

Water Market Insider



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Environmental Water Markets

Background

In many areas across the western United States, stream flow diversions by water right holders have severely impacted flows and left portions of streams dry or nearly dry during certain times of the year. Low stream flows harm fish and wildlife populations, diminish water quality, and reduce scenic and recreational value. Over the last two decades, states have encouraged the development of environmental water markets to provide stream flow protection.

Oregon was the first state to pass legislation allowing for instream water rights. Since then, nearly all western states have passed varying forms of legislation recognizing instream water rights and enabling environmental buyers to enter the water rights market.

Who's Buying and Selling?

The majority of buyers in the environmental market include federal and state agencies as well as a host of non-profit organizations formed in recent years to exclusively facilitate environmental water trades. The largest of the federal programs are managed under direction of both the Bureau of Reclamation (BoR) and the U.S. Fish and Wildlife Service. The federal and state environmental water acquisition programs are the result of regulatory initiatives focused on endangered species. Figure 1 provides a short list of some of the more active buyers.

Sellers in the environmental water market have historically been agricultural water users including irrigation districts and individual landowners. Agricultural water continues to be the primary supply

of the environmental market. However, other large water right owners such as Tribes and hydro-electric facilities more recently have shown interest in supply for the environmental market.

How Big is the Environmental Water Market?

The environmental sector has emerged as a sizeable segment of the overall water market. From 2003-2012 environmental transactions accounted for 40% of volume traded, and 7% of total value traded. The market accounts for a smaller percentage of value traded as environmental water rights generally trade at lower prices per acre-foot. In addition, the majority of environmental transactions are leases, whereas purchases are more common in the wider market. Lease transactions have a much lower cost per acre foot and only provide a temporary transfer. In total, 6.2 million acre-feet and \$562 million changed hands from 2003-2012, an average of approximately 620,000 acre feet and \$56 million per year.

2003-2012: Average Annual Trading

- 620,000 acre-feet
- \$56 million

Instream volume provided through market transactions has increased substantially since 2003. Figure 3 shows the cumulative volume added instream through leases and permanent acquisitions completed between 2003 and 2012. Instream volume peaked in 2010 at over 1.4 million acre feet, and declined in 2011 and 2012 mainly due to the expiration of large leases in California and Oregon.

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Figure 2: Water Transactions 2003-2012

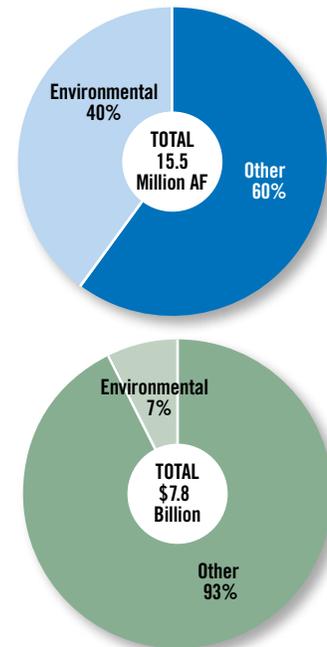


Figure 1: Examples of Environmental Water Buyers

Government	Non-Government
Bureau of Reclamation	Clark Fork Coalition
CA Department of Forestry & Fire Protection	Deschutes River Conservancy
Cities of Reno and Sparks, Nevada	Klamath Basin Rangeland Trust
Colorado Water Conservation Board	National Fish and Wildlife Foundation
Idaho Water Resources Board	The Freshwater Trust
Republican River Water Conservation District	The Nature Conservancy
Utah Division of Wildlife Resources	Trout Unlimited
U.S. Fish and Wildlife	Trans Pecos Water and Land Trust

WATER MARKET METER

ENVIRONMENTAL MARKET TRENDS

AVERAGE LEASE RATE



DECREASING
Down 70% from 2003

AVERAGE PERMANENT PRICE



INCREASING
Up 213% since 2003

VOLUME TRADED



DECREASING
462,036 AF traded in 2012

In the environmental water market, leases have been the dominant transaction structure, while permanent acquisitions account for only a small portion of the volume traded. Although purchases offer permanent flow restoration, leases provide much more flexibility and allow buyers and sellers the opportunity to evaluate the results of a transfer at relatively low cost before committing to a permanent transfer. Additionally, split season leases and minimum flow agreements allow buyers to lease water for only a portion of the year when flows are lowest.

Price Trends

Environmental water rights have historically traded at lower prices relative to other market segments. This is the result of many environmental transactions occurring in sparsely populated areas with few or no other water rights buyers. Additionally, environmental buyers have utilized unconventional transaction structures as a means to acquire water at lower prices. Furthermore, some sellers are willing to donate water rights or accept a lower price to help conserve riparian ecosystems and the scenic value of streams.

As shown in Figure 4, average permanent purchase prices have generally risen since 2003 which is consistent with pricing trends in the

wider market. Permanent prices dipped slightly during economic slowdown from 2008 through 2011. More recently, prices have rebounded with increased market strength.

