

13.0 RECOMMENDATIONS

13.1 Water Supply Development Recommendations

Evaluations of the water supply resources within the Sabine Basin indicate the need to develop additional supplies in the Upper Basin for future growth. Presently, there is only a very small amount of supply available in the Upper Basin from existing permits, other than the supply in Panola County (Lake Murvaul). Utilizing the portion of the water contracted to Dallas that must remain in the Sabine Basin, existing supplies can most likely meet the future needs of the Upper Basin until the year 2010. After 2010, a significant increase in water requirements is projected due to manufacturing, mining and power development.

These three industries play an important role in the economy of the Basin. However, it is uncertain whether the growth and water demands will increase at the projected rates. The largest manufacturing industry in the Basin, Eastman Chemical, has indicated that they have no plans for large expansions in the near future. Also, they are currently using less water than the supply they have available through their contracts and water rights. Steam electric power stations are the primary users of water associated with power in the Upper Basin. With deregulation, there is some uncertainty regarding the direction of power development in the Basin. There is, however, a new steam electric facility planned in the Upper Basin in the near future. Tenaska has plans to build a power generating facility in Rusk County. Tenaska has already signed a contract with SRA to purchase Toledo Bend water for use at this facility. SRA, is currently building a pipeline to transport water to this facility in Rusk County. Another uncertainty in water use projections area is the fact that electric companies are currently pursuing options that utilize less water per kilowatt generated (e.g., combined cycle generation). The growth in mining is generally dependent on the local economy and building industries. Lignite mining in the Basin is associated with operating steam electric power stations. If alternate power sources are used, water use for lignite mining will not increase as predicted. Based on this uncertainty in the projected future water requirements in the Upper Basin, it is recommended that additional water supply be developed in stages. A staged plan will allow for adjustments to changing needs and avoid unnecessary commitments of financial resources to a single project.

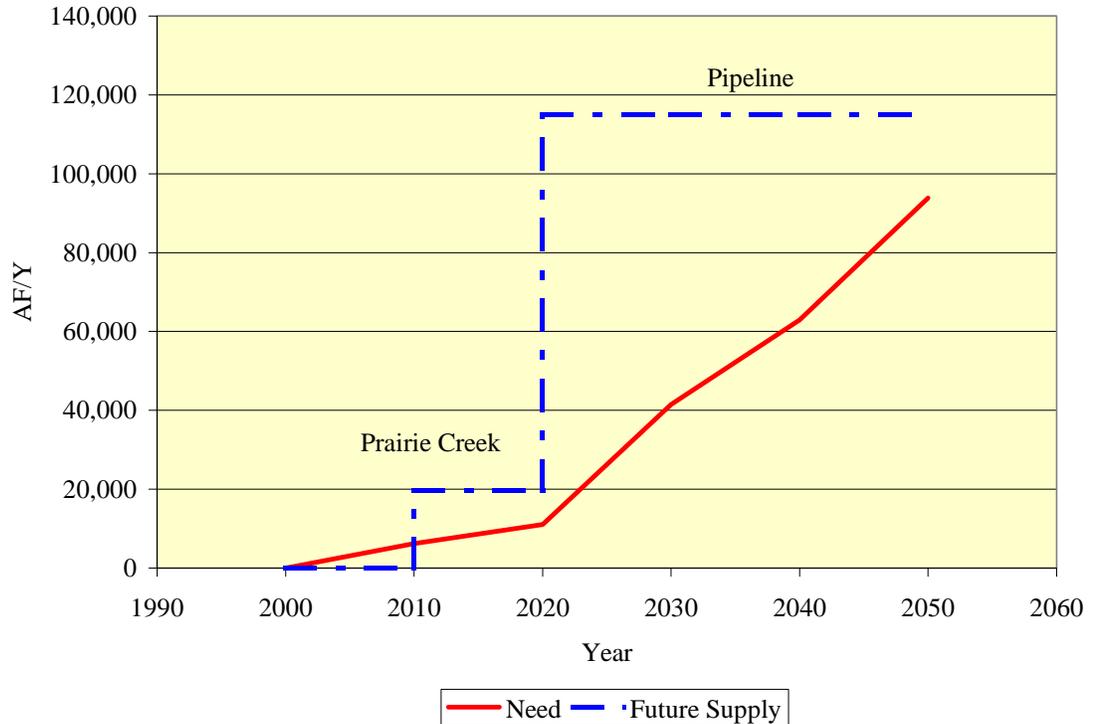
The potential sources for future water supply include new surface water reservoirs, diversions from the Sabine River, a transmission pipeline from Toledo Bend Reservoir,

