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City Water Woes

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Headlines proclaiming water shortages in Texas towns and cities were common during the hot, dry summer of 1978. Most of the shortages were due to inadequate storage and distribution systems, but there were towns which actually ran out of water.

In all but disaster situations, municipal water shortages are due to lack of human foresight and certainly can be prevented. Most municipal water problems are the result of unlimited growth with limited water resources.

Many towns and even a few cities in Texas, for example, have thrived in semi-arid areas with only shallow underground reservoirs for their water supply. As George Sibley points out in "The Desert Empire" (Harpers, October 1977): "We have not just moved into the desert with canteen and washbasin; we've gone in with the kitchen sink, flush toilet, watered lawn, and swimming pool."

There are many city councils and citizens groups working diligently to assure that their towns or cities do not make future headlines about water shortages.

A group in Granbury, organized this year by the Hood County Program Building Committee and called the Hood County Water and Sewer Task Force, is an example of concerned citizens groups working throughout the state. The Task Force is searching for solutions to the following future water demand problems common to many Texas towns and cities: increasing population, increasing per capita consumption, diminishing ground water supply, uncertain alternative sources, unacceptable water quality, and complex regional problems.

1. Increasing population

Ironically, the major cause of Hood County's water woes is Lake Granbury--one of the state's largest reservoirs. Since the Brazos River Authority project was completed in 1969, Hood County has experienced phenomenal growth.

The reservoir horseshoes around the town of Granbury on three sides, comes two blocks from the county courthouse, and has sparked development interest in Hood County beyond the dreams of even the most optimistic community booster.

Water development projects increasingly have become part of the problem of water supply in the state. They stimulate further development and create new demands before they are even completed.

2. Increasing per capita consumption

Until Lake Granbury was discovered by commuters from Fort Worth, just forty minutes away, Hood County was predominantly agricultural. Now Hood County--just as the Texas population as a whole--is growing more urban.

Seventy-eight percent of the Texas population lives in metropolitan areas. Urban population in the state increased 13 percent from 1970-76 as compared to a 6 percent increase in rural areas. Urban dwellers demand more water in their homes and for fire protection; they also use more water for lawns, swimming pools, and car washes than do rural Texans.

3. Diminishing ground water supply

Hood County has depended upon ground water for its water needs since the first windmill was installed 90 years ago. Eighty-seven wells currently supply public systems in Hood County.

This ground water, from the Trinity Sands Aquifer, is inexpensive, convenient, and high in quality. Unfortunately, there is just not enough of it. Like many other areas in Texas, more water is pumped from the underground reservoir each year than nature is replenishing.

New, deeper wells are replacing dried, shallower wells, but if current trends continue, the water level will decline further each year.

A study funded by Farmers Home Administration in 1968 determined that the county would need additional sources of water by 1990. The population of Hood County is already far beyond the report's prediction of 10,000 by 1990. In fact, current estimates range between 18,000 and 20,000 county population. Members of the Task Force feel that if the present rate of growth continues, the county population could exceed 50,000 by the turn of the century.

4. Uncertain alternative sources

Chairman of the Hood County Water and Sewer Task Force, Mac Bigelow, cites three possibilities for alternative sources of water for future county residents.

- Lake Granbury water could be purchased from the Brazos River Authority. This would be contingent upon the Authority having enough water after all others with surface water rights in the Brazos River Basin have been guaranteed their permitted amounts. Hood County is not the only growth area in the Brazos Basin. As a matter of fact, the Texas Department of Water Resources predicts a 96 percent increase in the population within the basin by 2020.
- The city or county could develop its own source by damming local streams. This would also depend upon the surface water rights of others.
- Hood County could also buy water from some other district or a city such as Fort Worth if surplus water is available.

Water, unlike other resources, cannot be easily shifted from one area to another to smooth out regional shortages. Transferring water from one river basin to another is becoming ever more unpopular as energy increases in cost and as water demands increase in all basins.

5. Unacceptable water quality

Unfortunately for Hood County, the water in Lake Granbury--certainly the most accessible water source--is not "fit to drink." The water in the lake is contaminated by salt from salty ground water reservoirs which flow into the Brazos River upstream. Lake Granbury water contains 1400 parts per million of salt, which is about three times saltier than it should be to be considered good drinking water.

The Task Force is investigating available desalting processes, but so far these have proven to be too expensive to construct and operate. Other Texas towns and cities have water sources which are high in nitrates, fluorides, or other natural contaminants. They, too, have found that treatment costs generally exceed the costs of alternative sources of water.

