

**Prioritized Scope of Work Items
Recommended by the Brazos G Scope of Work Committee
for
TWDB Planning Grant Funding
for the
2011 Brazos G Regional Water Plan
August 9, 2006**

(recommended during the July 26, 2006 SOW Committee meeting)

The following potential scope of work tasks were prioritized at the July 26, 2006 Scope of Work Committee (SOWC) meeting. The tasks are consolidated from individual ideas identified and discussed at the July 12, 2006 SOWC meeting.

The tasks are listed in the priority order recommended by the SOWC.

Task 1. Impact of drought on reservoir water supplies in the upper Brazos G area

Budget: \$79,900.

Scope: The ongoing drought has reduced supplies from reservoirs in the upper Brazos G area significantly. An updated drought of record analysis was completed for the 2006 Plan, but only utilized data available through June 2004. Continuation of the drought in West Texas since 2004 has likely reduced supplies further. For example, the available supply from O.H. Ivey Reservoir has been reduced by 28% of its originally estimated yield, but the 2006 Brazos G Plan only recognizes a 15% reduction. This work item will extend the naturalized flow record for the applicable upper-basin control points in the Brazos WAM through June 2008 to evaluate if supplies have been furthered reduced since June 2004. In addition, multiple reservoirs in the upper Brazos G area are experiencing extremely low levels, which could affect water quality from the remaining supply. Correlations between water quality constituents and reservoir level will be developed for up to three selected reservoirs in the western portion of the region with sufficient available data, in order to determine the level of degradation in water quality that occurs at lower lake levels. The implications of any degradation of water quality during drought with regard to the usability of the water supply from the reservoirs will be discussed and applied to other reservoirs in the region.

Deliverables:

1. Memorandum documenting updated flows and reservoir yields due to drought
2. Memorandum documenting water quality analyses and effect on supplies
3. Presentation of findings to Brazos G RWPG

Funding Criteria Met:

3. Refinement of water supply information or water management strategies.
4. Activities that will help overcome problems from the last round of planning.

Task 2. Regionalization strategies to assist small water systems in meeting new SDWA requirements.

Budget: \$49,400.

Scope: Rules adopted for public water systems subsequent to passage of the 1996 amendments to the Safe Drinking Water Act (SDWA) include new requirements related to higher levels of treatment that can be difficult for small water systems to attain. Financial and personnel training/certification considerations limit the extents to which many smaller systems can comply

with the requirements. However, if smaller systems within a localized area were able to share resources (trained personnel and treatment facilities), these stricter standards might be more readily attained by each participating utility. This task will identify specific utilities in locations where regionalization could allow multiple small utilities to share resources and reduce individual treatment and personnel costs. In addition, larger water user groups will be identified that might become or participate as regional suppliers. Two (2) potential regional systems will be identified, and the engineering and financial considerations for forming the regional partnerships will be developed and summarized. The specific utilities involved will be contacted, and their interest will be documented.

Deliverables: 1. Summary report documenting the findings of the study.
2. Presentation of findings to Brazos G RWPG.

Funding Criteria Met:

1. Evaluation of new water management strategies in response to changed conditions.
2. Studies that will further implementation of recommended water management strategies.
3. Refinement of water supply information or water management strategies.
5. Further evaluation of water management strategies, especially regional solutions, to meet needs in small communities or rural areas.
7. Interregional coordination.

Task 3. Evaluate changes to municipal water demands, supplies and strategies due to accelerated or desired growth

Budget: \$74,900., distributed as follows:

1. Changes due to Faster than Projected Growth: \$24,800.
2. Changes due to SH 130 Corridor: \$16,500.
3. Changes due to Trans-Texas Corridor: \$16,700.
4. Alternative Water Demands for Slow-Growth Counties: \$16,900.

