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Reallocating Texas' Water: Slicing up the Leftover Pie

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A new age is dawning in Texas water law -- the "Reallocation Era." This will be the age in which, having no new or "unspoken-for" water at hand, portions of existing water rights will be transferred, sold, leased, deposited into "banks," and shuffled among the hydrologic haves and have-nots. Plans call for moving water from areas of surplus to areas of scarcity, and from low- to high-valued uses. Increased conservation will also occur so that the rights to such "saved" water may be sold on the open market. These ideas constitute a major departure from the way most Texans are accustomed to dealing with water.

Reallocation is not a new idea. In fact, what is occurring in Texas water law reflects national trends. The traditional reliance on meeting water needs through additional appropriations is becoming unfeasible, because there is less available or uncommitted water. Most surface water in Texas has been allocated and often over-allocated. With few exceptions, there is little additional water to divert, store, or develop in many river systems.

The pie has been sliced. But has it been eaten? Not necessarily. The concept of reallocation is that even though the pie has been sliced and served, there might still be a few "leftovers." There might be pie holders who are willing to eat less in order to sell their "leftovers" to those willing to pay for more. The pie is being shifted to higher-valued uses. The term "leftover" is not entirely accurate in the context of water reallocation in that it implies that additional, excess, or unused water is available, or that appropriators have been allocated more water than they now need. While this is sometimes true, it is not the cornerstone of reallocation.

Clearly, competing demands and needs for water are rarely fully met. Even when an appropriator does hold more water rights than they actually "need" or use, full usage is

often reported to protect the right and avoid forfeiture because of non-use. Water that is freed up for reallocation is just that, freed up. It is not new, extra, surplus or excess water. It is water that can bring the appropriator more money by selling than by using.

The "Reallocation Era" is a recognition that it may be time to closely examine how the "pie" is sliced, given the scarcity of water. It may be the era when old public interest debts will be called in on issues like instream flow protection, and when water rights will undergo significant changes in use. Water marketing and transfers will play key roles in this reallocation.

From Development to Reallocation

Reallocative schemes such as water marketing, transfers, and improved water management are now common in the West due to greater competition and demands for limited water supplies. The previous era of development focused on "creating" new supplies. Now, reallocation must deal with water scarcity as a demand problem; there are too many users (*Won*, 1992). During the 1980s, voluntary and involuntary strategies were used to reallocate water from existing to new or alternative uses. Involuntary transfers resulted from cancellations, public condemnation, adverse possession, and use of the public trust doctrine. Voluntary agreements are commonly used to trade water rights (*Griffin and Boadu*, 1992).

Many Western states have turned to the market to reallocate water. Some argue there must be restrictions in this market lest transfers infringe on the water rights of others. Texas law sets limits on the free transfer and marketing of water rights. These include application of the "no injury" rule, mitigation of environmental impacts, and protection of the basin of origin when interbasin transfers occur. Surface and ground water markets have existed in Texas for 20 years. The markets have been facilitated by the Texas Natural Resource Conservation Commission (TNRCC) watermaster program, which is in place in the Lower Rio Grande and Nueces river basins. This program acts as a clearinghouse for marketing information and tracks actual water use. Rules also allow for the protection of the right to conserved water to facilitate the marketing of this "surplus" water. Markets in Texas have taken three forms: groundwater ranching, internal transfers, and permit exchanges. **Groundwater ranching** occurs mainly in the High Plains, where cities purchase irrigated lands underlain by aquifers. The overlying land is often leased back to dryland farmers while the cities pump the water. **Internal transfers** occur within Texas' water districts and river authorities (*Harper and Griffin*, 1988). **Permit exchanges** consist of the transfer of surface water rights. Most of these transfers occurred in the lower Rio Grande Valley, after the region had been fully adjudicated in the 1970s (*Griffin and Boadu*, 1992).

