

SCOPE OF WORK

2011 REGION F REGIONAL WATER PLAN

Task 1. Description of Region

The objective of this task is to update the description of the region in the 2006 Region F Water Plan. It will require updating the text to describe changed conditions and new studies completed or underway since the 2006 Water Plan. Budget and scope for this task will be a limited effort with minimal changes to tables and figures.

This task includes updating the following:

- Text to reflect any changed conditions in Region F. This will include a brief discussion of the renewed oil and gas activities and wind generation in the region, population trends since the 2000 census and other changes identified during the planning process.
- Descriptions of wholesale water providers as needed.
- Review and update as needed the list of threatened and endangered species in Region F counties.
- Descriptions of studies and plans completed since the 2006 Region F plan and on-going studies within the region.
- Current preparation for drought conditions.
- Add information compiled by the TWDB from water loss audits performed by retail public utilities pursuant to 31 TAC §358.6.

Deliverable: Updated Chapter 1 of the 2011 Region F Water Plan.

Task 2. Current and Projected Population and Water Demands

The focus of this task is to update projected populations and water demands based on changed conditions. The Texas Water Development Board will not be developing new population or water demand projections for the 2011 regional water plans with the exception of steam electric power demands. It is anticipated that there will not be significant revisions to the population and water demands projections in Region F. The effort for this task will include reviewing and approving the new steam electric power demands and updating demands for wholesale water providers. A high level review of the mining demands will also be performed.

This task includes the following:

- Review newly developed steam electric power demands
 - Revise tables and figures with new demands
 - Request revisions to demands as needed
- Review list of wholesale water providers
- Review and update demands on wholesale water providers, including new and changed contracts
- Review projected irrigation demands that show 2010 projections that are more than 200% of historical use and greater than 5,000 acre-feet above 2006 use. This includes Tom Green, Upton, Ward and Winkler Counties. Request revisions to these demands as directed by the Region F planning group and submit appropriate documentation to TWDB.

- Collect water use from the Railroad Commission, groundwater districts and other available sources on oil and gas activities in Region F. Compare the data to existing mining demands. Include discussion of the water usage for mining in Chapter 2.
- Update text, tables and figures in Chapter 2.
- Update TWDB database as needed

Deliverable: Updated Chapter 2 of the 2011 Region F Water Plan.

Task 3. Water Supply Analysis

This task focuses on updating water supplies in Region F based on changed conditions and requirements for the 2011 regional water plans. For the 2011 plans, surface water supplies must include reporting of firm yield. Allocations of supply can be limited to safe yield supply, operational yield or other factors. The 2011 Region F Water Plan will allocate surface water supplies from reservoirs on a safe yield basis. This is the standard used by the water providers in the region and used in previous regional water plans.

Groundwater supplies must comply with Managed Available Groundwater (MAG) values as determined by the TWDB and Groundwater Management Areas if this information is available. For Region F, the MAG values will not be available for incorporation in the 2011 water plan. However, based on information gathered in the groundwater study completed in the first round of planning, water supplies for selected counties may be changed. Additional effort for this task includes updating allocations of supplies to water users and wholesale providers based on new projects completed, changes in contracts or other changed conditions.

During the 1st biennium, Region F completed a Groundwater Study to assess groundwater supplies for the following aquifers and areas:

- Area 1 - Ogallala (southeast Andrews County),
- Area 2 - Other aquifer (parts of Runnels and Coke Counties),
- Area 3 - Edwards-Trinity Plateau (Schleicher, Sutton, Crockett, Glasscock, and Reagan Counties), and
- Area 4 - Pecos Valley Alluvium (Ward, Crane, and Winkler Counties).

The study is not yet complete, but it is evident that estimated groundwater availability in Areas 1, 2 and 3 have potentially decreased. In Area 4, supplies and potential co-development (among WUGs) of both brackish and fresh groundwater supplies will need to be assessed. In addition, the strategies associated with these areas need to be reviewed to ensure consistency with new groundwater supply changes.

This task includes the following:

- Report firm yields of reservoirs for Region F sources.
- Update water availability for surface water sources in the Pecan Bayou watershed based on the findings of the 1st biennium study.
- Review and update reuse water quantities.
- Update supplies available to water user groups based on changes in contracts and/or new supplies.
- Update supplies available to wholesale water providers based on changes in contracts and/or new supplies.
- Review and update groundwater supplies for the following aquifers and counties: Ogallala (Andrews), Other aquifer (Runnels, Coke, Menard, Sterling, Glasscock), Edwards-Trinity Plateau (Schleicher, Sutton, Crockett, Glasscock, Reagan), Pecos Valley Alluvium (Ward, Crane,

Winkler) based on the findings from the 1st biennium Groundwater Study. This includes review of county-wide estimates, review and update availabilities to water user groups and summarize the findings from the Phase I study in the updated 2011 Region F water plan.

- Include discussion of the status of developing Managed Available Groundwater.
- Update text, tables and figures in Chapter 3.
- Update TWDB database as needed.

