

# HAND BOOK OF TEXAS WATER LAW:

PROBLEMS  
AND NEEDS

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Texas Water Resources Institute



**HAND  
BOOK  
— OF —  
TEXAS  
WATER  
LAW:**

  
**PROBLEMS  
AND NEEDS**

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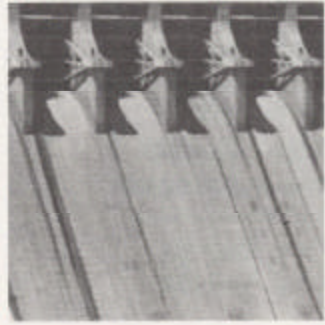
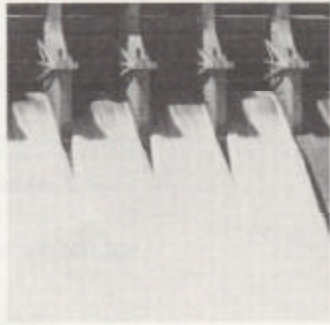
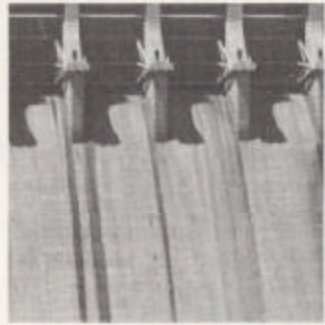
Lee Jones, hearings examiner in the Water Rights Division of the Texas Water Commission, and Frank Skillern, professor at the Texas Tech University School of Law, deserve special thanks for reviews and helpful explanations.

This publication is intended for educational and general informational purposes only. It should not be considered definitive with regard to specific legal problems requiring judicial resolution. Readers desiring specific advice concerning water problems requiring a legal resolution should contact the Texas Water Commission or an attorney.

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# INTRODUCTION

*Water, water, every where  
And all the boards did shrink;  
Water, water, every where  
Nor any drop to drink.*

The Rime of the Ancient Mariner

Texas is blessed with a bountiful supply of water, although it is not always in the right place at the right time, nor of the right quality. The wealth of Texas, legendary or factual, has historically been attributed to cattle, oil and gas, agriculture, and other activities dependent upon the abundance and variety of natural resources found throughout the state. None of these resources has been more crucial for the state's economic development than water.

Because water is critical to the state's livelihood, all Texans benefit from a basic understanding of how the state's water is managed, protected, and allocated.

## OVERVIEW OF TEXAS WATER ISSUES

How much water does Texas have and where is it? Is there an adequate supply for industry, agriculture, municipalities, and the environment? Will there be

enough for future generations? Will it be safe to drink, to bathe in, to swim in, and to use for other recreational purposes? For over 200 years Texans and their predecessors have wrestled with these issues. Answers to these questions will be provided by our political, economic, and legal systems. While politics and economics are important considerations, the final allocation and protection of Texas water resources will be determined by our water laws and institutions.

## WATER PROBLEMS

An appreciation of the complexity of Texas water problems and laws must begin with an understanding of the nature of water. Water is a dynamic resource that is in constant motion as it travels from stage to stage in the hydrologic cycle. The water supply at any particular place depends on several factors, including rates of precipitation, evaporation, streamflow, and absorption into the ground.



The water budget for the United States is shown in Figure 1-1. Approximately 10 percent of the 40,000 billion gallons per day (bgd) of water vapor passing over the U.S. is precipitated as rainfall. This percentage (4,200 bgd) is equivalent to an average rainfall of 30 inches per year. About two-thirds of this rainfall is evaporated or transpired from plants, leaving the remaining one-third (1,450 bgd) to accumulate in ground or surface storage or to flow to the oceans or across the nation's boundaries.

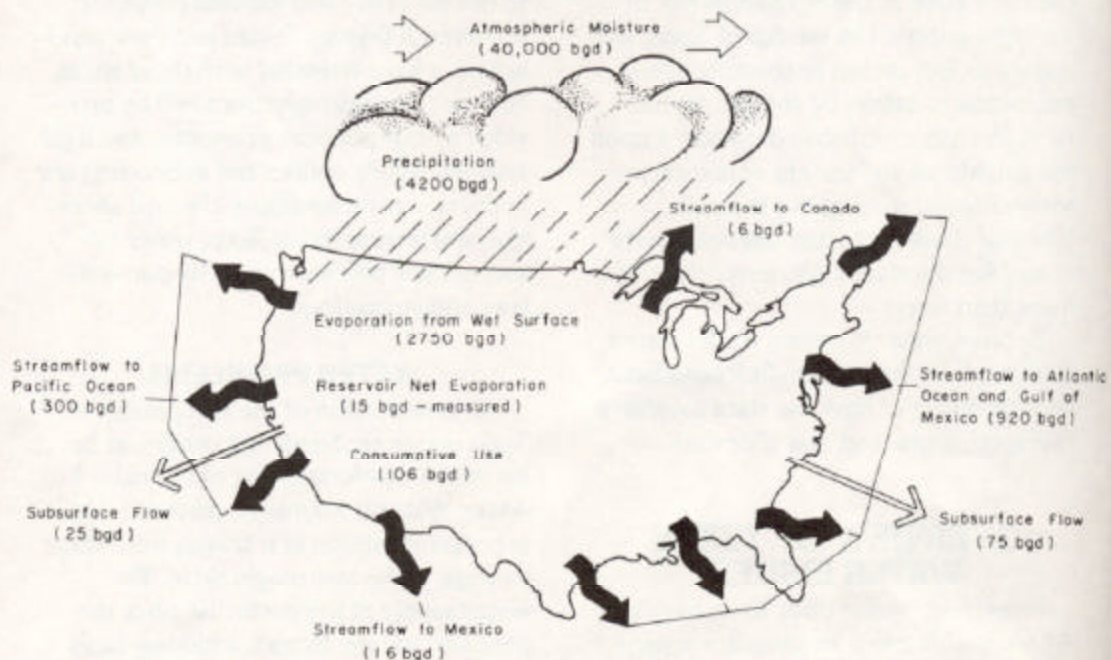
The Texas water budget is also controlled by the hydrologic cycle but on a smaller scale. Based on weather data compiled over the last 80 years, it is estimated that precipitation supplies about 413 million acre-feet (maf) of water to Texas annually. About 90 percent of this precipitation is lost through evaporation or plant transpiration, leaving an estimated 49 maf to recharge aquifers or to flow into rivers and streams.

Rainfall across the state varies and as one wag has observed, "It just doesn't

arrive in a very civilized manner." Texarkana averages 49 inches of rainfall a year; while Lubbock gets about 18 inches annually. This climatological diversity contributes to the state's water problems. While East Texas generally receives adequate precipitation to replenish ground and surface water sources, West Texas thirsts for rainfall to restock its water supplies.

Just as Texas is proud of its diversity of resources, it also must deal with a diversity of water problems. Rapid population growth and economic development coupled with climatic conditions have resulted in increasing water quantity and quality problems for the state. The Texas Department of Water Resources, recently divided into the Texas Water Development Board and the Texas Water Commission, has studied and identified the major types of water and water-related problems throughout the state. The agency published its findings in a 1984 report, *Water for Texas*. Major problems outlined in that plan are briefly described.

FIGURE 1-1  
WATER BUDGET FOR THE UNITED STATES



Redrawn from *The Nation's Water Resources, 1975-2000*, Vol. 2, U.S. Water Resources Council, Washington, D.C., 1978.



**Water Quality.** Both natural contamination and manmade pollution affect the quality of existing supplies and, although different uses of water require different degrees of quality, contamination and pollution can make water unusable or too costly. Several ground and surface water resources are presently unusable because of large concentrations of natural minerals, salts, and sediments. Water pollution from industrial, municipal, and agricultural activities also affect water availability. Both the quantity and complexity of pollution are increasing.

**Water Quantity.** Shortages in ground and surface water supplies required to meet anticipated municipal, industrial, and agricultural needs could occur in many regions of the state. Long-term dependence on groundwater, the historical water supply for much of the state, has caused groundwater resources to decline significantly. In order to solve present and future water supply problems, it will be necessary to increase water use efficiency through conservation and in some cases to increase surface water supplies through the development of additional reservoirs.

**Flooding.** Millions of dollars in damage are sustained annually in Texas due to flooding. Most people do not perceive or consider the risk of flooding when developing areas for residential, commercial, and industrial purposes.

In Texas the character and intensity of floods differ widely because of the varied geography and climate within river basins. Broad, flat, slow-moving floods generally occur in the coastal areas and the eastern part of Texas where rainfall is highest. This type of flood inundates areas for prolonged periods of time with damaging results. Flash floods occur in the central and western regions of the state where slopes are steep, ground cover is sparse, and soil is relatively unabsorbent. While flash floods are usually brief, their effects can be devastating.

**Environmental Degradation.** As competition for water increases, serious conflicts arise between environmental and developmental interests. One conflict is over the need to protect bays and estuaries as well as fish and wildlife habitats, while there are also water needs for agricultural, municipal, and industrial development. The problem is how to apportion and pay for water while maintaining a quality natural resource and economic environment.

**Land Subsidence.** As water is withdrawn from some coastal groundwater sources (aquifers), the water-bearing rocks compress, causing the ground to sink. As this occurs, the surface elevation of the land changes. Drainage patterns are affected, increasing the risk of hurricane tidal surges and flooding. Subsidence is a problem in the greater Houston area where the water table has been lowered by the excessive withdrawal of fresh water.

**Salt Water Intrusion into Aquifers.** When large quantities of fresh water are withdrawn from aquifers without being replaced, salt water migrates from adjacent strata and contaminates the freshwater aquifer. This may render the aquifer useless as a source of fresh water. Salt water intrusion occurs in coastal regions and in some inland areas that depend on groundwater.

## **WATER LAWS**

Solutions to the water problems of Texas must be undertaken in accordance with state water law, interstate compacts, international treaties, federal law, established water institutions, physical and economic conditions, as well as public opinion, preferences, and desires. Among the fundamental considerations are 1) the distinctly different types of ownership of ground and surface water; 2) the responsibility to protect water quality, and 3) the local, state, and federal agencies having jurisdiction in these areas of water management.



Texas law recognizes four distinct classes of water:

- (1) natural surface water,
- (2) diffused surface water,
- (3) percolating groundwaters,
- (4) underground streams.

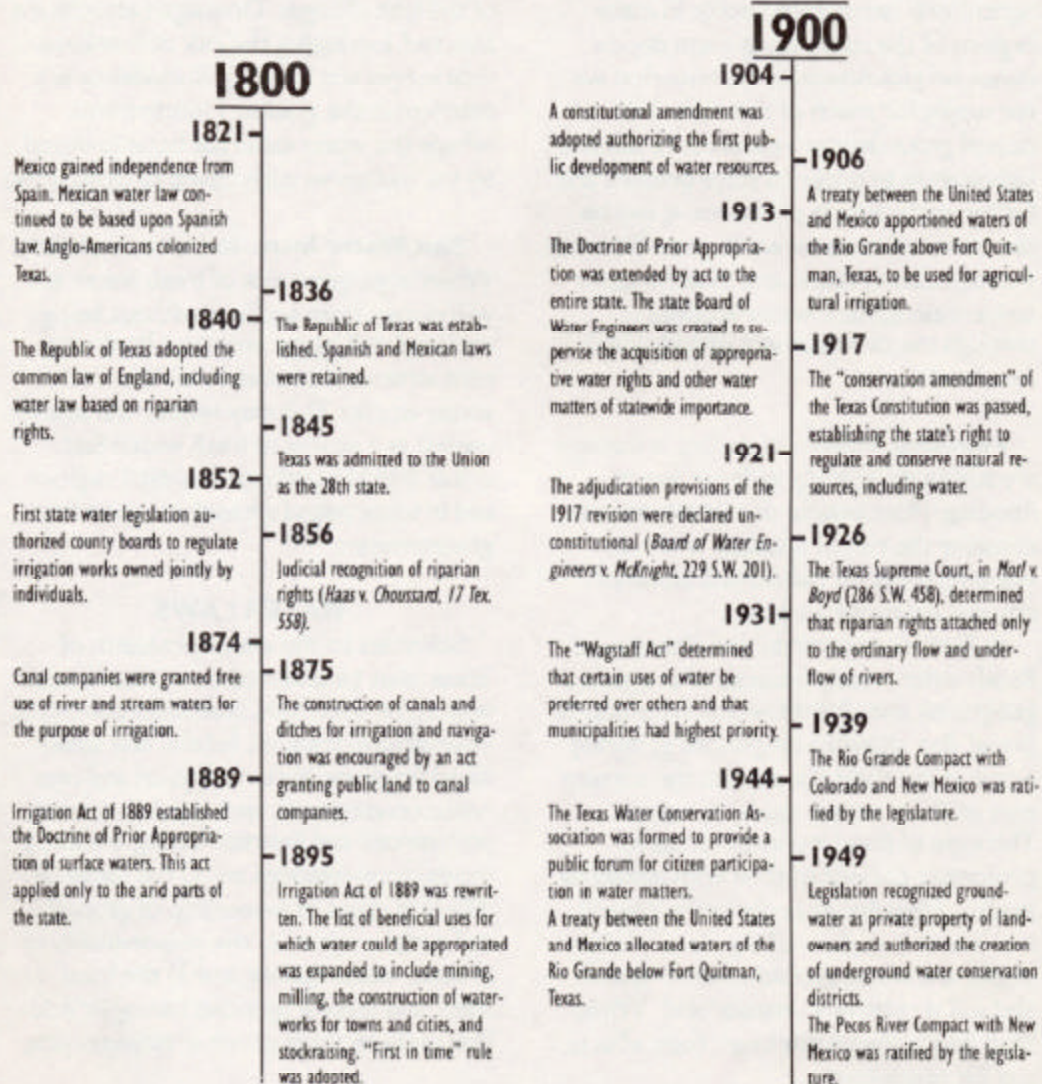
Separate rules of law have evolved for each type of water, hence the phrase "the water container determines the law to apply." Some of the Texas water law rules have remained unchanged while others have been elaborately modified by the Texas Legislature and courts. As will be apparent in the following chapters, the right of a farmer or landowner to use

water often depends on whether the source of the water is ground or surface water. Surface water found in water-courses is owned by the state. Diffused surface water or groundwater is owned by the landowner.

