

9.0 WATER AND WASTEWATER TREATMENT NEEDS

9.1 Water and Wastewater Treatment Survey

A survey of water and wastewater providers, local and regional governments, and industrial water users was conducted to define various issues pertinent to the provision of water in the basin. Each group received a survey designed to assess their specific conditions and needs. The surveys investigated the amount and source of current water supply, projected needs and the sources proposed to meet future needs. Information was also gathered on treatment facilities, planned expansions of service areas, water supply facilities or treatment plants, and conservation and drought management planning in the basin.

Approximately half of the surveys were completed and returned. The information obtained from these surveys was compiled and verified through meetings with the major water suppliers and wastewater providers (those that have an average flow of more than 5 million gallons per day). A list of these entities is presented in the Table 9.1.

Table 9.1: Major Water Suppliers and Wastewater Providers

Cities	Water Supply Corporations	Industries
Bridge City Carthage Center Gladewater Greenville Kilgore Longview Marshall Orange White Oak	Cash WSC Combined Consumer WSC MacBee WSC	Bayer Corp Chevron DuPont East Texas Saltwater Disposal Inland Paperboard & Packaging, Inc. Texas Eastman Texas Utilities (Martin Lake)

Based on the surveys and meeting with large suppliers, it was found that:

- There are no large increases to needs expected in the short-term.
- While some water providers and industrial users have water conservation plans, few of these plans specify conservation goals or mechanisms to quantify conservation savings. Even fewer providers and users have drought contingency plans.

- There appears to be sufficient water and wastewater treatment capacity for the next 10 to 20 years among the large suppliers.
- The surveys and interviews indicate a need to improve the knowledge and understanding of local suppliers on specific issues. Most of the larger entities know about the upcoming Safe Drinking Water Act regulations and Clean Water Act regulations and are adjusting or modifying their treatment systems to comply with them. Most of the smaller entities also know about the regulations but either: 1) do not know how to address them, or 2) know what needs to be done but do not have the money to modify their treatment facilities.
- Most of the larger entities do not have existing problems with treatment, whereas many smaller entities do have existing problems with their treatment facilities.
- Only one major wastewater provider, Chevron, is currently investigating reuse potential of their effluent.

A summary of the data compiled from the surveys and information meetings is presented on Tables 9.2 and 9.3 at the end of this section.

9.2 Septic Systems

Much of the basin's population is rural and is on septic systems. From the current water quality monitoring data, it appears that fecal coliform contamination due to septic systems is a problem within the basin. This should continually be monitored as part of the basin's source water protection program. TNRCC is currently performing studies that will result in better methods of detecting contamination from septic systems. In addition, there is new technology that can be used to pinpoint the contamination. It is an instrument that uses fluorescent lighting to detect household detergents leached out of a septic system. This can be very effective in identifying septic system problem areas.

9.3 Recommendations

The results of the water and wastewater survey identified several areas that could be improved, particularly with regard to expanding local technical expertise on water supply, treatment, and quality issues. The following recommendations focus on expanding local entity understanding and awareness of regulatory matters that impact water supply, quality or management in the Sabine Basin.

1. SRA, through its public involvement program, should develop a technical assistance program and educational and informational activities for specific use groups on relevant issues, as follows:
 - Maintain a database of contact names and addresses for all small water supply entities in the basin to be used to contact these suppliers with information on new 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. Hold these seminars at the SRA local offices in both the Upper and Lower basin and encourage local water and wastewater providers to attend.
 - Facilitate the TNRCC plant optimization program within the basin. This plant optimization program allows plant operators to visit other plants and learn new processes and also gives entities the opportunity to have outside operators come into their own plant to help optimize the treatment processes within the plant.
 - 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 database. Currently much of the data cannot be integrated into the Clean Rivers Program or into the Information System database because the data is not obtained using standard, EPA-approved data analysis methods.
 - Host and/or facilitate TWDB drought management and contingency planning seminars to assist all of the water suppliers in the region with their plans.