Scope: Certain counties or water user groups are experiencing growth rates significantly greater than projected from the 1990 and 2000 Census. **Evaluate revised population growth rates, focusing on years 2010, 2020 and 2030, to determine if the implementation of recommended water management strategies needs to be accelerated, and if additional strategies are needed.** Revise population and water demand projections for counties along the SH130 corridor (Williamson) and Trans-Texas transportation corridor (RCA5 – Williamson, Bell, Falls, McLennan, Limestone, and Hill), as implementation of those two projects will foster increased economic and population growth in those areas. Coordinate with Regions K, L, and C concerning appropriate assessments of the effects of SH130 and the Trans-Texas corridors. In addition, entities in West Texas have relatively low growth projections, primarily due to economic conditions which stalled growth between 1990 and 2000. Those entities wish to plan for water supplies sufficient to meet desired growth in order to attract new industry and stimulate renewed growth. Develop alternative water demand projections for water user groups in urban areas that have relatively flat population projections, to ensure that additional supply is available to serve desired economic growth, both from desired population growth as well as new industry.

Deliverables: 1. Summary report documenting the findings of the study.
2. Presentation of findings to Brazos G RWPG.

Funding Criteria Met:

1. Evaluation of new water management strategies in response to changed conditions.
2. Studies that will further implementation of recommended water management strategies.
3. Refinement of water supply information or water management strategies.

4. Activities that will help overcome problems from the last round of planning.
6. Reevaluation of population and demand projections only under the presence of changed conditions.
7. Interregional coordination.

Task 4. Refine water management strategies for Johnson and McLennan County areas

Budget:

TWDB Funding:	\$48,200.
Johnson County SUD participation:	\$15,000.
<u>City of Waco participation:</u>	<u>\$20,000.</u>
Total Funding:	\$83,200.

Scope: The Johnson County area is experiencing rapid growth from the north, and has large projected water needs. Update water management strategies for Johnson County. Due to recent studies and new water supply arrangements for Johnson County users, several of the water supply plans for specific water user groups in the 2006 Brazos G Regional Water Plan may need significant revision during the next planning cycle. Updates to the plan may include:

- Johnson County Special Utility District – JCSUD is in the process of completing their Trinity River Basin Water Supply Study, which includes evaluating treated and raw water supplies from the Trinity River Basin to meet a part of its future water supply needs. The results of the study will need to be incorporated in the water supply plan for Johnson County Special Utility District.
- City of Joshua and Johnson County FWSD No.1 – In late 2005, the City of Joshua provided a letter of consent to proceed with merging Johnson County FWSD No. 1 with Johnson County Special Utility District. After receiving unanimous public support for the merger, an application was filed with approval anticipated by end of 2006. Changes in wholesale water provider (and water supply) based on merger will need to be considered during the next planning cycle.
- The City of Arlington is conducting a wholesale water rate study to include evaluating water supply arrangements with Johnson County water users.
- The Brazos River Authority and Tarrant Regional Water District conducted a "Regional Water Supply and Wastewater Service Study for Johnson and Parker Counties" in April 2004 and identified several water delivery scenarios that could provide water supplies to Johnson and Parker County water users. Contingent on interest by Johnson County water users identified in the study, possible work items could include continuation of study leading to project implementation.
- Additional water provider/supply revisions identified by Regional Water Planning Group during planning process.

The Johnson County SUD has commissioned some recent and ongoing studies related to the above, which will provide some significant information that could be used by the Brazos G RWPG. This has reduced the necessary TWDB funding by approximately \$15,000.

In McLennan County, the City of Waco has been identified as the primary regional provider. However, Waco supplies are limited and would be virtually fully utilized by Year 2060. Explore additional water management strategies for the City, and identify water management strategies for specific water user groups that will serve as alternatives to the City of Waco. The City of Waco has expressed an interest in participating in the funding of this task and could provide \$20,000, which would reduce the necessary TWDB funding accordingly.

- Deliverables:**
1. Summary report documenting the findings of the Johnson County study.
 2. Summary report documenting the findings of the McLennan County study.