importation from outside the Basin, and some limited new ground water resources. Additional importation from the Cypress Basin is currently not a viable option since the supply available from Lake O' the Pines Reservoir will most likely be retained for in-Basin use. If new reservoirs are developed in the adjacent Basins, then importation may become more feasible.

Ground water currently provides approximately three percent of the Basin's total water supply. Water availability analyses indicates there is approximately an additional 16,000 acre-feet per year of ground water supply in the Carrizo-Wilcox aquifer and smaller amounts in the other aquifers that could be used for Upper Basin demands. It is unlikely that much of this amount will be developed due to the limitations of the aquifer and the location, amount and concentrations of the future demands. The aquifer is unable to support the large, concentrated future demands of manufacturing, mining and steam electric water uses. Also, based on the experiences of a number of entities in the Upper Basin, future plans should include alternatives to provide water supply if and when well fields fail.

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. Prairie Creek is centrally located in the Upper Basin, and 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 near Prairie Creek to supplement the yield of Prairie Creek Reservoir. This option would only increase the yield about 50 percent to about 30,000 AF/Y. This option would only be used if it was fairly certain the large future demands would not develop. The other option 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 as shown on Figure 13.1. This option has become particularly attractive in recent months 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 13.1: Recommended Water Resource Development



Based on the considerations discussed above, a summary of the recommended water resource development program is presented 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. SRA should try to get Prairie Creek added into the Texas Water Plan through the Senate Bill 1 regional planning process. 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 they are not intending to use that water for future use. 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.
- 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.

13.2 Environmental Recommendations

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. In addition, new studies on flood plain and wildlife within the Sabine Basin should be conducted. SRA should request that the TWDB , TNRCC, and/or the Texas Park and Wildlife Department conduct such studies.
- 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.
- 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.
- 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.

13.3 Information Management, Economic Development, and Public Participation Recommendations

Specific details on how to improve Sabine River Authority's Information Management System, Economic Development Program and Public Participation Program have been provided to the SRA in separate technical memoranda. The general guidelines are below.

- Continue to evaluate more efficient means of handling data. This should incorporate software that permits data filtering and analysis.
- Improve the information system for collection, storage, retrieval and analysis of watershed planning and environmental data for SRA use, compliance with regulations and dissemination to the interested public.
- Develop a standardized and accessible record control system for SRA documents; expediting document location, preventing storage of multiple document versions, and facilitating migration to an electronic document management system.
- Improve the communications process between SRA divisions, and tie these locations into the SRA data system.
- Create automated tools to analyze Sabine River watershed data for watershed operations and planning.
- Maintain its Internet World Wide Web site to communicate with federal, state, and local agencies, institutions, and SRA field offices and to inform and educate the public.
- 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. Define goals that focus on specific issues of importance to the Sabine Basin.
- Implement a "Partners in Water Resource Management" program. This program identifies specific water quality or water supply conditions and client or interest

groups that impact or are impacted by these conditions. It then enlists these entities in working with SRA to find and implement responses.

- Continue existing public information and education activities;
- Develop policies and internal communications with regard to public notice via the SRA website and/or newsletter. These policies should establish guidelines for types of information that can be made available to the public, who is authorized to release information and how to notify the webmaster or newsletter editor of this information.

13.4 Water and Wastewater Treatment Recommendations

Recommendations regarding the assessment of water and wastewater treatment needs throughout the Basin are below.

- 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.
- SRA should host and/or facilitate TWDB drought management and contingency planning seminars to assist all of the water suppliers in the region with their plans.
- SRA should further study the opportunity of implementing regional water and wastewater treatment facilities particularly in the Lower Basin.