Deliverable: Updated Chapter 3 of the 2011 Region F Water Plan.

Task 4. Identification, Evaluation and Selection of Water Management Strategies

The objective of this task is to update water management strategies in the 2006 Region F Water Plan and evaluate new strategies that may be identified for the 2011 water plan. This includes updating strategies that were recommended to meet a water need and those considered, but not recommended. As part of the 2011 plan, the Regional Water Planning Group will be able to identify alternative water management strategies. All alternative strategies will be evaluated to the same level as recommended strategies. Also, capital and annual cost estimates for all strategies must be updated per Exhibit C of this contract.

Tables 1 through 4 show water management strategies retained for further evaluation, water management strategies that have already been implemented and no longer need inclusion in the Region F plan, strategies that may be dropped from further consideration because they were not recommended strategies in the previous Region F plan and are unlikely to prove feasible, and strategies that may require updating due to changed conditions. All water user groups and wholesale water providers will be contacted to verify the recommended strategies in the 2006 regional water plan are still applicable and identify potential new strategies that the entity may be considering.

A major strategy for the Region F Water Planning Area is the Colorado River Basin Subordination Strategy (F07SUBORD). This strategy includes modifications to the Colorado River Basin Water Availability Model developed in conjunction with Region K. Region F intends to retain this strategy as described in the 2006 Region F Water Plan, including water provider agreements and system operations. Possible refinements to this strategy may be made to the water supplies in the Pecan Bayou watershed based on the results of an on-going Region F study in this watershed. Supplies for other surface water sources in Region F outside of the Pecan Bayou watershed will be identical to those used in the 2006 plan.

Table 1
Strategies from 2006 Plan that will be Retained and Updated in 2011 Region F Plan

DB07 Strategy Number	Strategy Name	Description
F01CONMUN	Municipal Conservation	Conservation for all municipal WUGs with needs
F02CONIRR	Irrigation Conservation	Conservation for all irrigation WUGs with needs
F04REUSE	Reuse	Reuse strategies for Ballinger, Big Spring, Bronte, Midland, Odessa, Robert Lee, Snyder and Winters
F05SYSOP	System Optimization	San Angelo system optimization
F06AVOLRED	New/Renew Water Supply - New Infrastructure	Ballinger Hords Creek evaluation
F06VOLRED	New/Renew Water Supply	Contract renewals with University Lands (Andrews, Midland & CRMWD) and CRMWD (Ballinger, Midland, Stanton, Millersview-Doole WSC)
F07SUBORD	Subordination	Multiple reservoirs and users
F10ETRGW	Develop Edwards Trinity Aquifer Supplies	New E-T supplies for San Angelo and Kimble County Manufacturing
F11HICGW	Develop Hickory Aquifer Supplies	New Hickory aquifer well for Menard, San Angelo McCulloch County Well Field
F12CENGW	Develop Cenozoic Aquifer Supplies	Midland T-Bar well field and CRMWD Winkler County well field
F16DESAL	Desalination	Andrews, Robert Lee, San Angelo, CRMWD
F17ASR	Aquifer Storage Recovery	Co-developed with Menard Hickory well
F19REHPIP	Rehabilitation Of Pipeline	Rehabilitate San Angelo pipeline from Lake Spence
F22OCR	Off Channel Reservoir	Off-channel reservoir on San Saba for Menard
F28BRUSH	Brush Control	Robert Lee, San Angelo, Mitchell County Steam Electric

Table 2
Implemented Strategies from 2006 Plan

DB07 Strategy Number	Strategy Name	Description
F06AVOLRED	New/Renew Water Supply - New Infrastructure	Supplies from BCWID to Northern Brown County
F13OTHGW	Develop Other Aquifer Supplies	New well field for Bronte

Table 3
Strategies from 2006 Plan No Longer Feasible

DB07 Strategy Number	Strategy Name	Description
F08MARKET	Water Marketing	Not used in previous plan
F23ALTGEN	Alternative Generation Technology	Not used in previous plan
F24SADESA	New Pipeline From San Angelo Desalination Plant	Regional system from proposed San Angelo desalination project. Project may not have supplies anticipated in previous plan.
F25BROSYS	Regional System From Lake Brownwood	Regional system from Lake Brownwood to Runnels and Coke County. Found to be cost prohibitive. Replaced by Rural System regionalization strategy.

Table 4
Strategies from 2006 Plan with Potentially Changed Conditions

DB07 Strategy Number	Strategy Name	Description
F13OTHGW	Develop Other Aquifer Supplies	Develop supplies from the Hovey Trough for San Angelo
F19REHPIP	Rehabilitation Of Pipeline	Rehabilitate Bronte pipeline from Oak Creek Reservoir
F20INTAKE	New Reservoir Intake	New intake in Lake Spence for Robert Lee
F21WTPSTO	New WTP And Storage Facilities	Upgraded treatment facilities for Robert Lee
F22OCR	Off Channel Reservoir	Off-channel reservoir on San Saba for Menard
F26BOTTLE	Bottled Water Program	Eden, Richland SUD, McCulloch County Other – provide bottled water for consumptive use
F27ADVTR	Advanced Treatment	Use of advanced treatment to treat for radium for Eden and Richland SUD
F28BRUSH	Brush Control	Robert Lee, San Angelo, Mitchell County Steam Electric
F29WMOD	Weather Modification	Increased supplies for irrigation in Irion, Mitchell and Ward Counties
F30REPWELL	Replacement Well	New wells for Eden & Richland SUD. Add replacement well strategy for all groundwater users.

