



SAVING OUR STREAMS

THROUGH WATER MARKETS



A PRACTICAL GUIDE

by Clay J. Landry



Political Economy Research Center

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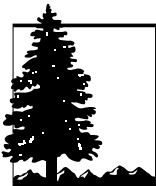


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INTRODUCTION

Anglers who normally flock to the Big Hole River in Montana remember 1994 with pain and anger. Because of low snowpack and light spring rain, water flows were unusually low. Even so, ranchers and farmers continued to exercise their rights to divert water for their crops. Out of concern for the fishery, the state closed the famous stream to angling. Although late in the season the state persuaded some irrigators to stop or cut back their diversions, it was “too little, too late.” The river remained closed.

“Market solutions to environmental needs are long overdue in our market-driven nation.”

— *Kirk Hana*

This conflict could have been resolved by market exchanges of water, and today, at long last, we are beginning to make such exchanges possible. “Market solutions to environmental needs are long overdue in our market-driven nation,” says Kirk Hana,¹ a board member of the Nature Conservancy and past president of the Colorado Cattlemen’s Association.

This manual will help practitioners and policy makers take the first steps toward using water markets to protect instream flows. It draws upon the extensive experience of practitioners in these markets. The manual begins by providing some general background on instream flow markets and then offers specific advice for those interested in implementing this idea.

WORKING WITH ‘PRIOR APPROPRIATION’

For more than a century the prior appropriation doctrine has been the underlying principle for water law in every western state. One distinct characteristic of the doctrine is that it allocates water use through private property rights. The doctrine uses the principle of “first in time, first in right,” which means that the first person to put water to a beneficial use is granted a right to continue that use without interference from those using it later. However, the doctrine has made it difficult for an individual to assert a right to the flow of the stream. Water claims were limited to uses that required diversions.

When the prior appropriation doctrine was first implemented, most states did not have a system

Over the years, people have come to recognize the social, economic, and environmental importance of instream flows.

for recording and documenting water rights. Without formal documentation, right holders needed to find ways to verify priority dates. They soon discovered that the best evidence of first use was the date the water was physically diverted from the stream. Diversions were quickly adopted as an essential requirement for a water right claim; thus, the prior appropriation doctrine

rewarded those who were quickest to divert water from rivers and streams.

The development of water rights typically came at the expense of instream uses such as habitat for fish and wildlife, outdoor recreation, and the protection of scenic and aesthetic values and water

quality. Over the years, however, people have come to recognize the social, economic, and environmental importance of instream flows.

As pressures to consider instream flow values in water policies increased during the 1960s and 1970s, many states responded with regulatory approaches such as setting minimum stream-flow requirements and placing conditions on new appropriations (Anderson 1983; Bolling 1994). Some states even tried issuing new water rights for instream flows. But these protection measures were implemented after much of the available water had already been appropriated for out-of-stream uses. In addition, these approaches offer only junior rights with modern priority dates and have no effect on established uses. As a result, instream flow rights and minimum flow requirements are proving to be ineffective in protecting and restoring flows in rivers and streams across the West.

No approach offers as much promise of restoring stream flows as transfers of water through markets. On heavily appropriated streams, acquisitions of senior rights to support instream flows may present the only effective option for protecting flows. Transfers allow flow restoration through voluntary action. Private organizations or state and federal agencies interested in protecting instream flows can work cooperatively with water right holders who are willing to transfer their water rights to instream use. Water right holders are fully compensated for selling or leasing their water rights.

NEW LAWS ALLOW MARKETS

Each western state has had a different experience with water markets. The Pacific Northwest is proving to be a leader in instream flow markets. The region has encouraged the development of markets by allowing individuals to participate in the market and acquire water rights for instream uses. This development was prompted by a flood of instream flow laws beginning in 1987, when Oregon adopted changes that allowed

The Pacific Northwest has encouraged the development of markets by allowing individuals to participate in the market and acquire water rights for instream use.

public or private entities to lease or purchase water rights and convert them to instream flow rights.

Other states in the Northwest have also moved toward markets. In 1989, Montana adopted legislation that created a temporary program to allow the Department of Fish, Wildlife and Parks to lease water rights for the purpose of maintaining or enhancing stream flows

for the benefit of fisheries. Washington followed in 1991 by establishing the Trust Water Rights program, which allows voluntary water right transfers for instream needs. In that same year, California changed its water code to allow water rights transfers to preserve or enhance wetlands habitat, fish and wildlife, or recreation. One year later Idaho granted exceptions to its water banking statutes that made it possible for the U.S. Bureau of Reclamation to lease water from the water banking program for instream use. In 1995, Montana reformed its water right leasing program to allow private groups to acquire water rights for instream flows. Though each state has taken a slightly different approach,

they all allow market forces to drive instream flow transfers.

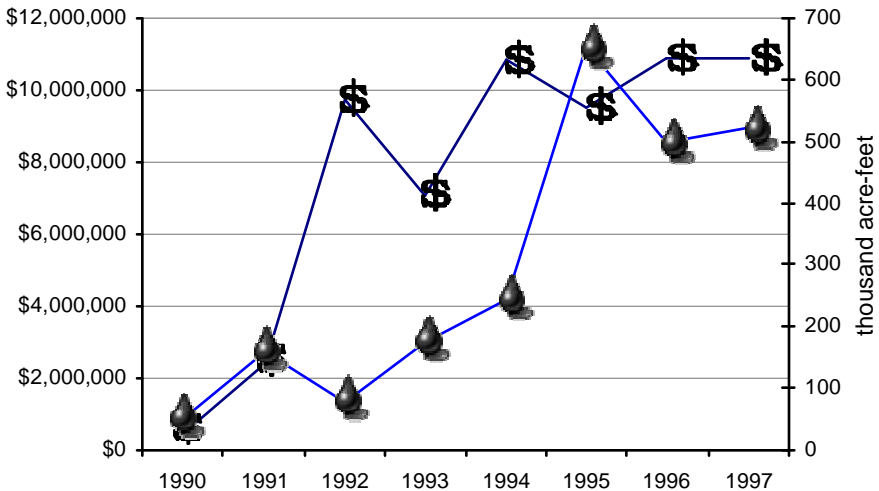
In contrast, most Rocky Mountain states are relying on state agencies to act in the marketplace. Colorado, Utah, and Wyoming require that instream flow rights be held by the state. The region has had only a handful of instream flow acquisitions in the last ten years, and conservation groups across the region contend that the public ownership requirement is locking them out of the instream flow market. Colorado, currently, is the only state in the region with an active acquisition program. It is limited in scope and can only acquire water for instream flows through donations, not purchases or leases. In Utah, Trout Unlimited is working with the Division of Wildlife Resources to negotiate Utah's first water right acquisition for instream flows. In Wyoming, conservationists and state officials are meeting to discuss policy reform to allow private organizations to pursue instream flow transfers.

Throughout the Southwest, state and federal agencies are spending an enormous amount of money to improve instream flows. New Mexico has spent over \$18 million to purchase and lease water rights to restore flows in its streams and rivers. Arizona has established a fund with \$5 million available annually for river and stream restoration projects including water right acquisitions. In Nevada, the Division of State Lands and the U.S. Fish and Wildlife Service have spent more than \$16 million to restore flows for two wildlife refuges on the Carson River.

WHO IS ACQUIRING WATER AND AT WHAT PRICE?

Much of the recent activity in instream flow acquisitions is driven by efforts to restore flows for endangered fish species.² Since 1990, an estimated \$61 million has been spent on leases and purchases of water for instream use. The market saw a significant jump in 1992, when total expenditures rose to more than \$9.6 million, about four times the amount spent in 1991 (Figure 1). This increase reflected the initiation of several federal and state acquisition programs—most notably, the San Joaquin Refuge water acquisition program funded by the Central Valley Project Improvement Act and the New Mexico Interstate Stream Commission acquisition program prompted by the Pecos River Compact.

FIGURE 1: ANNUAL INSTREAM FLOW ACQUISITIONS, 1990–1997



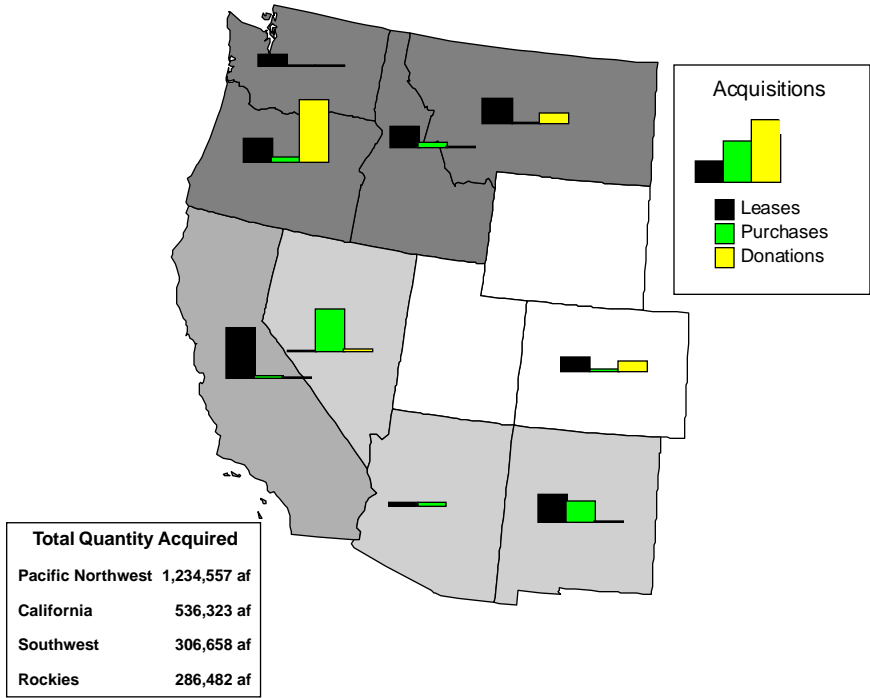
Source: Landry (1998).