2. If necessary, hire local consultants on an as-needed basis to help with a technical assistance program for local water and wastewater providers.
3. Study further the opportunity of implementing regional water and wastewater treatment facilities, particularly in the Lower basin where there was significant interest expressed in regional wastewater treatment by those entities in the meetings.
4. Incorporate any new TNRCC monitoring methodologies into SRA's water quality monitoring plan.
5. Use GIS and other analysis methods to continue monitoring for water quality problems that may be related to wastewater treatment effluent and septic systems. If necessary, utilize new technology to identify point source septic system contamination.

Table 9.2: Water Supply Information for Large Water Suppliers/Users in the Sabine Basin

Entity	Source	Amount of Source (MGD)	1996 Avg Day Use (MGD)	1996 Peak Day Use (MGD)	Plant Capacity (MGD)	2000 Avg Day Use from entity* (MGD)	2020 Avg Day Use from entity* (MGD)	2000 Avg Day Use from TWDB** (MGD)	2050 Avg Day Use from TWDB** (MGD)	Future Source
Bridge City	Ground water	2.38	0.77	1.156	NA			0.73	0.87	Additional wells
Carthage	Lake Murvaul & Ground water	12.0 & 1.1	2.50 (including wholesale customers & in city industry)	4.0	5.2	4.0	6.1	1.45	1.24	Lake Murvaul
Center	Lake Center & Lake Pinkston	1.3 & 3.4	2.8	3.7	4.6	2.3	3.76	0.84	0.97	None needed
Gladewater	Lake Gladewater	1.5	1.06 in city, 0.15 to wholesale customers	2.2	2.5			1.07	1.29	Currently applying to TNRCC for additional 1.5 mgd from L. Gladewater. Also considering new lake at Gilmer, Texas.
Greenville	City Lakes & Lake Tawakoni	3.7 & 19.0	4.46	7.52	13.0	5.17		5.26	5.07	No additional supply needed. City may return some of its Lake Tawakoni supply to SRA
Kilgore	Lake Fork & Ground water	3.5 w/ 2.5 option, 5	2.3 in city, 0.2 to wholesale customers	6.0	3.5			2.44	2.85	None needed
Longview	L. Cherokee, Lake Fork, Sabine River, Big Sandy Cr.	14.3 17.9 12.4 4.8 =49.4	18.67 in city, 2.44 to wholesale customers	31.0	42.0	19.8	23.8	14.16	17.11	Agreement to purchase 17.9 mgd from Lake O' the Pines with option for more. Developing system to deliver 30 mgd from that source.

* Estimated use from the entities includes manufacturing use and wholesale customers.

** Estimated use from the TWDB does not includes manufacturing use and wholesale customers.

Table 9.2 (continued) : Water Supply Information for Large Water Suppliers/Users in the Sabine Basin

Entity	Source	Amount of Source (MGD)	1996 Avg Day Use (MGD)	1996 Peak Day Use (MGD)	Plant Capacity (MGD)	2000 Avg Day Use from entity* (MGD)	2020 Avg Day Use from entity* (MGD)	2000 Avg Day Use from TWDB** (MGD)	2050 Avg Day Use from TWDB** (MGD)	Future Source
Marshall	Big Cypress Bayou	14.3	4.58	9.02	14.0	5.0	6.5	3.48	3.13	Currently looking at rights in Caddo Lake. Lake O' the Pines is also an option.
Orange	Ground water	4.25	3.36	3.7	NA	3.5	4.2	3.96	4.85	Plan to add 1.4 mgd of ground water within next 10 years.
White Oak	Big Sandy Creek (purchased from Longview)	3.0	0.869	1.907	2.0	.747	1.123	0.74	0.90	None needed
Cash WSC	Lake Tawakoni, Lake Fork, Lake Lavon	1.5 1.68 1.18 =4.36	1.2	2.187	2.7	1.59	5.46			Have requested 1.0 mgd from Lake Fork if it becomes available.
Combined Consumer WSC	Lake Tawakoni, Lake Fork	1.5 0.5	0.7	0.8	2.0	1.0	2.6			Lake Tawakoni, if available.
MacBee WSC	Lake Fork (actual use is from Tawakoni) & Ground water	0.5 with 1.5 option 0.9	0.511	1.026	2.0	.7	1.6			No plans for future sources.
Bayer Corp	SRA Canal, Ground water	1.0 1.0	2.0 1.0	4.3	4.0	4.5	4.5			2.9 mgd additional from SRA Canal division for plant expansion.
Chevron	SRA Canal, Ground water	2.0	5.75 diversion, 2.6 consumptive 0.15 gr. Water use	NA	6.0	3.0 consumptive use	3.0 consumptive use			.