The challenge for Texas is to develop a legal system of water rights that can handle Texans' competing claims for the use of water resources as well as their resistance to government regulation of an individual's rights and property.



## MILESTONES IN TEXAS WATER LAW





## 1950

1951

The Canadian River Compact with New Mexico and Oklahoma was ratified by the legislature.

1956

The Federal Water Pollution Control Act authorized grants for up to 30 percent of construction costs for municipal sewage treatment works.

1959

Passage of Open Beaches Act recognized the public's right to use Texas Gulf Coast beaches.

## 1960

1961

The Board of Water Engineers was reorganized, renamed the Texas Water Commission, and given specific responsibilities for water planning. The board issued a plan of surface water development to meet the state's needs to 1980.

1964

The governor directed the Texas Water Commission to develop a comprehensive state water plan.

1967

The Water Rights Adjudication Act directed the Texas Water Rights Commission to register any unrecorded water rights claims, to limit claims to actual use, and to adjudicate and administer water rights.

Water quality standards were adopted for all waters in the state in accordance with the Federal Water Pollution Control Act and the Texas Water Quality Act.

1969

Texas voters defeated a \$3.6 billion bond program for the Texas Water System.

1953

The Texas Water Pollution Advisory Council was created to focus the state program by coordinating state efforts.

The Sabine River Compact with Louisiana was ratified by the legislature.

1957

The Texas Water Development Board was created, and a constitutional amendment authorized the board to administer a Water Development Fund to help local communities develop water supplies.

1962

The Texas Supreme Court ruled that land in the Lower Rio Grande Valley held under Spanish and Mexican land grants did not include the right to irrigate with the river's waters (*Ralmont Plantations v. Texas*, 355, S.W.2d 502).

1966

Voters approved a constitutional amendment increasing the Water Development Fund to \$400 million, expanding the scope of the fund's use, and placing limitations on interbasin transfers of water.

1968

The Texas Water Development Board released the Texas Water Plan, a guide to meeting the projected needs of the state until 2020. The plan recommended construction of the Texas Water System to transport water from eastern to western Texas.

## 1970

1971

The Texas Water Development Board was authorized to issue \$100 million in bonds for water quality enhancement.

1973

The Coastal Public Lands Management Act protected natural coastal resources, public uses of such resources, and public interest in navigation in the intracoastal waters.

1977

The Texas Department of Water Resources was established through the consolidation of several commissions and boards.

1972

The Federal Water Pollution Control Act amendments established programs based on waste treatment and management plans for river basins. Plans for Texas' 15 basins were completed and approved by 1975.

1975

The Texas Water Development Board was directed to study the relationships between freshwater inflows and the biological productivity of Texas bays and estuaries.

1979

The Red River Compact with Arkansas, Oklahoma, and Louisiana was ratified by the legislature.

## 1980

1980

The federal "Superfund" (Comprehensive Environmental Response, Compensation, and Liability Act) provided a trust fund for emergency cleanup of chemical spills or hazardous waste sites.

1984

Texas Department of Water Resources adopted a new Water for Texas Plan.

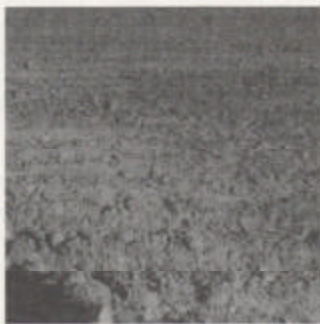
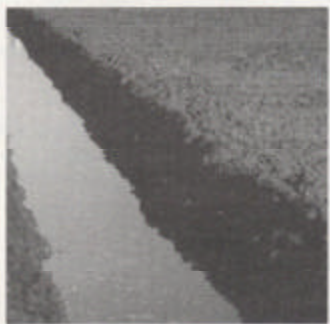
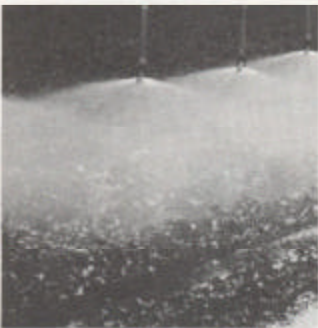
1982

The Texas Supreme Court upheld the constitutionality of the Water Rights Adjudication Act of 1967, including the limitations placed on riparian rights.

1985

Voters approved a \$1.2 billion dollar bond package for water supply, flood control, water quality enhancement, and agricultural water conservation. Texas Department of Water Resources was divided into the Texas Water Commission and the Texas Water Development Board. A requirement of water conservation was added to the criteria for awarding water use permits.







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# TEXAS WATER FACTS

*Augeas, King of Elis, had a herd of three thousand oxen, whose stalls had not been cleansed for thirty years. Hercules brought the rivers Alpheus and Peneus through them, and cleansed them thoroughly in one day.*

Bulfinch's Mythology

As a rural state, Texas generally has had an adequate supply of water for its diverse agricultural industry. Population growth led to increases in water demand requiring Herculean efforts to supply that water. Texas' population grew from 5.8 million in 1930 to more than 16 million in 1985. With this population growth came a big thirst for water.

Water usage in Texas increased from about 2 million acre-feet annually in 1930 to 18 maf per year in 1985. Most often this increase in usage resulted in the construction of reservoirs and in competition between agricultural and municipal interests over scarce supplies of water. This chapter provides some background on Texas' water supply and usage, then identifies the "water brokers," or agencies, responsible for developing and supplying water.

## WATER USE

Water use refers to two different events: withdrawal and consumption. All users of water withdraw water for municipal, agricultural, domestic, or commercial purposes. However, only a small portion of the water withdrawn may actually be consumed.

For instance, a municipality may withdraw large amounts of water from a nearby river. After the water has been used, it may be returned to the river in the form of treated effluent; that water has not been consumed. Water that has been consumed refers to water that does not return directly to the point from which it was taken but returns instead to the hydrologic cycle through evaporation and plant transpiration.



Agriculture is the biggest consumer of water in Texas. Of the 18 maf of water used in 1980, agriculture accounted for approximately 72 percent, or 13 maf (Figure 2-1). This water irrigated about 8 million acres of land (Figure 2-2) in 1980, a decrease of about 6 percent from 1974. Over 40 percent of Texas sales from the harvest of crops such as cotton, grain sorghum, vegetables, wheat, corn, and rice is directly attributable to irrigation.

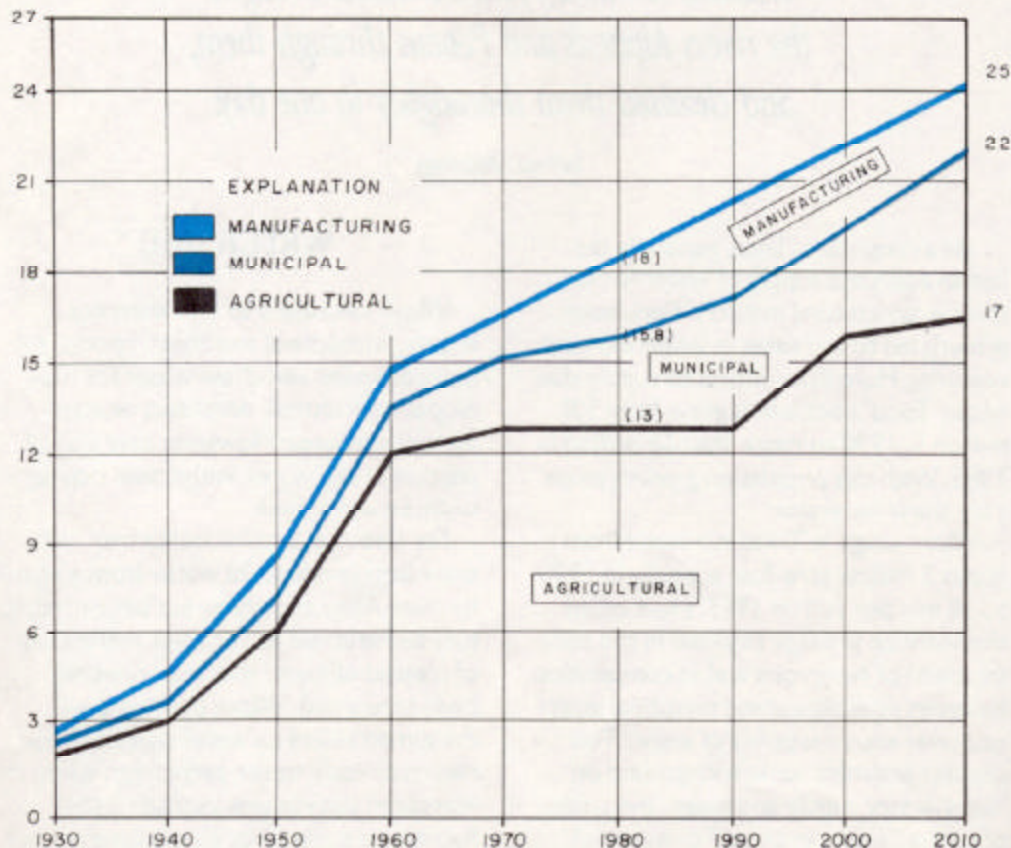
Municipalities are the second largest users of water, accounting for approximately 16 percent (2.8 maf) of total annual water consumption. This water is used by public offices, commercial businesses, private residences, fire departments, and other users supplied by municipal systems. Population growth and drought condi-

tions, which place the two biggest strains on municipal water use, have accounted for most of the increases in demand.

Industrial use accounted for about 12 percent (2.2 maf) of the state's annual water consumption in 1980. Within this category are manufacturing, mining, and steam-electric power generation.

The amount of water to meet predicted and desired economic growth in the year 2000 ranges from 17 to 25 maf. This projection, almost a 20 percent increase over present water usage, has important implications for developing new supplies or using existing supplies more efficiently. It will also be important in determining the growth of agriculture and industry in Texas.

FIGURE 2-1  
TEXAS WATER USE, 1930-2010  
Historical and Projected



Modified from *Water for Texas: A Comprehensive Plan for the Future*, Vol. I, Texas Department of Water Resources, Austin, 1984, Fig. 8, 9, 10 and 12.



## WATER SUPPLIES

Groundwater (aquifers) and surface waters (reservoirs, lakes, rivers) are the main sources of Texas water. While conversion of brackish and saline water (desalting) and water importation have been studied in Texas, they do not represent significant sources of water at this time.

### GROUNDWATER

More than half of Texas is underlain by seven major and 16 minor aquifers (Figure 2-3). An aquifer is an underground geologic formation that contains water. Collectively these aquifers contain about 1,400 trillion gallons of water, or 430 maf, that is recoverable using conventional pumping. Nearly 90 percent of this total is contained in one aquifer—the Ogallala that underlies the Panhandle.

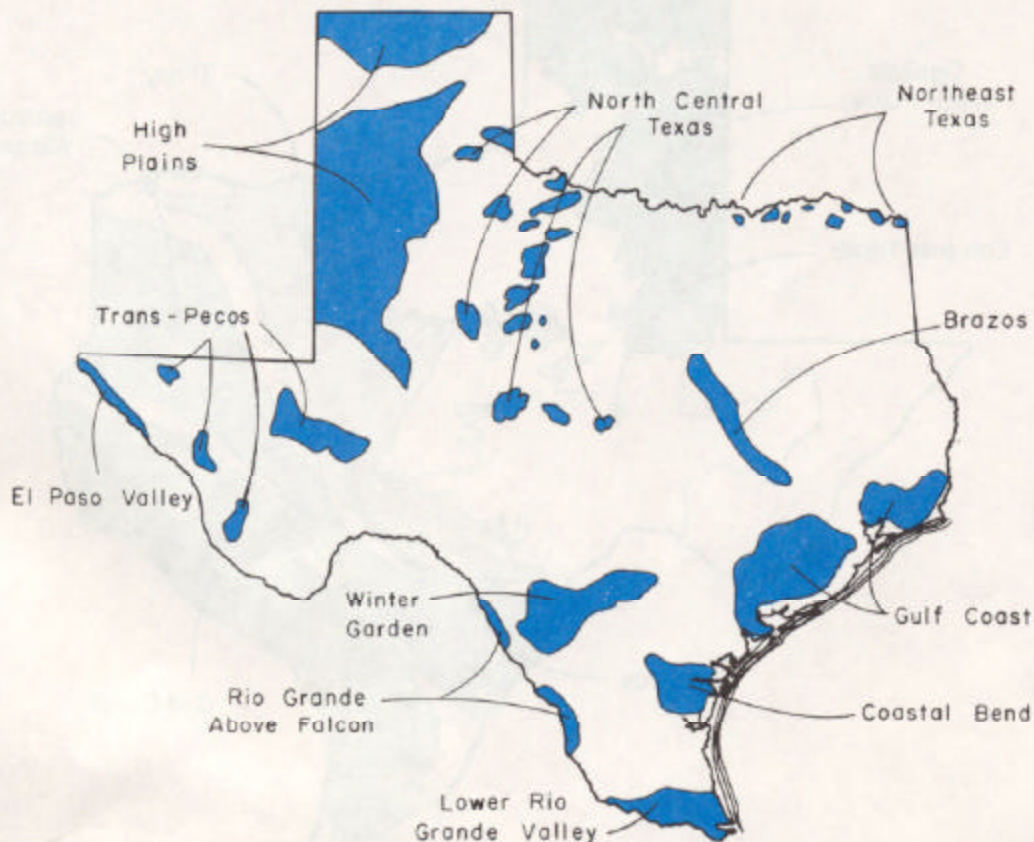
Texas is mining its aquifers by removing more water than can be recharged on an

annual basis. About 11 maf is withdrawn and only 5.3 maf is recharged. Since aquifers supply about 61 percent of the total water used in the state, this is a long-range problem.