Total acquisition of water by lease, purchase, and donation is on an upward trend as Figure 1 shows. Since 1990, more than 2.3 million acre-feet of water have been acquired for instream use. The quantity of water traded increased considerably in 1995, with more than 600,000 acre-feet of water acquired in that year. This rise marked the beginning of an aggressive campaign by the Bureau of Reclamation to lease water for endangered salmon species in the Columbia River Basin. The bureau's efforts in the Columbia River Basin are driven by a 1995 National Marine Fisheries Service biological opinion that calls on the agency to provide 427,000 acre-feet of water each year for flow and stipulates that the water must be acquired from willing sellers (Rigby 1997).

Purchases, leases, and donations of water for instream flows were reported in 9 of the 11 western states (Wyoming and Utah being the exceptions) between 1990 and 1997 (Figure 2).³ The federal government accounted for just over half of all expenditures and 70 percent of the total quantity acquired during the period 1990 to 1997 (Table 1). Most of the federal government's acquisition responsibilities have been delegated to the Bureau of Reclamation, which has initiated acquisition programs in Idaho, California, Oregon, and Washington.

The bureau's Idaho program, begun in 1991 to help salmon recovery in the Snake River, has leased and purchased more than 1.15 million acre-feet. In 1994, the agency expanded its acquisition efforts to California to improve flows in the Sacramento and

FIGURE 2: WESTERN U.S. WATER ACQUISITIONS, 1990–1997



Source: Landry (1998).

San Joaquin Rivers. The bureau’s California program, funded by the Central Valley Project Improvement Act, has leased 420,000 acre-feet of water from 1994 to 1997. In Washington, the bureau initiated a pilot leasing program in 1996 to restore flows in the Yakima River Basin and has leased a total of 7,000 acre-feet of water to date. The most recent addition to the bureau’s acquisition efforts was in 1997 when it began a demonstration program in Oregon’s Klamath River Basin, which has completed three leases, totaling 400 acre-feet.

The bureau is not the only federal agency active in the water market. The U.S. Fish and Wildlife Service is buying and leasing water throughout California, the Southwest, and the Rocky Mountain regions, but most of its efforts are devoted to the Stillwater Wildlife Refuge in Nevada. This acquisition program was initiated in 1990 as a cooperative effort between the U.S. Fish and Wildlife Service and the Nature Conservancy. The conservancy acted as a broker responsible for negotiating purchase agreements. The U.S. Fish and Wildlife Service has since assumed the responsibilities of the acquisition program and expects to purchase an additional 55,000 acre-feet of water (U.S. Fish and Wildlife Service 1996).

TABLE 1: MARKET ACTIVITY BY ACQUISITION METHOD, 1990–1997

	Federal	State	Private	Total
Lease Expenditures	\$ 27,653,410	\$ 10,095,861	\$ 96,482	\$ 37,845,754
Purchase Expenditures	\$ 5,857,956	\$ 14,970,577	\$ 3,059,055	\$ 23,887,588
Total Expenditures	\$ 33,511,366	\$ 25,066,438	\$ 3,155,537	\$ 61,733,342
Lease Quantity (af)	1,595,088	385,255	22,083	2,002,426
Purchase Quantity (af)	59,391	63,962	8,979	132,333
Donation Quantity (af)	0	31,477	213,783	245,261
Total Quantity (af)	1,654,479	480,695	244,846	2,380,021

Source: Landry (1998).

Commonly criticized for not devoting enough money to acquire water (Sterne 1997; Root 1995), states are now stepping up efforts to acquire water for instream needs. Between 1990 and 1997, state agencies in the West spent an estimated \$25 million to lease and purchase a combined total of about 450,000 acre-feet of water (Table 1). Montana, Nevada, and New Mexico have some of the most active state acquisition programs. Created as a temporary program, Montana's leasing program allows the Department of Fish, Wildlife and Parks (DFWP) to lease water rights to maintain and enhance stream flows for fish. Since the program's inception in 1989, the DFWP has negotiated nine long-term leases and has paid between \$1 and \$50 per acre-foot annually (Montana Fish, Wildlife and Parks 1998).⁴ Nevada's Division of

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State Lands with the help of the Nature Conservancy has permanently purchased more than 6,000 acre-feet of water since 1992 for the Carson Lake Refuge (Nevada Division of State Lands 1998). The New Mexico Interstate Stream Commission, one of the best-funded state programs,⁵ has leased and purchased just over 276,000 acre-feet of water to maintain flows in the Pecos River (New Mexico Interstate Stream Commission 1998).

Private organizations are starting to make their presence known. Since 1990, private groups have spent over \$3.1 million to lease and purchase a combined total of roughly 31,000 acre-feet of water. Several new organizations have formed (Table 1).

The Oregon Water Trust, the Washington Water Trust, and Nevada's Great Basin Land and Water are three new groups using market techniques to acquire senior water rights and convert them into instream rights. Traditional environmental organizations are also expanding their role. The Environmental De-

Private groups have received 51 donations totaling more than 213,000 acre-feet of water.

fense Fund, the Nature Conservancy, and Trout Unlimited have participated in water acquisitions in Idaho, Colorado, Nevada, Oregon, and Montana.

In addition to their market activity, private organizations have been successful in procuring a large quantity of water through

donations. These groups have received 51 donations totaling more than 213,000 acre-feet of water. Most of these occurred within the last three years. The Oregon Water Trust has been particularly successful, with 46 of the 51 donations.⁶ Most donations were for small amounts of water ranging from 15 to 1,000 acre-feet.

Other organizations have successfully acquired a limited number of large donations. The largest single donation is from the Pittsburg and Midway Coal Mining Company to the Nature Conservancy for rights to about 200,000 acre-feet of water in the Gunnison River, Colorado (Anderson and Snyder 1997). The Conservation Fund recently donated 2,200 acre-feet of water valued at over \$1 million to the Colorado Water Conservation Board, the only entity in Colorado that can hold instream flow rights. The water rights were a part of the Aspen Ranch, an 850-acre parcel that the fund purchased in 1995

(Thomas 1998). A portion of the ranch is being managed for wildlife habitat, so the water rights were no longer needed for irrigation. The fund converted the rights to instream flows and donated them to the state of Colorado.

As with any locally based market, prices for water vary considerably depending on demand and supply and depending on the duration of the right. Water purchased outright for instream uses in the West sold for about \$400 per acre-foot between 1990 and 1997. The highest price, \$850 per acre-foot, was paid by the New Mexico Interstate Stream Commission in 1994 (New Mexico Interstate Stream Commission 1998). On the low end of the market, the Bureau of Reclamation paid \$65 per acre-foot in 1996 to buy back a water service contract for water stored in the Lucky Peak Reservoir, Idaho (Rigby 1997).

TABLE 2: MARKET PRICE AND QUANTITY SUMMARY, 1990–1997

	Average	High	Low	Number of Transactions
Purchase Price (\$/af)	\$ 397.47	\$ 850.00	\$ 65.00	59
Lease Price (\$/af)	\$ 29.84	\$ 214.10	\$ 0.08	124
Purchase Quantity (af)	2,242.94	44,900.00	11.27	59
Lease Quantity (af)	16,148.60	232,839.10	12.00	124

Source: Landry (1998).

Short-term leases of less than five years accounted for the majority of market transactions. The average annual lease price between 1990 and 1997 was \$30 per acre-foot annually. The highest lease price, \$214 per acre-foot, was paid by the Bureau of Reclamation in 1997, as a part of the water acquisition demonstration project in Oregon's Klamath Basin (Davis 1997). The lease was negotiated with a farmer who had already planted wheat and was planning to irrigate the crop. The lowest lease price was \$0.08 per acre-foot paid by the New Mexico Interstate Stream Commission (New Mexico Interstate Stream Commission 1998).⁷ The most unusual lease agreement was arranged by the Oregon Water Trust in 1994. The trust negotiated a lease with a cattle rancher to increase stream flows in exchange for 76 tons of hay forgone by reduced irrigation (Oregon Water Trust 1996).

