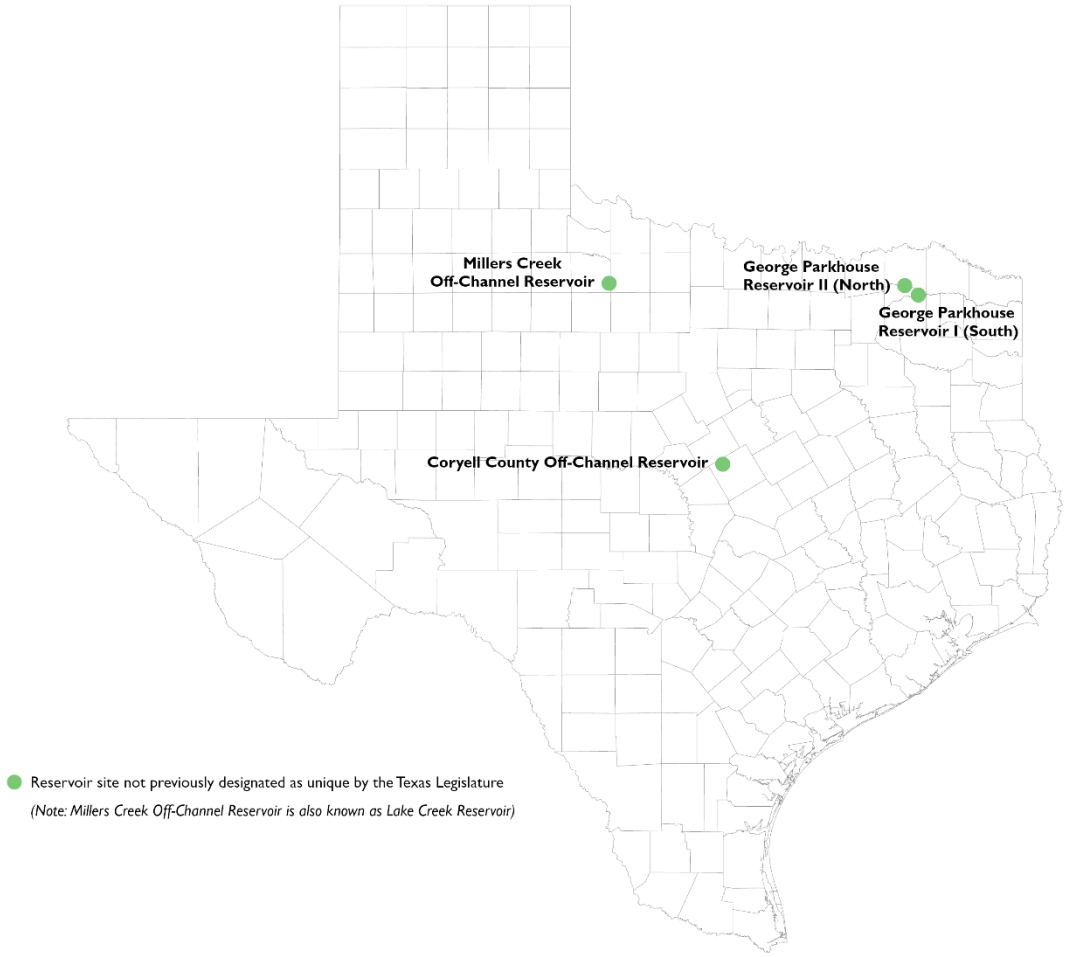


Figure 10. Reservoir sites recommended for designation as unique



Legislative Recommendation 3: Remove Interregional Planning Council requirements

The legislature should consider repealing Texas Water Code § 16.052 to eliminate the Interregional Planning Council, whose functions have become largely duplicative of more recent legislative mandates regarding TWDB coordination efforts. Removing this requirement would reduce administrative burden and align the planning process with newer directives focused on multi-regional water supply development and financial assistance programs.

Summary of the recommendation

Since its creation by the 86th Legislature, two councils have been appointed and disbanded upon adoption of the state water plans. Recommendations from the councils to

the TWDB, including those regarding interregional coordination, have already been implemented in regional water planning administrative rules (31 TAC §§ 357.12 and 357.50) regarding interregional coordination by planning groups during the development of their regional water plans and documentation of those efforts. Council recommendations to the Legislature remain primarily related to funding/appropriations and it is noted that the Interregional Planning Council does not have any statutory responsibilities associated with declaring, identifying, or resolving interregional conflicts.

The newer legislative mandates from the New Water Supply for Texas Fund and water supply conveyance coordination responsibilities make the Council's role in facilitating dialogue on regional strategies largely duplicative of the latest legislative implementation efforts made by the TWDB. The TWDB will continue to convene, roughly quarterly, regional water planning group chair meetings to discuss regional water planning processes and issues. However, the ongoing benefits of the Interregional Planning Council have diminished significantly, especially when weighed against the effort required to maintain this administrative body.

Legislative Recommendation 4: Improve resources and clarity to assist groundwater conservation districts in establishing desired future conditions policies (3 parts)

1) The Legislature should consider providing resources and direction to the TWDB to develop and provide a set of regional predictive groundwater modeling scenarios (such as maintaining average aquifer conditions, high-stress conditions with low recharge and high pumping, and low-stress conditions with high recharge and low pumping) to groundwater management areas for consideration in joint groundwater planning, ahead of each groundwater planning round to support more informed decision-making by groundwater conservation districts that are often lacking the resources to produce these scenarios.
2) The Legislature should consider requiring groundwater conservation districts to consider predictive modeling scenarios provided by the TWDB in joint planning.
3) The Legislature should consider removing the "total estimated recoverable storage" from desired future condition consideration requirements and references to "total recoverable storage capacity" in Texas Water Code Chapter 36. Recoverable storage volumes are conceptual and not a broadly practical measure of groundwater recoverability and have, as a result, introduced unreasonable expectations and confusion.

Summary of the recommendation

Enabling the TWDB to provide a set of additional, standardized modeling analyses as a starting point to inform joint groundwater planning would: establish a consistent, shared baseline of future groundwater scenarios; enable groundwater conservation districts to better focus their limited resources on refining local considerations rather than attempting to build their own scenarios from scratch; and strengthen the linkage between local decision-making and regional groundwater planning by ensuring desired future conditions are informed by a broader understanding of potential hydrologic and demand conditions. Additionally, for most aquifers across the state, metrics like the total estimated volume of groundwater within an aquifer (total aquifer storage) and the total estimated recoverable storage (TERS) suggest that an aquifer is theoretically capable of producing much higher volumes of water than what is actually possible to practically recover on a regional water supply basis. This can distort the planning process and stakeholder expectations as groundwater conservation districts make policy decisions (desired future conditions) that result in groundwater availability (modeled available groundwater).

Legislative Recommendation 5: Require consideration of drought conditions in development of desired future conditions

The legislature should consider requiring all groundwater conservation districts to explicitly evaluate drought conditions for each aquifer in establishing desired future conditions, and document in the desired future condition explanatory report how drought conditions were considered in joint planning.

Summary of the recommendation

Considering drought scenarios for all aquifers in joint groundwater planning should better align groundwater management with the state's water planning process and, importantly, more explicitly acknowledge anticipated fluctuations in pumping between wet and dry periods. The outcome being to ensure that groundwater planning adequately considers management of aquifers under drought conditions while better informing the drought-driven regional and state water supply planning processes.

Legislative Recommendation 6: Establish a single, statewide groundwater well-identification system

The legislature should consider adopting a statewide policy that requires the use of a common well-identification system – for organizing existing data and new well data that is already normally collected – across all groundwater-related databases; and provide resources to TWDB to create and maintain a centralized and publicly available well

inventory database that can be used to link together all Texas' existing groundwater databases through a common well-identification system. This recommendation will facilitate more seamless and efficient data exchanges and improve groundwater management and decision-making, while having no impact on private well-owners.

Summary of the recommendation

The TWDB is required by Texas Water Code § 16.012 to collect and disseminate groundwater data. This section also requires all state entities (including institutions of higher education) to cooperate with the TWDB in developing a coordinated, efficient, and effective statewide water resource data collection and dissemination network. Texas groundwater data resides in multiple databases, including the TWDB Groundwater Database, the Submitted Drillers Report Database—which is a cooperative database between the Texas Department of Licensing and Regulation and TWDB—the TWDB Water Use Survey Database, the Texas Commission on Environmental Quality Public Water Supply Database, and numerous other databases maintained by groundwater conservation districts.

This data is not shared or cross-examined for quality control purposes. Collectively, these databases support water resource decision-making across the state. However, the fragmented nature of these data creates challenges for consolidation, sharing, and analyses because of a lack of a complete and interoperable statewide well inventory that could easily link data across all these sources. This critical gap limits the ability to fully leverage the enormous amount of existing data that has been collected for planning and management and new data collection efforts, which can reduce confidence in future water availability estimates and unnecessarily increase the work required to carry out long-term planning efforts.

Creating a simple data-sharing system—based on common well-identification numbers—would allow groundwater conservation district pumping, water-level, and water-quality data to link seamlessly with other water-related database records. This would make information from multiple agencies compatible and comparable, significantly improving the overall quality of groundwater data in Texas.

Legislative Recommendation 7: Socioeconomic analysis tool to support joint groundwater planning

The legislature should consider providing resources to the TWDB to develop a standardized socioeconomic impact analysis tool for use, at the discretion of the groundwater management areas, in joint groundwater planning to support the assessment of socioeconomic impact considerations required for establishing desired future conditions.

Summary of the recommendation

Developing general guidance and a uniform but flexible socioeconomic impact analysis tool would promote statewide consistency and, ideally, improve desired future condition decision-making, including through improved scenario comparisons. Investing in contracting for development of a single, standardized socioeconomic impact evaluation tool would be more efficient than requiring individual groundwater management areas to continue to develop their own methods or rely on unsuitable alternatives. This approach would strengthen the joint groundwater planning process and ensure more consistent and appropriate consideration of socioeconomic factors across Texas.

Legislative Recommendation 8: Redefine the role of TWDB in interregional conflict identification and resolution

The legislature should consider defining an interregional conflict in the regional water planning process specifically and solely as an overallocation of planned use of water supply. Under the current planning process, recurring conflicts based on 'potential significant adverse impacts' are problematic and require detailed technical information that is typically only available during the permitting phase—not at the planning stage. Making such determinations within the long-term state-level planning process is premature and risks permanently eliminating viable water supply projects. A clear statutory definition focused exclusively on overallocation will ensure consistency, protect critical water supply options, and maintain the integrity and focus of the planning process.

Summary of the recommendation

The TWDB is a non-regulatory agency required to act as a tribunal during the interregional conflict process. The TWDB does not have staff, facilities, or other resources for handling contested matters. As such, interregional conflict identifications and resolutions are a poor fit for the TWDB because it is outside the agency's normal areas of competence and expertise. Limiting the role of the TWDB role to an overallocation-specific analysis is appropriate for the planning-level work conducted by this non-regulatory agency.

Legislative Recommendation 9: Conduct alternative versions of socioeconomic analyses of water shortage impacts

The legislature should consider providing resources to the TWDB to develop an alternative socioeconomic impact analysis model and tool that better reflects the long-term implications of not implementing the state water plan, particularly in high-growth areas. The model should be capable of simulating the cumulative, long-term impacts of persistent water shortages, such as building moratoriums and other economic shifts that

would result from failure to implement water supply projects associated with population growth. It should incorporate dynamic economic factors that the current simplified static analysis cannot model.

Summary of the recommendation

Although the current socioeconomic impact assessment made by the TWDB is comprehensive, it does not account for several dynamic factors, including long-term shortages related to growth or potential no growth outcomes, such as building moratoriums and loss of business in rapidly growing areas. Developing enhanced analytical tools would provide a fuller understanding of risks associated with insufficient water supplies under both population growth and drought conditions. Dynamic socioeconomic modeling would allow planners and policymakers to better understand—and communicate to the public—the cascading economic consequences of shortages and to make better informed decisions about investments in water infrastructure.

Legislative Recommendation 10: Remove requirement of infeasible strategy assessment amendments

The legislature should consider saving regional water planning groups significant time and resources by removing the requirement in Texas Water Code § 16.053(h)(10) that planning groups amend their previously adopted plans to remove any newly identified infeasible strategies or projects. Any projects identified as infeasible since adoption of the previous plan will still be addressed—by being removed or modified (typically by adjusting timing)—in the next regional plan to ensure feasibility.

Summary of the recommendation

While the original requirement prompted productive discussions about project timing, in practice the resulting amendments have largely focused on shifting project online dates rather than removing projects. At the same time, the formal amendment process places a substantial administrative burden on regional water planning groups and the TWDB and consumes limited planning grant resources, which would be more effectively directed toward developing their next regional plans in which feasibility updates are already incorporated as part of the five-year adaptive planning cycle.

Removing the statutory requirement to amend regional water plans to remove identified infeasible strategies will reduce significant, unnecessary workload. The planning process will still preserve the requirement that planning groups review their previously adopted regional water plan and identify infeasible strategies or projects in accordance with the definition of infeasible strategies and projects provided for this purpose in Texas Water Code § 16.053(h)(10).

References

BEG (Bureau of Economic Geology), 2022, Mining Water Use in Texas, www.twdb.texas.gov/waterplanning/data/projections/MiningStudy

Foote, A., Grosz, M., and Stevens, A., 2015, Locate your nearest exit—Mass layoffs and local labor market response, University of California, Davis, 44 p. www.nber.org/system/files/working_papers/w21618/w21618.pdf

Kaiser, R.A., n.d., Handbook of Texas Water Law—Problems and Needs: Texas Water Resources Institute, Texas A&M University, 46 p. texaswater.tamu.edu/resources/2002-037_waterlaw.pdf

Templer, O.W., 2019, Water Law in Handbook of Texas Online: Texas State Historical Association, tshaonline.org/handbook/online/articles/gyw01

TBWE (Texas Board of Water Engineers), 1958, Texas water resources planning at the end of the year 1958—A progress report to the fifty-sixth legislature: Texas Board of Water Engineers, 113 p.

TBWE, 1959, A study of droughts in Texas: Texas Board of Water Engineers Bulletin 5914, 76 p.

