

Water Transfers Could Play a Vital Role in Meeting Water Demands

Jennifer Najjar · [September 5, 2016](#)



I. Introduction

Under the doctrine of prior appropriation, the acquisition of water rights is based on the principle: first in time, first in right. As a result, this system has the capacity to create winners (the senior water rights holders) and losers (the junior or no water rights holders). In times of drought, this problem is exacerbated.

In *Estate of Steed v. New Escalante Irrigation Co.*, the Supreme Court of Utah rejected a proposal for balancing the interests of senior and junior water rights owners. Instead, the court concluded that “both parties cannot

‘win’ [because] the law simply favors the first user.” The court stated that “when there is not enough water to satisfy the needs of all users, the user who depends upon another’s seepage and runoff will suffer.”

Citing a strong policy of conservation underlying its water law as the reason for its decision, the court refused to recognize that return flows—resulting from the inefficient irrigation practice existing at the time—were legitimate means of supplying water rights to others. Although acknowledging that water users may appropriate wastewater and obtain protection against junior appropriators, the court stated that Utah water law encourages improvements in irrigation efficiency and the junior water appropriator of wastewater cannot compel the continued wasteful use of water. The adoption of improved and more efficient conservation technologies thereby brought benefits to the irrigator, including increased crop production and lower irrigation costs, but unfortunately, this development occurred at the expense of junior water-right holders. The result is increased pressure on an already over-appropriated Western water system and a greater divide between the “winners” and “losers.” While the court encouraged farmers to conserve and efficiently use water to ensure they retain all of their allocated water rights, this ruling discouraged the spread of water rights to different uses.

In the face of a changing climate and increasing urbanization in the West, water transfers could help arid regions meet growing demands for water through implementation of voluntary market-based sales and leases of water rights. Water rights may be transferred by sale, lease, or exchange. A water transfer is a voluntary agreement that results in a change in the type, time or place of use of a water right. A transfer may not exceed the quantity of rights held by the transferor, but may change the use of the water, the location, the time it is released, and the point of diversion. Water transfers are a means of making water available to those who don’t hold senior water rights. Water transfers can facilitate and enable the use of water, as necessary, for agricultural, municipal, industrial energy and environmental uses. Such

transfers afford the opportunity to maximize the use of the available water supplies and promote the most efficient use of water.

Transfers of water could also be used to mitigate the impact of the holding in *Estate of Steed*, which ultimately promoted the inefficient use of water.

Water transfers could potentially help balance the interests of senior and junior water rights owners by encouraging the water rights holder to better conserve his or her water and lease the remaining water rights for a limited time. As a result, this water will become available for junior water rights holders for the market price.

While voluntary water transfers have occurred for years, there are many barriers that water appropriators face when attempting to transfer water, including the lack of accurate and reliable information. Currently there is a high demand for water to be transferred from agriculture to uses that return higher economic benefits. This is most clearly evidenced by the circumstances of farmers in Northern California who hold senior water rights. With droughts plaguing arid climates, farmers are finding that their most valuable asset is no longer their crops, but rather their water rights. Therefore, farmers often face a choice between fallowing a field to lease out that water or continuing to farm the land without leasing any of the water rights.

This economic dilemma—which results in either an inefficient use of water resources or a loss in profits for a farmer—may soon disappear with changes in technology. Recently, farmers have found a third option that allows them to continue farming the land while implementing efficiency measures to significantly reduce water use for the same crop yield and then leasing that saved water to others in a high-demand market. A new technology, Sustainable Water and Innovative Irrigation Management (SWIIM), could provide the information necessary to help facilitate water transfers, and, thus, maximize the utility of this precious and dwindling resource. SWIIM helps farmers (1) conserve water; (2) more easily prove conservation efforts

and successes to regulators more easily; and, (3) lease their excess water to municipalities, industrial users, or other farmers and individuals seeking additional water resources.

II. Non-Use, Forfeiture, and the Difficulty of Proving Conservation Encourage Waste—the Law Behind *Estate of Steed*

Water rights acquired by prior appropriation may be lost if the allocated water is not fully consumed each year. The general rule is that as soon as the water leaves an appropriator's land and enters, or is destined for, a natural stream, it becomes subject to appropriation by other users. Typically, in farming only a portion of the allocated water is actually consumed for irrigation. The amount that does return to the stream—return flow—thereafter becomes available for others to divert.

Appropriators may also lose their water rights if they do not use their water for a significant period of time. Non-use for a significant period of time, coupled with intent to relinquish water rights, is sufficient to constitute abandonment of a water right. However, because water is such a scarce commodity, it is rare that a right holder will have the requisite intent to abandon a right. More likely, the water right holder may lose its water right despite the absence of any intent to do so under a forfeiture statute for non-use. Under the forfeiture statute for non-use, those appropriators who fail to beneficially use all of their allotted water, risk losing the rights to this water.