The trend toward reallocation in Texas is being fueled by the need for more water and facilitated by recent legislation to encourage water marketing. In 1993, the Legislature passed Senate Bill 1030, which amended Chapter 15 of the Texas Water Code. This act established a Texas "water bank" that will be administered by the Texas Water Development Board (TWDB). The bank will allow water rights holders to "deposit" up to

half of their allocation into the bank for others to buy or lease. The Board will act as a clearinghouse, providing information on persons or organizations in Texas that want to buy, lease, or sell water rights. It can also assist in negotiations between buyers and sellers, promote conservation by encouraging "saved water" to be deposited into the bank, and establish regional banks.

Ideally, water marketing creates opportunities for rights holders to realize greater economic gains from water they may already be using. The water bank is intended to support that trend. The bank may also complement future water transfers being studied under the Trans-Texas Water Program.

A History Lesson

To better understand these new trends in Texas water law, it is helpful to review the past. Texas has seen a long and complex evolution in its system of water laws. As far back as the 1600s, the Spanish apportioned land by governmental grant, but did so with or without specific rights for water access (*Kaiser*, 1987). The right to use water had to be explicitly obtained from the government. Only "riparians," or those who owned land adjacent to a watercourse, could obtain water rights. The rights were not limited to fixed water quantities. The practice of Spanish land grants continued through the mid-1800s (*Kaiser*, 1987).

In 1840, Texas adopted the English common law "riparian" doctrine. The riparian doctrine states that property owners near a river or stream have the right to use its water with neither the amount of water nor the purpose of use being specified, as long as the use is reasonable. This system works best when water is not scarce, since the amount of water used is not regulated. However, as Texans soon learned, when water *is* scarce, some type of license to use a specified amount of water is needed.

In 1899, the Texas legislature adopted the Irrigation Act, which applied prior appropriation rules to arid regions of the State. Under the pure form of the prior appropriation doctrine, a water user must obtain a permit to divert or use a specified quantity of water that will be applied to a specified beneficial use. Permits are typically issued on a first-come, first-served basis, with more senior rights taking priority over junior ones. In the early days of prior appropriation in Texas, settlers who first made beneficial use of surface waters were given preference over those who came later. The Irrigation Act of 1913 applied the prior appropriation doctrine statewide and ceased to recognize riparian rules. The 1917 Canales Act reenacted the 1913 law. Persons wishing to use state waters had to file an application for a permit with the State Board of Water Engineers. The permit could be developed into a "perfected right" by beneficial use, according to the terms of the permit (*Kaiser*, 1987).

Since pre-existing Spanish grants were also recognized, there was an ungainly mixture of the riparian and appropriation doctrines that led to conflicts in practical application. When the drought of the 1950s hit the Rio Grande Valley and vastly more water claims were being made than there was water in the river, the two systems collided. A lawsuit

resulted and water rights in the Rio Grande were adjudicated 15 years later (*Chang and Griffin,* 1992). The Water Rights Adjudication Act of 1967 initiated the adjudication of all surface water rights in the state. This Act converted all riparian rights to perfected rights that are subject to prior appropriations.

So, what does all this have to do with water marketing and reallocation? The adjudication of water rights, by specifically quantifying the appropriation, established a conducive environment for water marketing (*Chang and Griffin,* 1992). Water rights in Texas have now become something tangible and transferable; a water right is real property and can be sold. That brings us back to the idea of water banking and transfers.

The Water Bank

Both the Texas water bank and the Trans-Texas Water Program are versions of the general concept of water marketing and transfer. The water bank in Texas is being created *specifically* to facilitate water marketing, transfer, and reallocation. Water transfers need not take place through the bank. The Trans-Texas project is also being viewed as a means to reallocate waters. Through the amendments to SB 1030, the TWDB is authorized to administer the water bank to "facilitate the transfer of water from all sources as necessary to provide sources of adequate water supplies for use within the State." The bill allows for up to 50% of a water right to be deposited. As an incentive to deposit water rights into the bank, the bill protects water rights placed in the bank from cancellation for non-use for an initial 10 years, and for 10 more years following the actual transfer of a water right in the bank. Current water law provides that part or all of a right can be cancelled if the water is not put to beneficial use after a 10-year period. Appropriated water saved through a documented conservation plan may also be sold or leased without fear that the right will be amended or cancelled by the State. This provision was already in place before SB 1030 was passed. Deposits to water banks are expected to take two forms: 1) A time-limited deposit (lease) for a certain amount of water, requiring TWDB and TNRCC approval and the possible amendment of the water right; and 2) A permanent transfer of right, which may require an amendment of the original water right by TNRCC.