Agriculture is the biggest consumer of groundwater. About 81 percent of all the groundwater withdrawn is used in agriculture. Municipalities are also a major user of groundwater. About one half of all municipal water used in Texas comes from groundwater.

Management of groundwater quality and quantity is one of the state's biggest water problems. While surface water is state owned and allocated, groundwater basically belongs to the person who can capture it. It is nominally owned by the owner of the land above the aquifer, but is subject to the rule of capture and use by adjoining landowners.

FIGURE 2-2  
IRRIGATION AREAS OF TEXAS



Redrawn from Texas Water Facts, Texas Department of Water Resources, Austin, 1984.



### SURFACE WATER

These waters are defined by Texas law as the ordinary flow, underflow, and tides of every flowing river, natural stream, and lake; the storm water or floodwater in these watersheds; and every bay or river on the Gulf of Mexico.

Texas has 15 river basins and eight coastal basins containing 3,700 designated streams and more than 80,000 miles of riverbeds. Average annual runoff (stream-flow) is about 49 maf ranging from 1,100 acre-feet per square mile in East Texas to practically zero in parts of the Trans-Pecos region.

There are currently 184 reservoirs with 5,000 acre-feet or more total storage capacity in Texas. The 71 major reservoirs in Texas, containing 98 percent of the state's capacity, are shown in Figure 2-4. The dependable water supply (firm

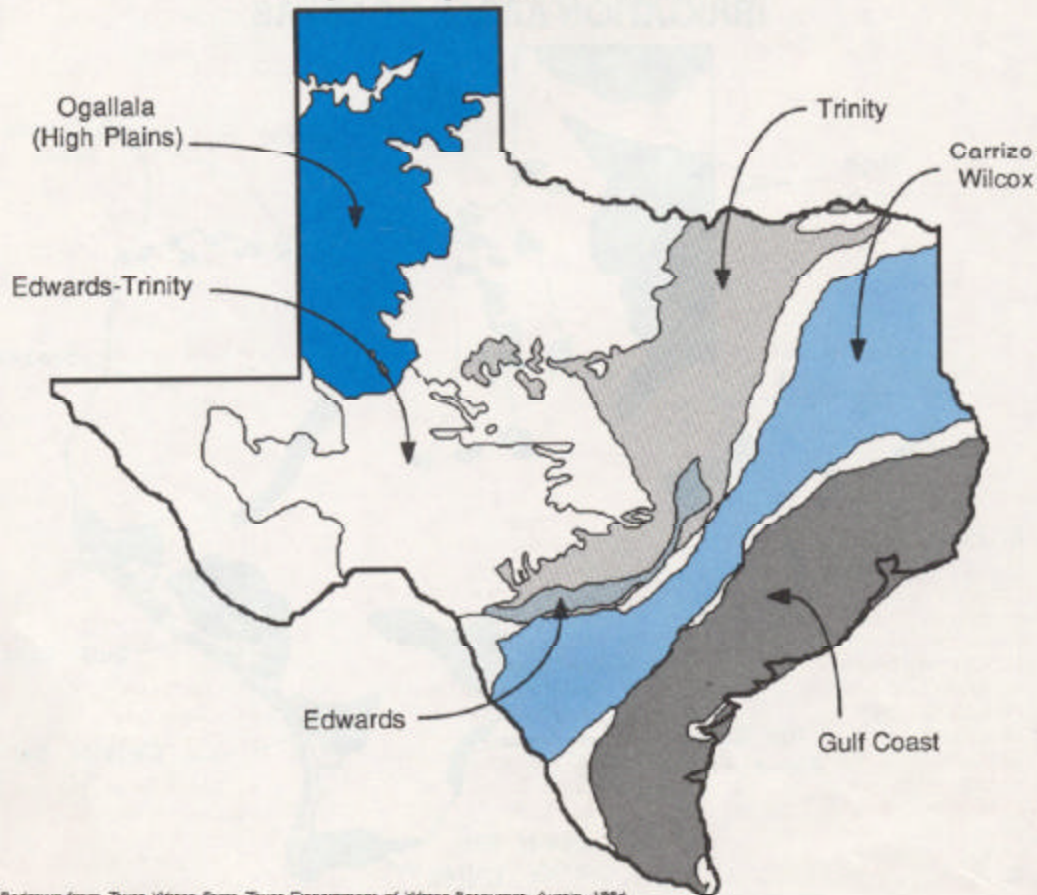
annual yield) from these reservoirs is about 11 maf. Texans now use about 7 maf (64 percent) of this dependable surface supply.

Again agriculture is the biggest consumer of surface water, with about 54 percent of annual water use. Close to 24 percent is taken for industrial uses, with the remaining 22 percent being used for municipal purposes. Of the 4 million acre-feet of unused dependable surface water supply, almost all is committed through contracts to municipal users over the next 30 years.

### WATER QUALITY

The chemical and biological quality of state surface waters has improved significantly during the last decade, due in large part to advances in wastewater treatment by municipalities and industry. More

FIGURE 2-3  
MAJOR AQUIFERS OF TEXAS



Redrawn from Texas Water Facts, Texas Department of Water Resources, Austin, 1984.



FIGURE 2-4  
MAJOR RESERVOIRS IN TEXAS



- |                              |                                 |                               |
|------------------------------|---------------------------------|-------------------------------|
| 1. Lake Meredith             | 25. Grapevine Lake              | 49. Lake Georgetown           |
| 2. Mackenzie Reservoir       | 26. Lavon Lake                  | 50. Granger Lake              |
| 3. Greenbelt Lake            | 27. Lake Ray Hubbard            | 51. Somerville Lake           |
| 4. Lake Kemp                 | 28. Cedar Creek Reservoir       | 52. Lake Limestone            |
| 5. Lake Kickapoo             | 29. Navarro Mills Lake          | 53. Lake J. B. Thomas         |
| 6. Lake Arrowhead            | 30. Bardwell Lake               | 54. Lake Colorado City        |
| 7. Lake Texoma               | 31. Lake Livingston             | 55. Champion Creek Reservoir  |
| 8. Pat Mayse Lake            | 32. Lake Conroe                 | 56. E. V. Spence Reservoir    |
| 9. Lake Sulphur Springs      | 33. Lake Houston                | 57. Twin Buttes Reservoir     |
| 10. Wright Patman Lake       | 34. White River Lake            | 58. O. C. Fisher Lake         |
| 11. Lake Cypress Springs     | 35. Millers Creek Reservoir     | 59. Hords Creek Lake          |
| 12. Lake Bob Sandlin         | 36. Fort Phantom Hill Reservoir | 60. Lake Brownwood            |
| 13. Lake O' the Pines        | 37. Lake Stamford               | 61. Lake Buchanan             |
| 14. Lake Tawakoni            | 38. Hubbard Creek Reservoir     | 62. Lake Travis               |
| 15. Lake Fork Reservoir      | 39. Lake Graham                 | 63. Lake Texana               |
| 16. Toledo Bend Reservoir    | 40. Possum Kingdom Lake         | 64. Canyon Lake               |
| 17. Lake Palestine           | 41. Lake Palo Pinto             | 65. Coletto Creek Reservoir   |
| 18. Lake Tyler               | 42. Lake Granbury               | 66. Medina Lake               |
| 19. Sam Rayburn Reservoir    | 43. Lake Pat Cleburne           | 67. Choke Canyon Reservoir    |
| 20. B. A. Steinhagen Lake    | 44. Whitney Lake                | 68. Lake Corpus Christi       |
| 21. Bridgeport Reservoir     | 45. Waco Lake                   | 69. Red Bluff Reservoir       |
| 22. Eagle Mountain Reservoir | 46. Proctor Lake                | 70. Amistad Reservoir (Intl.) |
| 23. Benbrook Lake            | 47. Belton Lake                 | 71. Falcon Reservoir (Intl.)  |
| 24. Lewisville Lake          | 48. Stillhouse Hollow Lake      |                               |

Redrawn from Texas Water Facts, Texas Department of Water Resources, Austin, 1984.



than 90 percent of the 16,115 stream miles that currently are monitored in Texas conform to the national goals of the federal Clean Water Act for "fishable and swimmable" waters.

The quality of much of the state's surface waters shows marked improvement. However, nonpoint source pollution is still a major quality problem. Nonpoint source pollution may be involved in fish kills on the Trinity River and other water quality problems.

While most point sources of pollution of surface waters are observable to the "naked eye," groundwater contamination has to be documented by complex chemical, biological, and geological testing. The problem of quickly identifying and preventing groundwater contamination is further complicated by division of responsibility among state agencies.

## **WATER AGENCIES**

In many ways, water development in Texas is a drama with scenes as light and carefree as boating on a reservoir; as complex as legal battles over water rights, and as tragic as a contaminated water supply. The stage for this drama is not limited to Austin, Texas; it is also played in Washington, D.C., New Mexico, and Oklahoma. There is a cast of more than 6,000 actors in the Texas water show, representing federal, state, and local interests.

### **FEDERAL AGENCIES**

Five federal departments and numerous agencies under them are directly involved in water development or protection in the state. The U.S. Army Corps of Engineers under the Department of Defense is a major actor in water development. The Corps owns and maintains 24 flood control dams in Texas and provides 9 maf of water storage. The Bureau of Reclamation, Department of the Interior, has five dams providing storage for over a million acre-feet of water.

Enforcement of standards to protect safe drinking water is the responsibility of

the Environmental Protection Agency. The protection of water and other resources is shared by the Soil Conservation Service and the U.S. Forest Service, Department of Agriculture; the U.S. Park Service, the Fish and Wildlife Service, and U.S. Geological Survey, Department of the Interior; and the Bureau of Sports Fisheries, Department of Commerce.

Adding to this complexity are those rivers that Texas shares with New Mexico, Colorado, Oklahoma, Louisiana, and the Republic of Mexico. Two international treaties and five interstate compact agreements determine water allocation on the Rio Grande, Canadian, Red, Pecos, and Sabine rivers.

### **STATE AGENCIES**

Various state agencies are involved in water planning, development, quality protection, and allocation. The primary water planning and development agency is the Texas Water Development Board. This agency is the water planning and development arm of Texas government with responsibilities in the following areas:

- prepare and update a state water plan,
- collect and maintain water reserve data,
- administer various funds designed to help finance state and local water projects.

Primary responsibility for protecting the quality and quantity of Texas' water resources is assigned to the Texas Water Commission. This state agency has the following responsibilities:

- administer the state's water quality program including granting of permits to discharge effluents into Texas waters,
- determine and allocate water rights to state waters,
- regulate dam construction, maintenance, and removal,
- administer the oil and hazardous spill program and license hazardous waste disposal facilities,



- regulate water well drillers,
- administer the National Flood Insurance Program,
- train and certify wastewater treatment operators,
- establish water and sewer rates.

Other state agencies play supporting roles as planners, protectors, and providers of water, even though their primary responsibilities are outside the water resource field. The Texas Department of Health enforces federal standards for drinking water and monitors the quality of water distributed by all public systems.

Responsibility for the development and protection of water-based recreational and wildlife resources falls to the Texas Department of Parks and Wildlife. This department provides recreational facilities and enforces water safety as well as fish and game laws. The Railroad Commission of Texas enforces regulations to protect ground and surface water from wastes generated by oil and gas production. The Railroad Commission also oversees surface mining of coal and lignite, and in situ mining of uranium to protect water resources.

### LOCAL AGENCIES

Literally a "cast of thousands" is involved in local water supply and distribution. Over 5,000 local agencies and private corporations supply water to municipal, industrial, and agricultural customers. Suppliers range from regional river authorities to private rural water systems.

**River Authorities.** These regional authorities are organized on the basis of river basins, rather than on political boundaries, and are major suppliers of water to cities, farms, and industries. The 18 river authorities that have been created are extremely influential in water planning, policy, and politics. Their authority extends beyond water supply; many have branched into wastewater treatment and electric power generation. River authorities own and operate 22 major water supply reservoirs with a combined storage capacity of over 10 million acre-feet.

**Local Water Suppliers.** Most of the local water suppliers fall into one of four categories: cities, Municipal Utility Districts (MUDs), Water Supply Corporations (WSCs), and private water suppliers. Cities play a vital role in planning and developing water supplies in the state. They generally own and operate wells and reservoirs, as well as treatment and distribution facilities. Many cities buy water from river authorities or from other water suppliers.