TCEQ (Texas Commission on Environmental Quality), 2009, Rights to surface water in Texas: Texas Commission on Environmental Quality Publication Number GI-228, 19 p.

Texas Demographic Center, 2022, Projections of the Total Population of Texas and Counties in Texas, 2020-2060, www.demographics.texas.gov/Projections/2022/TotalMethodology.pdf

TDEM (Texas Division of Emergency Management), 2025, Drought annex: State of Texas emergency management plan.

USBR (United States Bureau of Reclamation), 1953, Water supply and the Texas economy—An appraisal of the Texas water problem: United States Bureau of Reclamation, 91 p.

UT (University of Texas) Institute of Public Affairs, 1955, The fifty-fourth Texas legislature—A review of its work: The University of Texas, 34 p. www.lrl.state.tx.us/scanned/sessionOverviews/review/54th.pdf

Appendices

Appendix A: Background on Texas' water planning history, institutions, and laws

A.1 Texas water planning, 1904–1957

While formal statewide water planning did not begin until the 1950s, the Texas Legislature began assigning responsibility for managing and developing the state's water resources in the early 20th century. A series of devastating droughts and floods in the early 1900s magnified the need for water management. In 1904, a constitutional amendment was adopted authorizing the first public development of water resources (Figure A-1). The legislature authorized the creation of drainage districts in 1905; the Texas Board of Water Engineers in 1913; conservation and reclamation districts (later known as river authorities) in 1917; freshwater supply districts in 1919; and water control and improvement districts in 1925.

The creation of the Texas Board of Water Engineers, a predecessor agency to both the Texas Water Development Board (TWDB) and the Texas Commission on Environmental Quality, played a significant role in the early history of water management in the state. The major duties of the Board of Water Engineers were to approve plans for developing irrigation and water supply districts, issue water right permits for storing and diverting water, and plan for storing and using floodwater. Later, the legislature authorized the agency to define and designate groundwater aquifers; establish underground water conservation districts; conduct groundwater and surface water studies; and approve federal projects, including those constructed by the U.S. Army Corps of Engineers.

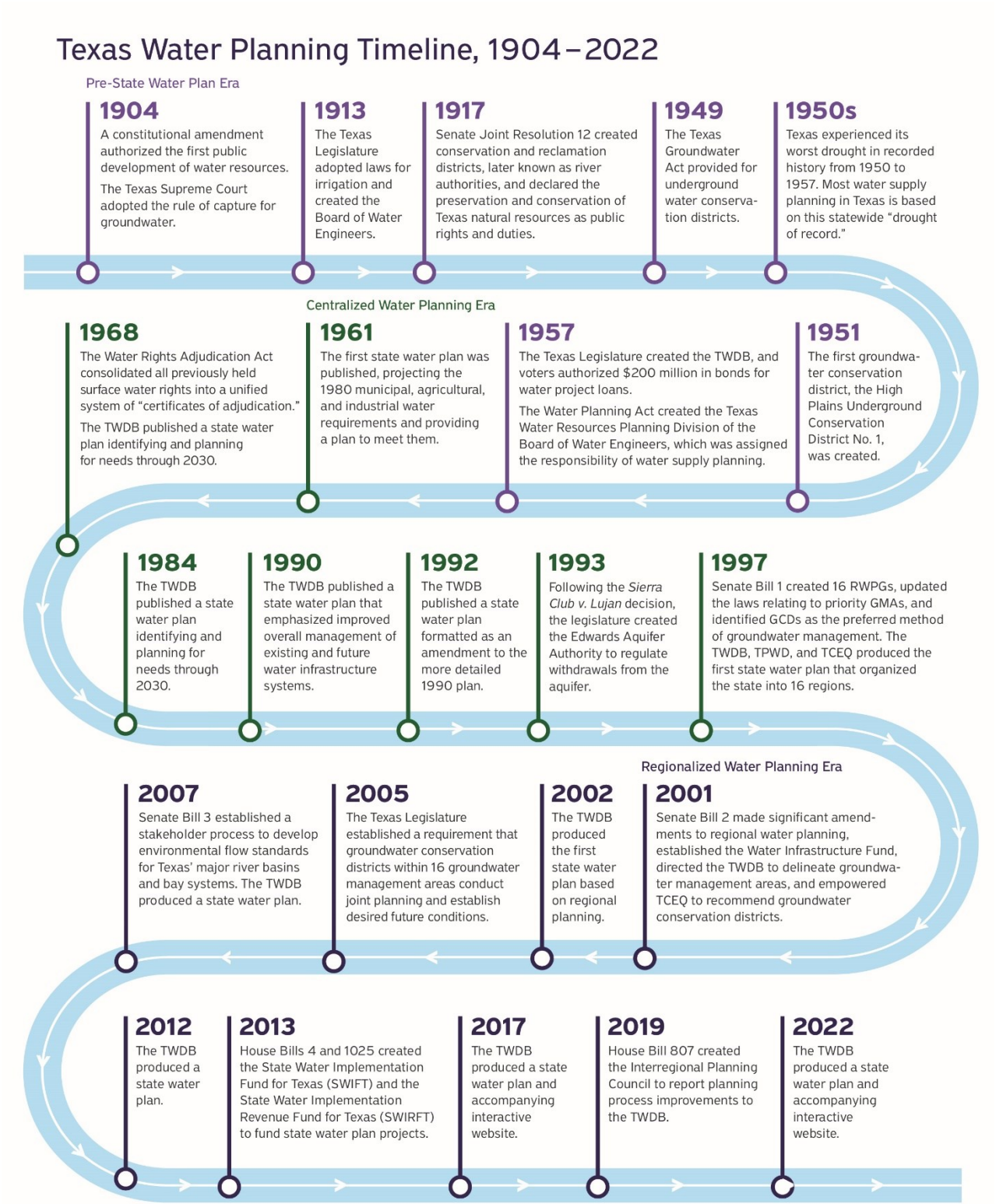
In 1949, Lyndon Johnson, then a U.S. Senator, wrote to the U.S. Secretary of the Interior requesting federal assistance to help guide Texas in achieving "a comprehensive water program that will take into account the needs of the people of my state." The U.S. Bureau of Reclamation responded by publishing "Water Supply and the Texas Economy: An Appraisal of the Texas Water Problem" (USBR, 1953). The report divided the state into four planning regions and evaluated existing and projected municipal and industrial water requirements up to the year 2000. The study recommended that Texas consider forming a permanent water planning agency to guide state water policy going forward.

In the 1950s, Texas experienced its worst drought in recorded history. The drought began in 1950 and by the end of 1956, 244 of Texas' 254 counties were classified as disaster areas. The drought ended in 1957 with widespread, heavy rains that resulted in the flooding of

every major river and tributary in the state. This drought represents the driest seven-year period in the state's recorded history and is still considered the statewide "drought of record" upon which state and regional water supply planning in Texas is based.

The drought of the 1950s was unique in that most Texans felt the impacts of water scarcity at some point. Small and large cities alike faced dire situations. By the fall of 1952, the City of Dallas faced a severe water shortage and prohibited all but necessary household use of water. In 1953, 28 municipalities were forced to use emergency sources of water supply, 77 were rationing water, and 8 resorted to hauling in water from neighboring towns or rural wells. The development of additional water infrastructure during the drought reduced the number of communities with shortages during later years of the drought, but many municipalities continued to be forced to haul in water before it was over (TBWE, 1959). The drought also had significant impacts on agriculture and livestock production and led tens of thousands of Texans to resettle from farms to cities. All told, the drought of the 1950s cost the state hundreds of millions of dollars and was followed by floods that caused an additional $120 million in damages (TBWE, 1958).

Figure A-1. Texas water planning timeline



RWPG = regional water planning group, GMA = groundwater management area, GCD = groundwater conservation district, TPWD = Texas Parks and Wildlife Department, TCEQ = Texas Commission on Environmental Quality

A.2 State water planning, 1957–1997

The Texas Legislature responded to the drought of record by establishing the Texas Water Resources Committee in 1953 to survey the state's water problems (UT Institute of Public Affairs, 1955). As a result of the committee's recommendations, the legislature passed a resolution authorizing $200 million in state bonds to fund water supply projects and created the TWDB to administer funds from the bond sale. In a special legislative session called by Governor Price Daniel, the legislature passed the Water Planning Act of 1957, which created the Texas Water Resources Planning Division of the Board of Water Engineers and assigned it the responsibility of statewide water supply planning. Texas voters subsequently approved a constitutional amendment authorizing the TWDB to administer a $200 million water development fund to help communities develop water supplies.

In June of 1960, Governor Daniel called a meeting in Austin to request that the Board of Water Engineers prepare a planning report with recommended projects to meet the projected municipal and industrial water requirements of the state in 1980. Work quickly began on statewide studies to develop the first state water plan. The first plan, *A Plan for Meeting the 1980 Water Requirements of Texas*, was published in 1961.

The plan described historical and present uses of surface water and groundwater by municipalities, industries, and irrigated agriculture; summarized the development of reservoirs; projected the 1980 municipal and industrial requirements of each area of the state; provided a plan for how to meet those requirements by river basin; and discussed how the plan could be implemented. The 1961 plan recommended 45 new reservoirs. During this era, reservoirs reigned supreme in water resource management, providing water supply, flood control, and electricity, as well as recreational opportunities.

In 1962, the Board of Water Engineers was reorganized, renamed the Texas Water Commission, and given specific responsibilities for water planning by the 57th Texas Legislature. The Texas Legislature again restructured the state water agencies in 1965 and transferred water resource planning functions to the TWDB and renamed the Texas Water Commission to the Texas Water Rights Commission.

Later plans were developed by the state and adopted in 1968, 1984, 1990, 1992, and 1997. Each of these plans recognized the state's steady population growth and the need to develop additional water supplies. Earlier plans placed more reliance on the federal government, while later plans developed at the state level increasingly emphasized the importance of conservation and natural resource protection. For example, the 1968 State Water Plan recommended the federal government continue to fund feasibility studies on importing surplus water from the Mississippi River (a later study determined that this

proposed idea was not economically feasible). Less than 20 years later, the 1984 State Water Plan was the first to address water quality, water conservation, water use efficiency, and environmental water needs.

The first three plans were organized by river basin, but the 1990 State Water Plan projected water demand, supply, and facility needs for eight regions in the state. The 1997 State Water Plan—developed by the TWDB in coordination with the Texas Parks and Wildlife Department and the Texas Commission on Environmental Quality—was the first to organize the state into 16 water planning regions.

A.3 Regional and state water planning, 1997–present

Drought conditions in the mid-1990s spurred action in Texas water planning efforts, just as in the 1950s. In 1996, Texas suffered an intense 10-month drought. Reservoirs and aquifer levels declined sharply and farmers suffered widespread crop failure, with estimated economic losses in the billions of dollars. Some cities had to ration water for several months, and others ran out of water entirely.

The drought of 1996 was short-lived, but its consequences were severe enough to remind Texans of the importance of water planning to ensure dependable water supplies. When the legislature convened in 1997, Lieutenant Governor Bob Bullock declared water the primary issue for the 75th Legislative Session. After lengthy debate and numerous amendments, the Texas Legislature passed Senate Bill 1 to improve the development and management of water resources in the state. Among other provisions relating to water supplies, financial assistance, data collection and dissemination, the bill established the regional water planning process, which directed state water planning to begin at the local (regional) level.

Senate Bill 1 outlined a new planning process in which every five years, local and regional stakeholders would develop consensus-driven regional plans for how to meet their water needs during times of drought. The TWDB would then develop a comprehensive state plan based on the regional water plans. The legislation also specified that the TWDB could only provide financial assistance for water supply projects if they were consistent with the regional water plans and the state water plan. The same provision also applied to the Texas Commission on Environmental Quality's granting of water right permits. The 2027 State Water Plan is the sixth plan completed under the Senate Bill 1 planning process and comprises the 16 regional water plans delivered to the TWDB on January 5, 2026.

A.4 State and federal water supply institutions

Although the TWDB is the state's designated water planning agency, several state and federal agencies in Texas are responsible for managing water resources and participating

in the regional planning process. The Texas Parks and Wildlife Department, Texas Department of Agriculture, and Texas State Soil and Water Conservation Board all have non-voting representatives on each regional water planning group. The Texas Parks and Wildlife Department, Texas Department of Agriculture, and Texas Commission on Environmental Quality are also directly involved in developing population and water demand projections and are consulted in developing and amending rules governing the planning process. The water-related responsibilities of these agencies—along with other state and federal entities that indirectly participate in the regional water planning process—are described in the following sections.

State entities

The TWDB is the state's primary water science, planning, and financing agency and is led by three Board members appointed by the governor. It supports the development of the 16 regional water plans and is responsible for developing a state water plan every five years. It similarly supports the development of regional flood plans and incorporates them into the state flood plan. The TWDB provides financial assistance through various state and federal programs to local governments for projects that support water supply, wastewater treatment, flood mitigation, and agricultural water conservation.

The TWDB collects data annually through the Water Use Survey, Water Loss Audit, and Water Conservation Plan Annual Reports. It provides scientific information on state water resources by collecting data, developing models, and conducting studies of surface water and groundwater availability and quality. The TWDB also participates in research and demonstration projects needed to advance innovative water technologies, all of which support the state water planning process. The agency uses and shares this information through a variety of avenues, including overseeing the joint planning process carried out by groundwater management areas and providing technical support to both the environmental flows process and the regional water planning process.

The TWDB also participates in many committees and serves as a member of the Water Conservation Advisory Council, Drought Preparedness Council, and the Emergency Drinking Water Task Force, to name a few. The TWDB houses the **Texas Geographic Information Office (TxGIO)**, which provides high-quality historic and present-day geospatial data products. The Deputy Executive Administrator of TxGIO acts as the state's Geographic Information Officer.

The State Parks Board, originally created in 1923, was later merged with other state entities and renamed the **Texas Parks and Wildlife Department (TPWD)**. Today the agency, led by nine commissioners appointed by the governor, is primarily responsible for conserving, protecting, and enhancing the state's fish and wildlife resources. It maintains a system of

public lands, including state parks, historic sites, fish hatcheries, and wildlife management areas; regulates and enforces commercial and recreational fishing, hunting, boating, and nongame laws; and monitors, conserves, and enhances aquatic and wildlife habitats.