In contrast, lease prices have steadily declined over the last 10 years. With the exception of a brief recovery in 2007, lease rates have dropped by nearly 70% and as of 2012, rates have leveled out at \$32 per acre-foot per year. The decline in environmental lease rates is surprising given the run up in agricultural commodity markets and drought conditions throughout the western US. However, environmental buyers have been extremely effective in finding surplus water each year, which has contributed to the trend in lease rates.

Regional Price Variation

Like most markets, location matters in determining price. In fact, within the environmental market lease rates vary significantly across states. Nevada is a costly state in which to purchase environmental water, although not necessarily in which to lease it. Oregon, Montana, and Idaho are the least expensive states for purchasing and leasing water.

Figure 3: Cumulative Environmental Volume Acquired, 2002-2013

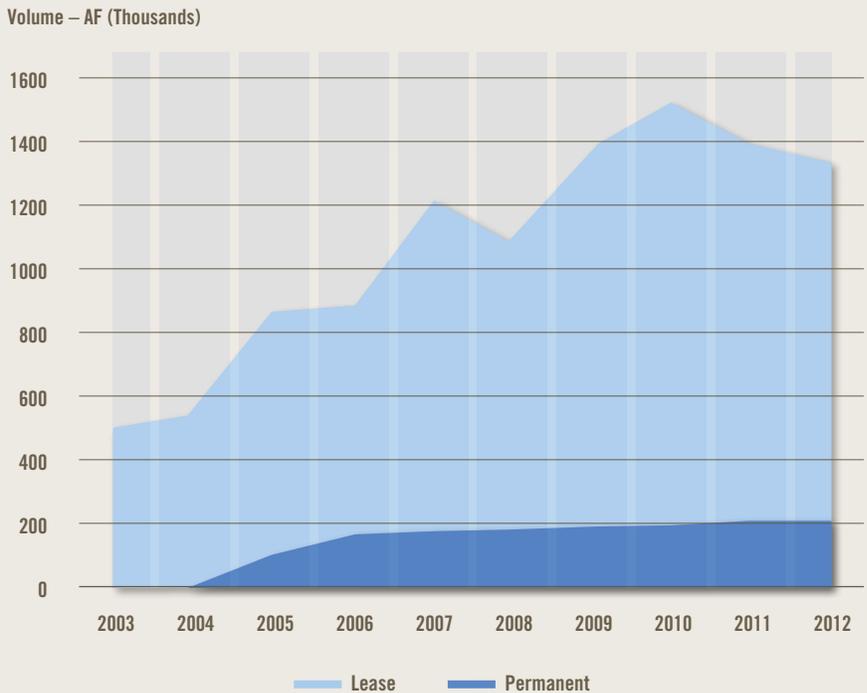


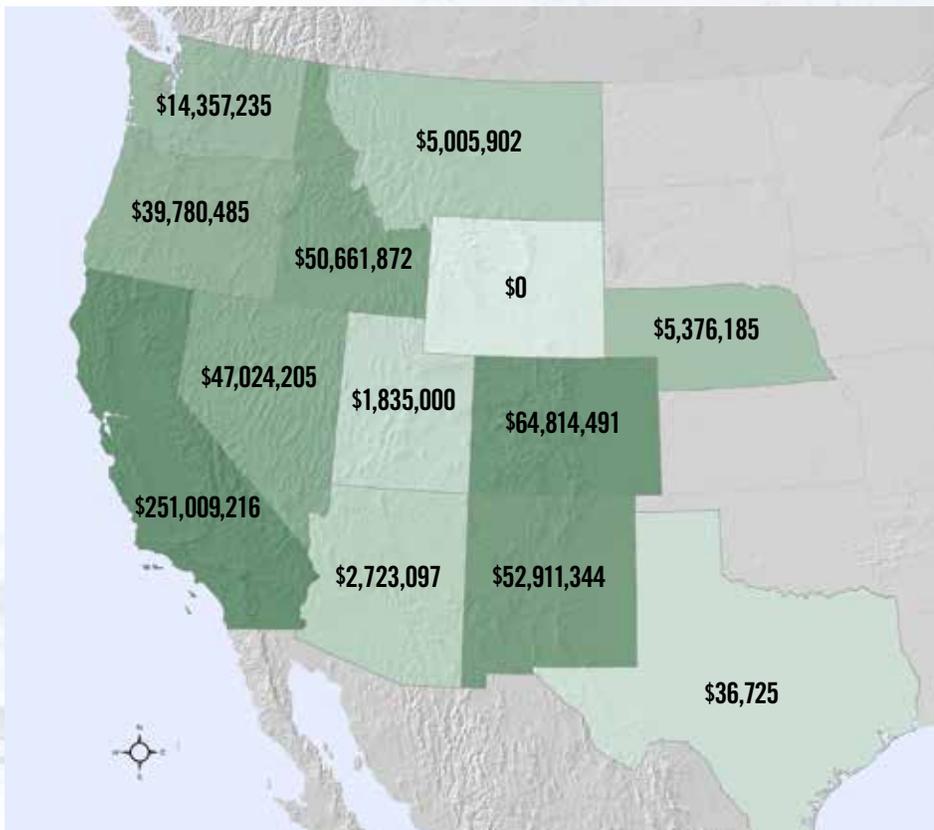
Figure 4: Average Environmental Water Prices