SPECULATION CONCERNS

A common argument raised against private ownership of instream flows is that it will result in speculation. Some people fear that speculators will use instream flow rights as a way to claim and hold water at little cost in order to sell it later for a large profit (Gillilan and Brown 1997). Some argue that speculators will force out current water users, mostly irrigators, through high prices (McKinney 1991). However, there is no indication of widespread speculation in the instream flow sector.

It is true that speculation is occurring in other sectors of the water market. Water purchases for domestic and municipal use are one sector experiencing price speculation (Person and Michelsen 1994; Gardner and Miller 1983). Developers buying water in anticipation of new growth in the Reno area, for example, have pushed up water prices by more than tenfold since the 1980s (Colby 1993). Current market prices are as high as \$2,500 per acre-foot.⁸ Growth along the Front Range of Colorado has driven water prices up. In the Colo-

Prices in the instream flow market reflect estimated agricultural production values of water.

rado Big Thompson (CBT) project north of Denver, market prices have risen more than 50 percent since 1990. At the end of 1996, CBT water shares traded for \$3,143 per acre-foot (*Water Strategist* 1997). Prices in the CBT do not reflect the agricultural value of the water, but, rather, the growing demand from municipalities (Person and

Michelsen 1994; Gardner and Miller 1983). Indeed, 90 percent of all CBT shares traded in 1996 were for domestic or municipal water use (*Water Strategist* 1997).

In contrast, there have not been large price jumps in the instream flow sector of the water market. Prices in the instream flow market reflect estimated agricultural production values of water (Duffield and Neher 1991; Gibbons 1986). The highest prices for instream flows were paid by government agencies, which are not likely to engage in market speculation.

SOME ADVICE FOR ENTERING THE MARKET

With instream flow markets developing all across the West, several private organizations and public agencies have gained extensive experience with market transfers. Not all acquisitions have been a success, and not all trades were easy. But after a decade of trading these organizations and agencies have learned a great deal. Their experiences provide some sound guidance to others interested in acquiring water rights for instream flows.

FINDING WILLING SELLERS

Finding willing sellers is one of the most challenging tasks in acquiring water rights for instream flows. This is a new, emerging market, so many potential participants are uninformed or uncertain about how it works. To overcome this challenge, some irrigation districts are helping facilitate market activity by providing posting services to members. Bulletin boards are maintained in the district offices where members can advertise their intent to buy or sell water. In areas outside irrigation districts, classified notices in newspapers advertising water for sale are becoming more common.

Many instream flow buyers are locating sellers through more direct approaches: phone calls, mailings, and public meetings. The Bureau of Reclamation conducted a telephone campaign to find potential sellers in Washington's Yakima River Basin.⁹ The Oregon Water Trust solicits interest in leasing or selling water rights through direct mailings to water right holders. Both the trust and Great Basin

Land and Water in Nevada have held public meetings to provide information on their water acquisition programs.

As in many markets, referrals and personal contacts are proving to be effective means of finding willing sellers. Personal contacts overcome the mistrust of instream flow transfers that exists among water right holders (Sterne 1997; Crammond 1995). The Oregon Water Trust believes that an active community presence is the key to overcoming mistrust and is working hard to establish such a presence in areas where it is trying to acquire water rights. In fact, it has hired basin coordinators who live in the watersheds where the trust is interested in acquiring water.

Great Basin Land and Water also recognizes the importance of an active community presence. It takes every opportunity to participate in natural resource and community development projects, even if some are not directly related to water. For example, the group has helped with weed control and local land-use planning. Participating in such activities increases the group's exposure and demonstrates its concern for the local community.

THE BIGGEST ECOLOGICAL BANG FOR THE BUCK

Where and how should money be spent? For example, should money be spent to increase flows on large rivers such as the Columbia, the Snake, and the Colorado, or should it be spent on protecting habitat in smaller streams and tributaries? The

answers depend mainly on the budget available for acquiring instream flows. Hence, the federal government is spending millions of dollars throughout the West on large rivers, while the Oregon Water Trust is spending its initial \$500,000 acquisition budget on small streams and tributaries.

Consider how much water \$500,000 buys on a river like the Columbia. The typical irrigation right in Oregon sells for about \$350 per acre-foot (Landry 1996). If the trust spent its entire budget on permanent acquisitions, it could augment the Columbia's flows by about 5 cubic feet per second, or less than one percent of the river's flow.

By focusing on tributaries, however, the Oregon Water Trust has been able to increase flows on more than 25 different streams and rivers. Most of its acquisitions are for a small amount of water, less than 500 acre-feet, but often that represents the entire flow of the stream. For example, in a recent purchase on Squaw Creek, a small stream in central Oregon, the trust spent about \$42,000 to increase flows by 0.86 cubic feet per second on a three-mile stretch of the creek that dries up in most years due to irrigation withdrawals (Oregon Water Trust 1997). Admittedly, this is a small amount of water, but the additional flow provides habitat for bull trout, which is proposed for listing under the federal Endangered Species Act. In a partnership that began in 1994, the trust leases 196 acre-feet (0.93 cubic feet per second) of water on Buck Hollow Creek in exchange for 76 tons of hay.¹⁰ Buck Hollow is one

of the best steelhead spawning tributaries of the Deschutes River, an internationally famous fishing river (Oregon Water Trust 1996). These two acquisitions illustrate how a small budget can yield significant ecological benefits.

NEGOTIATING FAIR MARKET VALUE

Determining and negotiating fair market value for water rights is difficult given the limited price information typical of most water markets. With relatively few exceptions, most transactions are private, and information about prices is not readily available. There are several creative ways to help overcome this problem, the most common of which is a water right appraisal.

Prior to the start of price negotiations, the Bureau of Reclamation¹¹ and the Nevada Division of State Lands¹² require that a qualified appraiser make an appraisal. But this approach is not without problems. First, finding a qualified water rights appraiser may be difficult. Generally, most appraisers specialize in land valuation and have limited experience with water right sales. They typically lack an understanding and appreciation of the legal complexities of water rights, and most rely on techniques that estimate the production value of water. Yet legal characteristics such as water right seniority, flow rates, and the location on a stream (which they tend to ignore) are significant price determinants (Landry 1996; Colby, Crandall, and Bush 1993).

A second problem with using appraisers is the cost. The Nevada Division of State Lands (1998) spends as much as \$30 per acre-foot for water right appraisals. For some sales this represents a third of the negotiated price.

Great Basin Land and Water and the Oregon Water Trust use a combination of appraisals and market experience to negotiate sale price. The Oregon Water Trust uses economic research, funded in part by one of the state universities, to value water rights. The trust then works with the water right holder to reach an agreement that satisfies both parties. Great Basin Land and Water uses a similar approach, but benefits from operating in an area that has an established water market with more public information.¹³

Another approach to the pricing problem is to offer a standing price and to wait for offers from sellers. The Bureau of Reclamation uses a standing-price approach for purchasing storage water in Idaho. It has a standing offer of \$150 per acre-foot for stored water that will be reliably delivered (Rigby 1997). A standing-price offer is also used in California's Drought Water Banking program. In 1991, the program's first year of operation, the standing offer was \$125 per acre-foot, but that offer was reduced to \$50 per acre-foot the following year when water conditions improved (Jercich 1997).

Finally, water auctions are a possibility, but they remain mostly a theoretical concept at this time. A report by the Environmental Defense Fund recom-

mends water auctions for leasing water in dry years (Willey and Diamant 1994). Auctions would serve as a way of establishing a spot market price at which water would be purchased for immediate flow needs. An auction format allows water prices to reflect rapidly changing supply and demand conditions.

KNOW WHAT YOU ARE BUYING

To say the least, water rights and water laws are very complex. This complexity can cause headaches and confusion even among the savviest of buyers. As a result, most buyers perform a legal evaluation prior to purchase. The Bureau of Reclamation probably has the most extensive screening process of all the groups currently acquiring water rights. Its evaluation process usually includes a title search, owner verification, seniority assessment, review of historical cropping patterns, and verification of acres irrigated over the last five years (U.S. Bureau of Reclamation 1998).

Not every evaluation process needs to be as extensive as the bureau's. However, as with title to land, diligence must be undertaken to research and investigate each water right. It is important to know the quantity and seniority of a water right. But most important, a review provides a check on the validity of a water right. Some less-than-scrupulous water right holders have tried selling water rights that are threatened with forfeiture due to lack of use. A simple review can help ensure that water rights are more than paper claims.

LEASE, PURCHASE, OR DONATION?

Determining which acquisition option is best will depend on the circumstances surrounding the acquisition. Some water right owners need flexibility, others need cash, and some want tax benefits. Leases provide flexibility, purchases offer permanency and large cash sums, and donations are inexpensive and can provide tax relief.

Leases are often criticized as being short-term fixes to a chronic problem. Yet leasing has a number of advantages. First, leases provide an opportunity for everyone to “test the waters” at little cost. They offer a way for water right holders and organizations to become comfortable with the idea of instream flow marketing. Water right holders have a chance to see how a lease affects their water needs, and organizations can assess how effective water rights are in protecting stream flows.