The Texas Parks and Wildlife Department reviews and makes recommendations to minimize or avoid impacts on fish and wildlife resources resulting from water projects. Additionally, the Department works with stakeholders participating in regional water planning and the environmental flows process as well as with regulatory agencies to protect and enhance water quality and to ensure adequate environmental flows for rivers and estuaries.

In 1992, to make natural resource protection more efficient, the legislature consolidated several programs into one large environmental agency now known as the **Texas Commission on Environmental Quality**. The Texas Commission on Environmental Quality, led by three commissioners appointed by the governor, is the environmental regulatory agency for the state. Focusing on water quality and quantity through various state and federal programs, the Commission issues permits for the treatment and discharge of industrial and domestic wastewater and stormwater; reviews plans and specifications for public water systems; and conducts assessments of surface water and groundwater quality.

The Texas Commission on Environmental Quality also regulates retail water and sewer utilities and administers a portion of the Nonpoint Source Management Program. In addition, it administers the surface water rights permitting program and maintains the water availability modeling programs that are the basis for the state's water rights permitting and water supply planning efforts (see Section A.5). It also administers a dam safety program, delineates and designates priority groundwater management areas, creates some groundwater conservation districts, and enforces the requirements of groundwater management planning. The Commission regulates public drinking water systems, is the primary agency for enforcing the federal Safe Drinking Water Act, provides support to the environmental flows process, and adopts rules for environmental flow standards.

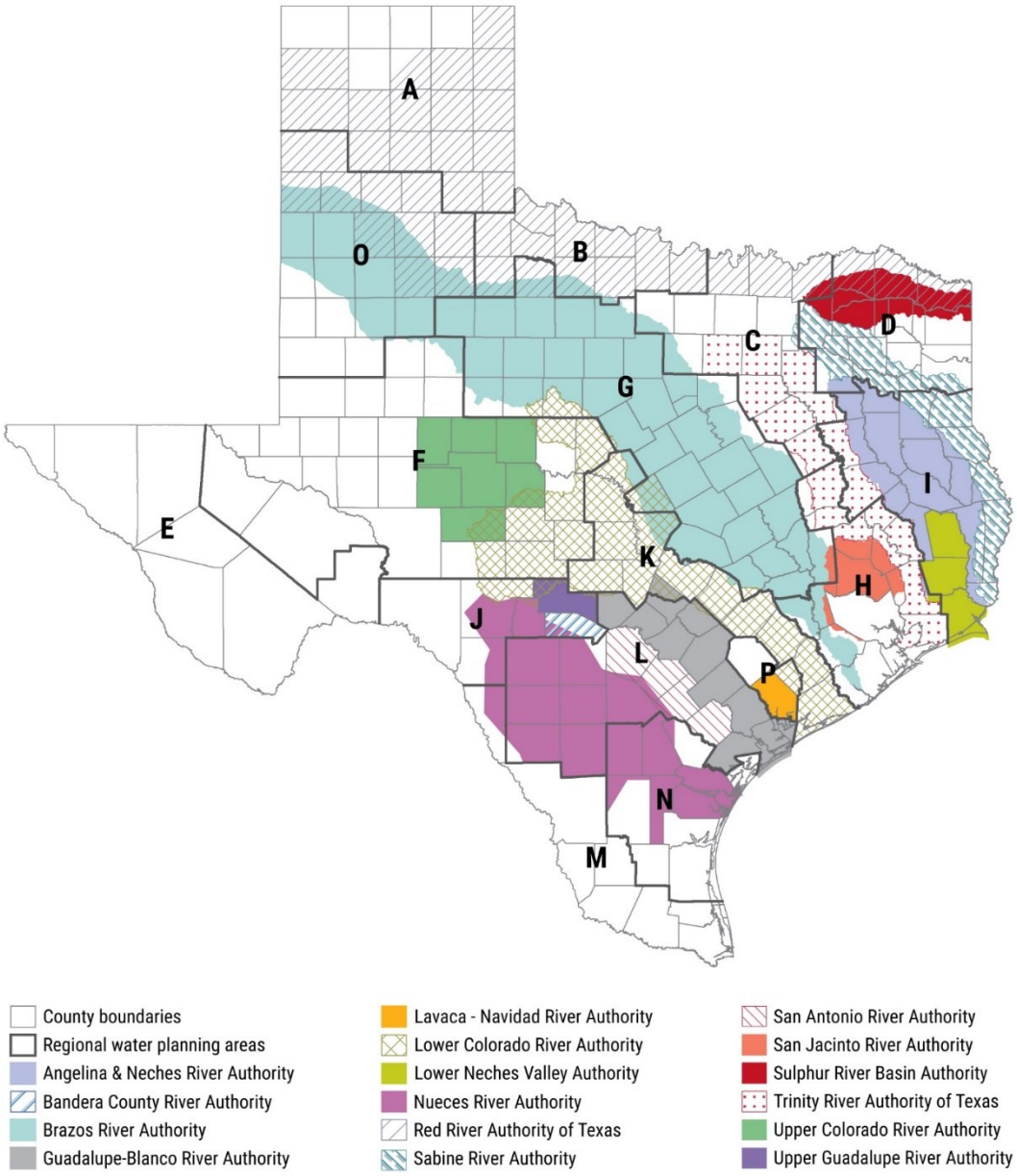
The **Texas Department of Agriculture**, established by the Texas Legislature in 1907, is led by the Texas Commissioner of Agriculture, an elected official of the state. It supports protection of agricultural crops and livestock from harmful pests and diseases; facilitates trade and market development for agricultural commodities; provides financial assistance to farmers and ranchers; and administers consumer protection, economic development, and healthy living programs. The agency also provides rural community infrastructure grants for water, wastewater, street improvements, and disaster relief.

The **Public Utility Commission of Texas**, established in 1975, is led by three commissioners appointed by the governor and regulates the state's electric, telecommunication, and water and sewer utilities. In 2013, the Texas Legislature transferred the economic regulation of water and sewer utilities from the Texas Commission on Environmental Quality to the Public Utility Commission. The agency regulates water and sewer rates and services, Certificates of Convenience and Necessity, and sales, transfers, and mergers.

Created in 1939, the **Texas State Soil and Water Conservation Board,** led by seven board members composed of two governor appointees and five elected officials, administers Texas' soil and water conservation laws and coordinates conservation and nonpoint source pollution abatement programs. It also administers water quality and water supply enhancement programs and maintains flood control structures across the state.

First authorized by the legislature in 1917, **river authorities** are assigned to manage the conservation and reclamation of the state's natural resources, including the development and management of water. They generally operate on utility revenues generated from supplying energy, water, wastewater, and other community services. There are 16 river authorities in Texas (Figure A-2), along with similar special law districts authorized by the legislature.

Figure A-2. Locations of river authorities and regional water planning area boundaries



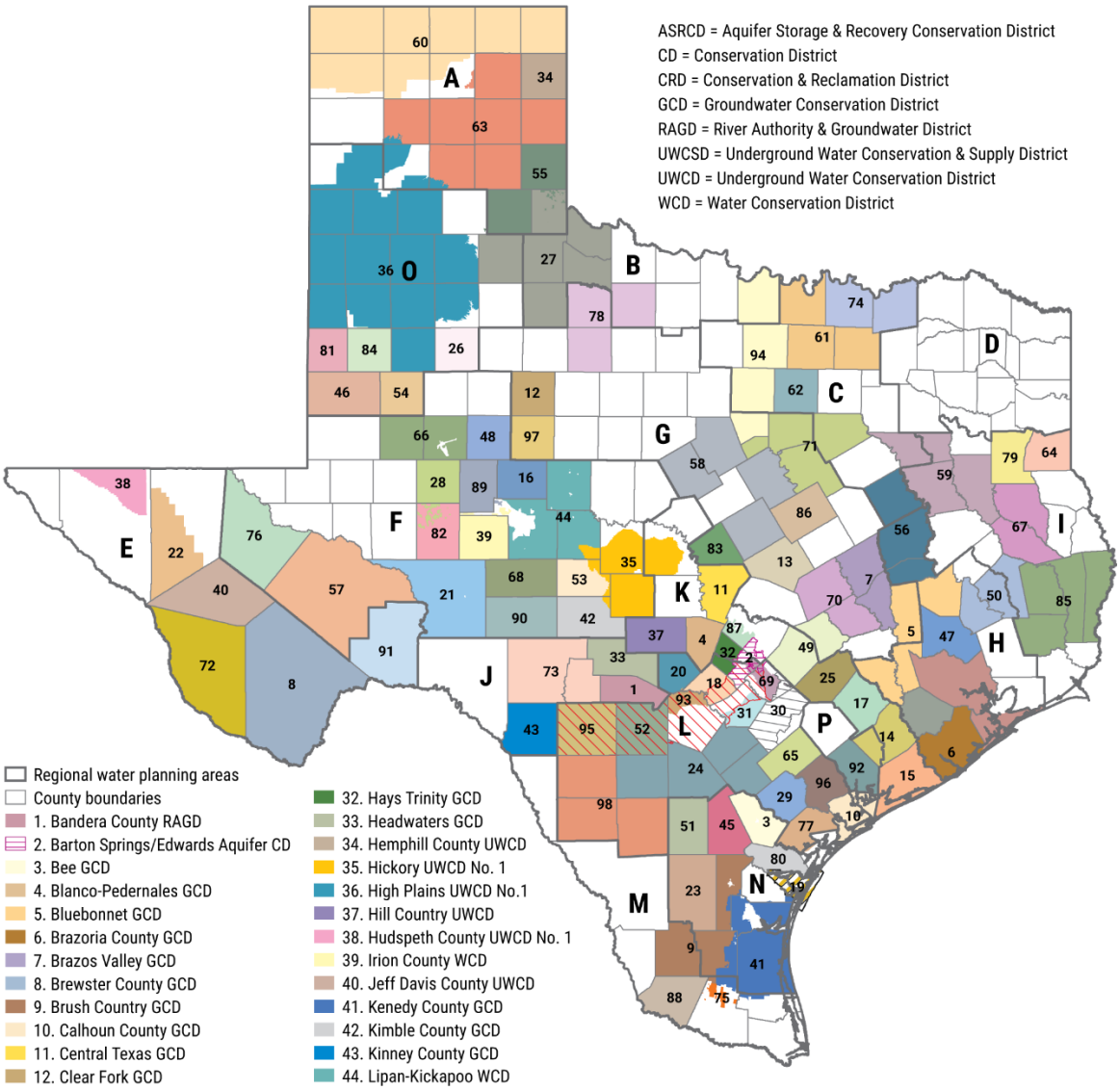
The formation of **groundwater conservation districts** was first authorized by the legislature in 1949 to manage and protect groundwater at the local level. Groundwater conservation districts are governed by a local board of directors, which develops a management plan for the district with technical support from the TWDB, the Texas Commission on Environmental Quality, and other state agencies.

Because most groundwater conservation districts are based on county lines and do not manage an entire aquifer, one aquifer is typically managed by several groundwater districts. Each district must plan with the other districts within their common groundwater

management areas to determine the desired future conditions of the relevant aquifers within the groundwater management areas. As of 2026, there are 98 confirmed groundwater conservation districts (excluding the two subsidence districts and the Edwards Aquifer Authority) located partially or fully within 173 of 254 Texas counties (Figure A-3). A map of these districts may also be found on the TWDB website (www.twdb.texas.gov/groundwater/conservation_districts/).

Other entities at the regional and local levels of government construct, operate, and maintain water supply and wastewater infrastructure. These include municipalities; water supply, irrigation, and municipal utility districts; flood and drainage districts; subsidence districts; and nonprofit water supply and sewer service corporations.

Figure A-3. Locations of groundwater conservation districts and regional water planning area boundaries



Federal agencies

Federal civil works projects played a major role in the early development of the state's water resources (TBWE, 1958). Historically, Texas relied heavily on federal funds to finance water development projects, with local commitments used to repay a portion of the costs. The **Soil Conservation Service**, the **U.S. Bureau of Reclamation**, and the **U.S. Army Corps of Engineers** are federal agencies that constructed many surface water reservoirs in Texas. These reservoirs were built for the primary purpose of flood control but provide a large portion of the state's current water supply. The pace of federal spending on reservoir construction has declined considerably since the 1960s, and current federal policy recognizes a declining federal interest in the long-term management of water supplies.

Several federal agencies are responsible for managing the nation's water resources. The U.S. Army Corps of Engineers investigates, develops, and maintains the nation's water and related environmental resources. Historically, the U.S. Army Corps of Engineers has been responsible for flood protection, dam safety, and the planning and construction of water projects, including reservoirs. Pursuant to the Clean Water Act and the Rivers and Harbors Act, the U.S. Army Corps of Engineers operates a program that regulates construction and other work in the nation's waterways.

Within the **U.S. Department of the Interior**, the **U.S. Geological Survey** conducts natural resources studies and collects water-related data, and the **U.S. Bureau of Reclamation** conducts water resource planning studies and manages water resources primarily in the western United States. The **U.S. Fish and Wildlife Service**, also part of the Department of the Interior, protects fish and wildlife resources through various programs and carries out provisions of the Endangered Species Act.

The **Natural Resources Conservation Service**, part of the U.S. Department of Agriculture and successor to the Soil Conservation Service, implements soil conservation programs and works at the local level through conservation planning and assistance programs. The **U.S. Environmental Protection Agency** regulates and funds federal water quality, solid waste, drinking water, and other programs pursuant to the Clean Water Act, Safe Drinking Water Act, and other federal laws and regulations. The **International Boundary and Water Commission** manages the waters of the Rio Grande between the United States and Mexico.

A.5 Management of water in Texas

Texas water law divides water into several categories for the purpose of regulation. Different rules apply to surface water and groundwater, and they determine who is entitled

to use the water, in what amount, and for what purpose. This system stems from Spanish and English common laws, the laws of other western states, and state and federal case law and legislation. The following sections briefly describe how the state manages surface water, groundwater, and reuse resources, as well as water quality, drinking water, and interstate waters—all important considerations when planning for drought.