In addition to city water suppliers, there are over 1,000 MUDs in Texas. They are tax-exempt political subdivisions of the state and have authority to issue bonds. MUDs develop and sell water by building reservoirs, drilling water wells, and distributing water to customers. They can also construct and operate water treatment and wastewater treatment plants.











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## SURFACE WATER LAW

*Each riparian owner has equal rights in the stream of water which flows by him, and the use of each must be reasonable as regards the rights of others. It is true that oftentimes it will be found difficult to determine what is a reasonable amount of water under existing conditions.*

Watkins Land Co. v. Clements,  
86 S.W. 733 (Tex. Sup. Ct. 1905)

Texas history books and court records verify that battles over water have been a continuous—often bitter—struggle throughout the state's development. Participants in these battles have included foreign nations, the federal government, other states, state agencies, municipalities, and private parties. The battles have been staged in the halls of Congress, board rooms, courtrooms, the state capitol, and at water holes and well sites.

Discussions of these struggles should not be confined solely to the past, since legal battles over water rage today in many areas of the state. Present-day water battles are often guided by skeletons of Spanish, Mexican, and English laws; and

their resolutions are shaped by the unique history of Texas water law.

Texas water law has evolved from conflicts between competing legal systems and from the necessity of developing a system that fits the needs of Texas. Water law will continue to evolve as the conditions of society, politics, populations, and economics change. Two basic legal doctrines of surface water law are recognized in Texas today—the riparian doctrine and the prior appropriation doctrine.

*Riparian Doctrine.* Simplistically, the riparian doctrine is based on English common law. These court-developed rules are used in deciding cases that involve water use conflicts. The basic concept is



that private water rights are tied to the ownership of land bordering a natural river or stream. Thus, water rights are controlled by land ownership.

Riparian land owners have a right to use the water, provided that the use is reasonable in relation to the needs of all other riparian owners. Riparian owners retain the right to use water so long as they own the land adjacent to the water.

*Prior Appropriation Doctrine.* This doctrine, on the other hand, is controlled by statute. Applied in western states, prior appropriation is not related to land ownership; instead water rights are acquired by compliance with statutory requirements. While the principles of riparian rights were appropriate in areas of England and the United States where rainfall averages 30 inches or more a year, these rights were not suited to the arid West.

During their early development, western states failed to control rivers and streams, and water was treated as though it belonged to no one. In the absence of any rules, people simply took water from streams and used it; that is, they appropriated it. When this practice was legalized, it became known as the Doctrine of Prior Appropriation.

The historical antecedents of the doctrine can be traced to three unrelated movements. The first was the Spanish influence in the Southwest where settlers introduced the acequia system. Acequias were community-controlled water ditches that supplied water to the settlement. Required community participation in maintaining the acequia system bound the early Spanish settlers into social units. A ditch master was appointed to regulate the use of water and mete out duties to maintain the ditch. This system was the forerunner of governmental control over water, with rights of use dispensed by a public permit.

The second influence was the migration in 1847 of Mormon pioneers, led by Brigham Young, to the Great Basin of Utah. The valley where they settled was a

desert into which flowed a number of streams. The land produced little without irrigation. With the arrival of new settlers in this basin, colonies were established by the Church of Jesus Christ of Latter-day Saints, which dictated water rights. These religious pioneers were the first Anglos to use irrigation water on a large scale in the West. The church principle that settlers who first made beneficial use of the water were entitled to preference over those who came later was eventually sanctioned by the Utah Legislature and courts.

The California Gold Rush in 1849 was the third event affecting water rights. Miners diverted water from natural watercourses to wash away soil that clung to the gold. In 1872 the California Legislature passed a statute that recognized many of the appropriative practices of mining camps.

## EVOLUTION OF TEXAS LAW

The history of water regulation in Texas began with the Spanish explorers and missionaries who entered the drier regions of the Texas wilderness from Mexico in the 1600s. Presidios and missions were established where water was available for irrigation. As settlers followed, they brought with them the civil law of Spain. Part of Spanish water law involved the formation of community irrigation ditches, or acequias. Vestiges of this acequia system can be found today in the City of San Antonio.

Under the Republic of Mexico, Spanish law continued to govern the use of land and water, with modifications for irrigation customs and local environmental conditions. Land, which was plentiful, was carefully classified as irrigable or nonirrigable, then apportioned by governmental grant with or without specific rights for water access.

The increasing influence of Anglo-American settlers in Texas in the early 1800s introduced the English common



law, or riparian law. Under riparian law, property rights assumed major importance because owners of land bordering a stream were granted use of the stream water. This was a major deviation from Spanish water law, which required specific authorization to use water.

Texas won its independence from Mexico in 1836 but continued to follow Spanish law. Even when the young Republic adopted the common law of England in 1840 for judicial proceedings, Spanish and Mexican land grant laws continued to be recognized. Until 1889 riparian law was the measure of rights pertaining to land and water in Texas. Legal difficulties were bound to occur; however, in applying the riparian system to irrigation needs in the arid portions of the state.

A drought cycle in the late 1880s and early 1890s halted expansion of agriculture in West Texas and imperiled the pastoral economy. The Texas Legislature, seeking relief through improvement in Texas water laws, looked to other states and to antecedents of its historical Spanish law for solutions. By that time the prior appropriation doctrine had been adopted and refined in many other western states. Borrowing from the laws of these states, the Texas Legislature adopted the prior appropriation doctrine in a series of statutes in 1889, 1893, and 1895.

The legislature has extended the doctrine to the entire state and refined its application through numerous legislative enactments. The following is a synopsis of the prior appropriation doctrine based on the Texas Water Code.

### **PRIOR APPROPRIATION: TEXAS STYLE**

In Texas the "container" in which water is found determines ownership and control. Thus, one set of laws determines ownership and control of groundwater, and another set of laws governs surface water. In a general sense surface water may be classified either as diffused surface water or as water within a defined water-

course. Only water in a watercourse is subject to state ownership. Texas courts have ruled that the state owns these waters in trust and may allocate the water for the use and benefit of all people of the state. In a legal sense it has been established that surface waters do not include groundwater or diffused surface water. Diffused surface water, often called drainage water or runoff, does not become the property of the state until it reaches a watercourse.

The differences between court-created riparian rights and legislatively created appropriative rights led to many conflicts. The nature of riparian rights made it difficult to determine the extent of water claims on Texas streams and to keep track of water rights. The problems were brought to a head in a massive lawsuit involving the Rio Grande River. Because claimed water rights exceeded the water available in the Rio Grande Valley during the drought of the 1950s, the state filed suit to have a court adjudicate the water rights. The case took more than 13 years to decide, involved about 3,000 parties, and generated an estimated \$10 million in court costs and attorney fees. This expensive litigation lesson convinced the Texas Legislature that another approach was needed.

In 1967 the Texas Legislature merged the riparian water rights system into the prior appropriation system with passage of the Water Rights Adjudication Act. The act required any person claiming a riparian water right to file a claim for the right by 1969 with the Texas Water Commission. Prior to this act riparian water right claimants did not have to file any claim for water. By 1969 more than 11,500 claims were filed with the commission, which now has issued certificates for all Texas rivers.

With the passage of the 1967 act, Texas consolidated the allocation of surface water into a unified water permit system. Anyone wishing to use surface water (exclusive of drainage water) must receive permission from the state in the form of a



"water right." By law no one may appropriate water without complying with all requirements of state law. Violation of this provision could result in a criminal penalty of up to \$100 a day, imprisonment, and also a civil penalty of up to \$1,000 a day.

### **WATER RIGHTS ADMINISTRATION**

Under the prior appropriation system, water rights are granted by a state license. This license, or permit, grants to the holder the use of a specified amount of water, at a specific location, and for a specific purpose. Awarding these water permits and keeping track of records is usually the task of a state water agency.

In 1985 the Texas Water Commission was granted authority to administer rights to use the state's surface water. The commission consists of three members appointed by the governor, with the consent of the senate, for six-year terms. An administrative staff assists the three full-time commissioners in performing the legislative and judicial functions of the Texas Water Commission.

Basically, the commission is responsible for apportioning water rights on all rivers and lakes in Texas as specified by statute. The commission fulfills this obligation by

- determining the amount of water available for appropriation,
- accepting and evaluating applications for permits to use water,
- granting permits to applicants to use water if they find adequate water exists and that the water will be used for a beneficial purpose.

### **ACQUIRING A WATER RIGHT**

Any person, public or private corporation, city, county, river authority, state agency, or other political subdivision of the state may acquire a permit to appropriate water. The Texas Water Code recognizes that an "appropriator" means any person who has made beneficial use of water in a lawful manner. Consequently,

Texas has a list of more than 12,000 appropriators of surface water.

### **Water Subject to Appropriation.**

Section 11.021 of the Texas Water Code declares:

The water of the ordinary flow, underflow, and tides of every flowing river, natural stream and lake, and of every bay or arm of the Gulf of Mexico, and the storm water, floodwater and rainwater of every river, natural stream, canyon, ravine, depression and watershed in the state is the property of the state.

Both rainfall and diffused surface water that flow across land prior to joining its natural watercourse belong to the landowner and not the state.

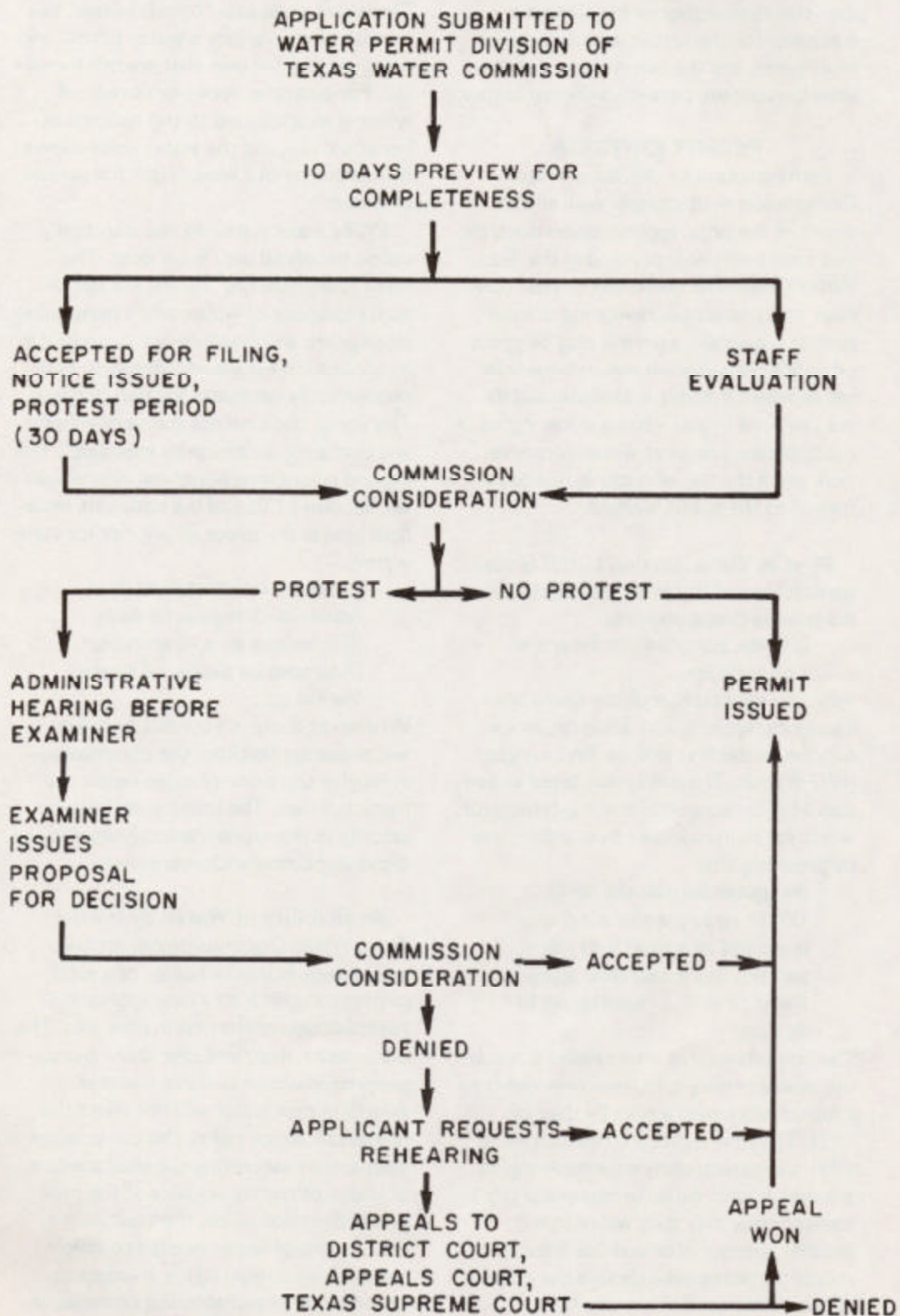
**Water Rights Permit.** The Adjudication Act applies to permit claims through 1969, which are titled "Certificates of Adjudication." For permits after 1969, a more standard procedure is followed. Anyone seeking to appropriate water must apply in writing, following the rules and procedures of the Texas Water Commission (Figure 3-1). After approving an application, the commission issues a permit giving the applicant the right to use water only to the extent stated in the permit.