A form of water "banking" already exists in Texas, although not through a centralized clearinghouse. Texas water districts and river authorities are broadly empowered to deliver water to a service area covering part or all of a river basin. These organizations provide water to multiple sectors (*Chang and Griffin,* 1992). River authorities routinely invest in water rights to ensure adequate streamflows for the future. At any time, a river authority may hold more water rights than it actually uses to meet present demands. When this occurs, authorities often lease the "extra" water rights to cities through long-term contracts.

The Texas water bank is also expected to broaden opportunities for water marketing for holders of smaller amounts of water rights. Banking and investment will likely extend into groundwater, too. Although groundwater in most of Texas is not allocated by an adjudicated right which can be transferred, there is nothing to prevent anyone from

capturing groundwater and selling it through the bank. Since groundwater rights are not quantified and there are no correlative rights among groundwater users, there may be many practical problems in establishing groundwater "banks."

The TWDB is now drafting rules and procedures for the operation of water banks. The first banks could become operational as early as March or April, 1994 and will likely incorporate large areas that will be affected by the Trans-Texas Water Program including the San Antonio and Corpus Christi regions and the Sabine River Basin.

The TNRCC already requires that users throughout Texas report annually on the amount of surface water they divert and use. However, the amount of water used is now only metered in watersheds covered by the watermaster program. The lack of metering or other enforced compliance with water rights throughout the rest of the state may be a cause for concern for future water banks. Those wanting to lease water may be reluctant to do so unless they know they will get all the water they pay for. Similarly, parties affected by any existing water right may wish to be protected from an unmonitored "over-sale" of a right. The Lower Rio Grande Valley, the one region with both a watermaster program and an active water market, is not expected to establish a water bank through the TWDB. Local districts appear to want to develop their own regional water bank (*Mark Jordan*, TNRCC, personal communication).

Many other western states have established water banks. In Idaho, farmers with surplus entitlements from federal projects lease more than 100,000 acre-feet (AF) of water annually through water banks that are sanctioned by the state. These leases generally change the point of diversion of stored water or the place or purpose of use. Fees are assessed for the transfer, part of which goes to the entity supplying the water to the rental pool, and part to the local water districts to cover administrative costs. Prices are set by a governing board. California also has a water bank, which was introduced to help the state respond to drought. The bank provides for the state to buy water from voluntary sellers and distribute it at cost to users with critical needs. In both states, protection is built into the program to ensure that water transfers do not harm "third parties," or other water rights holders or with the public interest. Third parties can include people and communities that are not directly engaged in a transfer of water or water rights, but who are still affected by it. Examples include watersheds of origin, towns that depend on irrigated agriculture or water-based recreation, boaters, and anglers. Environmental third parties can consist of wetlands, riparian areas, endangered species, instream flows, and other natural resources that might be impacted by a change in amount of water used or location of use.

There are many potential uses of the Texas water bank, including the lease or permanent transfer of water rights, emergency transfers for use during droughts, conjunctive uses, and exchanges of surface and ground water rights. As such, the bank may have potential as a tool for ensuring water for environmental purposes, provided suitable buyers can be found and the bank could manage this water effectively. While all of these possibilities existed before the bank, the bank may motivate increased marketing activity.

Specific rules for the Texas water bank have yet to be developed, but the bill provides safeguards including regular reporting to the Governor and Legislature on the progress of the bank. Reports are to include information on any changes needed to provide flows for rivers, bays and estuaries, water quality, and aquatic and wildlife habitat. Provisions for public interest and third party impact protections are part of the administrative approval process for all other water rights transfers. Water rights marketed through the bank will likely require authorization from the TNRCC for changes before the purchased right may be used.