Surface water

In Texas, all surface water is held in trust by the state, which grants permission to use the water to different groups and individuals. Texas recognizes two basic doctrines of surface water rights: the riparian doctrine and the prior appropriation doctrine. Under the riparian doctrine, landowners whose property is adjacent to a river or stream have the right to make reasonable use of the water. The riparian doctrine was introduced in Texas more than 200 years ago with the first Spanish settlers. In 1840, the state adopted the common law of England, which included a somewhat different version of the riparian doctrine (Templer, 2019). Landowners who live on many of the water bodies in the state are allowed to divert and use water for domestic and livestock purposes, but these are some of the last riparian rights still in place.

In response to the scarcity of water in the western United States, Texas began to recognize the need for a prior appropriation system (Kaiser, n.d.). The prior appropriation system, first adopted by Texas in 1895, has evolved into the modern system used today.

In 1913, the legislature extended the prior appropriation system to the entire state. It also established the Texas Board of Water Engineers, the agency that had original jurisdiction over all applications for appropriated water. Because different laws governed the use of surface waters at different times in Texas history, claims to water rights often conflicted. In 1967, as a result of these historic conflicts, the state began to resolve claims for water rights. A “certificate of adjudication” was issued for each approved claim, limiting riparian and other rights to a specific quantity of water. The certificate also assigned a priority date to each claim, with some dates going back to the time of the first Spanish settlements (TCEQ, 2009).

The adjudication of surface water rights gave the state the potential for more efficient management of surface waters (Templer, 2019). With only a few exceptions, surface water users today need a permit in the form of an appropriated water right from the Texas Commission on Environmental Quality. The prior appropriation system recognizes the “priority doctrine,” which gives superior rights to those who first used the water, often known as “first in time, first in right.” In most of the state, water rights are prioritized only by the date assigned to them and not by the purpose for which the water will be used. Only water stored in Falcon and Amistad reservoirs in the middle and lower Rio Grande Basin is

prioritized by the purpose of its use, with municipal and industrial rights having priority over irrigation rights during times of drought.

When issuing a new water right, the Texas Commission on Environmental Quality assigns a priority date, specifies the volume of water that can be used each year, and may allow users to divert or impound the water. Water rights do not guarantee that water will be available, but they are considered property interests that may be bought, sold, or leased. The agency also grants term permits and temporary permits, which do not have priority dates and are not considered property rights. The water rights system works hand-in-hand with the regional water planning process; the Texas Commission on Environmental Quality may not issue a new water right unless it addresses a water supply need that is consistent with the regional water plans and the state water plan.

Texas relies on the honor system in most parts of the state to protect water rights during times of drought. But in some areas, the Texas Commission on Environmental Quality has appointed a watermaster to oversee and continuously monitor streamflows, reservoir levels, and water use. There are three watermasters in Texas: the Rio Grande Watermaster, who coordinates releases from the Amistad and Falcon reservoir system; the Brazos Watermaster, who serves the middle and lower portions of the Brazos River Basin; and the South Texas Watermaster, who serves the Nueces, San Antonio, Guadalupe, and Lavaca river and coastal basins. The South Texas Watermaster also serves as the Concho Watermaster, overseeing the Concho River and its tributaries in the Colorado River Basin.

Groundwater

Groundwater in Texas is managed differently than surface water. Historically, Texas has followed the English common law rule that landowners have the right to capture or remove all the water that can be captured from beneath their land. In part, the rule was adopted because the science of quantifying and tracking the movement of groundwater was so poorly developed at the time that it would have been practically impossible to administer any set of legal rules to govern its use. The 1904 case and later court rulings established that landowners, with few exceptions, may pump as much water as they choose without liability. Today, Texas is the only western state that continues to follow the rule of capture.

In 1949, in an attempt to balance landowner interests with limited groundwater resources, the legislature authorized the creation of groundwater conservation districts to manage groundwater locally. Although the science of groundwater is now much better developed (the TWDB has groundwater availability models for all the major aquifers and most of the minor aquifers in the state), groundwater is still governed by the rule of capture, unless under the authority of a groundwater conservation district. Senate Bill 1 in 1997 reaffirmed

state policy that groundwater conservation districts are the state's preferred method of groundwater management.

Groundwater conservation districts can be created by four possible methods:

1) Action of the Texas Legislature
2) Petition by property owners
3) Initiation by the Texas Commission on Environmental Quality
4) Addition of territory to an existing district

Districts may regulate both the location and production of wells, with certain voluntary and mandatory exemptions. They are also required to adopt management plans that include goals to provide for the most efficient use of groundwater. The goals must also address drought, other natural resource issues, and adopted desired future conditions. The management plan must include estimates of modeled available groundwater based on desired future conditions and must address water supply needs and water management strategies in the state water plan.

The TWDB and the Texas Commission on Environmental Quality are the primary state agencies involved in supporting groundwater conservation districts to implement groundwater management plan requirements. Along with determining values for modeled available groundwater based on desired future conditions of the aquifer, the TWDB provides technical and financial support to districts, reviews and administratively approves management plans, performs groundwater availability and water-use studies, and is responsible for the delineation and designation of groundwater management areas.

In 2015, the 84th Texas Legislature passed **House Bill 30** directing the TWDB to conduct studies to identify and designate local or regional brackish groundwater production zones in areas of the state with moderate-to-high availability and productivity of brackish groundwater. To date, the TWDB has designated a total of 31 such brackish groundwater production zones that meet statutory criteria.

In 2019, the 86th Texas Legislature passed **House Bill 722** creating a framework for groundwater conservation districts to establish permitting rules for producing brackish groundwater from the TWDB-designated brackish groundwater production zones for municipal water supply or electric generation projects. The statute further directed the TWDB to conduct technical reviews of operating permit applications submitted to groundwater conservation districts and, when requested by a district, investigate the impacts of brackish groundwater production as described in the annual reports of the permitted production.

The Texas Commission on Environmental Quality provides technical assistance to districts and is responsible for enforcing the adoption, approval, and implementation of the management plans. The agency also evaluates designated priority groundwater management areas, which are areas experiencing or are expected to experience critical groundwater problems within 50 years—including shortages of surface water or groundwater, land subsidence resulting from groundwater withdrawal, and contamination of groundwater supplies.

Reuse

Reclaimed water is domestic or municipal wastewater which has been treated to a quality suitable for beneficial use. There are two types of reclaimed water: Type I reclaimed water is defined as use of reclaimed water where contact between humans and the reclaimed water is likely, and Type II reclaimed water is where contact between humans and the water is unlikely. The use of reclaimed water for beneficial purposes is regulated by the Texas Commission on Environmental Quality (www.tceq.texas.gov/assistance/water/reclaimed_water.html).

Water reuse falls into two main categories: indirect reuse and direct reuse. Indirect reuse involves the discharge of reclaimed water back to an environmental buffer, such as a lake, river, or aquifer, and retrieving it to be utilized again. Water reuse projects that involve discharge to a watercourse must comply with federal and state requirements pursuant to the Clean Water Act. They also require a bed and banks permit from the Texas Commission on Environmental Quality, which authorizes the permit holder to convey and subsequently divert water. Direct reuse involves piping reclaimed water directly from a wastewater treatment facility to a distribution system for beneficial use.

Both categories can be used for potable or non-potable purposes. Potable reuse projects require advanced treatment and must meet all applicable drinking water standards adopted under the Safe Drinking Water Act. To ensure safe drinking water, the Texas Commission on Environmental Quality reviews and approves potable reuse projects on a case-by-case basis prior to implementation (www.tceq.texas.gov/downloads/drinking-water/rg-634.pdf/@@download/file/rg-634.pdf). For non-potable uses, Texas Commission on Environmental Quality requirements depend on the type of reclaimed water and its intended use. In general, entities must obtain authorization from the Texas Commission on Environmental Quality to use reclaimed water for non-potable uses. The Texas Commission on Environmental Quality enforces water quality and monitoring requirements for all active reuse projects.

Seawater

The diversion, treatment, and use of marine seawater—as well as the discharge of the treated water and associated waste—is permitted by the Texas Commission on Environmental Quality. State-sponsored studies for seawater desalination plants were initiated in the 2000s, and in 2015 the 84th Texas Legislature passed **House Bill 2031**, directing the development of seawater desalination permitting rules in Chapter 18 of the Texas Water Code. The overall goal of the bill was to streamline and expedite the regulatory and permitting processes associated with seawater desalination.

In addition, the Texas Parks and Wildlife Department and General Land Office have identified zones for the diversion of marine seawater and discharge of the desalination waste that apply when using the Texas Commission on Environmental Quality expedited permitting process for seawater desalination. No zones are located within the state's bays and estuaries, and the map of zones is available at the General Land Office Coastal Resource Management Viewer (www.glo.texas.gov/maps/coastal-resource-management-viewer).

Surface water quality

The Texas Commission on Environmental Quality is charged with managing the quality of the state's surface water. Guided by the federal Clean Water Act and state law and regulations, the agency classifies water bodies and sets water quality standards. Water quality standards consist of two parts: the purposes for which surface water will be used (aquatic life, contact recreation, water supply, or fish consumption) and criteria to determine if the use is being supported. Water quality data is gathered regularly to monitor the condition of the state's surface waters and to determine if standards are being met. Through the Texas Clean Rivers Program, the Texas Commission on Environmental Quality works in partnership with state, regional, and federal entities to coordinate water quality monitoring, assessment, and stakeholder participation to improve the surface water quality within each river basin.

Every two years, Texas submits the Texas Integrated Report for Surface Water Quality (www.tceq.texas.gov/waterquality/assessment) to the U.S. Environmental Protection Agency. The report lists the status of all the waters in the state and identifies those not meeting water quality standards. When water bodies do not meet standards, the Texas Commission on Environmental Quality may develop a restoration plan, evaluate the appropriateness of the standard, or collect more data and information. For water bodies with significant impairments, the agency must develop a scientific allocation called a "total maximum daily load" to determine the maximum amount of a pollutant that a water

body can receive from all sources, including point and nonpoint sources, and still maintain water quality standards set for its use.

Drinking water

The Texas Commission on Environmental Quality is also responsible for protecting the quality and safety of drinking water through primary and secondary standards. In accordance with the federal Safe Drinking Water Act and state law and regulations, primary drinking water standards protect public health by limiting the levels of certain contaminants, and secondary drinking water quality standards address taste, color, and odor. Public drinking water systems must comply with certain construction and operational standards, and they must continually monitor water quality and file regular reports with the Texas Commission on Environmental Quality.

Interstate waters

Texas is a member of five interstate river compacts with neighboring states to manage the Rio Grande, Pecos, Canadian, Sabine, and Red rivers. The compacts, as ratified by the legislature of each participating state and the U.S. Congress, represent agreements that establish how water should be allocated. Each compact is administered by a commission of state representatives and, in some cases, a representative of the federal government appointed by the president. Compact commissions protect states' rights and work to prevent and resolve any disputes over water. The compact commissions are authorized to plan river operations, monitor activities affecting water quantity and quality, and engage in water accounting and rulemaking. To administer the five compacts in Texas, the Texas Commission on Environmental Quality provides administrative and technical support to each commission and maintains databases of river flows, diversions, and other information.

A.6 Key water planning statute and administrative rules

Texas Water Code §§ 16.012, 16.051, 16.052, 16.053, 16.054, and 16.055.

31 Texas Administrative Code Chapters 355, 356, 357, and 358.

Appendix B: Summary tables

Table B-1. Projected water demand by water use category (acre-feet)

Category	2030	2040	2050	2060	2070	2080	Percent change from 2030
Irrigation	8,375,529	8,001,557	7,313,180	6,642,983	6,384,027	6,187,571	-26
Livestock	303,833	312,367	314,856	316,567	317,389	317,754	5
Manufacturing	1,637,124	1,737,510	1,832,305	1,917,605	2,002,276	2,090,553	28
Mining	410,204	415,411	410,611	398,520	372,722	295,557	-28
Municipal	5,979,446	6,633,513	7,237,480	7,782,963	8,305,101	8,825,472	48
Steam-electric power	657,327	668,219	668,219	667,723	667,723	667,723	2
Total	**17,363,463**	**17,768,577**	**17,776,651**	**17,726,361**	**18,049,238**	**18,384,630**	**6**

Table B-2. Texas' annual water availability (acre-feet)

Source	2030	2040	2050	2060	2070	2080	Percent change from 2030
Surface water	11,047,409	10,984,797	10,922,320	10,818,168	10,711,728	10,603,865	-4
Groundwater	12,504,217	11,799,240	11,366,742	11,054,762	10,783,452	10,491,201	-16
Reuse	999,544	1,057,639	1,081,129	1,105,757	1,115,970	1,129,686	13
Aquifer storage & recovery	200,863	200,863	200,863	200,863	200,863	200,863	0
Texas	**24,752,033**	**24,042,539**	**23,571,054**	**23,179,550**	**22,812,013**	**22,425,615**	**-9**

Table B-3. Texas' annual existing water supply (acre-feet)

Source	2030	2040	2050	2060	2070	2080	Percent change from 2030
Surface water	7,202,299	7,178,185	7,141,704	7,100,599	7,067,475	7,034,277	-2
Groundwater	7,524,781	6,993,988	6,678,387	6,387,397	6,213,830	6,096,221	-19
Reuse	760,997	767,812	781,911	794,089	791,789	796,361	5
Aquifer storage & recovery	51,263	51,263	51,263	51,263	51,263	51,263	0
Texas[a]	**15,539,340**	**14,991,248**	**14,653,265**	**14,333,348**	**14,124,357**	**13,978,122**	**-10**

[a] Does not reflect some portions of existing supplies that are associated with purely saline water sources such as untreated seawater.