Second, leases provide an opportunity for organizations to become familiar with the state transfer process. This experience will help streamline application procedures and thus reduce costs. Further, many state agencies have limited experience in handling applications for converting water rights to instream flow rights. Leases provide an opportunity for organizations to work with state officials and develop procedures for transfers. For example, the Oregon Water Trust helped develop the state’s fast-track leasing process for short-term leases.

Third, leases provide an opportunity for organizations to demonstrate the impacts that instream flow

transfers have on local communities. Critics contend that leaving water instream, rather than using it for irrigation, takes land out of production, eroding a community's economic base. The agricultural community points to the devastating impact that large water transfers had on the economy of Owens Valley, California. Leasing can show how these

-
- **Leases offer flexibility for both buyers and sellers.**
 - **Purchases offer permanent solutions to instream needs.**
 - **Donations offer a low-cost way of acquiring water.**
-

costs can be minimized and how instream flow transfers can actually benefit communities by improving water quality (Weinberg, Kling, and Wilen 1993) and enhancing recreational opportunities (Leones et al. 1997).

Finally, leases offer flexibility to accommodate particular needs of both buyers and sellers. A variety of lease options are available beyond the standard annual and multi-year contracts. Dry-year options and split-season leases are two of the more creative contract arrangements.

With dry-year options, arrangements are made ahead of time for access to water during drought (Colby 1990).¹⁴ Split-season leases allow a portion of a water right to be used for irrigation early in the year, leaving the remaining portion of the right for instream use later in the summer. Option leases provide a way to protect fish, wildlife, and recreational values without tying up water and funds when stream flows are adequate (Colby 1990).

Purchases offer permanent solutions to instream needs. Most private groups acquiring water for

instream flows prefer purchases to leases. Great Basin Land and Water considered leasing but decided to limit its acquisitions to outright purchases. The Oregon Water Trust has relied on leases but considers them an interim device and is shifting its focus to purchases. Both organizations agree that purchases are the best option for streams that have chronic flow problems.

Donations offer a low-cost way of acquiring water. There are some costs associated with donations, usually in the form of legal and transfer fees. Organizations receiving donated water rights typically pay these expenses.

Donations are becoming an important means of protecting instream rights. Various factors motivate water right holders to donate rights for instream use (Barkley 1997), including potential tax benefits. Since water rights are property rights, donations may provide federal and state tax benefits.¹⁵ A water right holder in Montana accepted a below-market-value price for a lease and claimed a tax deduction for the balance of the lease price (Sterne 1997).¹⁶ Several water right holders who donated their rights to the Colorado Water Conservation Board for instream use have also claimed tax benefits.

THE STATE TRANSFER PROCESS

Just about every western state has a formal approval process to transfer an existing water right to an instream flow right. Some critics have expressed

disdain for the state transfer proceedings, which have been described as slow and painful,¹⁷ costly,¹⁸ and an unnecessary imposition on markets (Anderson and Johnson 1986). Sydney Macy of the Conservation Fund says that the cost and the hurdles of the transfer process could deter the group from pursuing future donations.¹⁹ Bruce Farling of Montana Trout Unlimited believes that many provisions in Montana’s transfer process are unnecessary and impede the success of instream flow markets.²⁰

However, these apparent high costs need not deter acquisition efforts. Groups with extensive market

“Experience counts in the instream flow market.”

— *Andrew Purkey, Oregon Water Trust*

experience offer a brighter outlook on the transfer proceedings. Andrew Purkey²¹ of the Oregon Water Trust says that experience counts in the instream flow market. Some of the early transfers by the trust were costly, but with time the group has become more familiar with the transfer process. Now application costs and time delays are “not a problem,”

says Purkey.²² Great Basin Land and Water has found the same to be true in Nevada’s instream flow market. Initially, state officials were not prepared to deal with instream flow transfers. Graham Chisholm,²³ executive director of the group, says the state is much more cooperative now than it was during some transfers in the early 1990s. As with any innovation, private parties and public officials must learn about and adjust to the new forms of market activities.

A STATE-BY-STATE REVIEW

Instream flow protection efforts are under way in every western state. Some efforts involve extensive legislative reform proposals, others are simple modifications to the way state agencies implement instream flow policies, and others are private efforts to implement existing policy. A summary of current instream flow protection efforts in each western state follows in alphabetical order.

ARIZONA

Arizona has established a Water Protection Fund with \$5 million available annually for river and stream restoration projects including water right acquisitions.²⁴ The fund was created in 1994 as a way to make use of surplus water from the Central Arizona Project (CAP). However, most of the money from the fund has been used to construct off-site livestock water facilities and to develop wetlands.

In 1997, for the first time the fund approved the acquisition of CAP water to protect a riparian area in the Picacho Reservoir south of Phoenix.²⁵ The reservoir was originally built to store water for agricultural use, but vegetation that has grown along its edges has attracted several threatened and endangered bird species, including the Yuma clapper rail, the snowy egret, and the yellow-billed cuckoo. A twenty-year agreement with Pinal County to lease CAP water will maintain water levels in the reservoir. In 1997, the county leased about 2,000 acre-feet of water at a cost of \$80,000.

In 1997, the Department of Interior, encouraged by Arizona's congressional delegation, spent \$720,000 to maintain the water level at San Carlos Reservoir. The delegation claimed that the reservoir was important not only to the San Carlos Apache tribe as a source of revenue, but to environmentalists, recreationists, and anglers (Hayworth 1997). A plan was negotiated to deliver 18,000 acre-feet of CAP water to users, who accepted it in lieu of water from the San Carlos Reservoir.

CALIFORNIA

California adopted changes to its water code in 1991 to allow the use of water rights for the purpose of preserving or enhancing wetlands habitat, fish and wildlife resources, or recreation.²⁶ While the change does not explicitly recognize instream flow rights, it specifically allows water right holders to change the use of their right for instream purposes.

The federal government has also entered into the instream flow arena in California because of endangered salmon runs. Two federal projects are now underway to address flow needs for salmon recovery. The Bureau of Reclamation is continuing the acquisition program established by the Central Valley Project Improvement Act. The program, initiated in 1995, is a three-year effort to lease water to help meet immediate fish and wildlife needs in the Sacramento-San Joaquin River sys-

tem. In 1997, the bureau leased over 167,000 acre-feet at an estimated cost of \$7.3 million (U.S. Bureau of Reclamation 1998).

The CALFED Bay-Delta Program may be assisting the Bureau of Reclamation in its acquisition efforts. CALFED is a consortium of state and federal water agencies and local citizens that addresses the water problems of the Bay-Delta, a 738,000-acre region where the Sacramento and San Joaquin Rivers enter the San Francisco Bay. Currently, the program's advisory committee is considering a proposal to allocate about \$20 million to purchase and lease water rights to increase flows in the Bay-Delta.²⁷ Water acquisitions are not likely to begin in 1998 because the advisory committee is still working on other flow-enhancement plans.

COLORADO

The Colorado Water Conservation Board is stepping up its efforts to increase awareness of the state's instream flow acquisition program.²⁸ The acquisition program allows the board to enter into agreements with water right holders to obtain rights for instream flows.²⁹ Because the acquisition program has never received money to purchase water rights, the board expects donations to be the primary means of acquiring instream flows. The board sees tax benefits from donations as incentive enough. "We've had several large donations and the primary motivation was the tax break," says program director Dan Marriman.³⁰

Others are not as optimistic about the state's acquisition program. Since its inception in 1973, the state has received only seven water right donations.³¹ "The state lacks a focused organization to really push instream flow markets," says Robert Wigington of the Nature Conservancy.³² While the Nature Conservancy could take on this role, Wigington is not convinced the organization is ready for the job. "The Nature Conservancy has a terrestrial bias, making it difficult to buy something it can't put a fence around," says Wigington.³³ He thinks Colorado needs a group like the Oregon Water Trust, which specializes in water right purchases.

IDAHO

Currently, Idaho limits market transfers for instream flows to stored water held in the water-banking program.³⁴ However, there is a "move afoot in Idaho," says Marti Bridges³⁵ of Idaho Rivers United, to allow private groups to buy or lease water rights for instream flows. The Idaho Water Resources Board (1996) recently adopted changes to the State Water Plan that recommend expanding market opportunities for instream flows. Unfortunately, these changes are not expected to be approved by the legislature in 1998, which is dominated by agricultural interests that typically resist instream flow marketing.³⁶ In the past eight years the Idaho legislature has twice rejected legislation similar to that recommended by the statewide water plan (Sterne 1997, 210).