Permits granted by the commission may be regular, seasonal, temporary, or emergency in nature. A regular permit is issued "in perpetuity" so long as the water is used for a beneficial purpose. Seasonal permits are similar to regular permits except that the use of water is limited to certain months or days during the year. A temporary permit is granted for a period of time up to three years and does not give the holder a permanent water right. An emergency permit allows the holder to divert and use water for up to 30 days if emergency conditions exist that threaten public health, safety, and welfare. The permit automatically expires after 30 days.

The commission may also grant permits to impound and store water, then



**FIGURE 3-1  
APPLICATION PROCEDURE FOR STATE WATER PERMITS**





determine the actual diversion and use at a later date. Many permits issued to river authorities fall in this category. At a later date the river authority may locate a customer for the water, such as a city or an irrigator, and the commission will then issue a water use permit to that customer.

### PERMIT CRITERIA

Permits issued by the Texas Water Commission must comply with all elements of the prior appropriation doctrine that have been incorporated in the Texas Water Code. The commission must consider many factors in reviewing a water permit. Generally, a permit may be granted only if the applicant makes beneficial use of water, if water is available and its use does not impair vested water rights, if the applicant practices water conservation, and if the use of water is not detrimental to the public welfare.

**First in Time.** Section 11.027 is the cornerstone of the prior appropriation doctrine in that it provides:

As between appropriators, the first in time is the first in right.

With any general rule of law there are usually exceptions, and Texas has an exception to the first in time, first in right (FITFIR) rule. The exception listed as Section 11.028 recognizes the importance of water for domestic uses over other uses by providing that:

Any appropriation made after May 17, 1931, for any purpose other than domestic or municipal use is subject to the right of any city or town to make further appropriation of the water . . . without paying for the water.

The commission has interpreted this statute as authorizing it to issue new rights to a municipality with a priority date of 1931. The new rights are retroactive to 1931 and permanently supersede rights granted at later dates. In essence, a city in a water crisis may take water from another appropriator and use it for domestic purposes even though the other appropriator used the water first.

**Beneficial Use.** Another requirement of the prior appropriation doctrine is that water be used for a beneficial purpose.

The water code sets "beneficial use" as a standard for awarding a water permit and sets penalties for uses that are not beneficial. For example, waste or nonuse of water is an anathema to the concept of beneficial use, and the water code allows the cancelling of a water right for nonuse of water.

While many states do not statutorily define beneficial use, Texas does. The term "beneficial use" means the use of such a quantity of water, when reasonable intelligence and diligence are exercised in its application for a lawful purpose, as is economically necessary for that purpose. The water code refines this very general and confusing definition by specifically listing and prioritizing beneficial uses of water. Section 11.024 of the code lists beneficial uses in the order of priority for state water:

- (1) domestic and municipal uses, (2) industrial uses, (3) irrigation, (4) mining, (5) hydroelectric power, (6) navigation, (7) recreation and pleasure, and (8) other beneficial uses.

Whenever there is a conflict between water use applications, the commission must give top priority to domestic and municipal uses. The uses having lowest priority in the appropriation hierarchy are those associated with recreation.

**Availability of Water.** By law the Texas Water Commission cannot take water away from the holder of a valid permit and give it to a new applicant in contradiction of the first in time rule. The commission must find that there is unappropriated water available and that awarding such water will not affect the holders of senior rights. The commission does this by estimating the total amount of water physically available at the proposed diversion point, then calculating the amount of water needed to satisfy senior downstream rights. If unappropriated water is available, the commission



may approve the application in whole or in part.

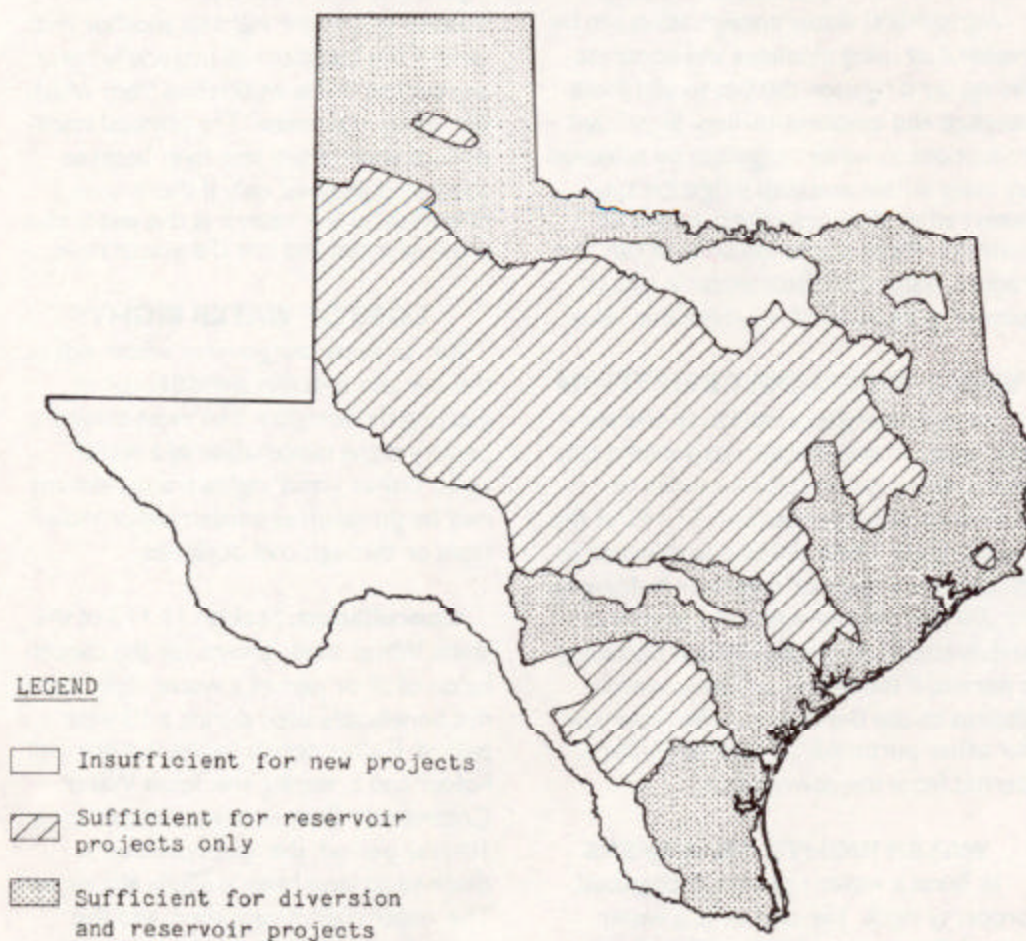
For example, if 5,000 acre-feet of river flow are available at the point of diversion and existing senior permits authorize 3,000 acre-feet, all or part of the 2,000 acre-feet of unappropriated water may be allocated. A permit could be issued for up to 2,000 acre-feet; anything more would affect the rights of existing permit holders.

The Texas Supreme Court, in a case referred to as the Stacy Dam decision, had to resolve precisely that issue. The court overturned an order of the Texas Water Commission allowing a water district to impound 500,000 acre-feet of water on the Colorado River at the Stacy

Dam site near Ballinger and to use up to 113,000 acre-feet of the water for municipal and industrial purposes. The court found that there would be no surplus water if existing permit holders used all they were entitled to use, and ruled that impounding the water on the river above senior permit holders would impair existing senior water rights. Subsequent to this case the parties have reconciled their differences on water availability to allow the Stacy Dam project to continue.

Many segments of Texas rivers are fully appropriated or have limited water available for appropriation. In these areas, surface water is a limiting factor in future growth. These areas are depicted in Figure 3-2.

FIGURE 3-2  
APPROPRIATED WATER AREAS IN TEXAS



Redrawn from Texas Water, Texas Department of Water Resources, Austin, Winter 1985.



### **Water Conservation Practices.**

A 1985 amendment to the Texas Water Code requires applicants to adopt specific water conservation practices before they receive a water permit from the commission. This means that municipalities, irrigators, and any other users must develop water conservation plans before receiving a permit to use state water. The commission requires applicants to show that their techniques and technologies either will reduce water consumption, loss, or waste, or will increase recycling or reuse of water.

Municipalities may apply various water conservation measures to reduce water usage. Residential conservation measures include plumbing repairs to stop leakage, low-flow shower heads and low-flush toilets, efficient lawn watering equipment, and water-efficient landscaping.

Agricultural water conservation can be realized by using pipelines and concrete linings for irrigation ditches to eliminate seepage and evaporation loss. Significant reductions in water usage can be achieved by using trickle and drip irrigation systems rather than large spray irrigation systems. Weed and brush control can also reduce water loss since water is lost to plants having little or no economic value.

### **SMALL RESERVOIR EXEMPTION**

An interesting exemption to the permit requirements is given to persons constructing small dams or reservoirs on their own property. Section 11.142 of the Texas Water Code allows a landowner to build a stock tank, or reservoir, holding up to 200 acre-feet of water for *domestic* and *livestock* purposes without obtaining a permit. If the owner of the reservoir desires to use the water in the reservoir for other purposes, he must apply for a permit from the commission.

### **WATER RIGHTS TRANSFERS**

In Texas a water right is a recognized property right. The owner of a water permit has no actual title to the water but only a right to use that water. As with

other property rights, a water right can be sold, leased, or transferred to another person. The Texas Water Code recognizes that a water right is a property right. As such, the water right can be passed or conveyed automatically with the title to land, unless reserved in a deed, or can be sold separately from the land. In these cases the water code provides that the written instruments conveying water rights may be recorded in the same manner as a property deed.

**Restrictions on Transfers.** The water code and rules of the Texas Water Commission place certain restrictions on the transfer of water rights. The commission must be notified of the sale of a water right, and a transfer will not be allowed if it would impair other water rights. The water code prohibits the transfer of a water right to another river basin if the transfer will materially harm any person in the watershed from which the water was taken. The physical transport of water from one river basin to another is allowed only if there is no prejudice. In this case, it is the water that is transported and not the water right.

### **LOSS OF WATER RIGHTS**

Just as Texas law governs water rights, the law also specifies penalties for neglecting those rights. The most severe penalty is the cancellation of a water right. Other water rights transgressions may be punished as misdemeanor violations or through civil penalties.

**Cancellation.** Section 11.173 of the Texas Water Code allows for the cancellation of all or part of a water right that is not beneficially used during a 10-year period. If after notice to the water right holder and a hearing the Texas Water Commission finds nonuse of water for a 10-year period, the appropriation is deemed to have been willfully abandoned. The water right is cancelled, and the water becomes available for appropriation to other uses.



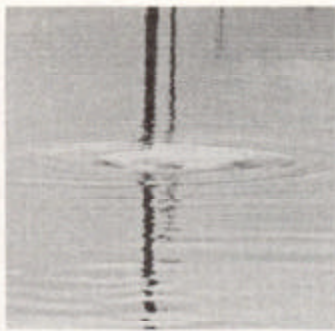
In the future the cancellation program of the Texas Water Commission will take on greater importance. Up to now the commission has been preoccupied with quantifying riparian rights under the Water Rights Adjudication Act. As of 1986 the adjudication process at the commission level is complete, and the commission can now turn its attention to monitoring beneficial uses of water in Texas and cancelling permits for nonuse.

**Misdemeanors.** The Texas Water Code contains a number of penalties for water rights users who violate substantive and procedural provisions of the code. The transgressions are judged as misdemeanors and are punishable by fines as high as \$1,000 or by confinement in a county jail for not more than two years, or both. Some examples of misdemeanor violations follow: (1) unlawful use of state water without a permit, (2) sale of a water right without a permit, (3) inter-watershed transfers, (4) interference with diversion of water on an international stream, (5) willful destruction of ditches, canals, reservoirs, or machinery associated with a water right, (6) allowing Johnson grass or Russian thistle to go to seed on a waterway, (7) throwing garbage into a water canal, (8) obstructing a navigable stream, and (9) willfully wasting water.

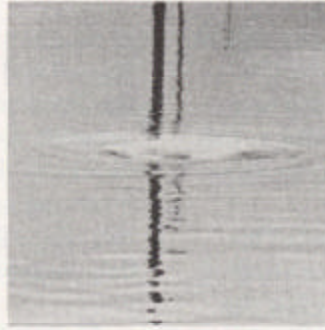
**Civil Penalty.** In addition to the misdemeanor penalties, the code allows a civil penalty to be levied for unlawful use of water. A person who takes state water without a permit, or in violation of a permit, faces a civil penalty of up to \$1,000 for each day of the violation.











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## DRAINAGE WATER LAW

*To loose the creeping waters from their springs,  
tainting the pasturage: and let thy fields  
in slopes descent and mount, that chilling rains  
may trickle off and hasten to the brooks*

John Dyer  
The Fleece (1761)

Diffused surface waters are waters that, in their natural states, occur after rainfall or snowmelt and flow across land from higher elevations to lower elevations. This diffused water is often called stormwater, drainage water, or surface runoff. Examples of diffused surface water can be found flowing across yards and down subdivision streets, standing in parking lots after a heavy rain, or flowing in backyard drainage ditches. At lower elevations the excess rainfall forms rivulets, then small streams, and eventually rivers with noticeable banks and channels.

Once the water flows into a clearly defined watercourse, it is claimed by the state and is subject to appropriation. On its way to a watercourse, drainage water often flows across privately owned lands.

In such cases the water does not automatically become the property of the landowners, although they may capture and use it. Legal problems arise when a landowner interferes with the natural flow of drainage water by capturing and holding the flow or by diverting or increasing it.

