
AWRA 2011 ANNUAL WATER RESOURCES CONFERENCE
Albuquerque, New Mexico

November 7-10, 2011

Copyright © 2011 AWRA

DEVELOPING FLEXIBLE WATER LEASING INSTITUTIONS IN THE SW

David Brookshire*, Craig Broadbent, Don Coursey, Vince Tidwell

ABSTRACT: Water management increasingly depends upon flexible institutions that allow for the efficient allocation of scarce water resources. In the semi-arid west, watersheds are predominately fully or over-allocated as water demand from population growth continues to increase and the supply of water is subject to uncertainty and variability. Further given the increasing complexity of the water allocation issues, it has become increasingly important to formally incorporate Native American rights and environmental issues. Due to these anthropogenic changes and possible climatic variations there is a need to develop alternative institutional responses for water allocation, such as water leasing markets. To examine the potential of water leasing market we develop and test, through experimental economic techniques, a coupled hydrologic, engineering, institutional and economic market using the Middle Rio Grande Basin located in central New Mexico as an institutional framework for developing a prototype water leasing markets. First, a hydrologic model is developed representing the natural, physical and engineering dynamics of the basin and the outputs of this coupled model are integrated with a trading market. Second, laboratory market experiments are conducted using these hydrologic outputs as initial allocations to each participant. The coupled model reports the number of transactions each trading period and provides detailed information on individual trades: such as who engaged in the transaction, the amount of water traded, the price per acre-foot and the impact of water trading upon the physical system. This framework allows us to observe the number of transactions (a test of market robustness), the volume of water traded, carriage gains and / losses, the impact of water movement upon the physical system, the prices paid by user group and the overall market price, all within the context of alternative climatic scenarios. Finally we discuss the lessons learned from the experimental setting as they are currently being applied to the development of a water leasing market in the Mimbres Basin, New Mexico.

* Professor, Dept. of Economics, MSC005-30601, University of New Mexico, Albuquerque, NM 87131 USA, Phone: 505-277-1964, Fax: 505-277-9445, Email: brookshi@unm.edu