Table B-4. Projected annual water needs by water use category (acre-feet)

Category	2030	2040	2050	2060	2070	2080	Percent change from 2030
Irrigation	2,592,164	2,714,671	2,361,117	1,981,182	1,901,134	1,826,275	-30
Livestock	13,818	16,284	16,549	16,943	17,714	18,091	31
Manufacturing	178,797	245,523	314,524	380,356	446,796	516,497	189
Mining	89,250	93,025	96,472	98,379	99,297	71,890	-19
Municipal	713,928	1,277,021	1,768,727	2,272,459	2,784,391	3,300,634	362
Steam-electric power	57,490	64,376	68,088	71,658	75,402	78,922	37
Texas	**3,645,447**	**4,410,900**	**4,625,477**	**4,820,977**	**5,324,734**	**5,812,309**	***59***

Table B-5. Annual volume of recommended water management strategies by online decade and strategy type (acre-feet)

Water management strategy type	2030	2040	2050	2060	2070	2080
Agricultural conservation	468,170	682,236	753,637	802,287	861,442	916,494
Aquifer recharge	0	9,783	9,887	9,762	9,799	9,799
Aquifer storage & recovery	53,715	206,335	213,404	217,176	216,942	238,233
Direct potable reuse	35,752	84,801	105,664	117,062	138,252	139,852
Drought management	75,014	86,433	96,204	105,629	115,321	132,924
Groundwater desalination	124,804	195,045	227,416	254,090	278,873	276,887
Groundwater wells & other	346,678	459,893	559,996	624,262	658,256	679,765
Indirect reuse	205,455	475,990	567,702	649,233	582,664	606,456
Industrial conservation	11,774	23,559	38,529	50,227	62,358	73,583
Municipal conservation water loss mitigation	137,688	261,872	333,235	381,289	421,027	472,614
Municipal conservation water use reduction	176,626	318,956	441,975	552,357	661,940	779,871
New major reservoir	101,535	287,582	369,256	408,077	612,550	676,053
Other direct reuse	83,262	138,143	185,245	211,140	240,537	249,853
Other strategies	95,177	112,215	116,107	119,143	122,111	125,158
Other surface water	659,486	1,046,226	1,492,053	1,587,750	1,773,482	1,880,944
Seawater desalination	151,218	275,165	275,699	276,278	276,893	277,542
Water recycling reuse	10,441	10,529	10,475	10,463	11,390	14,251
Texas	**2,736,795**	**4,674,763**	**5,796,484**	**6,376,225**	**7,043,837**	**7,550,279**

Table B-6. Projected statewide annual socioeconomic impacts from not meeting water needs

Impact measure	2030	2040	2050	2060	2070	2080
Estimated income loss (billions of dollars)[a]	$91	$111	$131	$154	$177	$177
At risk job loss	402,146	524,720	646,610	782,805	918,771	979,644
At risk population out-migration	57,587	75,140	92,595	112,098	131,568	140,285

[a] Year 2023 dollars, rounded.

Table B-7. Statewide annual water supply needs that are unmet by the plan (acre-feet)

Category	2030	2040	2050	2060	2070	2080
Irrigation	2,246,993	2,208,123	1,817,168	1,435,313	1,314,403	1,200,128
Livestock	3,086	3,313	3,887	5,826	7,620	9,329
Manufacturing	41,793	43,626	47,840	53,622	58,872	64,153
Mining	77,050	81,481	82,925	82,776	79,789	47,296
Municipal	35,004	41,826	75,359	153,733	141,331	197,103
Steam-electric power	32,491	35,875	29,682	31,987	33,136	35,249
Total	**2,436,417**	**2,414,244**	**2,056,861**	**1,763,257**	**1,635,151**	**1,553,258**

Table B-8. Projected annual water demand, existing supplies, and needs by basin and water use category (acre-feet)

Basin	Category	Demand 2030	Demand 2040	Demand 2050	Demand 2060	Demand 2070	Demand 2080	Existing supplies 2030	Existing supplies 2040	Existing supplies 2050	Existing supplies 2060	Existing supplies 2070	Existing supplies 2080	Needs 2030	Needs 2040	Needs 2050	Needs 2060	Needs 2070	Needs 2080
Brazos	Irrigation	1,537,142	1,365,068	1,058,047	751,112	703,006	674,462	1,129,311	931,933	809,332	705,218	658,544	632,697	435,111	460,091	275,463	72,326	70,670	68,720
Brazos	Livestock	71,038	73,783	74,048	73,646	73,283	72,917	83,151	83,138	83,126	83,115	83,105	83,098	1,147	1,160	1,172	1,183	1,193	1,200
Brazos	Manufacturing	194,247	201,440	208,897	216,633	224,650	232,966	212,627	212,035	210,513	209,662	208,514	205,269	2,438	8,576	17,326	25,688	34,671	45,622
Brazos	Mining	30,322	31,544	29,923	31,317	31,630	32,819	36,548	36,752	36,927	37,112	37,152	37,125	14,565	15,429	16,256	17,073	17,125	18,222
Brazos	Municipal	701,536	826,532	944,853	1,056,632	1,169,223	1,284,852	720,545	738,065	745,842	751,089	757,616	768,688	118,943	203,474	300,790	394,639	498,792	602,239
Brazos	Steam-electric power	215,203	211,505	211,505	211,505	211,505	211,505	302,125	297,990	296,625	293,074	291,775	290,458	27,751	28,488	29,243	29,945	30,635	31,343
Brazos-Colorado	Irrigation	285,603	278,467	271,526	264,772	258,200	251,807	124,926	124,743	124,547	124,428	124,312	124,317	160,677	153,724	146,979	140,344	133,888	127,490
Brazos-Colorado	Livestock	1,965	1,965	1,965	1,965	1,965	1,965	2,113	2,101	2,087	2,079	2,071	2,072	21	33	47	55	63	62
Brazos-Colorado	Manufacturing	36,747	38,106	39,517	40,979	42,495	44,067	13,736	13,665	13,590	13,543	13,498	13,501	23,039	24,466	25,948	27,454	29,012	30,578
Brazos-Colorado	Mining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brazos-Colorado	Municipal	14,444	18,015	21,710	24,591	27,690	30,417	16,415	16,976	17,047	16,958	16,881	16,854	177	3,259	6,972	10,047	13,343	16,244
Brazos-Colorado	Steam-electric power	5	5	5	5	5	5	5	5	5	5	5	5	0	0	0	0	0	0
Canadian	Irrigation	1,660,591	1,660,277	1,523,389	1,408,179	1,299,858	1,217,542	1,265,181	1,143,225	1,036,527	948,406	867,303	804,853	396,408	519,468	488,223	459,779	432,555	412,689
Canadian	Livestock	46,665	49,406	49,907	50,421	50,946	51,485	39,326	39,892	40,202	40,518	40,840	41,165	9,285	11,430	11,597	11,768	11,943	12,122
Canadian	Manufacturing	32,866	34,081	35,340	36,647	38,002	39,408	32,127	32,549	33,039	33,577	34,191	33,045	911	1,705	2,473	3,242	3,983	6,535
Canadian	Mining	4,585	4,615	4,646	4,679	4,714	4,750	4,585	4,615	4,646	4,679	4,714	4,750	0	0	0	0	0	0
Canadian	Municipal	40,143	39,834	39,122	38,082	37,082	36,119	39,644	35,785	32,913	30,127	27,847	25,936	1,822	4,720	6,848	8,504	9,587	10,535
Canadian	Steam-electric power	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	15,000	0	0	0	0	0	0
Colorado	Irrigation	958,034	893,571	808,829	724,213	701,711	683,807	799,722	718,180	680,168	654,316	631,702	615,806	162,292	179,315	132,517	73,755	73,865	71,857
Colorado	Livestock	18,770	18,900	18,918	18,905	18,895	18,875	20,525	20,512	20,504	20,499	20,495	20,491	44	57	65	70	74	78
Colorado	Manufacturing	71,543	75,483	79,478	83,525	85,130	86,798	71,850	75,270	78,697	82,211	83,320	84,481	1,601	2,075	2,594	3,079	3,525	3,977
Colorado	Mining	139,757	138,320	128,876	109,555	78,312	54,906	129,275	127,906	119,055	102,521	80,434	60,900	12,847	12,409	11,561	8,587	4,888	2,413
Colorado	Municipal	488,029	567,012	642,036	715,763	791,998	875,407	619,236	621,471	616,136	604,383	595,990	586,581	21,323	46,398	78,789	137,432	218,436	309,633
Colorado	Steam-electric power	59,344	59,344	59,344	58,848	58,848	58,848	60,928	60,735	60,485	59,707	59,525	59,356	6,864	7,057	7,307	7,589	7,771	7,940
Colorado-Lavaca	Irrigation	121,761	119,258	116,823	114,454	112,149	109,905	62,591	62,591	62,591	62,591	62,591	62,591	67,341	65,117	62,954	60,850	58,802	56,809
Colorado-Lavaca	Livestock	1,120	1,120	1,120	1,120	1,120	1,120	1,361	1,361	1,361	1,361	1,361	1,361	0	0	0	0	0	0
Colorado-Lavaca	Manufacturing	45,263	47,249	48,671	50,146	51,675	53,263	43,081	43,081	43,081	43,082	43,082	43,083	3,679	4,313	5,593	7,066	8,594	10,180
Colorado-Lavaca	Mining	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
Colorado-Lavaca	Municipal	3,480	3,440	3,376	3,299	3,210	3,107	4,074	4,071	4,066	4,065	4,060	4,053	0	0	0	0	0	0
Colorado-Lavaca	Steam-electric power	67,490	67,490	67,490	67,490	67,490	67,490	67,490	67,490	67,490	67,490	67,490	67,490	0	0	0	0	0	0
Cypress	Irrigation	730	730	730	730	730	730	1,494	1,494	1,494	1,494	1,494	1,494	291	291	291	291	291	291
Cypress	Livestock	5,791	5,809	5,827	5,846	5,868	5,868	14,375	14,376	14,376	14,375	14,375	14,375	0	0	0	0	0	0
Cypress	Manufacturing	32,270	33,471	34,717	36,007	37,346	38,733	123,453	118,331	119,646	128,279	122,064	122,114	69	72	76	79	82	85
Cypress	Mining	801	801	801	801	801	801	1,279	1,313	1,328	1,366	1,397	1,423	433	425	416	409	399	399

Basin	Category	Demand 2030	Demand 2040	Demand 2050	Demand 2060	Demand 2070	Demand 2080	Existing supplies 2030	Existing supplies 2040	Existing supplies 2050	Existing supplies 2060	Existing supplies 2070	Existing supplies 2080	Needs 2030	Needs 2040	Needs 2050	Needs 2060	Needs 2070	Needs 2080
Cypress	Municipal	22,236	22,290	22,203	22,099	21,996	21,879	53,374	52,985	52,575	52,110	51,529	51,152	1,893	1,981	2,008	2,059	2,096	2,118
Cypress	Steam-electric power	33,848	33,848	33,848	33,848	33,848	33,848	34,868	33,990	33,195	33,078	32,175	30,915	0	1,198	2,458	3,143	4,433	5,693
Guadalupe	Irrigation	11,820	11,820	11,820	11,820	11,820	11,820	13,870	13,870	13,859	13,843	13,843	13,843	220	220	220	220	220	220
Guadalupe	Livestock	12,314	12,314	12,314	12,314	12,314	12,314	12,442	12,442	12,442	12,442	12,442	12,442	12	12	12	12	12	12
Guadalupe	Manufacturing	45,276	46,951	48,690	50,492	52,361	54,298	9,676	9,675	9,676	9,655	9,611	9,567	39,012	40,474	41,990	43,562	45,192	46,882
Guadalupe	Mining	21,477	23,650	25,842	28,020	30,124	23,623	15,152	15,152	15,151	15,151	15,151	15,149	7,184	9,350	11,537	13,707	15,801	13,751
Guadalupe	Municipal	147,810	191,968	236,885	291,410	349,741	416,048	181,858	182,935	183,194	183,404	183,403	183,358	12,203	37,650	71,292	122,057	178,296	243,262
Guadalupe	Steam-electric power	19,533	19,533	19,533	19,533	19,533	19,533	38,844	38,844	38,844	38,844	38,610	38,350	666	666	666	666	666	666
Lavaca	Irrigation	227,755	225,403	223,113	220,885	218,718	216,609	186,029	186,029	186,029	186,029	186,029	186,029	41,963	39,611	37,321	35,093	32,926	30,817
Lavaca	Livestock	5,463	5,463	5,463	5,463	5,463	5,463	5,594	5,594	5,594	5,594	5,594	5,594	0	0	0	0	0	0
Lavaca	Manufacturing	1,755	1,825	1,888	1,955	2,023	2,093	2,172	2,173	2,173	2,172	2,173	2,172	0	0	0	0	0	0
Lavaca	Mining	3,494	3,496	3,499	3,501	3,504	43	3,148	3,147	3,148	3,147	3,147	3,147	377	380	382	385	388	0
Lavaca	Municipal	7,915	8,130	8,350	8,598	8,849	9,108	10,199	10,206	10,213	10,222	10,231	10,241	0	0	0	0	0	0
Lavaca	Steam-electric power	1,572	1,572	1,572	1,572	1,572	1,572	1,572	1,572	1,572	1,572	1,572	1,572	0	0	0	0	0	0
Lavaca-Guadalupe	Irrigation	26,740	26,740	26,740	26,740	26,740	26,740	17,771	17,771	17,771	17,771	17,771	17,771	9,173	9,173	9,173	9,173	9,173	9,173
Lavaca-Guadalupe	Livestock	993	993	993	993	993	993	993	993	993	993	993	993	0	0	0	0	0	0
Lavaca-Guadalupe	Manufacturing	23,647	24,751	25,428	26,130	26,859	27,613	24,787	24,787	24,787	24,787	24,787	24,786	0	27	689	1,376	2,088	2,827
Lavaca-Guadalupe	Mining	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lavaca-Guadalupe	Municipal	9,146	9,125	9,017	8,847	8,665	8,464	9,761	9,708	9,654	9,598	9,537	9,472	2,697	2,764	2,782	2,757	2,730	2,697
Lavaca-Guadalupe	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Neches	Irrigation	19,787	19,787	19,787	19,787	19,787	19,787	21,479	21,464	21,433	21,409	21,385	21,381	7,708	7,708	7,708	7,708	7,708	7,708
Neches	Livestock	18,522	18,905	19,354	19,871	20,186	20,186	31,415	31,485	31,004	30,667	30,346	30,184	84	86	87	100	482	652
Neches	Manufacturing	152,715	171,180	189,746	208,422	227,202	246,096	158,610	160,581	160,959	161,501	161,841	162,493	5,142	21,297	39,308	57,386	75,803	94,022
Neches	Mining	4,323	4,391	4,459	4,542	4,627	4,717	4,915	4,903	4,913	4,940	4,945	4,890	702	761	818	873	952	1,097
Neches	Municipal	128,622	134,602	140,787	143,714	146,823	150,148	148,697	154,110	159,618	162,082	165,184	168,249	2,482	2,687	3,018	3,467	3,967	4,673
Neches	Steam-electric power	14,160	14,160	14,160	14,160	14,160	14,160	14,804	14,831	14,911	15,160	15,428	15,702	2,949	2,949	2,949	2,949	2,949	2,949
Neches-Trinity	Irrigation	200,210	200,210	200,210	200,210	200,210	200,210	333,621	333,621	333,621	333,621	333,621	333,621	0	0	0	0	0	0
Neches-Trinity	Livestock	1,327	1,327	1,327	1,327	1,327	1,327	1,788	1,788	1,788	1,788	1,788	1,788	128	128	128	128	128	128
Neches-Trinity	Manufacturing	98,638	117,998	137,360	156,725	176,094	195,467	96,903	99,203	99,374	99,656	99,942	100,243	2,185	19,161	38,266	57,259	76,249	95,224
Neches-Trinity	Mining	294	312	332	354	379	406	431	431	431	431	431	431	0	0	0	0	0	0
Neches-Trinity	Municipal	51,251	51,781	51,899	51,439	51,019	50,626	53,685	54,029	54,171	53,686	53,324	53,069	4,355	4,726	5,192	5,236	5,224	5,177
Neches-Trinity	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nueces	Irrigation	259,197	259,197	259,197	259,197	259,197	259,197	207,663	207,586	207,479	207,391	207,303	207,251	59,608	59,685	59,768	59,837	59,902	59,954
Nueces	Livestock	9,805	9,805	9,805	9,805	9,805	9,805	9,760	9,760	9,760	9,760	9,760	9,760	73	73	73	73	73	73
Nueces	Manufacturing	39,300	39,446	39,595	39,749	39,911	40,105	47,470	47,302	47,287	47,413	47,542	47,606	1,260	1,337	1,403	1,465	1,529	1,592