When a landowner interferes with the natural flow by damming a stream or by capturing runoff, neighboring landowners may have a basis for legal action. If a dam on a natural drainageway creates a lake and floods lands upstream, then the flooded neighbor can sue the downstream neighbor for damages. Correspondingly, when a landowner paves or changes the contour of or increases the amount of runoff, the increased flow may cause injury to lower landowners. For



example, if a new shopping center is built in a previously undeveloped area, the increased runoff from the parking lots may flood downstream landowners. The downstream owners may recover damages caused by the flooding.

There are three general rules of law that apply when diffused surface water is captured or diverted. One is called the "common enemy rule." Under this rule, drainage water is regarded as an enemy common to all landowners. The law allows every owner to take any measure to protect property, regardless of the consequences to other neighbors. If this rule is applied to the shopping center developer, the developer has no liability for the flooding of downstream landowners.

At the other end of the drainage law spectrum is the "natural flow," or civil law, rule. This rule recognizes that each landowner is entitled to rely upon continuation of the natural flow. Under this rule a landowner who increases runoff, thereby causing flooding, is liable for damages. Somewhere between the common enemy and natural flow rules is the rule of "reasonable flow." This rule allows landowners to divert or change drainage water, even to the extent of harming adjoining landowners, so long as the diverter's actions are "reasonable" considering all the circumstances.

## NATURAL FLOW RULE

Texas follows the natural flow, or civil law, rule for drainage waters. The evolutionary story of Texas drainage law is similar to that of surface water law. It draws upon conflicts between Spanish civil law and English common law and between legislative and judicial jousting.

Under Spanish and Mexican law, the natural flow rule applied. A downstream landowner had to accept the natural flow of water across his property but did not have to accept unnatural, or increased, flows caused by upstream diversions. After Texas adopted the English common law in 1840, the common law applied to

all property except that resulting from Spanish and Mexican land grants. In 1889 the Texas Supreme Court adopted the common enemy rule. The Texas Legislature in 1915 overruled the supreme court and readopted the natural flow rule. Since that time, the law in Texas has been reasonably settled.

Section 11.086 of the Texas Water Code states:

No person may divert or impair the natural flow of surface waters in this state, or permit a diversion or impounding by him to continue, in a manner that damages the property of another by the overflow of the water diverted or impounded.

The statute grants a remedy for damages to any person injured by such a diversion. The Texas Supreme Court has upheld this statute as a proper exercise of police power. Therefore, Texas law regarding diffused surface waters may be summarized as follows:

- (1) As between higher and lower elevation landowners, the lower landowner must accept the natural flow of drainage water from the higher landowner.
- (2) The lower landowner does not have to accept an unnatural flow caused by an upper landowner and may construct reasonable barriers to repel the artificial flow, and may seek damages for any injury.
- (3) An upper landowner may artificially capture diffused surface waters on his own land and discharge those waters into natural watercourses that run across neighboring properties so long as the total discharge is not beyond the natural capacity of the watercourse.



- (4) Normal plowing and land cultivation for agriculture do not constitute a prohibited change in natural flow even though it may alter the quality and location of the flow.

The term "natural flow" is vague and subject to different interpretations. It has been interpreted to mean untouched by the hands of man, and it has also been interpreted that a landowner may change the natural flow so long as the total discharge is not beyond the natural capacity of the drainageway. These different interpretations of the term "natural flow" are the precipitators of lawsuits as the courts struggle for a consensus definition.

### **GOVERNMENT DIVERSIONS**

The diversion section of the Texas Water Code does not apply to governmental agencies. If a governmental agency undertakes developments (such as roads, utility corridors, or drainageways) that alter natural drainage patterns and injure adjoining landowners, the cause of action is a suit for *inverse condemnation*, or the "taking of property without due process of law." In other words, the injured landowner may claim constitutional damages. If a governmental agency undertakes a water diversion project, it must use the power of *eminent domain* (see Glossary) to acquire an easement or other property right when it increases the natural flow of water on adjoining property. The governmental agency must pay the landowner for any property right that it takes by causing flooding or channelization on private property.

### **DRAINAGE CONTROL IN URBAN AREAS**

Texas cities have the authority to pass ordinances controlling drainage through the subdivision plat approval process. Cities may lawfully impose regulations on subdivision developers to regulate the

amount of drainage runoff from a development. These regulations generally specify road width, paving materials, roadway slopes, drainage ditches, and other storm water criteria. If a developer fails to meet a city's drainage control criteria, the city may withhold approval of the subdivision plat. Since a developer may not proceed with a sale of subdivision lots without an approved plat, this is a compelling reason to comply with regulations.

Texas counties have also been given the authority to impose drainage restrictions on subdivision developers within their jurisdiction. Counties may develop flood control master plans and require that subdivision developments conform to those plans.











## GROUNDWATER LAW

*Because the existence, origin, movement,  
and course of such water, and causes which  
govern and direct their movements, are so  
secret, occult, and concealed . . .*

*an attempt to administer any set of legal  
rules in respect to them would be involved  
in hopeless uncertainty, and would, therefore,  
be practically impossible.*

Houston & T. C. Ry. Co. v. East  
81 S.W. 279 (Tex. Sup. Ct. 1904)

Water found below the earth's surface in the crevices of soil and rocks is called *percolating water*, or more commonly groundwater. With a few exceptions, such as in limestone formations, groundwater does not occur in underground rivers or lakes as is sometimes believed. It is found oozing or filtering in porous and permeable subsurface geologic formations called aquifers.

Another important misconception is that groundwater is often perceived to be separate and distinct from surface water, when in fact the two are often naturally interrelated. Groundwater feeds springs and surface streams, and surface water recharges groundwater reservoirs.

Nevertheless, the laws of Texas perpetuate the myth (long ago abandoned by hydrologists, but not legislators or judges) that groundwater is separate from and unrelated to surface water. This "separation myth" has been a major hurdle in the development of an integrated and conjunctive body of water law for Texas.

Groundwater is a significant source of water for Texas. It supplies about 60 percent of the total water used in the state and about 85 percent of all agricultural water usage. Reliance on groundwater to satisfy water demand in Texas is the result of the widespread geographic occurrence of aquifers and the relatively high cost of developing surface water



storage facilities. The excessive reliance on and use of groundwater has resulted in groundwater "mining" or depletion as more water is removed than can be replenished. This depletion pattern is exacerbated by Texas groundwater law.

## GROUNDWATER LAW IN TEXAS

In contrast to surface water law, which was crafted by the Texas Legislature, Texas groundwater law is judge-made law, derived from the English common law rule of "absolute ownership." The Texas Water Code considers surface water as the property of the state and requires permits for its use. Groundwater, on the other hand, belongs to the owner of the land above it and may be used or sold as private property. Texas courts have adopted, and the legislature has not modified, the common law rule that a *landowner has a right to take for use or sale all the water that he can capture from below his land.*

Because of the seemingly absolute nature of this right, Texas law has often been called the "law of the biggest pump." Texas courts have consistently ruled that a landowner has a right to pump all the water he can from beneath his land regardless of the effect on wells of adjacent landowners. The legal presumption in Texas is that all sources of groundwater are percolating waters as opposed to subterranean rivers. Consequently, the landowner is presumed to own underground water until it is conclusively shown that the source of supply is a subterranean river.

The state of the law with respect to ownership of subterranean rivers is not settled in Texas. Both stream underflow and subterranean rivers have been expressly excluded from the definition of underground water in Section 52.001 of the Texas Water Code.

The practical effect of Texas groundwater law is that one landowner can dry up an adjoining landowner's well and the landowner with the dry well is without a

legal remedy. Texas courts have refused to adopt the American rule of "reasonable use" with respect to groundwater.

### Exceptions to Absolute Owner

**Rule.** There are five situations in which a Texas landowner can take legal action for interference with his groundwater rights:

- (1) If an adjoining neighbor trespasses on the land to remove water either by drilling a well directly on the landowner's property or by drilling a "slant" well on adjoining property so that it crosses the subterranean property line, the injured landowner can sue for trespass.
- (2) There is malicious or wanton conduct in pumping water for the sole purpose of injuring an adjoining landowner.
- (3) Landowners waste artesian well water by allowing it to run off their land or to percolate back into the water table.
- (4) There is contamination of water in a landowner's well. No one is allowed to unlawfully pollute groundwater.
- (5) Land subsidence and surface injury result from negligent overpumping from adjoining lands.

## LIMITED REGULATION OF GROUNDWATER

The Texas Legislature acknowledged private ownership of percolating groundwaters in legislation passed in 1949 and again in 1985, when it authorized the establishment of underground water conservation districts. These districts generally have the authority to promulgate rules for conserving, protecting, recharging, and preventing waste of underground water. There are



two basic types of groundwater districts in Texas: Underground Water Conservation Districts and Subsidence Districts.

### UNDERGROUND WATER CONSERVATION DISTRICTS

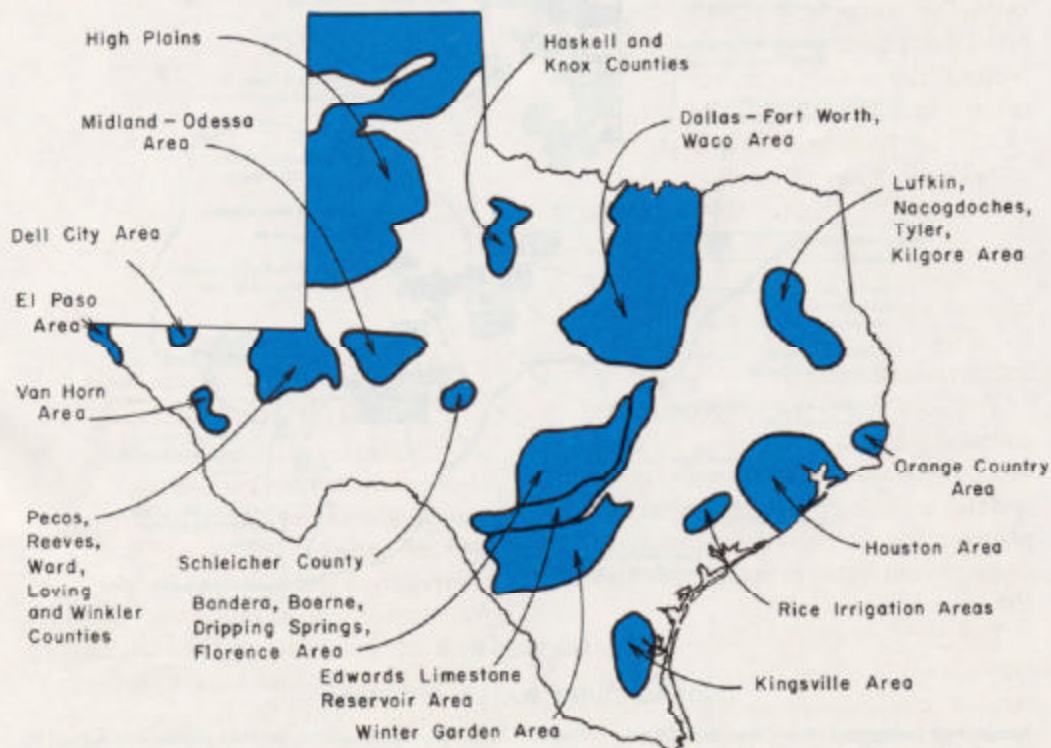
In 1949 and again in 1985 the Texas Legislature passed a law authorizing, only with local voter approval, the creation of special underground water districts. The 1985 legislation added a refinement to the existing statute. In the past residents could petition the state to have a district created. The 1985 amendment allows the Texas Water Commission to designate certain areas as "critical groundwater areas" and to initiate the formation of a district (Figure 5-1). Voters can veto any proposed district, but if they do, state funding for water projects can be withheld. With this amendment the emphasis has shifted from citizen initiative to the state taking a leadership role in managing groundwater.

The districts authorized by Sections 52.001 to 52.501 of the Texas Water Code have as their purpose the prevention of waste, the prevention of land subsidence, protection of water quality, and conservation of groundwater supplies. This is accomplished by regulating well spacing, enjoining wasteful water practices such as allowing water to flow into roadside ditches, and conducting public education programs about water conservation methods. Districts can also require permits for new wells.

All underground water districts tread a narrow path between private ownership rights of groundwater and responsibility to protect the water resource. Because the districts are locally controlled, none has even attempted to limit the annual production of private wells. Instead, most districts direct their efforts toward prevention of waste, recharge work, data collection, and water conservation education.

Groundwater districts can be established

FIGURE 5-1  
**CRITICAL GROUNDWATER AREAS**  
 Cited by the Texas Water Commission, 1986





anywhere in Texas and 12 districts have been created (Figure 5-2).

### HARRIS-GALVESTON COASTAL SUBSIDENCE DISTRICT

As Houston's population grew so did its thirst for water. The aquifer system around Houston provided good quality, inexpensive, and easily obtainable water. By 1976 groundwater pumpage in the Houston area was more than 455 million gallons a day. Pumping at this rate lowered water tables and caused land subsidence.

Subsidence has lowered land elevations by 9 feet or more in the eastern sections of the Houston area and dramatically increased vulnerability to flooding before excessive pumping in that area was stopped. Subsidence is still taking place in the western and southwestern portions of Houston. Most of the effects of subsidence are irreversible, even if water levels in an aquifer are restored to their original levels.

In 1975 the Texas Legislature created the Harris-Galveston Coastal Subsidence District and charged it with the responsibility "... to provide for the regulation of the withdrawals of groundwater within the boundaries of the district for the purpose of ending subsidence." Perhaps the most striking difference between the Subsidence District and other groundwater districts is that it issues permits to drill wells and regulates operators of wells within the district. The Subsidence District restricts the amount of groundwater than can be taken and levies a pumping fee for the groundwater that is withdrawn.

