

Farmer Willingness to Participate in Water Banking

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Water Bank

- Institution that uses free-market transactions to facilitate the temporary or permanent legal transfer of water rights to move water where it is needed most—can involve surface water and groundwater
 - Brings together those holding legally valid water rights with those in need of additional water supplies
 - Regular, transparent, institutionalized process for transferring water rights, which serves to reduce the confusion and transaction costs
 - Typically a water bank has a public purpose, for example, to alleviate the impacts of water shortage in a basin

Prior to Farmer Willingness Study

- Diverse Walker River stakeholder group to consider water banking as a water conservation tool and requested information
- Educational workshop held in Walker for water right holders:
 - Snake River Water Bank
 - California Drought Water Bank
- Role, function and operational/market structure of water banks:
 - Hydrologic
 - Legal
 - Economic and Social

Common Hydrologic Considerations

- 💧 Capacity: Sufficient capacity to store and deliver water at required times to specified users
- 💧 Measurement: Accurate and efficient accounting and measurement of water transferred
- 💧 Conveyance: Adequate ditch and canal infrastructure to ensure water delivery with minimal evaporation loss

Common Legal Concerns

- 💧 Prior Appropriation Doctrine precludes water diversions to be decreased consistently without decreasing the amount of land irrigated and ultimately modifying the water right accordingly
- 💧 Changes in place, timing or purpose of use could affect the supply for other users through a change in return flows

Common Economic and Social Concerns

- Economic multiplier effects—*Buy and Dry?*
 - Negative spin-off effects on local economies
 - Less demand for agricultural labor
 - Agricultural suppliers experience decreased demands for goods
 - Local environmental impacts
 - Air and water pollution--dust; invasive weeds; erosion
 - Property values
- Social
 - “Way of life”

Survey of Farmers

- Input from WRB Federal Water Master, WRID Manager, Antelope Valley Mutual Water Company President
- Snake River Water Bank and CA Drought Water Bank managers reviewed
- Surveyed all Walker River Basin water right holders: 22% response rate
- Under a range of 3 price scenarios, what number of acres would you fallow in order to lease water in a normal (100%) and moderate (75%) water year?
- Reduction options included alfalfa, other hay, grain, pasture and other

Percent Acreage Followed By Crop	Moderate Water Year 75%			Normal Water Year 100%		
	\$25/acft	\$50/acft	\$75/acft	\$25/acft	\$50/acft	\$75/acft
Alfalfa	3%	37%	53%	06%	27%	32%
Other Hay	10%	6%	5%	1%	0	0
Grain	0	0	2%	0	2%	2%
Pasture	84%	55%	42%	90%	69%	64%
Other	3%	2%	1%	3%	2%	2%
Average Decree	1,573			1,734		
Average Storage	46			80		
Total Percent Acreage Followed	16%	24%	33%	27%	36%	39%

Willingness to Participate

- **Willing to participate provided questions were answered and conditions were satisfied (57%)**
- **Do not know enough to decide (19%)**
- **Unwilling to participate (23%)**
- Questions and conditions to satisfy:
 - Confusion over use of term “bank”—i.e., lack storage capacity
 - Pricing
 - Loss of water right to nonuse
 - Crop rotation and fallowing lands

Farmers' Comments

- I would like to see the agreement before committing to numbers of acres (fallowed). The agreement would have to be very flexible from year to year.
- It makes sense—we have water rights and I doubt if they are used to the fullest extent.
- I don't think farmers should be “gouged” in dry years.
- My primary crop is alfalfa—I need water every year or not at all.
- Water conservation is possible, but some would only continue to pump groundwater beyond their allocation—as there are not enough personnel to enforce water usage.
- The price would have to be pretty high (\$100/AF) to interest me. This would likely be at two scenarios: 1) 100% water year and 2) low water (65%) year. In moderate year (75%) I'd rather be a buyer at low prices.

Famers' Comments

- I don't know enough about water banking to decide and need more information.
- We are a small water right holder and don't really have enough knowledge to make good comments. I might make a mistake and not have enough water.
- Our water rights are in trust with the federal government and we have no control over them.
- There is not sufficient surface water to go around. Ground water would have to be pumped.
- More water and water storage would be required. It takes a high flood year to meet demands now.

Farmers' Questions

- Good idea but is there a danger that the farmer could lose some of their water right by showing lack of need?
- Would an agreement to lease water be permanent and irrevocable?
- Do we establish price on 100% (normal year) and get the same price on an above-normal year?
- Will ranchers have to bid against the US Treasury for water in dry years?
- Under drought conditions, what mix of considerations would be used to determine the availability of water for agriculture vs. maintenance of wild land resources?