Figure 5: Total Volume Traded by State, 2003-2012



Figure 6: Total Value Traded by State, 2003-2012



Market Activity by Region

Environmental water market activity varies significantly by region largely due to differences in water law and regulatory drivers. Pacific Northwest states have been proactive in passing legislation that has resulted in one of the most robust and active environmental markets in the US. By comparison, legislation in the Rocky Mountain States is more restrictive. As a result trading activity remains limited with the exception of Colorado, which has taken significant strides in recent years to develop its environmental water market.

California has outpaced all other states in value traded within environmental water markets. Over the last ten years, more than \$250 million dollars has exchanged hands to provide water for environmental purposes within the state. In fact, California expenditures on instream water represents nearly half of the total market share for the entire US. California's environmental water market is unique because it has focused on large scale water deals backed by well-funded federal and state programs that attempt to restore flows in major river systems. In contrast, other states have focused on more modest deals in small streams and tributaries where incremental amounts of water can have significant ecological benefits.

In terms of volume traded, Idaho has the most market activity, but only a fraction of the spending of California. The largest buyer in Idaho is the Bureau of Reclamation which is required to acquire up to 427,000 acre-feet per year to augment flows in the Snake River to protect endangered salmon and steelhead populations. To meet this obligation, the Bureau has mainly executed one year leases of uncontracted water stored in reservoirs along the Snake River which is available at low prices. From 2003-2012, the Bureau leased approximately 2.7 million acre-feet in Idaho.

The Art of the Deal

Compared to other water rights buyers, the nature of environmental water rights allows for more flexibility in structuring transfers. Unlike municipal or industrial users that require water year round, environmental buyers frequently focus on acquiring water for a specific period of the year when flows are the lowest. As a result, environmental buyers have developed a number of contracting and deal structures to get the biggest ecological bang for their buck. Some of the more creative deal structures include:

- Partial season leases enable environmental buyers to acquire water rights for a specific portion of the year when ecologic benefits will be the greatest, and allow sellers to continue farming during the remainder of the irrigation season.
- Minimum flow agreements allow lessors to continue using a portion of their water. These flow agreements compensate water right holders for reducing diversions to the extent necessary and maintaining a minimum level of flow. The extent of reduction varies depending on stream levels.
- Conservation and efficiency financing agreements provide funding for irrigation infrastructure improvements to more efficient technology to save water. The conserved water is then leased or permanently transferred at no additional cost for instream flow use.

Pioneer Water Users Conservation Project

Trout Unlimited and multiple funding partners preserved 7,824 acre-feet instream on the Wenatchee River in Washington by replacing a large open ditch diversion with a pressurized irrigation system. The project moved the point of diversion 6.5 miles downstream to the confluence with the Columbia River where low flows are not a factor. As part of the project, a new instream flow water right was issued protecting the conserved stream flows from future diversions.

The final cost of the project worked out to \$429 per acre-foot, much less than the cost of directly purchasing similar water rights.

By utilizing unique deal structures, environmental water buyers are able to develop mutually beneficial agreements with water right holders. These deal structures offer greater flexibility and help environmental purchasers to acquire water at lower prices relative to other buyers.

Environmental Water Market Wrap Up

Across western states, environmental water markets have emerged as a mechanism to increase stream flows without imposing on existing water rights. Both government and non-government organizations have been active in acquiring environmental water rights. Most commonly, water rights are purchased or leased from agricultural water users in areas where stream flows have been substantially diminished.

The overall market is large, and has continued to grow, but activity varies greatly by region. The Northwest has been active in enabling markets through legislation, while the rocky mountain region has lagged behind. In the future, further legislation to promote environmental markets could lead to increased environmental trading activity in the west.

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ABOUT WESTWATER RESEARCH

WestWater Research is the leading firm in the water rights industry. WestWater specializes in transaction advisory services, water right valuations and appraisals, marketing services, water resource economics, and investment services. Since its inception in 2001, WWR has advised clients in every western state, including Alaska and Texas, on various water rights projects. We are forging new markets and developing innovative solutions to western water scarcity. Our team excels at finding creative solutions to complex water marketing issues.

The data on environmental prices and trading volumes summarized in this document are drawn from the Waterlitix database maintained by WestWater Research, which contains comprehensive and verified information on market water rights transactions.

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