The U.S. Bureau of Reclamation continues to benefit from legislation instituted in 1992 that allows the agency to lease storage water from reservoirs for salmon migration. The legislation created a three-year test program that was updated in 1996 and extended for another four years. The Bonneville Power Administration, with the help of Idaho Power Company, was the first to lease water through the program for the so-called “salmon flush” (Beeman 1993). Since then the bureau has taken the lead in providing flows for salmon. In 1997, the agency leased 427,000 acre-feet of water from the state’s water banking program and permanently acquired 57,000 acre-feet of storage rights.³⁷ These acquisitions were an effort to comply with the 1995 Biological Opinion for salmon recovery. The bureau may step up its efforts in the near future. A Snake River systems configuration study due out in 1999 is considering the need for an additional 1.4 million acre-feet of flow for Snake River salmon.³⁸

MONTANA

In 1995, an unlikely partnership of environmental and agricultural groups formed to pass legislation that allows individuals or private organizations to lease water rights for instream needs.³⁹ The governor’s office hailed the law as an example of successful consensus building, claiming that it demonstrates how key advocacy groups like the Montana Farm Bureau and the Wildlife Federation can work together (McKinney, n.d.). Yet the

implementation of this success is off to a slow start. So far, only one lease for a small amount of water has been finalized. Montana Trout Unlimited, the only group actively pursuing leases, says it has other deals in the works but contends that the state's administrative process is slowing them down.⁴⁰

NEW MEXICO

Ask any state official in New Mexico about the state's instream flow program and he or she is likely to claim it does not exist.⁴¹ At best, the official might say that it plays a minor role in water management. Ask about instream flow markets, and you are likely to receive a blank look. Yet all across the state, cash is changing hands to keep water in streams and rivers.

New Mexico's Pecos River compact agreement with the state of Texas is just one illustration. The state has yet to issue instream flow rights officially; however, the compact agreement is creating the same effect, and the methods used to meet the compact's goals often end up resembling instream flow marketing. New Mexico is purchasing irrigation water rights on the Pecos River and retiring them to meet the flow obligation to Texas stipulated by the compact.

New Mexico's Middle Rio Grande Conservancy District recently declared its water bank open for business. The bank provides a way for the district to

lease surplus water to other users. Although some state officials question the bank's legality, it has already leased about 2,000 acre-feet of water to agricultural users in the valley (*U.S. Water News* 1997). The U.S. Fish and Wildlife Service has expressed interest in leasing some of the bank's water for the endangered silvery minnow and may become the bank's next customer.⁴²

Water banking may become possible in the rest of the state if the 1998 legislature passes a bill⁴³ that would create a statewide program to allow water right holders to deposit conserved or surplus water for lease to other users. The bill contains provisions that allow such water to be used for the benefit of the public. However, it is unclear whether this provision includes instream flows.

NEVADA

Nevada is developing an active instream flow market.⁴⁴ The market began in 1990 when the Nature Conservancy spent \$1.5 million to purchase water for the Stillwater Refuge. The U.S. Fish and Wildlife Service has since taken over the responsibility of purchasing water for the refuge, and in 1997 it acquired just over 8,000 acre-feet from local irrigators. The market around the refuge is maturing, and trading has remained relatively constant in recent years.⁴⁵

Market transfers are helping solve some of the water quality problems in the Truckee River. Great Basin

Land and Water is finalizing several water right purchases to increase flows and address these problems. It expects to successfully negotiate about seven purchases by the end of 1998. The group got its start through the congressionally approved Truckee River Water Quality Settlement Agreement of 1980, which set aside \$24 million for water acquisitions to augment flows during the summer. Half of the money for acquisitions is coming from the Department of Interior and half is coming from the coffers of Washoe County and the cities of Reno and Sparks.

The Walker River Basin may be the next region in the state to see an instream flow market emerge. Talks are underway among state and federal agency officials and the local agricultural community to consider water purchases for Walker Lake. The U.S. Bureau of Land Management is interested in purchasing stored water to maintain flows through the Walker River and into the lake to provide fish and wildlife habitat. The agricultural community is not very receptive to this proposal, but government officials are pitching the idea of a pilot leasing program to introduce instream flow markets.

OREGON

Oregon continues to lead the development of instream flow markets, even though during the last two legislative sessions several bills were introduced to prohibit the transfer of agricultural water to any other use.⁴⁶ Fortunately for Oregon's

active market, these bills were rejected. Beyond these bills, there have been few recent legislative proposals to change the state's instream flow water laws.

Administrative changes, spearheaded by salmon recovery efforts, continue to shape the state's instream flow transfer and leasing process. The Oregon Water Resources Department is placing a priority on instream transfers and leases by providing a final decision within 180 days of receiving the application (Oregon Governor's Office 1997). This commitment is part of the Oregon plan, a recovery effort for coho salmon that is based on voluntary habitat restoration by private landowners.⁴⁷

Ownership of instream flow rights has been an issue in Oregon since the approval of the first instream lease. The 1987 instream flow legislation that allowed market transfers is unclear about ownership. It authorizes the purchase or lease of water rights for instream flows by private groups, but defines an instream flow right as "a water right held in trust by the Water Resources Department for the benefit of the people of the State of Oregon to maintain water in-stream for public use."⁴⁸ The department has held this position until this year.

Private groups purchasing water rights for instream flows have argued that ownership is essential to the success of their efforts. To address this concern, the agency now issues a new type of right called a "flow enhancement water right." This new right is

similar to an instream flow right except that it may be held by private organizations.⁴⁹

The Oregon Water Trust and the Environmental Defense Fund are continuing their instream flow marketing efforts. In 1997, the trust completed 27 acquisitions that accounted for about 15,000 acre-feet of additional flow (Oregon Water Trust 1997). In addition, the Environmental Defense Fund, with the help of the Confederated Tribes of Warm Springs Reservation, is working with several irrigation districts to lease water conserved by irrigators so that it can remain in the Deschutes River (Willey and Diamant 1996). The conserved water was made available by improving the irrigation districts' delivery systems.

UTAH

The Utah Division of Wildlife Resources and Division of Parks are the only entities that can hold instream flow rights.⁵⁰ However, the Utah Chapter of Trout Unlimited (TU) is working with the Division of Wildlife Resources to purchase water rights for instream use on the Price River. The proposed deal would acquire storage rights to maintain late-season flows in the Price River. Currently, the Carbon County Water Conservancy District operates a dam on the upper portion of the Price River. The gates on the dam are closed at the end of the irrigation season, leaving little water in the river. TU believes that it can maintain river flows year-round with about 700 additional acre-

feet, but the water may come at a substantial cost. With water rights expected to cost \$700 to \$800 per acre-foot, TU is hoping that the Division of Wildlife Resources and several private funding sources will pick up most of the tab.⁵¹

The Division of Wildlife Resources is working on some of its own acquisition efforts. However, the fact that the Division of Wildlife Resources must seek legislative approval to purchase water rights for instream use has slowed efforts.

Water shares may present an opportunity for the agency to acquire water for instream flows without the need for legislative approval. Water shares are slightly different from water rights. Irrigation districts typically hold a water right and issue water entitlements or shares to their customers. These shares are commonly traded for irrigation purposes. Division of Wildlife Resources officials think it might be possible to buy these water shares for instream use without legislative approval.

Twice the Division of Wildlife Resources has attempted to do this. Both attempts failed, but in one case the division went so far as to make an offer of \$165,000 for 1,100 shares of water totaling 7,200 acre-feet.⁵² A rapidly growing city in northern Utah held the first right of refusal to the water and decided to purchase the shares instead. While the division has yet to complete a deal, its officials still view purchases of water shares as an opportunity to expand the state's lagging instream flow program.

WASHINGTON

Washington is attempting to develop new markets for instream flows.⁵³ In 1996, the state saw its first lease of an irrigation water right for instream flows (Environmental Defense Fund 1996). This transaction in the Teanaway River, a tributary of the Yakima River, was the first in the Bureau of Reclamation's \$12 million water acquisition program to restore flows for salmon habitat. Program Director Tracy Yerxa⁵⁴ says the bureau will increase its efforts in the coming years to lease and buy more water. The bureau has formed an advisory group, representing diverse interests ranging from environmentalists to ranchers and tribal members, to provide guidance on water acquisitions.

The 1998 legislature is considering further refinements to the state's water code that would greatly enhance instream flow trades. Legislation is pending that would allow individuals to acquire and hold instream flow rights, in contrast to the state's water code, which is unclear about ownership of instream flows.⁵⁵

The proposed changes may help revive the state's Trust Water Rights Program, which provides a mechanism for voluntary transfers of water rights to instream flows. Under this program, state and federal agencies and private organizations may acquire water rights for instream flows but the rights must be held by the Washington Department of Ecology. However, the department has not issued a single trust water right since the program started in 1991 (Sterne 1997; Crammond 1995). Frustrated by the inaction, two private organizations announced

that they are taking matters into their own hands. The Center for Environmental Law and Policy and American Rivers have formed the Washington Water Trust, which will use the provisions of the Trust Water Rights Program to acquire water through leases or purchases for instream needs. The job will become easier if the proposed legislation passes to allow private ownership of instream flows.

WYOMING

Wyoming first reformed its water code in 1986 to recognize instream flows.⁵⁶ The legislation was praised as a necessary change to make the century-old concept of prior appropriation more contemporary (Fasset 1993). Unfortunately, its impact has been negligible. Only a handful of new instream flow rights have been issued and water flow problems persist. The lack of progress has left many people dissatisfied. Representatives from state agencies and conservation groups are meeting in an effort to get policy reform and Wyoming's rivers flowing again. At the top of their reform wish list is amending the state's water code to extend ownership of instream flow rights to private organizations. (At present, the state is the only entity that can apply for and hold instream flow rights.) Jill Morrison of the Powder River Basin Resource Council contends that the absence of private ownership has slowed instream flow protection.⁵⁷

The group believes that there is a lot of misinformation and misunderstanding about instream flow

rights. Part of this group's effort is to clarify the process. "We're trying to get the witches out of the closet and open discussions on instream flows," says Tom Annear, instream flow coordinator for the Wyoming Game and Fish Department.⁵⁸ He anticipates that legislation to allow private ownership of instream flows will be passed in five years.