* Estimated use from the entities includes manufacturing use and wholesale customers.

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DuPont	SRA Canal, Ground water, Adams Bayou	22.0 0.1 Brackish Only	1.1 consumptive use	1.6	3.0	1.1	1.1			Possibly increase their use by 20% within 5 years and another 20% within 10 years. Will get this from SRA Canal.
Inland Paperboard & Packaging	SRA Canal, Ground water	20.0 1.6	15.3	16.2	16.0	16.0	16.0			None needed
Texas Eastman	Sabine River, Lake Fork, L. Cherokee, Longview, On-site reservoirs	20.0 3.12 4.9 0.70	18.8 total diversion, 15.1 consumptive use		NA	20.3	29.3			Additional on-site reservoirs being developed now. Other supplies not needed for next 25 years.
Texas Utilities	Martin Lake, Lake Fork (from SRA), Lake Fork (from Dallas), Ground water	22.3 10.7 15.2 0.16	19.3		0.9	19.3	19.3			None needed.

* Estimated use from the entities includes manufacturing use and wholesale customers.

** Estimated use from the TWDB does not include manufacturing use and wholesale customers.

Table 9.3: Wastewater Information for Large Wastewater Providers in the Sabine Basin

Entity	1996 Avg Day Flow (MGD)	1996 Peak Wet Weather Flow (MGD)	Plant Capacity (MGD)	2000 Avg Day Flow (MGD)	2020 Avg Day Flow (MGD)	Expansion Plans	Reuse Potential
Bridge City	0.9	4.0	1.6	0.9	1.3	None	
Carthage	2.6	9.0	3.6			None	
Center	0.6	1.55	1.75	0.8	0.9	None	
Gladewater	0.655	1.398	1.4	0.8	1.2	None	
Greenville	2.9	7.0	4.23	3.1	3.8	Will enlarge plant in 3-5 years	
Kilgore	2.0	4.9	3.0			Add 3.0 mgd in year 2001.	
Longview	10.37	18.9	16.5	17.0	24.0	21 mgd in 1998-99.	
Marshall	3.6	4.7	5.9	3.7	4.0	8.0 mgd in 1998.	
Orange	3.5	9.5	7.0	4.0	6.0	None	
White Oak	0.55	1.6	1.0	0.8	1.4	Plant can be uprated to 1.2 mgd without modification. If 4 th clarifier is added, it can be uprated to 1.4 mgd.	
Bayer Corp	2.5	11.83	20	2.5	2.5	None	
Chevron	2.29	7.75	3.6	2.5	2.5	None	In year 2001, they are looking at potential reuse project where they will reuse 90% of outfall
DuPont	7.0	15.0	12.0	10.0	10.0	None	

Table 9.3 (continued): Wastewater Information for Large Wastewater Providers in the Sabine Basin

Entity	1996 Avg Day Flow (MGD)	1996 Peak Wet Weather Flow (MGD)	Plant Capacity (MGD)	2000 Avg Day Flow (MGD)	2020 Avg Day Flow (MGD)	Expansion Plans	Reuse Potential
Inland Paperboard	18.8	24.3	20.0	20.0	20.0	None	
Texas Eastman	4.0	4.0					
Texas Utilities	0.01	0.02	0.4	0.01	0.01	None	

Note: No WSCs are involved in wastewater treatment.