Basin	Category	Demand 2030	Demand 2040	Demand 2050	Demand 2060	Demand 2070	Demand 2080	Existing supplies 2030	Existing supplies 2040	Existing supplies 2050	Existing supplies 2060	Existing supplies 2070	Existing supplies 2080	Needs 2030	Needs 2040	Needs 2050	Needs 2060	Needs 2070	Needs 2080
Nueces	Mining	47,061	47,979	48,838	49,638	50,369	14,631	22,123	22,154	22,186	22,211	22,212	19,300	25,316	26,208	27,042	27,818	28,552	6,971
Nueces	Municipal	39,670	40,405	40,917	41,007	41,184	41,508	58,467	58,333	58,147	57,891	57,650	57,103	3,606	3,646	3,917	4,075	4,285	4,914
Nueces	Steam-electric power	8,016	8,016	8,016	8,016	8,016	8,016	8,551	8,551	8,551	8,551	8,551	8,551	0	0	0	0	0	0
Nueces-Rio Grande	Irrigation	1,230,026	1,189,377	1,148,728	1,108,082	1,067,432	1,026,793	399,405	399,118	398,832	398,169	397,253	396,173	830,621	790,268	749,915	709,941	670,217	630,667
Nueces-Rio Grande	Livestock	4,728	4,728	4,728	4,728	4,728	4,728	5,084	5,100	5,005	5,005	5,005	5,005	0	0	0	0	0	0
Nueces-Rio Grande	Manufacturing	52,713	52,918	53,132	53,352	53,684	55,671	22,644	19,696	17,486	15,610	13,631	13,466	31,387	34,378	36,633	38,555	40,685	42,649
Nueces-Rio Grande	Mining	376	404	433	463	491	516	1,702	1,697	1,697	1,695	1,692	1,683	0	0	0	0	0	0
Nueces-Rio Grande	Municipal	310,225	324,532	334,443	337,476	340,619	343,887	325,400	327,764	326,796	327,230	327,934	323,631	23,747	32,433	42,096	44,541	47,392	55,012
Nueces-Rio Grande	Steam-electric power	12,526	12,526	12,526	12,526	12,526	12,526	12,526	12,526	12,526	12,526	12,526	12,526	0	0	0	0	0	0
Red	Irrigation	794,973	715,652	613,402	507,126	483,953	472,808	690,396	599,613	528,567	452,050	424,422	409,771	114,234	128,842	94,124	60,481	64,678	68,801
Red	Livestock	41,831	43,680	44,143	44,269	44,456	44,668	46,671	46,775	46,841	46,923	47,006	47,090	47	47	47	47	47	47
Red	Manufacturing	26,908	31,808	32,673	33,570	34,502	35,467	30,344	30,299	29,786	29,186	29,009	28,906	2,530	7,283	8,463	9,827	10,764	11,620
Red	Mining	7,984	8,333	8,877	9,741	10,667	11,579	8,112	8,438	8,764	8,813	8,857	8,897	0	0	113	928	1,810	2,682
Red	Municipal	123,087	131,220	138,996	146,295	155,112	162,065	130,389	127,368	126,499	123,982	122,681	121,406	13,037	23,395	31,582	41,258	51,263	59,573
Red	Steam-electric power	10,857	10,857	10,857	10,857	10,857	10,857	12,095	11,590	11,088	10,585	10,083	9,581	0	3	66	569	1,071	1,573
Rio Grande	Irrigation	776,616	771,456	766,295	761,132	755,972	750,810	578,224	579,380	580,080	580,427	580,681	580,930	211,481	205,166	199,304	193,795	188,383	182,975
Rio Grande	Livestock	7,921	7,921	7,921	7,921	7,921	7,921	7,865	7,849	7,849	7,849	7,849	7,849	257	257	257	257	257	257
Rio Grande	Manufacturing	9,105	9,441	9,790	10,152	10,526	10,914	10,805	10,838	10,872	10,908	10,945	10,983	0	0	0	1	5	9
Rio Grande	Mining	115,062	116,147	116,546	116,063	114,418	105,760	94,739	95,690	96,375	96,533	95,457	94,215	21,353	21,352	20,927	20,154	19,458	15,392
Rio Grande	Municipal	274,383	281,722	286,047	289,138	292,401	295,841	267,323	268,154	268,918	269,819	270,815	271,638	47,666	51,670	55,337	58,280	61,308	64,687
Rio Grande	Steam-electric power	9,219	9,219	9,219	9,219	9,219	9,219	7,539	7,539	7,539	7,539	7,539	7,539	1,680	1,680	1,680	1,680	1,680	1,680
Sabine	Irrigation	4,819	4,819	4,819	4,819	4,819	4,819	6,541	6,542	6,541	6,541	6,541	6,541	425	425	425	425	425	425
Sabine	Livestock	15,441	16,076	16,839	17,753	17,770	17,770	26,494	26,637	26,776	26,890	26,989	27,094	302	302	300	396	399	397
Sabine	Manufacturing	144,477	149,829	155,376	161,131	167,097	173,289	230,583	230,810	231,039	233,676	238,269	242,892	2,790	3,285	3,811	4,264	4,686	5,075
Sabine	Mining	8,109	8,279	8,498	8,843	9,247	9,709	19,842	19,961	19,970	19,958	19,866	19,929	1,457	1,445	1,641	1,974	2,366	2,824
Sabine	Municipal	132,217	145,620	156,537	163,746	171,898	177,926	183,003	188,330	191,260	191,733	192,708	192,594	14,988	21,900	29,313	35,529	42,358	48,252
Sabine	Steam-electric power	50,672	50,672	50,672	50,672	50,672	50,672	86,766	86,766	86,766	86,766	86,766	86,766	0	0	0	0	0	0
San Antonio	Irrigation	30,514	30,514	30,514	30,514	30,514	30,514	37,965	38,113	37,703	37,849	37,998	37,998	2,791	2,643	3,166	3,166	3,166	3,166
San Antonio	Livestock	4,381	4,381	4,381	4,381	4,381	4,381	4,351	4,351	4,351	4,351	4,351	4,352	41	41	41	41	41	41
San Antonio	Manufacturing	9,914	10,280	10,660	11,054	11,464	11,889	10,008	10,008	10,007	10,029	10,072	10,117	21	345	682	1,031	1,395	1,772
San Antonio	Mining	13,506	14,298	15,058	15,760	16,401	11,709	16,512	16,520	16,527	16,534	16,540	16,436	1,454	1,499	1,540	1,576	1,608	418
San Antonio	Municipal	357,298	397,830	427,436	453,776	478,729	511,165	431,698	435,980	435,898	428,970	428,803	428,696	23,695	29,162	37,090	59,272	82,257	113,851
San Antonio	Steam-electric power	52,293	52,293	52,293	52,293	52,293	52,293	95,651	95,651	95,651	95,651	95,651	95,651	0	0	0	0	0	0
San Antonio-Nueces	Irrigation	8,639	8,639	8,639	8,639	8,639	8,639	8,644	8,651	8,657	8,663	8,667	8,667	7	7	7	7	7	7
San Antonio-Nueces	Livestock	1,390	1,390	1,390	1,390	1,390	1,390	1,390	1,390	1,390	1,390	1,390	1,390	0	0	0	0	0	0

Basin	Category	Demand 2030	Demand 2040	Demand 2050	Demand 2060	Demand 2070	Demand 2080	Existing supplies 2030	Existing supplies 2040	Existing supplies 2050	Existing supplies 2060	Existing supplies 2070	Existing supplies 2080	Needs 2030	Needs 2040	Needs 2050	Needs 2060	Needs 2070	Needs 2080
San Antonio-Nueces	Manufacturing	29,289	29,321	29,355	29,390	29,432	29,561	30,465	30,129	29,937	29,863	29,784	29,730	1,767	1,937	2,095	2,237	2,390	2,529
San Antonio-Nueces	Mining	88	90	92	93	94	94	88	90	92	93	94	94	0	0	0	0	0	0
San Antonio-Nueces	Municipal	20,261	20,575	20,712	20,723	20,750	20,791	19,018	19,461	19,781	20,008	20,268	20,566	1,439	1,349	1,198	1,007	796	558
San Antonio-Nueces	Steam-electric power	2,576	2,576	2,576	2,576	2,576	2,576	2,576	2,576	2,576	2,576	2,576	2,576	0	0	0	0	0	0
San Jacinto	Irrigation	31,500	31,500	31,500	31,500	31,500	31,500	31,976	31,200	30,658	30,323	30,124	29,943	1,947	2,723	3,265	3,600	3,799	3,980
San Jacinto	Livestock	2,672	2,672	2,672	2,672	2,672	2,672	2,392	2,147	2,092	2,058	2,038	2,020	548	793	848	882	902	920
San Jacinto	Manufacturing	198,908	209,392	220,954	226,902	233,072	239,470	284,763	285,638	286,681	287,218	287,810	288,432	2,105	2,424	2,688	2,902	3,090	3,277
San Jacinto	Mining	3,048	3,085	3,120	3,157	3,194	3,232	346	347	350	353	359	364	2,702	2,738	2,770	2,804	2,835	2,868
San Jacinto	Municipal	1,014,204	1,071,561	1,126,772	1,164,295	1,192,179	1,220,518	872,484	784,520	796,541	805,341	811,186	816,581	162,940	303,545	345,423	373,558	395,444	418,385
San Jacinto	Steam-electric power	40,428	40,428	40,428	40,428	40,428	40,428	32,473	32,287	32,157	32,077	32,030	31,987	15,010	15,196	15,326	15,406	15,453	15,496
San Jacinto-Brazos	Irrigation	91,753	91,753	91,753	91,753	91,753	91,753	26,109	25,795	25,703	25,625	25,597	25,579	65,919	66,233	66,325	66,403	66,431	66,449
San Jacinto-Brazos	Livestock	1,285	1,285	1,285	1,285	1,285	1,285	981	945	935	926	923	921	304	340	350	359	362	364
San Jacinto-Brazos	Manufacturing	146,482	153,024	160,056	165,179	170,490	176,000	190,318	190,013	189,355	188,436	187,472	186,466	0	0	1,400	3,266	5,201	7,209
San Jacinto-Brazos	Mining	517	574	634	700	771	848	177	170	167	166	165	165	340	404	467	534	606	683
San Jacinto-Brazos	Municipal	241,455	257,290	267,881	275,534	281,922	287,686	289,407	298,550	301,395	303,377	304,183	304,331	25,270	28,762	34,422	38,863	42,971	47,121
San Jacinto-Brazos	Steam-electric power	2,843	2,843	2,843	2,843	2,843	2,843	2,703	2,703	2,703	2,703	2,703	2,703	140	140	140	140	140	140
Sulphur	Irrigation	16,380	16,380	16,380	16,380	16,380	16,380	8,227	8,237	8,242	8,242	8,254	8,254	10,268	10,268	10,268	10,268	10,268	10,268
Sulphur	Livestock	8,383	8,306	8,198	8,104	8,067	8,067	11,332	11,501	11,511	11,695	11,777	11,777	83	83	83	83	83	83
Sulphur	Manufacturing	42,999	44,591	46,244	47,955	49,730	51,573	42,986	44,646	46,286	47,880	49,536	50,901	1,512	1,569	1,629	1,690	1,754	1,820
Sulphur	Mining	1,228	1,238	1,294	1,341	1,379	1,408	1,228	1,238	1,294	1,341	1,379	1,408	0	0	0	0	0	0
Sulphur	Municipal	29,253	29,172	29,125	29,026	28,889	28,658	28,217	28,088	27,864	27,717	27,579	27,414	12,062	12,064	12,089	12,134	12,181	12,215
Sulphur	Steam-electric power	5,320	5,320	5,320	5,320	5,320	5,320	8,278	8,278	8,278	8,278	8,278	8,278	0	0	0	0	0	0
Trinity	Irrigation	71,261	71,261	71,261	71,261	71,261	71,261	70,571	69,608	69,308	68,986	68,693	68,402	10,502	10,516	10,524	10,543	10,583	10,632
Trinity	Livestock	21,744	21,854	21,974	22,104	22,270	22,270	21,812	21,812	21,854	21,937	21,937	21,937	1,253	1,253	1,253	1,300	1,466	1,466
Trinity	Manufacturing	70,266	76,493	79,033	81,668	84,398	87,231	57,820	56,551	54,887	53,652	52,908	52,649	12,797	20,294	24,498	28,369	31,844	34,935
Trinity	Mining	8,170	7,853	8,841	9,950	11,598	14,004	9,054	8,799	9,354	10,011	10,474	11,187	520	625	1,002	1,557	2,509	4,170
Trinity	Municipal	1,808,518	2,043,450	2,268,449	2,475,106	2,660,551	2,822,307	1,604,923	1,597,736	1,586,442	1,574,758	1,567,331	1,562,583	216,997	457,659	693,403	911,185	1,103,697	1,269,934
Trinity	Steam-electric power	29,474	44,064	44,064	44,064	44,064	44,064	41,937	44,114	42,816	41,464	40,399	39,535	2,430	6,999	8,253	9,571	10,604	11,442
Trinity-San Jacinto	Irrigation	9,678	9,678	9,678	9,678	9,678	9,678	8,923	8,923	8,923	8,923	8,923	8,923	3,177	3,177	3,177	3,177	3,177	3,177
Trinity-San Jacinto	Livestock	284	284	284	284	284	284	95	95	95	95	95	95	189	189	189	189	189	189
Trinity-San Jacinto	Manufacturing	131,796	138,432	145,705	149,842	154,133	158,581	100,202	100,065	100,032	99,687	99,366	99,041	44,552	50,505	56,959	60,558	64,254	68,078
Trinity-San Jacinto	Mining	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
Trinity-San Jacinto	Municipal	14,263	17,407	19,927	22,367	24,571	26,945	15,092	16,121	16,886	17,724	18,456	19,196	2,586	3,777	5,166	6,559	7,968	9,554
Trinity-San Jacinto	Steam-electric power	6,948	6,948	6,948	6,948	6,948	6,948	11,063	11,063	11,063	11,063	11,063	11,063	0	0	0	0	0	0