The Trans-Texas Water Program

The idea of moving East Texas "surplus" water into the drier regions of the state has been considered since the 1940s. During the 1960s, the ideas jelled into the formulation of the TWDB Texas Water Plan. The plan (dubbed "Burleigh's Ditch") called for importing water from the Mississippi River which, along with water from East Texas streams, would be transferred through a system of existing streams, canals, and reservoirs to the water-scarce regions of the state. Water was to be diverted and used primarily for irrigation, but would also help meet urban demands in Houston, San Antonio, and Corpus Christi. A major problem was that it was too expensive, because it required that large amounts of water be pumped uphill to the High Plains for irrigation.

The plan met an early demise because of high costs and other problems, but it focused a great deal of attention on what is now called "area of origin protection." Protecting the area of origin (or headwaters) stems from the need to preserve future water supplies and to ensure that water is not "over-exported" from an area. Regions with current water surpluses fear that exporting water out of their "back yard" could mean water shortages in the future, limitations on economic development, and environmental degradation.

In Texas, areas of origin are protected differently than in most other western states. An amendment to the state constitution provides that state funds may not be used to finance a project "which contemplates or results in the removal from the basin of origin of any surface water necessary to supply the reasonable foreseeable future water requirements for the next ensuing 50-year period (thus the "50-year lockup") within the river basin of origin." In other words: "*You can't have it until we say we don't need it anymore.*" By contrast, most other western states provide area of origin protection through another approach: "*You can have it until we say we need it back*." The Texas area of origin protection laws mean that a water basin wishing to export part of its supply using state funds must first show that it has enough water to meet its *own* needs for the next 50 years. The requirement could limit water marketing in Texas, but the "50-year lockup" requirement has not yet hindered any large diversions.

Current studies of water reallocation in Texas consider the physical conveyance and contractual transfer of water. Managers are looking toward conservation, reuse, and other strategies in addition to large-scale water diversions. The main difference between the 1968 diversion plan and the 1990 Texas water plan is that interstate water diversions and

transfers are not currently being considered. The 1990 plan incorporates interbasin transfer as one mechanism for reallocation, but not as the central focus.

In its 1990 Texas Water Plan, the TWDB identified the immediate and future water needs in the metropolitan areas of southeast and south-central Texas. The plan also identified areas in the state that may have surplus water supplies, such as the Lower Sabine River Basin below the Toledo Bend Reservoir. The Lower Sabine is one of the few basins in the state that can meet the 50-year area of origin requirements and still have surplus water to export.

Texas' share of the estimated minimum firm yield below the Toledo Bend Reservoir in the Lower Sabine basin is 931 million gallons per day (mgd). Water rights permits total 131 mgd (89 mgd for municipal and industrial use and 41 mgd for irrigation). Thus, the total available surface water supply in the Lower Sabine River is roughly 1,062 mgd. Groundwater adds roughly 65 mgd to the water available in the lower basin. During 1992, actual surface water use amounted to 49 mgd, although there are contracts for 64 mgd. It is estimated that surface and groundwater demands in the lower basin may grow to 230 mgd by the year 2050. These figures show that the available water supply within the basin is more than adequate to protect the future water needs. For that reason, the Lower Sabine Basin and Toledo Bend Reservoir have been the primary focus of physical water transfers in the initial planning stages of the Trans-Texas program.

The Trans-Texas Water Program is considering transferring water from the Toledo Bend Reservoir to a number of existing canal systems, pumping stations, and reservoirs. The Toledo Bend Reservoir is owned and operated jointly by Texas and Louisiana on a 50/50 basis and these exports would come out of Texas' share. The Sabine River Basin has been supplying water to neighboring basins (especially Dallas) in times of need for 30 years. In that respect, exporting water would not be new to the region.