Walker: Addressing Hydrologic Concerns

- 💧 Sufficient capacity to store and deliver water at required times to specified users—start with surface storage water
- 💧 Accurate and efficient accounting and measurement
 - 💧 Modernize and automate head-gates to regulate and measure diversions from river
- 💧 Adequate ditch and canal infrastructure to deliver water with minimal evaporation loss
 - 💧 Improve conveyance to minimize sedimentation

Walker: Addressing Legal Considerations

- 💧 Nevada water law supports water banking:
 - 💧 Water rights may be severed from the appurtenant place of use and may be transferred to another place of use without losing priority of right
 - 💧 A temporary change in point of diversion or purpose of use as well as manner of use is allowed through permit process via state engineer

Walker: Addressing Economic/Social Considerations

● Economic Multiplier Effects

- Explore alternative low water use crops
- Explore and develop markets for new agricultural products
- Add value to agricultural products through local processing
- Maintain or increase property values through:
 - Re-vegetating fallowed agricultural lands to minimize dust and runoff
 - Rural tourism via river corridors open to public

● Social

- Encourage stewardship through comprehensive county planning for agriculture and other beneficial uses –clean and green
- “Way of life” –water use is strategically and sustainably planned
- Quality of life improves

Water Bank

Administrative Roles

- **Information clearinghouse.** Potential sellers need information about potential buyers and vice versa; when, where, at what price, and under what conditions.
- **Brokerage.** Help link potential seller with potential buyer and/or oversee the execution of mechanics of the transaction including the relevant paperwork.
- **Technical support.** Legal expertise to sort through who has what water right, hydrologic expertise to link the water right to the actual stream flows that would be affected by the transaction, and institutional expertise to fit the transaction into the operations of Reclamation, tribal lands, irrigation districts, and other entities.
- **Verification and conveyance.** Verify that the seller relinquished the water, the buyer received it, that both complied fully with the terms of the contract, and that obligations to third parties were not violated.

Water Bank

Administrative Functions

- Set contract terms and pricing
- Determine what rights can be leased
- Establish quantity of leased water
- Oversee and facilitate regulatory requirements
- Oversee and facilitate trading
- **REDUCE INDIVIDUAL TRANSACTION COSTS**

Market Structure: Clearing House

- Most common in western water banks—potential participants post bids to buy or sell
 - Postings on literal bulletin boards via irrigation district
 - Online postings: Arkansas Basin River Bank (www.coloradowaterbank.org) Texas Water Bank (www.twdb.state.tx.us)
- Most transactions involve individual exchanges between buyer or seller
 - Market determines prices through repeat interactions—information-experience
 - **Bank facilitates trades and lowers costs of transactions**
- Limitations--price dispersion in thinly traded markets could result in economically inefficient trading—increasing transaction costs

Market Structure: Fixed Price

- Second most common structure; often preferred in markets in small communities because it creates a sense of fairness
 - Fixed price reduces concern of price gouging or market speculation.
- Tradeoffs associated with the fixed price structure is that prices are unresponsive to changing market and climatic conditions.
 - Without a market based pricing structure, no incentive exists for suppliers to deposit water in the banking during dry years when supplies are scarce. Therefore, participation in some rental pools has been limited during drought.

Western Water Banks

STATE	PROJECT NAME	YEAR	ACTIVITY	PRICING	\$/AF/YR
Arizona	Central Arizona Project Water Bank Program	1996	High	Fixed	\$21-\$53
California	Drought Water Bank Dry-Year Purchasing Program Semitropic Groundwater Bank	1991 2001 1991	High High Moderate	Fixed Fixed Market	\$68-\$175 \$75-\$100 Fee Range
Colorado	Arkansas River Basin Bank	2002	None	Market	\$500-\$1,000
Idaho	Statewide Water Supply Bank 6 Rental Pools	1979 1988- 2001	Moderate Limited to High	Market Fixed	\$11 \$3-\$10 \$146
Nevada	Interstate Water Bank Truckee Meadows Groundwater Bank	2002 2000	Limited Limited	Fixed -- --	\$78- -- --
New Mexico	Pecos River Basin Water Bank Pecos River Acquisition Program ESA Mitigation on Pecos River	2002 1991 Proposed	None Moderate Limited	Market Market Market	-- -- \$50-\$100 Water Exch.
Oregon	Deschutes Water Exchange	2003	Limited	Fixed	\$65
Texas	Texas Water Bank Texas Water Trust Edwards Aquifer Groundwater Trust	1993 1997 2001	Limited Limited None	Market Market Market	-- -- Donations -- --
Washington	Yakima Basin Okanogan	2001 2000	Moderate Moderate	Market Fixed	-- -- -- --

Walker River Water Bank

- Experiment with storage water
 - Administrative role and function
 - Market structure—fixed or clearinghouse
 - Measurement/accounting improvements
 - System infrastructure/conveyance improvements
- Conservation improvements
 - Micro-irrigation/soil moisture monitoring
 - Re-vegetation techniques/alternative crops
 - County/community planning

Walker River Water Bank

- May see thin trading activity initially
- Limited experience and understanding causes participants to hold back initially to gain market information and then enter once market established
- Regulate and monitor supplemental groundwater pumping
- Fallow [marginal] land as a part of water leasing program to provide check and balance
- Administrative role and function oversees accuracy and equity of program

Effective Water Banks Facilitate Market Forces

- Good design: Lower transaction costs by facilitating trading
- Combine real time water supply and use data with demand and pricing—include data related to improved water use efficiencies
- Improve water conveyance to optimize conservation and reduce third party injury
- Strategic & sustainable water management tool
 - Conjunctive water banking—coordinate between surface and groundwater
 - Surface water stored in groundwater bank during wet years and withdrawn during dry years
 - Surface water banked in reservoir and groundwater withdrawn—increasing supply in surface water bank

Educational Outreach

- Market relies on information for decision-making
- Market relies on transparency
- Market relies on experience