Table B-9. Projected annual strategy supplies and unmet needs by basin and water use category (acre-feet)

Basin	Category	Strategy supplies 2030	Strategy supplies 2040	Strategy supplies 2050	Strategy supplies 2060	Strategy supplies 2070	Strategy supplies 2080	Unmet needs 2030	Unmet needs 2040	Unmet needs 2050	Unmet needs 2060	Unmet needs 2070	Unmet needs 2080
Brazos	Irrigation	80,631	105,329	88,139	66,479	63,288	61,303	375,938	380,138	212,241	40,665	39,157	36,972
Brazos	Livestock	100	100	100	100	100	100	1,145	1,158	1,170	1,181	1,191	1,198
Brazos	Manufacturing	112,827	116,861	120,482	123,021	126,052	129,950	218	228	235	653	786	275
Brazos	Mining	12,744	13,699	14,201	14,258	14,569	15,389	8,640	8,694	8,947	9,445	8,978	9,450
Brazos	Municipal	235,450	384,563	450,710	513,926	602,172	654,939	20,619	29,454	66,267	91,932	102,024	136,559
Brazos	Steam-electric power	2,259	2,849	14,693	17,381	19,927	22,341	25,824	26,577	18,911	19,387	19,850	20,432
Brazos-Colorado	Irrigation	12,475	20,130	20,130	20,130	20,130	20,130	153,364	138,573	131,632	124,878	118,306	111,913
Brazos-Colorado	Livestock	0	0	0	0	0	0	21	33	47	55	63	62
Brazos-Colorado	Manufacturing	28,801	30,228	31,710	33,216	34,774	36,340	0	0	0	0	0	0
Brazos-Colorado	Mining	0	0	0	0	0	0	0	0	0	0	0	0
Brazos-Colorado	Municipal	8,646	11,626	15,508	18,576	21,829	24,771	0	0	0	0	0	0
Brazos-Colorado	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
Canadian	Irrigation	80,127	193,129	248,081	302,553	342,467	379,411	337,667	377,518	306,344	247,389	203,101	164,420
Canadian	Livestock	10,702	11,957	11,478	9,628	7,917	6,280	0	0	538	2,449	4,222	5,923
Canadian	Manufacturing	1,948	3,334	4,462	5,063	5,245	5,660	0	0	168	893	1,852	3,004
Canadian	Mining	0	0	0	0	0	0	0	0	0	0	0	0
Canadian	Municipal	3,634	9,811	11,815	13,900	14,457	14,967	0	0	0	105	211	322
Canadian	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
Colorado	Irrigation	49,299	70,573	71,141	65,489	64,138	63,076	138,242	140,743	96,588	47,491	45,657	44,021
Colorado	Livestock	49	49	49	49	49	49	29	29	29	29	29	29
Colorado	Manufacturing	1,737	2,208	2,762	3,275	3,735	4,193	70	140	184	218	249	279
Colorado	Mining	6,949	5,054	4,729	3,019	2,228	1,745	15,697	17,007	15,288	12,462	7,764	3,625
Colorado	Municipal	95,790	280,016	366,380	429,017	492,475	550,875	1,567	2,089	4,866	10,882	17,631	24,974
Colorado	Steam-electric power	2,925	3,069	3,339	3,555	3,674	3,775	3,940	3,989	3,969	4,035	4,099	4,165
Colorado-Lavaca	Irrigation	4,386	6,445	6,449	6,453	6,457	6,461	64,658	60,379	58,216	56,112	54,064	52,071

Basin	Category	Strategy supplies 2030	Strategy supplies 2040	Strategy supplies 2050	Strategy supplies 2060	Strategy supplies 2070	Strategy supplies 2080	Unmet needs 2030	Unmet needs 2040	Unmet needs 2050	Unmet needs 2060	Unmet needs 2070	Unmet needs 2080
Colorado-Lavaca	Livestock	0	0	0	0	0	0	0	0	0	0	0	0
Colorado-Lavaca	Manufacturing	4,555	5,252	5,276	5,299	5,324	5,350	0	0	1,259	2,711	4,217	5,779
Colorado-Lavaca	Mining	0	0	0	0	0	0	0	0	0	0	0	0
Colorado-Lavaca	Municipal	315	430	532	554	553	547	0	0	0	0	0	0
Colorado-Lavaca	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
Cypress	Irrigation	298	298	298	298	298	298	0	0	0	0	0	0
Cypress	Livestock	0	0	0	0	0	0	0	0	0	0	0	0
Cypress	Manufacturing	122	122	124	123	123	122	0	0	0	0	0	0
Cypress	Mining	1,648	1,648	1,648	1,648	1,648	1,648	0	0	0	0	0	0
Cypress	Municipal	6,084	6,148	6,213	6,208	6,183	6,153	0	0	0	0	0	0
Cypress	Steam-electric power	0	0	0	0	0	0	0	1,198	2,458	3,143	4,433	5,693
Guadalupe	Irrigation	624	669	709	754	790	830	185	167	155	143	133	122
Guadalupe	Livestock	12	12	12	12	12	12	0	0	0	0	0	0
Guadalupe	Manufacturing	0	4,132	4,132	4,132	4,132	4,132	39,012	40,464	41,979	43,550	45,179	46,868
Guadalupe	Mining	0	0	0	0	0	0	7,184	9,350	11,537	13,707	15,801	13,751
Guadalupe	Municipal	63,736	172,261	218,410	253,482	286,225	325,701	0	0	0	5,019	11,886	21,805
Guadalupe	Steam-electric power	0	0	0	0	0	0	666	666	666	666	666	666
Lavaca	Irrigation	27,074	32,123	32,123	32,123	32,123	32,123	17,607	10,206	7,916	5,688	3,521	1,412
Lavaca	Livestock	0	0	0	0	0	0	0	0	0	0	0	0
Lavaca	Manufacturing	64	66	68	71	73	75	0	0	0	0	0	0
Lavaca	Mining	0	0	0	0	0	0	377	380	382	385	388	0
Lavaca	Municipal	1,296	1,511	1,682	1,849	1,989	2,127	0	0	0	0	0	0
Lavaca	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
Lavaca-Guadalupe	Irrigation	805	971	1,137	1,304	1,453	1,604	9,025	8,946	8,867	8,787	8,716	8,643
Lavaca-Guadalupe	Livestock	0	0	0	0	0	0	0	0	0	0	0	0
Lavaca-Guadalupe	Manufacturing	638	686	687	688	689	691	0	27	689	1,376	2,088	2,827
Lavaca-Guadalupe	Mining	0	0	0	0	0	0	0	0	0	0	0	0

Basin	Category	Strategy supplies 2030	Strategy supplies 2040	Strategy supplies 2050	Strategy supplies 2060	Strategy supplies 2070	Strategy supplies 2080	Unmet needs 2030	Unmet needs 2040	Unmet needs 2050	Unmet needs 2060	Unmet needs 2070	Unmet needs 2080
Lavaca-Guadalupe	Municipal	7,026	12,686	14,319	14,340	14,111	12,886	0	0	0	0	0	0
Lavaca-Guadalupe	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
Neches	Irrigation	7,874	7,876	7,893	7,906	7,920	7,929	0	0	0	0	0	0
Neches	Livestock	89	89	596	1,049	1,382	1,552	0	0	0	0	0	0
Neches	Manufacturing	11,776	28,148	46,276	64,791	83,072	101,429	0	0	0	0	0	0
Neches	Mining	850	910	960	1,010	1,060	1,120	0	0	0	0	0	0
Neches	Municipal	9,160	80,543	101,195	111,339	111,709	112,405	0	0	0	0	0	0
Neches	Steam-electric power	890	890	890	890	890	890	2,061	2,061	2,061	2,061	2,061	2,061
Neches-Trinity	Irrigation	47,153	97,403	97,403	97,403	97,403	97,403	0	0	0	0	0	0
Neches-Trinity	Livestock	200	200	200	200	200	200	12	12	12	12	12	12
Neches-Trinity	Manufacturing	10,129	27,458	46,824	66,055	85,254	104,427	0	0	0	0	0	0
Neches-Trinity	Mining	0	0	0	0	0	0	0	0	0	0	0	0
Neches-Trinity	Municipal	8,958	12,563	14,494	14,572	14,630	14,629	0	0	0	0	0	0
Neches-Trinity	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
Nueces	Irrigation	59,178	61,435	63,687	65,944	67,815	69,683	52,478	50,740	45,910	42,962	40,516	38,057
Nueces	Livestock	97	97	97	97	97	97	0	0	0	0	0	0
Nueces	Manufacturing	77,254	125,498	126,466	127,441	128,425	129,414	734	761	789	818	848	879
Nueces	Mining	1,920	2,092	2,267	2,442	2,616	1,677	23,778	24,660	25,499	26,284	27,007	5,462
Nueces	Municipal	10,922	19,661	21,910	23,458	24,598	30,109	0	0	0	0	0	0
Nueces	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
Nueces-Rio Grande	Irrigation	42,011	56,602	71,033	84,633	97,794	110,366	801,281	754,998	702,023	648,550	595,772	543,719
Nueces-Rio Grande	Livestock	0	0	0	0	0	0	0	0	0	0	0	0
Nueces-Rio Grande	Manufacturing	63,314	83,768	85,038	86,283	87,535	89,042	0	0	0	0	0	0
Nueces-Rio Grande	Mining	33	40	42	46	50	53	0	0	0	0	0	0
Nueces-Rio Grande	Municipal	147,369	236,026	268,585	285,851	301,699	315,519	0	0	0	0	0	0
Nueces-Rio Grande	Steam-electric power	1,033	1,033	1,033	1,033	1,033	1,033	0	0	0	0	0	0

Basin	Category	Strategy supplies 2030	Strategy supplies 2040	Strategy supplies 2050	Strategy supplies 2060	Strategy supplies 2070	Strategy supplies 2080	Unmet needs 2030	Unmet needs 2040	Unmet needs 2050	Unmet needs 2060	Unmet needs 2070	Unmet needs 2080
Red	Irrigation	47,750	69,769	72,224	74,220	79,716	83,110	87,556	88,298	58,328	31,751	32,541	33,485
Red	Livestock	617	617	617	617	617	617	0	0	0	0	0	0
Red	Manufacturing	7,976	17,092	19,307	22,040	24,332	25,548	0	0	0	0	0	0
Red	Mining	24	24	137	952	1,834	2,706	0	0	0	0	0	0
Red	Municipal	21,745	65,180	73,018	80,850	88,714	95,587	0	0	0	0	0	0
Red	Steam-electric power	0	3	3,004	3,005	3,005	3,006	0	0	0	0	0	0
Rio Grande	Irrigation	69,278	85,558	98,538	101,153	103,723	106,267	160,512	148,889	140,442	132,322	124,334	116,699
Rio Grande	Livestock	602	602	602	602	602	602	0	0	0	0	0	0
Rio Grande	Manufacturing	18	18	20	20	20	22	0	0	0	0	0	0
Rio Grande	Mining	7,054	7,054	6,708	6,689	5,900	5,182	18,438	18,425	18,280	17,473	16,808	13,155
Rio Grande	Municipal	85,397	129,580	147,652	154,461	159,651	165,046	1,318	0	0	0	0	0
Rio Grande	Steam-electric power	1,710	1,710	8,970	8,970	8,970	8,970	0	0	0	0	0	0
Sabine	Irrigation	430	431	434	435	436	437	3	3	3	3	3	3
Sabine	Livestock	303	303	303	403	403	402	0	0	0	0	0	0
Sabine	Manufacturing	3,819	4,502	4,921	5,178	5,506	5,718	0	0	0	42	0	0
Sabine	Mining	242	248	460	804	1,207	1,669	1,215	1,199	1,185	1,177	1,168	1,168
Sabine	Municipal	22,275	32,744	43,087	50,067	60,288	65,914	14	38	70	1,315	145	201
Sabine	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
San Antonio	Irrigation	20,711	21,062	21,414	21,763	22,060	22,350	1,111	884	806	806	806	806
San Antonio	Livestock	54	54	54	54	54	54	0	0	0	0	0	0
San Antonio	Manufacturing	0	0	0	0	0	0	21	345	682	1,031	1,395	1,772
San Antonio	Mining	0	0	0	0	0	0	1,454	1,499	1,540	1,576	1,608	418
San Antonio	Municipal	118,150	189,576	239,585	288,680	332,577	346,198	0	0	0	1,020	3,344	6,230
San Antonio	Steam-electric power	5,000	5,000	5,000	5,000	5,000	5,000	0	0	0	0	0	0
San Antonio-Nueces	Irrigation	395	401	408	414	419	425	0	0	0	0	0	0
San Antonio-Nueces	Livestock	0	0	0	0	0	0	0	0	0	0	0	0