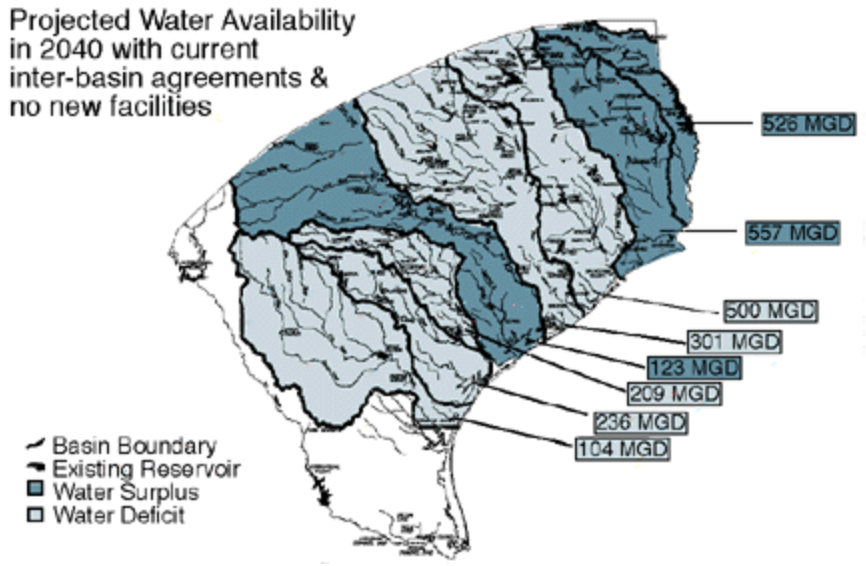
The Trans-Texas Water Program is a comprehensive water resources planning program that includes evaluation of a full range of water management strategies for a large area of Texas. During the initial phase, the goal is to identify the most cost-effective and environmentally sensitive strategies to meet the current and future water needs of southeast and south-central Texas. Later, the program may examine the water needs of other regions. The program began with a study to examine both short- and long-term water needs and to evaluate strategies to reduce demands through conservation and reuse, increasing water supplies, and transferring water from areas with surpluses to regions with shortages. The study evaluates alternatives in terms of technical feasibility, cost, and environmental acceptability.

The studies will also focus on strategies to share water among river basins, such as water rights exchanges and physical transfers. Other aspects of the program being studied include accelerated water conservation, desalinization, water reuse, and expanding existing reservoirs. While building new water reservoirs may ultimately be necessary, the focus of the water bank and the Trans-Texas program is to move away from developing

new reservoirs toward conservation, reuse, transfer, and other sustainable reallocation mechanisms.

The Future of Water Marketing

Water rights transfers that are completed through the TNRCC administrative process are legally binding and have taken into consideration the possible impact of the transfer on third parties. Texas applies the "no-injury" rule without preference to seniority when water rights are transferred. An appropriator wishing to make a change in water rights must ensure that no existing appropriators are harmed. For example, senior appropriators may not enlarge their water right in a way that harms other rights holders. So far, this has limited water rights transfers.



A fair amount of water marketing activity exists in Texas. The long-standing practice of leasing water through contractual commitments proves that water marketing is occurring. However, when multiple authorities exist within one basin, all competing for area of origin protection, conflicts can result. There have been a number of disputes over area of origin protection, such as in the Lower Colorado River Basin.

In addition to marketing by water authorities, a large water market exists among irrigation farmers and municipalities in the Lower Rio Grande Valley where the river is fully appropriated and a watermaster program monitors and enforces water rights. Unique circumstances exist in that region which have facilitated the marketing. First, third party effects resulting from a transfer are uncommon because the points of on-channel storage do not change -- all the surface water for the region comes from the Falcon and Amistad reservoirs. Because of this, no public notice to third parties is necessary unless there is a change in the point of diversion or purpose of use (*Chang and Griffin*, 1992). Second, all water rights in the valley are correlative, and there are no assigned seniorities by time. Correlative water rights are reciprocal; shortages and surpluses are shared by all rights holders according to a weighted allocation scheme. Third, rapid urban development in the region has displaced much irrigated farmland and has created a profitable environment for agricultural water rights holders to sell their water to municipalities.