Wyoming's water codes allow donations of water rights for instream use. The water right is converted to an instream flow right and is held by the state. But some water right holders who want to improve stream flows are reluctant to transfer their rights to the state. They may be more willing to donate to a private group. Annear says several water right holders who were interested in transferring their rights to instream flow rights have contacted him. "These people wanted to do something good for the stream but weren't interested when they found out that they had to sign over their right to the state." Annear believes that allowing private ownership of instream flow rights would stimulate donations.⁵⁹

CONCLUSION

Instream flow markets are coming of age in the West. More and more, legislators, ranchers, and environmentalists recognize the benefits of buying and selling water rights to increase stream flows. However, market exchanges of water rights for instream flows may see only modest growth until more western states ease restrictions on transfers. The Pacific Northwest region has led the way. Idaho, Montana, Oregon, Washington, and California have all adopted changes that allow water rights to be traded to enhance instream flows. As a result, markets are developing. Since 1990 the region has had more than 150 transactions totaling more than 1.7 million acre-feet.

As legislative reform occurs, private groups are taking advantage of the changes and are leasing and purchasing water rights for instream use. Combined, private organizations have negotiated 87 transfers to acquire more than 244,000 acre-feet of water.

The success of these organizations demonstrates that private resources can and will be devoted to environmental goods such as instream flows. The value of increasing stream flows is high enough to attract funds to create a market. The advice offered in this manual is drawn from the experiences of on-the-ground market entrepreneurs and should encourage others to take the first steps necessary to protect streams and rivers through water market transfers.



NOTES

1. Kirk Hanna, e-mail to the author, re: instream flow marketing in Colorado, March 7, 1998.
2. The term *acquisitions* is used throughout this manual and includes leases, purchases, and donations.
3. The absence of sales in Utah is particularly surprising since provisions in the Central Utah Completion Act of 1992 call for water acquisitions for instream use in the Provo and Strawberry Rivers (Gillilan and Brown 1997, 229).
4. Critics contend that the DFWP has not been as aggressive as it could be in implementing the program. They argue that the state has forgone several lease opportunities due to potential controversy and perceived political fallout (McKinney 1991).
5. The 1998 New Mexico legislature passed a bill that allocates \$24 million to the Interstate Stream Commission for water right acquisitions on the Pecos River (HB 363, 1998, 43rd Leg., 2nd Sess.).
6. Data provided by the Oregon Water Trust, Portland.
7. According to the New Mexico Interstate Stream Commission, Santa Fe, Mississippi Potash, Inc., entered into this lease because it feared losing a portion of its rights due to lack of use. The lease ensures that the company's water rights are being used beneficially, avoiding the loss of these rights.
8. Harriet Burgess, Director, American Land Conservancy, telephone conversation with author, March 16, 1998.
9. Tracy Yerxa, Water Acquisition Specialist, U.S. Bureau of Reclamation, Yakima Basin Area Office, Yakima, Washington, telephone conversation with author, February 17, 1998.
10. One cubic foot per second is a rate of water flow which will supply one cubic foot of water in one second and is equivalent to flow rates of 1.98 acre-feet per day.
11. Richard Rigby, Water Acquisition Specialist, U.S. Bureau of Reclamation, telephone conversation with author, February 6, 1998.
12. Ron Pecheco, Water Rights Acquisition Program Coordinator, Division of State Lands, Carson City, Nevada, telephone conversa-

tion with author, March 13, 1998.

13. Graham Chisholm, Director, Great Basin Land and Water, telephone conversation with author, March 5, 1998.

14. The holder of an option contract has the right to buy water at a specified price, termed the exercise price, from the seller of the option. The seller of the option guarantees future delivery under specified conditions and price. A premium in addition to the exercise price is paid in exchange for guaranteeing future delivery of water at a set price. The premium is usually paid in a lump sum at the onset of the option contract.

15. The Internal Revenue Code allows a tax deduction for charitable contributions, including contributions to states and their political subdivisions if the contribution is made for exclusively public purposes (26 U.S.C. 170[a] and [c][1]). Currently, people donating land to groups such as the Nature Conservancy receive a tax deduction under this provision. However, a deduction for a contribution of a water right to the state could be problematic for two reasons. First, a water right would have to be recognized as the taxpayer's entire interest in the property (26 U.S.C. 170[f][3]). This is questionable since the Internal Revenue Service classifies oil and gas rights as "partial" interests in property. However, "qualified conservation contributions" are an exception to the disallowance of deductions for donations of partial interest in property (26 U.S.C. 170[f][3][b][iii]). The donation of a water right may qualify under this exception. Second, the amount of a resulting deduction is determined by the fair market value of the property. Ascertaining fair market value for water rights could prove to be more challenging than for other types of real property. In many parts of the West, water rights are not frequently traded, a fact that has prevented the establishment of a discernible market price. Treasury regulations (sec. 1.1770A-2) define fair market value as the price at which the property would change hands between a willing buyer and a willing seller. While market prices are usually not available, appraisal and valuation methods are well established for water rights. As for state tax benefits, many states offer landowners tax benefits for donations of real property in the form of conservation easements. Property subject to a conservation easement is usually not taxed at market value. Instead, the property is taxed at the market rate, less the value of the conservation easement. It may be possible for water right holders to receive similar benefits through these types of tax policies. A water right holder may be able to receive a tax benefit by

donating water for instream use. The tax benefit would come in the form of a lower property assessment on the land (Grigsby 1997).

16. The right holder accepted \$7,500 for a right appraised at \$10,000 (Crammond 1995).

17. Time delays of a year or more for transfer requests are common throughout the West. In Oregon, for example, transfer applications can take as long as three years. Similarly, transfer proceedings in Colorado can last as long as a year, with controversial transfers taking up to several years (Thompson 1993). However, some states are making efforts to streamline the approval process. Oregon, in an effort to encourage short-term leases for instream flows, has developed a fast-track leasing process. In addition, the state recently announced that it would make a final decision on all instream transfer applications within 180 days of receiving the application.

18. Organizations buying water for instream use often hire attorneys and engineers to help prepare these applications. These applications can be quite costly. Surveys in Colorado and New Mexico found an average transfer cost \$300 per acre-foot for applications involving 20 acre-feet or less (Thompson 1993). In a telephone conversation with the author, March 2, 1998, Sydney Macy of the Conservation Fund estimated that the fund spent about \$100,000 in legal fees to donate 2,200 acre-feet of water to the Colorado Water Conservation Board for instream use. Montana Trout Unlimited estimated it spent about \$3,000 on legal fees to complete the state's first private lease for instream flows, according to Bruce Farling, Director, Trout Unlimited, Montana Chapter, during a telephone conversation with the author, February 6, 1998.

19. Macy, telephone conversation.

20. Farling, telephone conversation.

21. Andrew Purkey, Director, Oregon Water Trust, telephone conversation with author, March 6, 1998.

22. Purkey, telephone conversation.

23. Chisholm, telephone conversation.

24. Arizona allows water rights to be transferred to other uses, but only the state can file the transfer if the water is to be used for

instream needs such as fish, wildlife, or recreational purposes. According to Herb Dishlip, Deputy Director, Office of Water Management, Arizona Department of Water Resources, no transfers from off-stream to instream use have occurred. Arizona's water codes do not specifically recognize instream flows, but the state does consider the maintenance of recreation and wildlife a beneficial use. A 1976 court decision found that a diversion of water is not a necessary requirement for a beneficial use (*McClellan v. Jantzen* 547, P2.d 454 [1976]). This decision gave instream flows a foothold in the state and they have been defined through an administrative process (Gillilan and Brown 1997). The state has attempted on several occasions to formalize its instream flow policy through legislation. The last attempt in 1992 was a comprehensive bill that would have recognized instream flows, allowed private ownership, and formalized a transfer process.

25. Perri Benemelis, Department of Water Resources, Arizona Water Protection Fund, memo to the author, "Water Acquisition Projects Funded by the AWPf," February 17, 1998.

26. Water right transfers provide the only mechanism for establishing instream flow rights in California (CWC 1707). The new instream flow right retains the priority date of the original right. Transfers allow for permanent and temporary changes in use. This provides opportunity for both purchasing and leasing water rights for instream flows.

27. Cindy Darling, Program Coordinator, CALFED Bay-Delta Program, telephone conversation with author, March 3, 1998.

28. Colorado allows existing off-stream rights to be transferred to instream flow rights but requires that these right be held by the Colorado Water Conservation Board (CWCB). In 1986, the legislature authorized the CWCB to acquire water rights for instream flows (CRS 37-92-102[3]). However, the legislature has never appropriated money for the acquisition program. The CWCB relies on donations and has only received seven water right donations for instream flows.