3. Presentation of findings to Brazos G RWPG.

Funding Criteria Met:

1. Evaluation of new water management strategies in response to changed conditions.
2. Studies that will further implementation of recommended water management strategies.
3. Refinement of water supply information or water management strategies.
4. Activities that will help overcome problems from the last round of planning.
5. Further evaluation of water management strategies, especially regional solutions, to meet needs in small communities or rural areas.

Task 5. Updated evaluation of sources and control of chloride pollution

Budget: \$148,700.

Scope: Identify and quantify current sources of elevated chlorides in the Brazos River, and identify future sources such as increased brine disposal from RO treatment. Prepare a basin-wide salinity mass balance using recently-implemented features in WRAP to model salinity under the Brazos G assumptions and implementation of the recommended water plan. Include the effects of secondary recovery by oilfields, such as is occurring in Hubbard Creek Reservoir, and possibly occurring in Possum Kingdom, and Granbury Reservoirs. Use the analysis to identify the effects of salinity on water supplies for municipal, irrigation, and some industrial uses. Perform further evaluations of upper basin chloride control projects to improve water quality, including the U.S. Bureau of Reclamation's current project. Consider the impacts of chloride reduction on endangered/threatened species dependant on saline surface water. Also perform feasibility-level study of measures to control seepage into reservoirs from secondary recovery operations.

- Deliverables:**
1. Summary report documenting the findings of the study.
 2. Presentation of findings to Brazos G RWPG
 3. Updated Brazos River Basin salinity model.

Funding Criteria Met:

1. Evaluation of new water management strategies in response to changed conditions.
2. Studies that will further implementation of recommended water management strategies.
3. Refinement of water supply information or water management strategies.
5. Further evaluation of water management strategies, especially regional solutions, to meet needs in small communities or rural areas.

Task 6. Participate in HB1763 process to assist GMA's in establishing desired future conditions

Budget: \$27,700.

Scope: The GMA process required under HB1763 could significantly impact available groundwater supplies in Brazos G. For the 2011 Plan, groundwater availability estimates established by the GMAs and are to be used by the regional water planning groups. The regional water planning groups, in particular Brazos G, have spent considerable time and effort in developing reasonable groundwater availability estimates and should be involved in the GMA process in order to advise the GMAs on previous technical analyses developed by the regional plans and the likely outcomes and ramifications resulting from decisions considered by the GMAs. No technical analyses (groundwater modeling) will be developed under this task. The Brazos G RWPG will direct their technical consultant to attend and participate in the GMA

process, report back to the RWPG, and communicate feedback between the GMA process and the Brazos G RWPG. The Brazos G technical consultant will attend and participate in up to 15 meetings related to GMA activities during this important coordination process.

- Deliverables:**
1. Status reports presented to the Brazos G RWPG.
 2. Memorandums and presentations as needed to GMA committees.

Funding Criteria Met:

3. Refinement of water supply information or water management strategies.
4. Activities that will help overcome problems from the last round of planning.
7. Interregional coordination.

Task 7. Update effects of reservoir sedimentation on supply and identify strategies for control

Budget: \$118,400.

Scope: Incorporate recent sedimentation surveys and studies to determine the effects of reservoir sedimentation on water supplies. Identify and evaluate sediment control projects to prolong reservoir yields for 7 reservoirs, including watershed management, reservoir sedimentation ponds, dredging, and storage restoration using off-channel projects.

- Deliverables:**
1. Summary report documenting the findings of the study.
 2. Presentation of findings to Brazos G RWPG.

Funding Criteria Met:

1. Evaluation of new water management strategies in response to changed conditions.
2. Studies that will further implementation of recommended water management strategies.
3. Refinement of water supply information or water management strategies.
5. Further evaluation of water management strategies, especially regional solutions, to meet needs in small communities or rural areas.

Task 8. Augment water supplies in tributary areas

Budget: \$47,200.

