

## EXECUTIVE SUMMARY

In October 1996, the Sabine River Authority authorized Freese and Nichols, Brown and Root, and LBG-Guyton to conduct the Comprehensive Sabine Watershed Management Plan. This plan was performed in conjunction with the Texas Water Development Board. The purpose of this plan is to update the 1985 *Update of the Master Plan for the Sabine River*. Significant changes have taken place since 1985 that necessitated an update of SRA's overall plan for the Basin. This plan takes an overall look at Basin development including such issues as water need, water supply, the environment, conservation, economic development, and natural resources among others.

The first Master Plan for SRA was in 1955. It was basically a plan for reservoir development. Lake Cherokee was the only reservoir in the Basin at that time. The plan listed thirteen potential reservoirs. In 1962, SRA prepared a *Supplement to the Master Plan*, which revised the hydrologic analyses, yield determinations, and development plan for the Basin. In 1985 the *Update of the Master Plan for the Sabine River* was performed. By the time of the 1985 Master Plan Update, six of the original 13 reservoirs had been built. The 1985 Plan further recommended that four new reservoirs be developed prior to the year 2030. Those four reservoirs were Waters Bluff, Big Sandy, Bon Wier, and Big Cow Reservoirs. As stated above, significant changes have developed since 1985 that necessitate an update of that plan. Information from these previous plans as well as other published studies were used in this Comprehensive Plan. A complete list of references used in this study is included in Appendix A of the main report.

It is important to note that the Senate Bill One Regional Planning process, which was initiated during the course of this plan, has become the mechanism for water planning throughout the State. Any future projects that come from this comprehensive plan should be incorporated into the Senate Bill One Planning process to ensure that the projects become part of the Texas Water Plan.

In this Comprehensive Sabine Watershed Management Plan, the Sabine Basin is divided into two distinct geographic regions: the Upper Basin and the Lower Basin. The Upper Basin begins at the upstream end of the Basin and extends down to the headwaters of Toledo Bend

Reservoir in Panola County. The Lower Basin extends from the headwaters of Toledo Bend Reservoir to Sabine Lake at the Gulf of Mexico.

### **Development Plan and Recommendations**

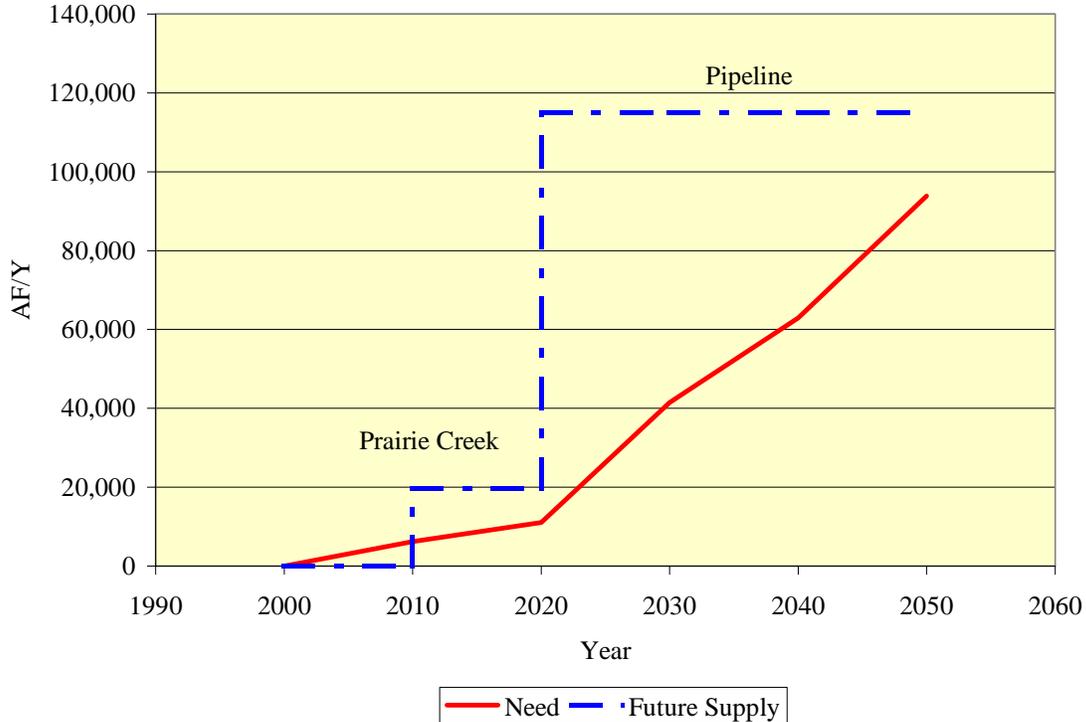
The Texas Water Development Board (TWDB) Consensus Planning population and water use projections were used as a basis for the determining the water needs in the Basin. Based on these projections, the Upper Basin water use will increase from 197,000 acre-feet per year in 1990 to 457,000 acre-feet per year in 2050. The Lower Basin water use will increase from 79,000 acre-feet per year in 1990 to 164,000 acre-feet per year in 2050. These water use projections do not include any use for instream flows and bay and estuary inflow needs, as those have not yet been determined by the state agencies.

Based on the detailed comparison of water needs and available supply, it was determined at this time no new supplies need to be developed in the Lower Basin. It was also determined that in the Upper Basin approximately 93,000 acre-feet per year of additional supply is needed by the year 2050. Potential sources for future water supply include new surface water reservoirs, diversions from the Sabine River, a transmission pipeline from Toledo Bend Reservoir, importation from outside the Basin, and some limited new ground water resources.