Basin	Category	Strategy supplies 2030	Strategy supplies 2040	Strategy supplies 2050	Strategy supplies 2060	Strategy supplies 2070	Strategy supplies 2080	Unmet needs 2030	Unmet needs 2040	Unmet needs 2050	Unmet needs 2060	Unmet needs 2070	Unmet needs 2080
San Antonio-Nueces	Manufacturing	60,350	97,259	97,971	98,687	99,396	100,126	0	1	33	66	100	135
San Antonio-Nueces	Mining	2	5	7	9	12	14	0	0	0	0	0	0
San Antonio-Nueces	Municipal	6,465	7,193	7,575	7,874	8,035	8,195	0	0	0	0	0	0
San Antonio-Nueces	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
San Jacinto	Irrigation	6,419	7,199	7,744	8,079	8,278	8,459	8	4	1	1	1	1
San Jacinto	Livestock	117	196	251	285	237	255	499	665	665	665	665	665
San Jacinto	Manufacturing	3,916	6,221	8,693	11,144	13,690	16,358	0	0	0	0	0	0
San Jacinto	Mining	2,702	2,746	2,777	2,809	2,839	2,871	0	0	0	0	0	0
San Jacinto	Municipal	252,552	587,608	902,257	923,515	925,439	932,065	0	0	0	0	0	0
San Jacinto	Steam-electric power	17,250	17,436	17,566	17,646	16,355	15,496	0	0	0	0	0	0
San Jacinto-Brazos	Irrigation	28,869	28,869	28,869	28,869	28,869	28,869	37,372	37,686	37,778	37,856	37,884	37,902
San Jacinto-Brazos	Livestock	0	0	0	0	0	0	304	340	350	359	362	364
San Jacinto-Brazos	Manufacturing	35,584	53,174	55,766	59,191	63,254	67,557	0	0	0	0	0	0
San Jacinto-Brazos	Mining	340	404	467	534	606	683	0	0	0	0	0	0
San Jacinto-Brazos	Municipal	139,309	164,374	177,151	188,114	198,273	207,990	0	0	0	0	0	0
San Jacinto-Brazos	Steam-electric power	140	140	140	140	140	140	0	0	0	0	0	0
Sulphur	Irrigation	5,250	5,251	5,253	5,253	5,254	5,254	5,021	5,020	5,018	5,018	5,017	5,017
Sulphur	Livestock	0	0	0	0	0	0	83	83	83	83	83	83
Sulphur	Manufacturing	28,261	50,301	55,839	62,734	69,647	71,126	0	0	0	0	0	0
Sulphur	Mining	0	0	0	0	0	0	0	0	0	0	0	0
Sulphur	Municipal	14,836	14,848	14,969	15,016	15,024	14,950	31	50	70	96	125	156
Sulphur	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0
Trinity	Irrigation	14,742	32,850	34,691	35,072	35,525	35,897	3,949	3,915	3,884	3,875	3,858	3,849
Trinity	Livestock	600	600	600	814	813	813	860	860	860	860	860	860
Trinity	Manufacturing	11,174	23,010	28,000	31,510	37,131	41,018	1,738	1,660	1,822	2,264	2,158	2,335

Basin	Category	Strategy supplies 2030	Strategy supplies 2040	Strategy supplies 2050	Strategy supplies 2060	Strategy supplies 2070	Strategy supplies 2080	Unmet needs 2030	Unmet needs 2040	Unmet needs 2050	Unmet needs 2060	Unmet needs 2070	Unmet needs 2080
Trinity	Mining	523	621	986	1,526	2,472	4,121	267	267	267	267	267	267
Trinity	Municipal	259,756	512,248	783,894	941,719	1,188,440	1,347,520	11,455	10,195	4,086	43,364	5,965	6,856
Trinity	Steam-electric power	3,163	5,737	6,802	7,076	8,809	9,468	0	1,384	1,617	2,695	2,027	2,232
Trinity-San Jacinto	Irrigation	3,015	3,015	3,015	3,015	3,015	3,015	1,016	1,016	1,016	1,016	1,016	1,016
Trinity-San Jacinto	Livestock	100	100	100	100	100	100	133	133	133	133	133	133
Trinity-San Jacinto	Manufacturing	57,190	63,563	71,027	75,420	80,339	85,929	0	0	0	0	0	0
Trinity-San Jacinto	Mining	0	0	0	0	0	0	0	0	0	0	0	0
Trinity-San Jacinto	Municipal	4,634	5,890	6,994	9,281	10,220	12,129	0	0	0	0	0	0
Trinity-San Jacinto	Steam-electric power	0	0	0	0	0	0	0	0	0	0	0	0

Table B-10. 2022 State Water Plan projects funded by the TWDB, by project sponsor

Reference	Sponsor region	Project[a]	Project sponsor entity	Financial assistance features			Closed funding amount	Associated annual water supply (acre-feet per year)[b]
				SWIFT funding	Board participation	Other state and federal funding		
1	A	Develop Additional Water Supplies from the Ogallala Aquifer	Greenbelt MIWA			x	$18,110,000	2,000
2	B	Odell-Winston Wellfield Pipeline	Vernon	x			$12,000,000	120
3	C	20 MGD WTP Expansion – Ray Roberts Phase 1	Denton	x			$21,370,000	22,418
4		2025 DWSRF Honey Grove Water System Improvements	Honey Grove			x	$4,196,000	1,613
5		Bois d'Arc Lake & Leonard Water Treatment Plant	North Texas MWD	x			$771,450,000	120,665
6		City of Bonham Water System Improvements	Bonham			x	$24,274,100	1,492
7		City of Denison Water Distribution Improvements Project for Disadvantaged Areas	Denison			x	$16,950,000	18
8		City of Springtown – Water System Improvements	Springtown			x	$6,200,000	81
9		Conservation, Water Loss Control	White Settlement	x			$675,000	30
10		Eagle Mountain Water Treatment Plant – 35 MGD Expansion	Fort Worth	x			$125,000,000	39,497
11		GTUA – Collin-Grayson Municipal Alliance (CGMA) Bloomdale Pump Station Expansion	Greater Texoma UA	x			$7,525,000	4,491
12		GTUA/City of Bells Water & Wastewater Improvements	Greater Texoma UA			x	$7,200,000	7,259
13		GTUA/City of Dorchester Water System Improvements	Greater Texoma UA			x	$4,625,000	200
14		GTUA/City of Gainesville Water Transmission Main Replacement Project	Greater Texoma UA	x			$2,705,000	18
15		GTUA/White Shed WSC Water Well & System Improvements	Greater Texoma UA			x	$3,520,000	605
16		Harpool RWTP Expansion, Phase 2	Upper Trinity Regional WD	x			$80,000,000	33,600
17		Infrastructure to Treat and Deliver to Customers: Design of Lake June Pump Station Replacement	Dallas	x			$7,500,000	14,600

Reference	Sponsor region	Project[a]	Project sponsor entity	Financial assistance features			Closed funding amount	Associated annual water supply (acre-feet per year)[b]
				SWIFT funding	Board participation	Other state and federal funding		
18	C	Infrastructure to Treat and Deliver to Customers: Water Main Replacement Program	Dallas	x			$170,000,000	2,090
19		Integrated Pipeline (IPL) Connect Lake Palestine	Tarrant Regional WD	x			$255,000,000	114,377
20		Lake Ralph Hall Reservoir	Upper Trinity Regional WD	x			$614,345,000	60,399
21		Mabank Wastewater and Water Infrastructure	Mabank			x	$28,790,000	0
22		North System Raw Water Pipelines	North Texas MWD	x			$641,695,000	80,304
23		RTWS Northeast Transmission Pipelines & Loop	Upper Trinity Regional WD	x			$58,460,000	33,479
24		South Transmission System Pipeline	Greater Texoma UA			x	$43,200,000	12,797
25		Southwest Pipeline Phase 1	Dallas	x			$73,300,000	19,900
26		Springtown Raw Water Station; Surface WTP Improvements	Springtown	x			$1,390,000	81
27		Taylor Regional Water Treatment Plant Expansion	Upper Trinity Regional WD	x			$115,620,000	16,800
28	D	New 15 MGD WTP	Greenville	x			$90,500,000	8,077
29		Riverbend Regional Water System	Riverbend Water Resources District			x	$258,700,000	80,209
30	F	Hickory Aquifer Wellfield Phase II	San Angelo			x	$69,490,000	3,000
31	G	Brushy Creek Regional Utility Authority Water Treatment and Distribution Project	Brushy Creek Regional UA	x			$275,255,000	42,410
32		Carrizo Aquifer Development	Bistone Municipal WSD	x			$5,000,000	371
33		Granbury Emerging Contaminants Reduction Improvements	Granbury			x	$57,800,000	5,601
34		Turkey Peak Reservoir	Palo Pinto Co MWD # 1	x			$72,000,000	6,000
35	H	Allens Creek Reservoir	Brazos River Authority	x			$50,000,000	0
36		BAWA East SWTP Expansion	Baytown Area WA	x			$69,000,000	6,720

Reference	Sponsor region	Project[a]	Project sponsor entity	Financial assistance features			Closed funding amount	Associated annual water supply (acre-feet per year)[b]
				SWIFT funding	Board participation	Other state and federal funding		
37	H	Brazosport WSC Reservoir Project	Brazosport WSC	x			$335,890,000	84,000
38		Central Harris County Regional Water Authority Transmission and Distribution Expansion	Central Harris Co Regional WA	x			$5,000,000	5,470
39		City of Groveton Water Improvements	Groveton			x	$4,261,250	323
40		City of Houston East Water Purification Plant Enhancement	Houston	x			$350,000,000	403,251
41		CWA TRANSMISSION EXPANSION (WMS-4009)	Coastal Water Authority	x			$75,000,000	134,506
42		NHCRWA Internal 2020 Distribution	North Harris Co Regional WA	x			$362,960,000	143,360
43		Oakwilde & Woodland Oaks WWTPs	Sunbelt FWSD			x	$10,440,000	806
44		The City of Cut and Shoot Water Well #6 and EST	Cut and Shoot			x	$5,875,000	483
45	J	City of Bandera Water Supply Improvements	Bandera			x	$2,755,800	39
46		Drill a new well and connect to distribution system	Del Rio	x			$4,865,000	3,226
47		Water Treatment Plant Expansion	Del Rio	x			$3,455,000	4,705
48	K	Conservation Strategy – Smart Meters (Advanced Meter Infrastructure)	Austin	x			$70,000,000	6,105
49		Direct Reuse Strategy	Austin	x			$10,000,000	70
50		Marble Falls – Purple Pipe System Extension	Marble Falls			x	$4,300,859	13
51		Municipal Conservation	Austin	x			$3,000,000	700
52	L	Carrizo Groundwater Supply Project	Guadalupe Blanco RA	x			$152,335,000	24,000
53		Hays-Caldwell Water Treatment Plant Improvement Project	Canyon Regional WA			x	$5,000,000	1,560
54		I-35 Business Waterline Extension and Citywide Waterline Replacement	Pearsall			x	$7,400,000	397
55		Phase 1B, 1C, and 1D	Alliance Regional Water Authority	x			$148,000,000	16,320

Reference	Sponsor region	Project[a]	Project sponsor entity	Financial assistance features			Closed funding amount	Associated annual water supply (acre-feet per year)[b]
				SWIFT funding	Board participation	Other state and federal funding		
56	L	SAWS ASR Treatment Plant Expansion	San Antonio Water System	x			$27,635,000	21,000
57		Trinity Aquifer Groundwater Wells	New Braunfels			x	$40,000,000	4,480
58	M	City of McAllen Acquisition of Water Rights (Conversion of Water Rights)	McAllen	x			$3,215,000	1,333
59		City of McAllen Brackish Groundwater Treatment Plant	McAllen	x			$30,000,000	6,720
60		ERHWSC North Cameron Reverse Osmosis Plant Expansion	East Rio Hondo WSC			x	$43,110,000	2,800
61		McAllen Citywide AMI/AMR Infrastructure Upgrade Project	McAllen	x			$18,000,000	964
62		Rio Hondo Proposed Reverse Osmosis Treatment Plant & Water Well Improvements	Rio Hondo			x	$4,140,000	1,120
63		Seawater Desalination Plant	Laguna Madre WD	x			$10,000,000	5,600
64		Sharyland Water Supply Corporation Test Wells	Sharyland WSC			x	$1,050,000	0
65	N	Replace Small Diameter Distribution Lines & Install Automated Meter Reading System	Nueces Co WCID # 3			x	$9,304,876	4
66		Seawater Desalination	Corpus Christi	x			$10,000,000	33,604
67		Supplemental Water Resources	Alice			x	$12,499,000	3,336
68	O	Seminole 2024 Water System Improvements	Seminole			x	$6,090,000	1,120

[a]Project name and components may vary from the 2022 State Water Plan.

[b]Associated annual supply volumes based on best available information. Water volumes may also be associated with other projects and may differ from the final amounts at project completion. Projects with zero acre-feet of associated supply do not include a construction phase required to bring supplies online.

FWSD – fresh water supply district
MIWA – municipal and industrial water authority
MWD – municipal water district
RA – river authority
SWIFT – State Water Implementation Fund for Texas
UA – utility authority
WA – water authority
WCID – water control and improvement district
WD – water district
WSC – water supply corporation
WSD – water supply district