Scope: Evaluate several options for transporting water from the main stem of the Brazos River to tributary areas where supplies are limited, particularly the areas near Lake Aquilla, Lake Limestone and Lake Proctor. Identify 4 tributary areas in need of additional supply for which it is plausible that main stem supplies could be used to augment the tributary supplies. Determine water available to supplement those supplies and develop planning-level cost estimates for the projects.

- Deliverables:**
1. Summary report documenting the findings of the study.
 2. Presentation of findings to Brazos G RWPG.

Funding Criteria Met:

1. Evaluation of new water management strategies in response to changed conditions.
2. Studies that will further implementation of recommended water management strategies.
3. Refinement of water supply information or water management strategies.
4. Activities that will help overcome problems from the last round of planning.

5. Further evaluation of water management strategies, especially regional solutions, to meet needs in small communities or rural areas.

Task 9. Impacts of stock tanks and small ponds on reservoir yields

Budget: \$48,100.

Scope: A trend has been identified where historically large, undivided tracts of rangeland are being subdivided into smaller tracts or ranchettes, with multiple owners. These new owners are allowed to construct stock tanks and small ponds up to 200 acre-feet in capacity without acquiring water rights from the State. These tanks and ponds impound runoff from watersheds that would ordinarily fill downstream reservoirs. Reduced runoff from a reservoir watershed will decrease reservoir yields and dependable supplies. While any single tank or pond is unlikely to have a noticeable effect on runoff from a reservoir's watershed, the cumulative effect of multiple ponds could be large. For a moderately-sized watershed above a major reservoir, use historical mapping, historical aerial photography, and satellite imagery to identify changes in the numbers of tanks and ponds over time. Estimate cumulative surface acreages and cumulative storage volumes (if reasonable to do so), and evaluate the effects of these facilities on watershed runoff and downstream reservoir yields.

- Deliverables:**
1. Summary report documenting the findings of the study.
 2. Presentation of findings to Brazos G RWPG.

Funding Criteria Met:

3. Refinement of water supply information or water management strategies;

Task 10. Water quality aspects of indirect reuse as a water management strategy

Budget: \$107,400.

Scope: Introduction of reuse water into water supply reservoirs to increase yields may result in some undesirable effects on water quality, including the introduction of endocrine disruptors from pharmaceuticals, and increases in total dissolved solids (TDS), nutrients, and others. Evaluate recent literature on the subject, and perform an analysis (mass balance and fate/transport) using water samples obtained from a potential indirect reuse project, such as the Clear Fork Scalping project into Hubbard Creek Reservoir. Describe barriers to implementation of reuse as a water supply.

- Deliverables:**
1. Summary report documenting the findings of the study.
 2. Presentation of findings to Brazos G RWPG.

Funding Criteria Met:

2. Studies that will further implementation of recommended water management strategies;
3. Refinement of water supply information or water management strategies;
5. Further evaluation of water management strategies, especially regional solutions, to meet needs in small communities or rural areas;

Task 11. Re-evaluate water management strategies for Sweetwater

Budget: \$78,200.

Scope: Use updated Edwards-Trinity GAM to evaluate supplies from the Champion Well Field, which is a recommended water management strategy for Sweetwater. If potential supplies from the well field are shown to be less than assumed in 2006, re-evaluate water management strategies for Sweetwater. Alternative strategies include 1. supply from City of Abilene, 2. other groundwater, 3. smaller configuration or off-channel alternative to Double Mountain Fork Reservoir, 4. scalping operation into Lake Sweetwater.

Deliverables: 1. Summary report documenting the findings of the study.
2. Presentation of findings to Brazos G RWPG.

Funding Criteria Met:

1. Evaluation of new water management strategies in response to changed conditions;
2. Studies that will further implementation of recommended water management strategies;
3. Refinement of water supply information or water management strategies;
5. Further evaluation of water management strategies, especially regional solutions, to meet needs in small communities or rural areas;