29. Dan Marrison, Dan, Instream Flow Director, Colorado Water Conservation Board, telephone conversation with author, February 25, 1998.

30. Marrison, telephone conversation.

31. Bahman Hatami, Colorado Water Conservation Board, letter to the author, February 18, 1998.
32. Robert Wigington, The Nature Conservancy, Western Regional Office, telephone conversation with author, February 26, 1998.
33. Wigington, telephone conversation.
34. Idaho's water code does not contain provisions that specifically allow for or prohibit the transfer of existing off-stream rights to instream use. The legislature amended the water code in 1992 to allow storage water to be leased from the state's water banking program for instream use. This was a three-year pilot program that was extended in 1996 for four more years (IDC 42-17-63[b]).
35. Marti Bridges, Water Policy Director, Idaho Rivers United, telephone conversation with author, January 28, 1998.
36. Bridges, telephone conversation.
37. Rigby, telephone conversation.
38. Rigby, telephone conversation.
39. Montana allows existing off-stream water rights to be leased for instream use through a temporary transfer. Adopted in 1989, the water leasing statute created a temporary program that allows the Department of Fish, Wildlife and Parks to lease water rights for the purpose of maintaining or enhancing stream flows for the benefit of fisheries (MCA 85-2-436, 437) In 1995, an amendment was adopted that allows private groups to lease water rights for instream needs (MCA 85-2-402).
40. Farling, telephone conversation.
41. On March 27, 1998, the New Mexico attorney general issued a legal opinion that water rights can be issued for instream uses. Prior to this decision, New Mexico was the only western state that did not recognize instream flow rights. The State Engineer Office is reviewing a transfer application to convert an existing diversionary right to an instream flow right. The application is using a 1972 court finding (*State ex. rel. Reynolds v. Miranda* 83 N.M. 443, 493 P.2d 409 [1972]) that diversions are not necessary to establish water rights.

42. Jeff Whitney, Ecological Services Field Office, U.S. Fish and Wildlife Service, telephone conversation with author, March 3, 1998.

43. New Mexico HB 452, 1998, 43rd Leg., 2nd Sess.

44. Nevada allows water rights to be transferred to instream flows and be held by any public or private entity. Instream flow rights have been established through an administrative process. These rights were first recognized when the Nevada Supreme Court found instream flows to be a beneficial use for the purpose of recreation, fish and wildlife maintenance, and visual quality (*Nevada v. Morros* 443, 493 P.2d 409 [1988]). Since then, the Nevada Division of Wildlife, U.S. Fish and Wildlife Service, and the Nature Conservancy have all successfully transferred existing off-stream water right to instream use.

45. Information provided by Richard Grimes, Water Rights Acquisition Director, Stillwater National Wildlife Refuge, U.S. Fish and Wildlife Service, Fallon, Nevada, and Steve Hobbs, State Director, The Nature Conservancy, Nevada Chapter, Carson City.

46. Oregon first recognized instream flows in 1955 by establishing minimum flows. In 1987, legislation was adopted that converted minimum flows to instream flow rights and also explicitly allows any person, public or private, to purchase or lease a water right for the conversion to an instream right (Oregon Revised Statute 537.348). The amended provision also allows for the donation of water rights for instream use.

47. The Oregon plan temporarily prevented coho salmon from being placed on the endangered species list. The plan was challenged and a federal district court ordered that the species be listed. As of June 4, 1998, the state of Oregon is appealing the decision. The salmon species was placed on the endangered species list on August 3, 1998.

48. Oregon Revised Statute 537.332(3).

49. Flow enhancement rights are issued for permanent transfers and purchases. Temporary transfers such as leases still require an instream flow right.

50. Utah recognizes instream flow rights but allows them to be created only through a transfer (Utah Code sec 73-3-3). The legislature amended the water code in 1986 specifically to allow the

Division of Wildlife Resources to file for temporary or permanent changes for instream purposes on water rights they presently own. This privilege was extended to the Division of Parks in 1992. The 1986 amendment gives the divisions the ability to purchase water rights for instream flows. However, purchases require an approval and an appropriation of money from the legislature. In a telephone conversation with author, February 19, 1998, Bill Bradwisch, Aquatic Habitat Coordinator, Utah Division of Wildlife Resources, stated that neither divisions have purchased water rights for instream flows. Individuals may donate existing water rights to the two agencies for instream use.

51. Fred Reimherr, President, Trout Unlimited, Utah Council, telephone conversation with author, March 2, 1998.

52. Bradwisch, telephone conversation.

53. Washington allows for instream flow transfers through the Trust Water Rights program (WRC 90.42.005-90.42.900 and 90.38.005-90.38.902). The program was initiated through legislation in 1991 and allows existing rights to be voluntarily transferred to the state as a trust water right. Voluntary transfers can result from purchases or leases by any public or private entity (Washington Department of Ecology 1992).

54. Yerxa, telephone conversation.

55. Kenneth O. Slattery, Senior Policy Analyst, Washington Department of Ecology, e-mail to the author, February 16, 1998.

56. Wyoming limits the ownership of instream flow rights to the state. The Wyoming Game and Fish Department is responsible for identifying priority streams, performing studies, and making flow recommendations to the Water Development Commission, which then applies to the State Engineer Office for an instream flow right.

57. Jill Morrison, Director, Powder River Basin Resource Council, Sheridan, Wyoming, telephone conversation with author, February 23, 1998.

58. Tom Annear, Instream Flow Supervisor, Wyoming Department of Game and Fish, telephone conversation with author, February 25, 1998.

59. Annear, telephone conversation.

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APPENDIX: ORGANIZATIONS AND AGENCIES

The private organizations and public agencies in this appendix are using a variety of market approaches to acquire water rights for the protection of instream flows. The appendix is intended to be a resource that provides contacts who can answer questions and assist efforts to acquire water rights. This list is by no means complete, and PERC would welcome information about other organizations working in this area.

PRIVATE ORGANIZATIONS

THE CONSERVATION FUND

1942 Broadway, Ste 201 Phone: 303/444-4369
Boulder, CO 80302 Fax: 303/938-6850

The Conservation Fund is a non-profit organization created in 1985 that is dedicated to advancing land and water conservation. The goal of the organization is to protect land and water resources in partnership with other organizations, public agencies, corporations and individuals.

ENVIRONMENTAL DEFENSE FUND

Pacific Northwest Office
60440 Woodside Road
Bend, OR 97702

Phone: 541/317-8424
Fax: 541/330-0392

The Environmental Defense Fund (EDF) is a leading national, non-profit, research and advocacy organization with more than 300,000 members nationwide. EDF's staff includes scientists, economists, engineers, and attorneys who seek practical solutions to a broad range of environmental and public health problems. EDF has been a pioneer in the development of water markets and the acquisition of instream flows in the western United States.

ENVIRONMENTAL RESOURCES TRUST, INC.

2944 Macomb Street NW
Washington, DC 20008

Phone: 202/244-4738

The Environmental Resources Trust Inc. (ERT) is a private non-profit organization founded with the help of the Environmental Defense Fund. ERT has offices in Washington, D.C., West Redding, Connecticut, and Bend, Oregon. ERT's goal is to engage market forces by bridging the traditional gap between economic and environmental aspirations. Some of ERT's projects include buying water rights to enhance endangered species habitat and survival.

GREAT BASIN LAND AND WATER

440 Hill Street, Suite D
Reno, NV 89501

Phone: 702/329-1599

Great Basin Land and Water (GBLW) is a non-profit organization founded in 1997. GBLW is dedicated to using market-based tools to protect land and waters in the Great Basin for conservation, open space, and historical purposes. GBLW is currently assisting with the implementation of the Truckee River Water Quality Settlement Agreement by purchasing water rights on behalf of the cities of Reno-Sparks, Washoe County, the Pyramid Lake Paiute Tribe, and the Department of the Interior for instream flows. GBLW is also purchasing water rights for the state of Nevada for the benefit of the Carson Lake wetlands in Fallon, Nevada.

MONTANA TROUT UNLIMITED

PO Box 7186
Missoula, MT 59807

Phone: 406/543-0054

Montana Trout Unlimited (TU) is a membership organization with a mission to conserve, enhance, and restore cold-water fish and their habitats. Montana TU has a long history of promoting improved stream flows for cold-water fish, including supporting and helping create legislation that allows private landowners to lease consumptive water rights to public agencies and private interests for instream uses. Montana TU has also been instrumental in establishing of arrangements that allow Montana's Department of Fish, Wildlife and Parks to purchase stored water from storage facilities for instream flows.

NATURAL HERITAGE INSTITUTE

114 Sansome Street, Ste 1200 Phone: 415/288-0550
San Francisco, CA 94104 Fax: 415/288-0555

Natural Heritage Institute (NHI) is a non-profit natural resources law and consulting firm based in San Francisco. NHI works to foster conservation and sustainable use of the world's limited stock of natural resources by improving the laws that govern natural resources and the institutions that manage them. NHI was founded in 1989 by a group of conservation lawyers and scientists who foresaw the need for a new tool kit for the next generation of environmental problem-solving. NHI is pursuing initiatives to acquire instream flow rights through water markets.