This task includes the following:

- Update water needs analysis for water user groups with changed demands and/or supplies
 - Steam electric power
 - Irrigation (if demands are revised)
 - Others identified in Chapter 3 due to changes in supplies and/or contracts
 - Others due to changed conditions identified from the survey (below)
- Update water needs analysis for wholesale water providers with changed demands and/or supplies
 - Changed contracts as identified in Chapter 2
- Survey all water user groups and wholesale water providers to confirm need analysis and recommended water management strategies.
- Reevaluate all retained water management strategies used to meet needs as required by Exhibit B Section 4.0. Revise as needed.
- Update strategies for steam electric power, if water needs changed.
- Develop new or update strategies resulting from special studies in 1st biennium
 - Regionalization strategy for Brown, Coleman and Runnels County based on Rural Water Supply Study.
 - Update municipal water conservation strategies based on the findings of the municipal conservation survey.
 - Pecan Bayou watershed water user groups & BCWID (no new needs expected)
- Develop new irrigation water conservation methodology based on results of irrigation conservation survey
- Update capital costs for retained water management strategies per Exhibit C of this contract. Calculate annual costs as required for database entry.
- Update text, tables and figures in Chapter 4 of the water plan.
- Update TWDB database as needed.

Deliverable: Updated Chapter 4 of the 2011 Region F Water Plan.

Task 5. Impacts of Water Management Strategies on Key Parameters of Water Quality and Impacts of Moving Water from Rural and Agricultural Areas

The objective of this task is to update the 2006 plan to incorporate changed conditions and new water management strategies.

This task includes updating the following:

- Review and update impacts as needed, considering new water management strategies and changed conditions.
- Update text of Chapter 5 as needed.

Deliverable: Updated Chapter 5 of the 2011 Region F Water Plan.

Task 6. Water Conservation and Drought Management Recommendations

This task will update the water conservation and drought management recommendations for the 2011 water plan. It will include discussion of new information obtained from the 1st biennium studies,

including the municipal conservation survey and irrigation study.

This task includes the following:

- Update recommendations based on findings of municipal conservation survey conducted during 1st biennium.
- Update existing irrigation conservation estimates in the region based on data collected as part of the 1st biennium irrigation study
- Review assumptions for conservation in new steam electric power demands. Update discussions as needed.
- Update recommendations for irrigation conservation based on revised methodology
- Review and update model conservation and drought contingency plans for any changes required by the TCEQ for these plans.
- Review and update drought trigger conditions based on updated drought contingency plans.

Deliverable: Updated Chapter 6 of the 2011 Region F Water Plan.

Task 7. Description of How the Regional Water Plan is Consistent with Long-Term Protection of the State's Water Resources, Agricultural Resources and Natural Resources

This task includes the following:

- Update descriptions considering updated and new water management strategies.

Deliverable: Updated Chapter 7 of the 2011 Region F Water Plan.

Task 8. Unique Stream Segments/ Reservoir Sites/ Legislative Recommendations

The focus of this task will be on reviewing and updating legislative recommendations based on changed conditions, new legislation and other factors.

This task includes the following:

- Review and consider new and updated policy and legislative recommendations.
- Update text in Chapter 8 to incorporate new and/or updated recommendations.

Deliverable: Updated Chapter 8 of the 2011 Region F Water Plan.

Task 9. Infrastructure Financing Recommendations

The objective of this task is to update the assessment of funding needs and preferred funding vehicles for entities in Region F.

This task includes the following:

- Send infrastructure financing surveys developed by TWDB to each water user group with a recommended strategy to update consensus of recommendations and obtain information on plans for financing strategies.
- Update information on available sources of funding.

- Update findings and recommendations.

Task 10a. Plan Adoption and Public Participation.

This task provides for public participation, eligible administrative costs, planning member travel costs and other activities deemed eligible by the TWDB.

This task includes the following:

- Assist with public participation activities
- Assist with plan adoption activities
- Develop and maintain a Region F website to disseminate information to the regional planning group members and the public.
- Respond to comments on Initially Prepared Plan and incorporate in final plan
- Print and distribute copies of the Initially Prepared Plan and the Final Water Plan to each county within the region as required by rule.
- Print and submit copies of the Initially Prepared Plan and the Final Water Plan to the TWDB on behalf of Region F as required by rule and Attachment A.

Deliverables: *Initially Prepared 2011 Region F Water Plan* and *Final 2011 Region F Water Plan*. The deliverables will meet the requirements set forth in Attachment A.

Task 10b. Development of Planning Grant Application