Overall, the district has been successful in reducing the area's reliance on groundwater and encouraging the conversion to surface water. With a reduction in groundwater withdrawals, the subsidence in the area has been reduced.

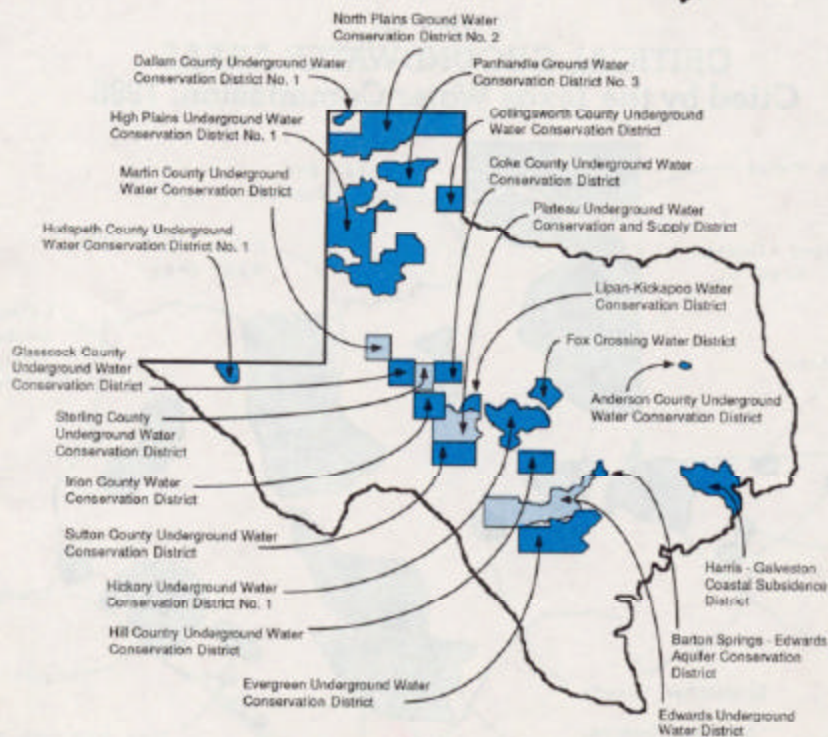


FIGURE 5-2

### UNDERGROUND WATER DISTRICTS

Redrawn from *Underground Water Conservation Districts, Underground Water Reservoir Delineations, and Major Aquifers as of August 1983*, Texas Department of Water Resources, Austin, 1983.





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## PUBLIC ACCESS TO WATERS

*A canoeist needs a lawbook, a copy of the original land grant, a surveyor's instrument and five justices from the Texas Supreme Court to determine if he has a legal right to use a Texas riverbank.*

Texas Monthly Magazine, April 1975

Legal answers to public access questions are becoming increasingly important each year as more and more Texans flock to the beach or discover the fun of floating a river. In the pursuit of water and sand, the recreationist often comes into direct conflict with private property rights and may be prosecuted as a criminal trespasser.

Finding answers to the question of a recreationist's legal right to be on a river, lake, or beach can be as easy as finding a car key on the bottom of the crystal clear Comal River at New Braunfels or as difficult as finding that key on the bottom of the muddy Brazos River at Brazoria. Texas laws dealing with public access are fairly clear and concise on Texas' Gulf Coast beaches but are complex and poorly defined on Texas' inland rivers, lakes, and streams.

### GULF COAST WATERS

Texas' coast extends nearly 400 miles along the Gulf of Mexico from Louisiana to the border of Mexico. The shoreline continues 2,500 miles along islands, peninsulas, marshes, bays, and estuaries. This coastal area has great recreational value for boating, fishing, surfing, walking, or just enjoying the shore.

Texas coastal lands may be divided conveniently into *uplands*, *tidelands*, and *submerged lands* (Figure 6-1).

**Uplands.** This refers to the area of land generally above the influence of the mean high tide. Most of the state's coastal uplands are privately owned. Due to the state's unique history the original source of the title to these lands may be either (1) a Spanish or Mexican land grant or (2) a conveyance from the Republic or State of Texas.



**Tidelands.** The land generally below the mean high tide and above the mean low tide is referred to as tidelands. It is the area of wet sand subject to the "ebb and flow" of the tides. Except for some tidelands granted to local governments or private parties, the State of Texas owns the lands lying below the mean high tide and above the mean low tide.

**Submerged Lands.** In 1836 the Republic of Texas established its seaward boundary at 3 marine leagues (roughly 10.25 miles) from the Gulf of Mexico's shore. When the Republic was admitted to statehood in 1845, the U.S. Congress accepted the Texas Constitution and laws, including the 3-league boundary. In 1953 Congress passed the federal Submerged Lands Act confirming Texas' title to the bottomland of the gulf out to the 3-marine-league limit.

#### OPEN BEACHES ACT

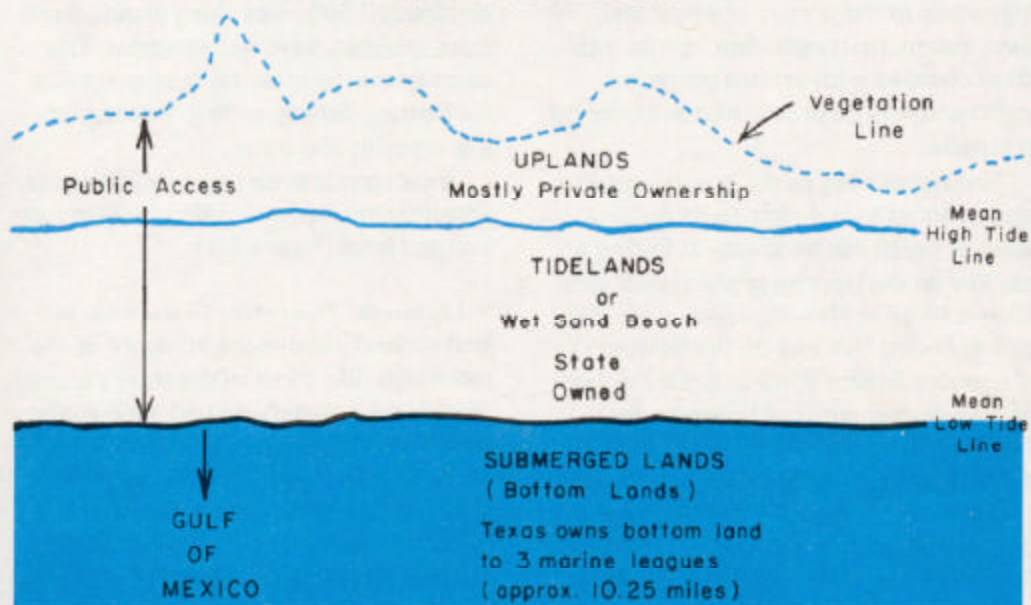
Texas was a forerunner in protecting public access to and use of the seashore, before many other states recognized the value of beaches. In 1959 the legislature passed the Texas Open Beaches Act, ar-

ticulating the state's policy of guaranteeing recreational use of its beaches and tidal waters. The act recognized state ownership of tidelands and the pattern of public use of these wet sand beaches, but went one step further and extended a right of public access into the upland areas of beaches. Section 61.011 of the Natural Resources Code declares the public policy of Texas to be:

... that the public ... shall have the free and unrestricted right of ingress and egress to and from the state owned beaches bordering on the seaward shore of the Gulf of Mexico, or if the public has acquired a right of use or easement to or over an area ... the public shall have a *right of ingress and egress to a larger area extending from the mean low tide to the line of vegetation bordering on the Gulf of Mexico.*

As illustrated in Figure 6-1 the public has a right to use the dry sand portion of Texas beaches below the vegetation line, even though this upland area may be privately owned. Another provision of the Texas Open Beaches Act states that a private littoral owner's title does not include the right to prevent the public

FIGURE 6-1  
RIGHTS OF PUBLIC ACCESS:  
OPEN BEACHES ACT





from using the area below the vegetation line for ingress and egress to the sea. There is a prescriptive right of public access to this area. As of this writing, no reported Texas Supreme Court case had decided whether this provision is constitutional.

The act specifically prohibits private property owners from constructing fences or barriers from the vegetation line to the mean high tide line to prevent the public from using this area. The Texas attorney general has the power to file lawsuits protecting these public rights and to seek the removal of obstructions or barriers in this area.

A private landowner may prosecute beach users for trespassing if they cross upland private property to reach a beach covered by the act. However, once a user obtains lawful access to the open beach area, the user may travel freely without restriction up and down the beach.

The Texas Open Beaches Act applies only to those beaches directly bordering on the open waters of the gulf. The act does not apply to (1) beaches on the landward side of islands and bays, (2) remote beaches on the islands not accessible by road or ferry, and (3) beaches over which no prescriptive right has been established. Short of these limited conditions, the Texas Open Beaches Act grants to the public the right of ingress and egress over all the gulf-side beaches below the vegetation line. Theoretically, a person could travel the entire Texas gulf coastline below the vegetation line and not trespass on private property.

## **INLAND WATERS**

Texas has more than 80,000 miles of waterways. The state also has 184 lakes and reservoirs with almost 1 million acres of surface water. The diversity of Texas' waterways and reservoirs is probably greater than that of any other state. East Texas rivers with a jungle-like climate, pine-covered banks, and serpentine currents often provide a serene float trip.

In contrast, hill country rivers and streams have steeper gradients cut through rocky terrain and often have stretches of white water. These waterways offer a more exciting "water park" type of recreational experience. West Texas rivers traversing arid country with high bluffs and steep rocky canyons offer a "wilderness" experience.

Although recreation is a nonconsumptive use of water, the magnitude of recreational use of the state's rivers and reservoirs is an indicator of the value of these recreational waters to Texans. In 1980 nearly 60 million people visited the 24 Texas reservoirs maintained by the U.S. Army Corps of Engineers. This increasing recreational use of Texas water has resulted in increasing conflicts between the public recreational user and the private landowner.

In Texas 98 percent of the land is in private ownership. Most of the navigable rivers are public property, with the state owning the riverbed, but the shorelines of these rivers are usually privately owned. The conflict between public use of the rivers and private property rights on the riverbanks results in confrontation and often in prosecution for "criminal trespass." Landowners along the rivers must endure loss of privacy, litter, vandalism, and loss of solitude as increasing numbers of Texans use rivers for recreation. Without a doubt, the unsettled, complex, and ambiguous legal picture of public access to and use of rivers and riverbanks leads to many conflicts between private landowners and the recreating public.

## **RIGHT TO USE RIVERS**

Nowhere in the Texas Water Code is there statutory recognition of public access rights to state inland waters for recreation purposes. Except for a provision that state water may be appropriated, stored, or diverted for recreation, there is no mention of the public right to use the state's rivers for recreation. This is in sharp contrast to the statutory rec-



ognition extended to coastal beaches in the Texas Open Beaches Act. Reference must be made to numerous court cases dealing with different aspects of river use to discern the public's right to travel and use the waters, banks, and shores of streams and lakes. From these cases it is possible to "patchwork" some general rules regarding the rights to use rivers and banks.

**Navigation Test.** The law is well settled that the public has the right to travel on and use the *navigable* rivers of the state. The Texas Supreme Court as early as 1863 ruled that navigable streams, exclusively within the state, are beyond question the highways of travel and trade for citizens of the state. *Therefore, if the river is navigable, the public can boat, fish, float, or use it for other recreational pursuits.* Private landowners along the banks of navigable rivers may not erect or maintain fences or other structures across streams to keep canoeists or other users from traveling "unimpeded" on the river.

The public has no legal right to use nonnavigable rivers, and the owners of the land along these rivers can prevent public use. A difficult problem arises in determining whether or not a stream is navigable.

Texas has adopted two tests for river navigability: (1) the federal navigable "in fact" test and (2) a state navigable "in law" test. Federal law identifies rivers as navigable "in fact" on the basis of whether they are able to sustain commerce. Simply, has the river served as a highway for commerce? If a river does not meet the federal test for navigability, then the state test applies. The Texas legal definition has nothing to do with whether a boat can actually navigate the river, but it is based on the width of the river.

The origin of the Texas navigable "in law" test can be traced to Spanish and Mexican law, as superseded in 1837 by an act of the Republic of Texas. Spanish law provided that the streambed of "peren-

nial" or "torrential" streams was owned by the sovereign. A perennial stream is generally defined as a continually flowing stream.

The 1837 statute passed by the Republic, now codified into Texas law, stipulated that land grant surveys should not cross navigable streams. Navigable streams were defined by the act as those that average 30 feet or more in width from the mouth upstream, and the act declared that the beds of such streams were the property of the state. Thus streambed ownership and navigability are intertwined issues that determine the Texas navigable "in law" test.

*Simply stated, a Texas river or stream is navigable "in law" if it averages 30 feet in width from the mouth upstream.* This means that streams of this width are navigable and that the public has a right to use them for recreation, travel, and public purposes. The beds of these streams are owned by the state, and the public has a corresponding right to use these streambeds, particularly when they form islands or sandbars.

The navigability status of many intermittent streams may be questionable because the original law dealt with "perennial" streams. Until the Texas Supreme Court or legislature clarifies this issue, the legal waters will remain murky. The question of whether a stream is navigable or not will be determined on a case-by-case basis with the courts using the federally derived navigable "in fact" test or the Texas navigable "in law" test.