Although conserving water is a beneficial use and therefore will not result in a reduction of water rights, the burden is on the appropriator to prove such conservation to the authorities. Unfortunately, calculating the amount of water conserved is very complicated and an imprecise. Accordingly, rather than risk losing valuable water rights, appropriators, like the farmers in the *Estate of Steed*, are thereby discouraged from adopting more efficient methods of operation and conserving water to lease. Instead, water appropriators have a financial incentive to use all of their water rights, however inefficient such use may be, to avoid the risk of forfeiture. This

logical consequence of our current system promotes the inefficient and illogical incentive to flood lands and reuse instead of applying that extra water to a more productive use that will return higher environmental, economic, and social benefits.

The transfer of water is further complicated when the water rights are conveyed separately or there is a different use contemplated. The laws of water take extra precaution by ensuring that the rights of other stream appropriators are not negatively impaired. This special protection comes in the form of the no-harm rule.

In sum, farmers who reduce water use do not necessarily see their “savings” translate into that same amount of conserved water being available to lease to someone else for a different—and possibly more important—use. Rather many farmers conclude that the lack of information available to senior appropriators makes it extraordinarily difficult to transfer water, and the possibility of losing their unused water rights is too great to risk implementing more efficient conservation technologies. As a result, these right holders have been notoriously resistant to water conservation because the legal system has created a financial disincentive that actually promotes inefficient use. In effect, the overly complicated process of transferring water actually discourages water conservation and creates a perverse motivation for farmers to overwater their crops merely to avoid losing water rights.

III. The Short-Term Solution: Transfer of Water

Water transfers could be one method of allowing water managers to combat drought-riddled areas and repurpose existing water resources for new and more beneficial uses. Transfers of water could help improve farming practices, further energy development, and meet the demands of increasing urbanization. States can also develop new infrastructure and storage capabilities, implement conservation and efficiency initiatives, and promote water reuse projects.

In general, water transfers are done on an ad-hoc basis and there are barriers to overcome. In particular, measurement poses a difficult problem for authorities attempting to regulate use. This problem is exacerbated by the limited data available on the amount of water used. However, SWIIM can help facilitate the transfer of water; and thereby help farmers sell their extra water so it could be utilized for other uses. SWIIM has the capacity to accomplish these tasks by allowing farmers to assess all of their economic options. The program instructs the farmer on what crops can be grown, the expected yields that can be anticipated from each of these various crop options, and the amount of water required to achieve the various crop yields. SWIIM is also a tool that provides a guide to the farming interest in how to sell or lease water rights, thereby enabling the farm to retain a sufficient amount of their water rights to continue productive farming. Most importantly, this new system can work in a manner that is consistent with the western doctrine of prior appropriation and still help expedite water transfers. As a result, the prior appropriation doctrine may continue serving as the legal framework to guide the allocation of water resources, while incorporating the flexibility to meet evolving needs through the promotion of more efficient utilization of water rights in a rapidly changing environment.

SWIIM's software enables farmers to lease their extra water to others. This program allows farmers to quote the availability of water and provide it to other users who need this resource—sharing the water for the best and most efficient use. Farmers who hold the most senior water rights in a region will no longer have the economic incentive to flood their fields with little regard for efficiency. Instead, this program creates a new opportunity for both the farmer in particular and society in general, whereby the farmer maximizes the economic return on the use of water and others can receive the benefit of a limited resource that would otherwise be unavailable.

To utilize the program, the farmers must enter detailed information about past use of their land and water rights and then identify measures that they are willing to adopt to reduce water use. Using data from irrigation districts,

field instruments, weather reports, satellites, and low-altitude flights, the SWIIM software calculates in real time how much of a farm's water is consumed and how much returns to underground flows—thereby ensuring that farmers do not jeopardize their rights if they choose to sell or lease their conserved water. Using the information provided, an algorithm developed jointly with the U.S. Department of Agriculture informs farmers how to conserve water, by adopting efficient measures such as a targeted drip-irrigation system that will not result in reduced productivity.

IV. Conclusion

With an influx of population and industries settling in the water-scarce West, combined with an increasingly arid climate, SWIIM could help evaluate and facilitate how society utilizes water transfers as a means of allocating a vital resource. This technology will enable stakeholders to learn from other's experiences with water transfers, thereby facilitating more informed and efficient decisions with respect to the use of their water rights. SWIIM facilitates water transfers to other uses while avoiding inflicting harm to agricultural economies and surrounding communities.

The law encourages implementation of improvements in water systems to promote the conservation of water. However, to effectively implement such improvements, water rights owners should not be penalized for conserving water. Instead, there should be an incentive system to economically reward implementing water conservation practices. SWIIM offers a market-based solution that could be regulated to ensure there is equal water distribution to municipalities and individuals in need of this vital resource. The purpose of water transfers and the utilization of the SWIIM system, is not to "dry" up the farm. Rather, it is to move the water efficiently where needed, without adverse economic consequences to the senior right holder. When we "free-up" the water, we can grow as a society, conserve water and utilize the flexibility that the prior appropriation doctrine is intended to allow.

Managing California's complex water storage and delivery system is a never-

ending balancing act between supply, demand and environmental considerations, particularly during a severe drought. As water scarcity reaches unprecedented extremes in the West, SWIIM technology could help mitigate the impact in the region. It provides one method of managing drought and is a welcome new addition to the state's water market.

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Jennifer Najjar

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