The most viable surface water project is a staged development of Prairie Creek Reservoir. This reservoir site was selected based on its location, cost analysis and assessment of developmental concerns. Its firm yield should provide approximately enough supply to meet projected 2023 demands. When the yield of Prairie Creek Reservoir is fully used, there are two options for further supply. One option is diverting water from the Sabine River to supplement the yield of Prairie Creek Reservoir. Diversions would provide some additional supply but would not meet all the projected needs. The other option, as shown in the Figure ES.1, would be to build a pipeline from Toledo Bend Reservoir to Prairie Creek Reservoir. As needs increase and larger demands develop, approaching the limit of the Prairie Creek supply, this pipeline should be constructed. This pipeline/reservoir system would be able to provide for all the projected additional demands in the Upper Basin through 2050. This option has become particularly attractive since SRA is now building a pipeline along the approximate route of this pipeline about half way to Prairie Creek Reservoir to serve an industrial customer. This represents a substantial cost savings to SRA for a future extension of this pipeline route to Prairie

Creek Reservoir. It would decrease the cost of this option even below the amount presented in this report.

**Figure ES.1: Recommended Water Resource Development**



Issues and recommendations identified in this plan are summarized below.

- SRA should continue to pursue negotiations with the City of Dallas to allow for selling the water in Dallas’s contract that must remain in the Sabine Basin.
- SRA should begin the process of permitting Prairie Creek Reservoir. A new reservoir typically takes 10 to 15 years to permit and construct. Therefore, if Prairie Creek Reservoir is planned to meet the needs in the Upper Basin by 2010, the permitting process should be started by year 2000. Should significant obstacles arise to the development of Prairie Creek Reservoir, SRA should pursue the development of the State Highway 322 Stage II reservoir. SRA should talk to TXU Electric regarding their plans for the mining operations at the reservoir site.

- Prior to year 2010, SRA should re-evaluate the water use demand projections (the Senate Bill One projections that are accepted by TWDB) to assess changes in growth and future needs.
- SRA should review the results of the Water Availability Model (WAM) of the Sabine River when completed by TNRCC. This model will indicate if there is additional supply available from the Sabine River for future diversions or insufficient water for existing contracts.
- Based on the results of the re-evaluated demand projections and the WAM, SRA should evaluate the need, timing, and sizing of a transmission pipeline from Toledo Bend Reservoir with terminal storage at Prairie Creek. SRA should pursue the design, permitting and construction of the pipeline several years prior to the expected shortage.
- SRA should pursue discussions with various customers regarding reducing their contracted amount. If a portion of the entity's water contract is released, it could be used for water supply needs elsewhere in the Basin.
- SRA should initiate discussions with Wood County regarding the possibility of converting the Wood County Lakes to water supply. There is a potential 20,000 acre-feet per year of firm yield from these four lakes. However, this would impact the current recreational value of these reservoirs.
- SRA should encourage the Cities of Kilgore and Canton to work with the TWDB regarding the possibility of implementing ASR at their existing well fields to better utilize the surface water supplies during drought and high demand periods.

Other recommendations from this comprehensive report include the following:

- SRA should continue evaluating potential environmental mitigation areas for future water development projects. This will enable SRA to pursue surface water projects that require mitigation lands.
- Due to the uncertainty surrounding the current Bottomland Hardwoods status in the Sabine Basin and their importance to reservoir development, we recommend that an updated statewide study of Bottomland Hardwoods be conducted. SRA should request that the TWDB and/or the TNRCC conduct such a study.

- SRA should review its current contracting procedures to determine if modifications would result in more accurate allocations of firm yield to its customers. Currently, there are a number of large water contracts in the Upper Basin that are not being fully utilized.
- SRA should conduct volumetric surveys of their existing reservoirs to verify sedimentation rates. If the sedimentation rates are significantly different from those used in this plan, SRA should re-evaluate the firm yields of the affected reservoirs. The projected firm yield of Lake Tawakoni and Lake Fork in the year 2050 is approximately 18,100 acre-feet per year less than the current contracted amounts. This amount is not reflected in the total 93,000 acre-feet per year of projected water needs in the Upper Basin.
- SRA should continue their public participation and information programs to its customers and water and wastewater providers. Specific recommendations for expanding awareness of water resource management to water and wastewater providers are included in Section 9.3 of the main report. Recommendations for public participation are outlined in Section 12.2 of the main report and in a separate technical memorandum.
- SRA should implement an economic development program for traditional economic development utilizing local, regional, and state resources throughout the Sabine Basin. Further, this effort should be expanded to include eco-tourism to fully take advantage of the wealth of natural resources in the Basin.
- SRA should continue their current water quality monitoring program to assess water quality in the Basin. We recommend that SRA expand the special studies program to include more high flow or storm sampling studies for non-point source documentation, and SRA should pursue working with the TNRCC to develop regional tolerance values for bioassessment data.
- SRA should provide a technical assistance program to support water and wastewater providers in the Basin with information such as EPA and TNRCC regulations. Provide recommendations on treatment options to help small water supply entities comply with regulations. Host and/or facilitate any available TWDB and TNRCC seminars or workshops regarding water or wastewater treatment. Facilitate the

TNRCC plant optimization program within the Basin. If necessary, hire local consultants on an as needed basis to help with this technical assistance program.

- Train entities within the Sabine Basin that collect water quality data in approved data collection and analysis methods so that this information can be used in the Clean Rivers Program and SRA's Information System and GIS database.
- Host and/or facilitate TWDB drought management and contingency planning seminars to assist all of the water suppliers in the region with their plans.
- Study further the opportunity of implementing regional water and wastewater treatment facilities.
- Use GIS and other data analysis methods to continue monitoring for water quality problems that may be related to wastewater treatment effluent and septic systems, non-point sources, oil and brine spills, construction activities, and specific anthropogenic pollutants.