University Research

Many researchers at Texas A&M University are studying the impact of water marketing. Ron Griffin of the of Agricultural Economics Department has documented two types of water rights transfers in the Lower Rio Grande Valley. The first is a formal change of use requiring an amendment to the water right. For example, a farmer may increase conservation and reduce his water use. This would produce a water savings that could be marketed for urban uses. Transfers from agriculture to municipalities in the Rio Grande Valley have totaled nearly 75,000 AF and have constituted approximately 95% of all water transfers in the region over the last 20 years. Statewide, 99% of all water transferred in Texas was from agriculture to non-agricultural uses (*Chang and Griffin*, 1992). Griffin has also documented that 45% of all valley water rights possessed by municipalities were obtained by transfer during the last two decades, clearly illustrating the importance of water marketing in the changing socioeconomic structure of the region (*Chang and Griffin*, 1992).

Griffin has also documented that a large portion of the water rights transfers in the Lower Rio Grande Valley are based on an informal, temporary lease agreement between the parties. The TNRCC watermaster office maintains a listing of people who have water to sell. These transfers are short-term and do not normally require an amendment to the water right. Farmers trade irrigation water rights based on crop water needs, and on potential profits from water leases or sales.

This system of correlative rights is unique in Texas. Throughout the rest of the state, water rights are protected in order of seniority. It is the senior right holder's appropriation which must be satisfied first in any water rights transfer, whether they are a party to the transfer or not. Economists prefer water markets involving appropriated, rather than correlative, water rights because the presence of varying seniorities allow risk-sensitive water users to trade for more senior rights. However, correlative leasing seems to function well in the Lower Rio Grande Valley and is expected to continue to do so (*Chang and Griffin*, 1992).

Texas A&M Agricultural Economist Bruce McCarl has investigated the effect of proposed water management plans on water use in the Edwards Aquifer region. The study was funded by TWRI. In particular, McCarl has assessed the economic and hydrologic implications of management plans that have been proposed for the Edwards region utilizing computer simulation models. The study is particularly important in understanding the potential for water markets to develop because it indicates the potential for transfers from low-valued uses such as agricultural irrigation to higher-valued urban or industrial users. The results suggest that by the year 2000 the value of water for irrigation in the Edwards region will be much less than the price urban and industrial uses will be willing to pay. This growing disparity could provide irrigators with the economic incentives they need to engage in short-term or permanent sales of groundwater to higher valued users. As much as 91,000 AF may be transferred from agricultural to industrial and urban uses in the region by the year 2000, according to the study (McCarl and others, 1993).

Although the future for water marketing and reallocation in Texas is unsure, most indications seem to point to an increase in market activity. A recent study by Ronald Kaiser of the Texas A&M University Recreation and Parks Department examined the legal and institutional factors that limit water marketing and transfers in Texas. It concludes that water rights marketing and transfers should increase significantly in Texas and be an important tool for water reallocation (Kaiser, in press). Results also suggest that the water bank's role as an information clearinghouse will stimulate the development of water markets in Texas. Potential limitations may include the lack of infrastructure needed to physically transport water across basins, and legal barriers presented by the "no-injury" rule. Kaiser is currently working with TNRCC on modifications to the existing no-injury rule that may provide mitigation or other compensation is provided if third party injuries occur.

Summary

For many years, Texas has relied on building dams and reservoirs to meet its water needs. However, it is now clear that dam building is not the only option available to get more water available to those who need it. Recently, Texas has begun to take significant steps to encourage more efficient use. For example, the water banks mentioned in this article will encourage conservation and provide incentives for rights holders to store water for the future -- not use it all today or risk losing it. The Trans-Texas program is considering ways to transfer water from areas with surpluses to regions that are water-short. In general, these strategies stress economic and water use efficiency. Low-valued users (mainly agriculture) will be able to profit, if they choose, by selling or leasing water rights to cities and industries who are willing to pay more. Areas like the Lower Sabine River basin may be able to pay off long-term debt by helping other regions meet pressing needs. Finally, a note of caution. When water transfers are considered, the impact on third parties needs to be carefully evaluated.

For More Information

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