The determination of navigability of lakes is somewhat different from the statutory test used for rivers and streams. Here the test is whether the lake is navigable "in fact." Texas court cases applying the navigability "in fact" test have resulted in confusing and opposite results.

In a 1917 case titled *Welder v. State*, 196 S.W. 869 (Tex. Civ. App.), a lake 3.5 miles long by 2 miles wide, with an average depth of 4 feet, was found to be navigable. The court noted that:



It is a reasonable rule that lakes large enough to be useful to the public for boating and fishing should be held to be public and not private property.

A completely different conclusion was reached in the 1935 case of *Taylor Fishing Club v. Hammett*, 88 S.W.2d 127 (Tex. Civ. App.). The court found that a lake 1.5 miles long and 700 feet wide, with an average depth of 15 feet, was not navigable. In its opinion the court stated that:

... the lake is useful for fishing and as a general pleasure resort, but it is generally held that a lake that is chiefly valuable for fishing and pleasure boats of small size is not navigable.

The results of these two cases are obviously confusing. The navigability of many Texas lakes, without a navigable stream inlet or outlet, will have to be decided on a case-by-case basis.

### RIGHT TO USE RIVERBANKS

The public's right to use riverbanks is one of the most complex legal issues of river recreation. It is generally accepted that the public may use the beds of navigable streams and their banks up to the line dividing public ownership from that

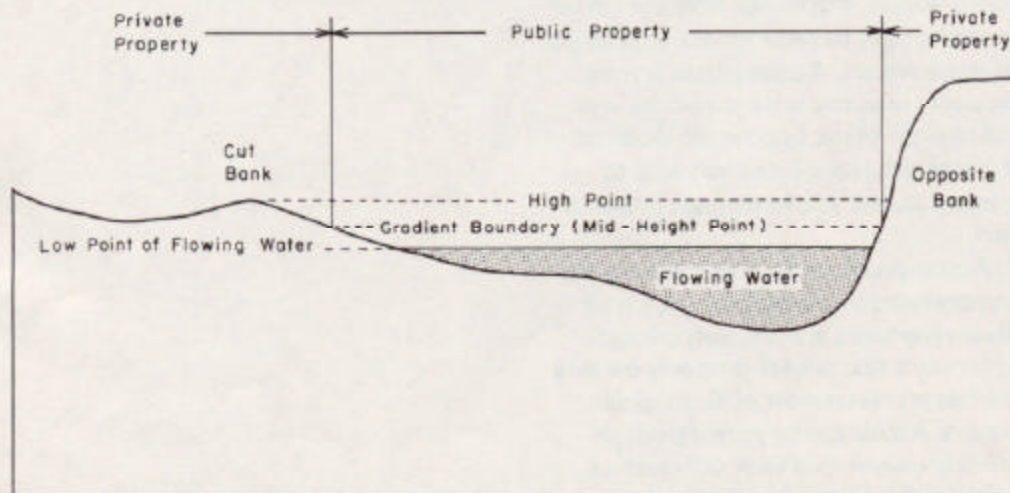
of adjoining private property. It is also well established that the public has no legal right to go beyond that dividing line without the consent of the owner. Section 10.05 of the Texas Penal Code provides that a person commits a criminal trespass if

- ... he enters or remains on property
- ... without effective consent and he:
  - (1) had notice that the entry was forbidden; or
  - (2) received notice to depart but failed to do so.

The code recognizes that notice can be provided by "fencing the property" or "posting signs" at a location that is likely to come to the attention of intruders. A criminal trespass violation is punishable by a fine of up to \$1,000 or confinement in a jail for up to 180 days, or both.

**Gradient Boundary Line.** The legal dividing line between public and private property on a navigable stream is called the *gradient boundary line*. As defined by the U.S. Supreme Court and adopted by the Texas Supreme Court, *this is a line located midway between the lower level of the flowing water that just reaches the "cut bank" and the higher level of it that just does overtop the "cut bank"* (Figure 6-2).

FIGURE 6-2  
GRADIENT BOUNDARY LINE





This is a fine legal definition for courts and lawyers, but locating the imaginary line on a riverbank requires diligent fieldwork by land surveyors. A recreationist who steps out of a boat on a navigable stream may be treading above the gradient boundary line and risks being charged with criminal trespass. When in doubt, the timid should remain in the boat.

One question that remains untested in Texas is how the common law "emergency trespass rule" applies to a river recreationist. Under this rule it is a defense to a charge of trespass for a person in peril or in an emergency to commit a reasonable trespass. It has never been determined in Texas courts whether a person who is lost, in a damaged boat, or going for emergency assistance is justified in entering private lands. Certainly, rivers with access points miles apart provide a strong basis for this defense.

### **RIGHT OF ACCESS TO RIVERS**

Although the public has a right to travel on any navigable river in Texas, the river must be reached by legal means. There is no right to travel across private property to reach public property. In 1935 the Texas Supreme Court in *Diversion Lake Club v. Heath*, 86 S.W.2d 441 (1935), clearly established that even though the public has a right to fish in public waters, it does not have the corresponding right to cross private land to get to those waters. Access across private property to public waters must be with the consent of the landowner. Violation of this well-established rule may lead to criminal as well as civil trespass prosecution.

Access problems to public waters are compounded by the fact that nearly all Texas riverbanks are privately owned. This means that private property owners control access to most of Texas' public waters. Access can be gained through publicly owned riverbank sites such as public parks or highway rights-of-way

crossing streams. These sites are often miles apart, which contributes to public and private conflicts.

As public access conflicts escalate, and they most assuredly will, the Texas Legislature will have to determine how the public is to gain recreational access to the state's public waters. This is a political question and not exclusively a legal issue.







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## TRENDS

The desire to be unique, to borrow ideas from others only if they are workable, and to preserve a lifestyle has forced Texas to develop a complementary system of water law. Our water law system is drawn from Spanish and Mexican law, modified by English common law, and fine-tuned by our legislature and courts. We must recognize these historical antecedents as we look to the future.

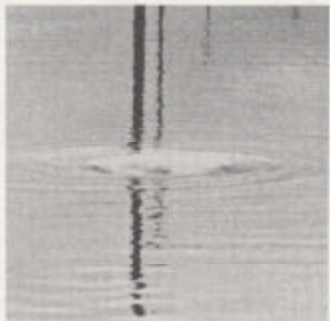
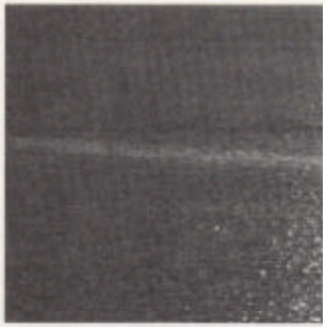
Times change, people change, and the demands of growth have taxed the state's limited water supply. The changing character of the state calls on us, as Texans, to increase our understanding of the

migratory nature of water. As water problems increasingly become regional, national, and international issues, rather than county or state issues, we must examine how the water problems of other states affect Texas' water resource management.

With changing times, it is only natural that our legal rules must change and adapt to allocate our water resources in the best interest of Texas. It is important that, when considering changes, we have an understanding of our current laws and the legal history behind those laws. We hope this publication serves that end.









## GLOSSARY

**Acequia**—from Spanish, meaning a community irrigation ditch.

**Acre-foot**—the quantity of water required to cover one acre of land to a depth of one foot; equal to 325,851 gallons of water.

**Adjudication**—a formal judicial proceeding before the Texas Water Commission, or a Texas court, to determine the validity and extent of a water right.

**Appropriation doctrine**—the system of western water law pertaining to the "first in time" right of taking or diverting water from a watercourse and applying it to a beneficial use.

**Appropriator**—a person who takes water from a watercourse and applies it to a beneficial use.

**Artesian well**—a free-flowing well in which water is forced to flow to the surface by internal hydrostatic pressure.

**Aquifer**—a saturated underground geologic formation of rock or other porous material capable of storing water and transmitting it to wells or springs.

**Beneficial use**—the amount of water necessary when reasonable intelligence and diligence are used for a stated purpose; Texas law recognizes the following uses as beneficial: (1) domestic and municipal uses, (2) industrial uses, (3) irrigation, (4) mining, (5) hydroelectric power, (6) navigation, (7) recreation, (8) stock raising, (9) public parks, and (10) game preserves.

**Civil law**—the system of jurisprudence administered in the Roman Empire, as set forth in the compilation of Justinian, and adopted by Spain and Mexico.

**Common enemy rule**—a rule of law concerning diffused surface water whereby a landowner may drain water from his land in any manner regardless of damage to surrounding neighbors.

**Conjunctive management**—integrated management and use of two or more water resources, such as an aquifer and a surface water body.

**Consumptive use**—water withdrawn from a supply that, because of absorption, transpiration, evaporation, or incorporation in a manufactured product, is not returned directly to a surface or groundwater supply; hence, water that is lost for immediate further use.

**Depletion**—the withdrawal of water from surface or groundwater reservoirs at a rate greater than the rate of replenishment.

**Diffused surface waters**—waters that in their natural state are spread over the land surface in places other than watercourses, lakes, rivers, and streams.

**Diversion**—the removal of water from a natural watercourse; also called withdrawal.

**Drainage basin**—the land area from which water drains into a river (for example, the Brazos River Basin consists of all the land area draining into the Brazos River); also called "watershed" or "river basin."

**Eminent domain**—the right of government to acquire private property for public use, even from an unwilling owner, upon payment of just compensation to the owner.

**Evapotranspiration**—water dissipated to the atmosphere by evaporation from moist soil and by plant transpiration.

**Flood plain**—the land area bordering a river that is subject to flooding during any given period of time.

**Gradient boundary line**—the dividing line on a riverbank separating public and private property; measured as a midpoint between the lower level of the flowing water, which just reaches the cut bank, and the higher level, just to the top of the bank.

**Groundwater**—water that occurs beneath the land surface and fills the pore spaces of the rock material in which it occurs; also called "percolating water."

**Groundwater mining**—the withdrawal of water from an aquifer at rates in excess of net recharge or replenishment; sooner or later the underground supply will be exhausted or will not be economically feasible to pump.

**Hydrologic cycle**—the circulation of water from the sea, through the atmosphere, to the land, and then back to the sea by overland and subterranean routes, or directly back into the atmosphere by evaporation and transpiration.

**Instream use**—use of water that does not require withdrawal or diversion from its natural watercourse; for example, the use of water for navigation, recreation, and support of fish and wildlife.

**Interbasin transfer**—the physical transfer of water from one watershed to another; regulated by the Texas Water Code.

**International water treaty**—an agreement between the United States and a foreign nation dealing with a water resource involving both nations. Such treaties supercede state law. The U.S. has two treaties with Mexico to govern the international waters of the Rio Grande River.

**Interstate water compact**—an agreement between two or more states dealing with a water resource, beyond the legal authority of one state alone to solve. Such agreements require the consent of Congress. In Texas compacts cover the Rio Grande, Canadian, Red, Pecos, and Sabine rivers.



**Inverse condemnation**—the illegal act of taking private property by government action prior to instituting eminent domain actions.

**Litigation**—to engage in legal proceedings.

**Littoral rights**—the water rights of landowners adjacent to lakes; equivalent to the riparian rights of landowners bordering streams.

**Natural flow doctrine**—the system of water law regarding the treatment of diffused surface waters by a landowner. Basically a landowner cannot change the natural flow of drainage water across his land to the detriment of adjoining landowners.

**Navigable waters**—those waters capable of supporting commerce; in Texas those rivers that either support commerce or average more than 30 feet wide from the mouth upstream.

**Open beaches**—coastal beaches subject to provisions of the Texas Open Beaches Act.

**Precipitation**—any form of rain, snow, or hail falling to the earth's surface.

**Prior appropriation doctrine**—see Appropriation doctrine.

**Recharge**—the addition of water to an aquifer by natural infiltration or by artificial injection through wells.

**Reservoir**—a pond, lake, aquifer, or basin, either natural or artificial, in which water is stored or controlled.

**Return flow**—the portion of withdrawn water that is not consumed by evapotranspiration and that returns to its source or another body of water.

**Riparian doctrine**—the system of water law based on English common law allowing landowners adjoining lakes and rivers to withdraw "reasonable amounts" of water so long as downstream landowners are not unreasonably damaged.

**Riparian rights**—the water rights of landowners adjacent to rivers and streams.

**Tidelands**—that portion of land subject to the normal "ebb and flow" of the tides.

**Underground water**—generally referred to by hydrologists as groundwater or percolating water, and by the Texas Legislature as underground water but not including subterranean streams.

**Vested water rights**—a matured appropriative right to use state water for a beneficial purpose.

**Water permit**—a state license to appropriate state water for a beneficial purpose.

**Water right**—a legal right to divert state waters for a beneficial purpose.



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## FOR FURTHER INFORMATION

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Austin, Texas 78758

Water Resources Center  
Texas Tech University  
Lubbock, Texas 79409

Texas Water Development Board  
Stephen F. Austin State Office Building  
P. O. Box 13231  
Austin, Texas 78711

Edwards Aquifer Research and Data Center  
Southwest Texas State University  
San Marcos, Texas 78666

### WATER RIGHTS

Texas Water Commission  
Water Rights and Uses Division  
Stephen F. Austin State Office Building  
P. O. Box 13087  
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### WATER PLANNING AND FUNDING

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Stephen F. Austin State Office Building  
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