THE NATURE CONSERVANCY

Western Regional Office Phone: 303/444-1060
2060 Broadway, Ste 230 Fax: 303/449-4328
Boulder, CO 80302

The mission of the Nature Conservancy is to preserve plants, animals, and natural communities that represent the diversity of life on Earth by protecting the lands and water they need to survive. To date the Conservancy and its members have been responsible for the protection of more than 5.5 million acres in 50 states and Canada. It has helped like-minded partner organizations to preserve millions of acres in Latin America and the Caribbean. While some Conservancy-acquired areas are transferred for management to other conservation groups, both public and private, the Conservancy owns more than 1,300 preserves, the largest private system of nature sanctuaries in the world.

OREGON WATER TRUST

111 SW Front Ave, Ste 404 Phone: 503/226-9055
Portland, OR 97204 Fax: 503/226-3480

The Oregon Water Trust (OWT) is a nonprofit, private group established in 1993 that uses a market-based approach to help maintain and restore surface water flows in the rivers and streams of Oregon. OWT works cooperatively with willing water users to acquire part or all of existing out-of-stream water rights. OWT works closely with community leaders, local watershed councils, government agencies, and a range of public interest groups to prioritize and implement its efforts. OWT is funded through grants and donations and is governed by a nine-member board of directors that reflects the diversity of water interests in Oregon. The views of farmers, ranchers, environmentalists, and Native Americans are represented.

WASHINGTON WATER TRUST

1165 Eastlake Ave E, Ste 400 Phone: 206/223-8454
Seattle, WA 98109 Fax: 206/223-8464

The Washington Water Trust (WWT) is a private, nonprofit organization established in 1998 to restore instream flows in Washington's rivers and streams by acquiring existing water rights and converting them to instream use. WWT's focus is on market-based approaches, involving transfers from willing sellers or donors. The goal is to protect and improve water quality, fisheries, recreation and other public values related to instream flows.

PUBLIC AGENCIES

ARIZONA WATER PROTECTION FUND

Arizona Dept of Water Resources
500 North Third Street Phone: 602/417-2400
Phoenix, AZ 85004 Fax: 602/417-2423

The Water Protection Fund is a competitive grant process that supports projects to enhance and restore rivers and streams and associated riparian areas. Grants from the fund may be used to: acquire water from the Central Arizona Project or effluent for the purpose of restoring rivers and streams; develop, promote and implement water conservation programs; support research, data collection and analysis work; and develop and implement capital projects.

CALIFORNIA INTERIM WATER ACQUISITION PROGRAM

U.S. Bureau of Reclamation
Mid Pacific Region
2800 Cottage Way Phone: 916/978-5209
Sacramento, CA 95825-1898 Fax: 916/978-5290

The Interim Water Acquisition Program, initiated in 1995, is a three-year effort to acquire temporary water supplies to help meet the immediate fish and wildlife water needs while long-term planning continues. Temporary water supplies have been acquired to provide protection to various federal, state, and private wetlands with funds made available through the Central Valley Project Improvement Act.

COLORADO INSTREAM FLOW & NATURAL LAKE LEVEL PROGRAM

Colorado Water Conservation Board
Water Rights Investigation Section
1313 Sherman Street, Rm 721 Phone: 303/866-3441
Denver, CO 80203 Fax: 303/866-4474

In 1973, the Colorado legislature created the instream flow program to acquire and protect a property right in water within the framework of the state's prior appropriation doctrine. The idea was to leave water instream to provide a reasonable degree of preservation for Colorado's natural environment. The Colorado Water Conservation Board is authorized to acquire water, water rights, or interest in water for instream flow protection.

COLUMBIA BASIN FLOW AUGMENTATION PROGRAM

U.S. Bureau of Reclamation
Pacific Northwest Region
1150 North Curtis Phone: 208/378-5092
Boise, ID 83704 Fax: 208/378-5305

The Bureau of Reclamation provides water for flow augmentation in accordance with a 1995 Biological Opinion of the National Marine Fisheries Service. The flows are provided to increase water in the salmon migration corridor in the lower Snake and Columbia Rivers. Reclamation provides flow augmentation from water held in Reclamation space, annual rentals of water from irrigation entities, and from reservoir space and natural flow water rights Reclamation has permanently acquired.

MONTANA WATER LEASING PROGRAM

Montana Dept of Fish, Wildlife and Parks
1420 East Sixth Avenue Phone: 406/444-2449
Helena, MT 59620 Fax: 406/444-4952

Through a pilot program that was created in 1989, the Montana Department of Fish, Wildlife and Parks leases water rights from willing individuals for the purpose of maintaining and enhancing stream flows. The pilot program is designed to provide an opportunity for all affected interests in the state to study and evaluate the social, economic, and environmental impacts of transferring water from traditional uses to instream use.

NEVADA WATER RIGHTS ACQUISITION PROGRAM

Nevada Division of State Lands
333 W Nye Lane, Rm 118 Phone: 702/687-4363
Carson City, NV 89706-0857 Fax: 702/687-3783

The state of Nevada, through the Division of State Lands, buys water rights for the use of fish and wildlife, habitat protection, and parks and recreation. The division purchases water rights throughout the state from willing sellers. The division works in partnership with other state and federal agencies, organizations, corporations and individuals to acquire water to meet the environmental and recreational needs of the state.

NEW MEXICO INTERSTATE STREAM COMMISSION

PO Box 25102 Phone: 505/827-6160
Santa Fe, NM 87504-5102 Fax: 505/827-6188

The New Mexico Interstate Stream Commission, created in 1935, has the authority to negotiate with other states on the use of interstate rivers and streams and to propose compacts subject to legislative approval. All of New Mexico's major streams are subject to one or more of the eight interstate stream compacts, which greatly affect the development and use of water in New Mexico. The Interstate Stream Commission is purchasing water rights and retiring them to meet flow requirements agreed to in the Pecos River Water Compact with Mexico.

STILLWATER WILDLIFE REFUGE WATER ACQUISITION PROGRAM

U.S. Fish and Wildlife Service
PO Box 1236 Phone: 702/423-5128
Fallon, NV 89407 Fax: 702/423-0416

The purpose of acquiring water rights for Stillwater National Wildlife Refuge is to protect significant wetlands in the Lahontan Valley from further degradation and to enhance the habitat of many wildlife species that depend on these wetlands. The water acquisition program, which began in 1990, purchases water rights from willing sellers for the protection of the Lahontan Valley wetland habitat.

WASHINGTON TRUST WATER RIGHTS PROGRAM

Washington Dept of Ecology
PO Box 47600 Phone: 206/407-6637
Olympia, WA 98504-7600 Fax: 206/407-7162

The Trust Water Rights Program provides a mechanism for voluntary transfers of water rights to instream or offstream uses. Voluntary transfers can occur through purchases, leases, or donations. The program was created in 1991 and is managed through the Department of Ecology.

YAKIMA RIVER BASIN WATER ACQUISITION PROGRAM

U.S. Bureau of Reclamation
Yakima Basin Area Office
PO Box 1749
Yakima, WA 98907-1749 Phone: 509/575-5848

The water acquisition program is funded through the Yakima River Basin Water Enhancement Project. This federal legislation was first passed in 1979 and funded again in 1984. The project was initially intended to fund water storage projects, but in 1994 the project was updated and \$150 million was allocated to fund water conservation projects. From that money, about \$12 million was appropriated for water acquisitions to meet target instream flow levels for salmon and steelhead recovery efforts.

ABOUT THE AUTHOR

Clay J. Landry is a research associate at PERC (Political Economy Research Center) in Bozeman, Montana. With an extensive background in public policy and applied economics research, Landry has advised both state and local governments on water policy. Prior to joining PERC, he was a natural resource economist for the Oregon Water Resources Department, where he worked with the department and the U.S. Army Corps of Engineers analyzing water demand in the Willamette Basin. As an economic consultant for the Oregon Water Trust he developed a strategic plan for purchasing water and techniques for the valuation of water rights. He has also served as a legislative analyst for Montana Trout Unlimited, promoting legislation to allow the leasing of water rights to protect wildlife habitat. Landry holds a master's degree in agriculture and resource economics from Oregon State University and a bachelor's degree in economics from the University of Wyoming. He is an avid fly-fisherman who first became interested in water policy in his youth while helping irrigate his parents' small Montana farm.



ABOUT PERC

PERC (the Political Economy Research Center) is a nationally recognized nonprofit institute located in Bozeman, Montana. The organization's primary goal is to provide market solutions to environmental problems. PERC pioneered the approach known as free market environmentalism and conducts research in the areas of water, forestry, public lands, and endangered species, among others.

Free market environmentalism is based on several tenets: Private property rights encourage stewardship of resources; government subsidies often degrade the environment; market incentives encourage individuals to protect environmental quality; and polluters should be liable for the harm they cause others.

For more information about free market environmentalism, contact PERC at:

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502 South 19th Avenue, Suite 211
Bozeman, MT 59718-6827

Phone: 406/587-9591
Fax: 406/586-7555
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