6. Complex regional problem.

Like most water problems, the Hood County water demand dilemma is a regional concern. The diminishing source is used by cities as well as for irrigation and industrial purposes. Water conservation measures and long range plans for use of surface as well as ground water for the city or county would simply leave the water for someone else rather than lengthen the usefulness of the reservoir for the residents of Hood County.

One of the most common problems in providing water to growing communities is that the problems are not limited to political boundaries. River basins, underground and surface

reservoirs--and certainly urban sprawl--ignore city limits, county lines, and even state boundaries.

Many volunteer hours have already gone into the Task Force organization and fact-finding activities. Plans now include forming a nonprofit corporation, contacting funding agencies, working with consultants, and reporting to the community.

Perhaps the most important accomplishment to date is a public awareness that present water supply in Hood County is inadequate for the future. Certainly the area is not alone in its water supply problems.

Common Dilemma

An oft-heard saying in Texas city halls goes: "Local governments have all the problems; state governments have all the authority; and the federal government has all the money." Water supply is an excellent example of this dilemma.

City officials face everyday problems of meeting water demands, monitoring water quality, expanding and repairing distribution systems, buying and selling water, and developing new sources of water to meet future needs.

Water departments must plan to meet future demands with adequate distribution systems as well as adequate sources of water. They must plan by estimating population growth and future per capita use of water.

A majority of Texas towns and cities now depend upon ground water sources for their water supply. Ground water is widespread in the state and is relatively low in development and pumping costs. Underground supplies are diminishing because of overpumping, however, and many municipal supplies will have to turn to available surface water.

State Authority

Texas courts have ruled that the water underground belongs to the owner of the land. A city can withdraw water from under its property and use it for whatever purpose it chooses. This is in direct contrast with the extensive and direct involvement of the state in controlling surface water supplies.

The state--just as the saying goes--has all the authority concerning the distribution of surface water. All water in defined water courses (rivers, streams, lakes, and bays) is the property of the state. Rights to use the surface water in Texas are granted by a state agency--the Texas Water Rights Commission.

After the right to the water is obtained, cities must then develop the water source or buy the water from a river authority or other district created by the state legislature to develop and sell water. It is not unusual for Texas cities to acquire rights to water many years in

advance of the actual need. Small towns and new communities often find themselves at the mercy of the large municipal water suppliers because of their inability to plan ahead and acquire water rights for future growth.

And the Money?

The state also has the authority to loan money to cities to help with expansion or improvement of water supply systems. The Texas Water Development Fund, administered by the Texas Department of Water Resources, has aided 72 water supply projects with $215.7 million and has catalyzed the investment of an additional $160.6 million from local interests.

Water development projects are generally far away from economic reality for government bodies other than large federal agencies such as the Corps of Engineers and the Bureau of Reclamation. In a sense, therefore, "all" of the money available for large scale surface water development has been federal.

Federal funding for multipurpose reservoirs, however, is expected to be much less available in the future. River authorities, municipalities, water districts, and state water agencies will have to play a larger role in development of future municipal water supplies.

Alternatives

Texas cities--large and small--must prepare to meet future water demands. They must do this by estimating how many people will be served and how much water will be used per person per day.

Most estimates of future water demand assume continued rapid population growth as well as continued increase in daily per capita use of water. Increasing per capita consumption is due to improved economic conditions, increased use of water consuming appliances, improved sanitary facilities, and increased demand for irrigated lawns.

Robert Van Dyke, General Manager of the San Antonio City Water Board, told the 1974 Water for Texas Conference: "Coupled with the increased urban population is an ever-increasing daily per capita use of water by our city dwellers. A quarter of a century ago, metropolitan water systems were designed on the basis of 100 gallons per capita per day. This figure has increased to approximately 150 gallons per capita per day today, and it is anticipated that it will rise to over 200 gallons per capita per day by the turn of the century."

Lower per capita consumption, however, is a viable alternative to some water development projects and must be encouraged by cities in the future.

Federal policies on water development projects and in other areas such as facilities grants now reflect a strong commitment to water conservation. Many federal funds to cities in

the future will require the adoption of certain conservation regulations for industries and residences.

A provocative view on future water demand appears in a 1977 publication from the League of Women Voters Education Fund called, "GROWTH and water: can we maintain the pressure?"

"Water demand cannot be considered the same as water need. The quantity of water needed for maintaining life and public welfare is actually quite small. Even the amount of water to comfortably support a growing population is, in theory, much smaller than per capita water consumption trends show. Demand has been used as a term to denote gross water use without regard to how efficiently that water has been used.

"As demands tax supply, we must ask whether we have some inherent right to all the water we want for all the uses we can conceive. Does government have the responsibility to meet all water demands? Are water users willing to pay--through taxes and water charges--the true cost of meeting demand under all circumstances?"