Moving Toward Climate-Responsive Water Management – Short Summaries

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BACKGROUND ON PROJECTS: The inquiry began with looking into actual as well as potential uses of weather and climate information in water management in several areas. A team led by Dr. Charles Howe looked into timing of decisions so that forecasts can be as useful as possible, as well as requests for information, which we passed back to NOAA planners (an edited report on Colorado's Arkansas Valley is posted as "What do farmers want to know…"). Along with potential uses of weather and climate information to help inform decisions, we also learned of other obstacles to climate-response in Colorado. We focused on small-scale water management, working down the organizational hierarchy from the big federal agencies through the state to ditch companies and individuals in agriculture-related businesses. One problem was the inability to quickly and cheaply transfer the use of water. We observed and commented on the Arkansas River Basin Water Bank Pilot Project, to understand what went right and what went wrong, and what might help (such as enlisting Dr. Jeff Tranel to devise a Water Lease Rate Calculator). That led to observation and commentary for the Statewide Water Supply Initiative, and the Interbasin Compact and Basin Roundtable Process. We moved from "how can climate information be used?" to "what are the obstacles to those uses?" The Drought centered on 2002 and water events such as some leasing activity, establishment of the Lower Arkansas Valley Water Conservancy District, and new water laws have certainly changed the decision environment, but on-the-ground change has not yet appeared. though several studies are in progress, funded by the Lower Arkansas Valley Water Conservancy District, the Colorado Water Conservation Board, and others.

Currently, Dr. David Yates and I are asking, "What if we get new forms of water management?" The Statewide Water Supply Initiative Phase 2 discussed aspects of the new forms of water transfers described here, and showed some concern for reconsidering management; there has been increasing rhetorical endorsement, but important gaps in information remain. So far we have been able to follow-up on some of the fears and concerns over water leasing that we learned about between 1999 and 2002, and we think some can be "checked off" as problems that are manageable. Some are problems which are far less adverse for the local farming and economy under the new forms than the traditional "buy and dry" water sales. And some are just hard to judge – in particular, there are problems for all of us in the lack of information about cumulative impacts. Work at present concerns review of literature and interviewing on the effects of moving water from environments that are "hybrids" of "natural" and human-influenced situations (see Wiener et al. short article in May 2008 Water Resources Impact; AWRA presentation posted). Avoiding cumulative impact problems such as water quality total maximum daily load limits, or endangered species problems would help everyone. These seem to range from the expensive, messy, and inequitably injurious, to worse. Failure to address this in public may be creating a race to avoid the limits. Other remaining areas of concern include how to design best rotations for leasing, interruptible supply and fallowing programs, or sale/partnership deals that accomplish the same goals; costs and techniques of revegetation or best management of formerly-irrigated lands; local government interests and relationships of land use and water planning; and ditch company and multi-company self-organization for water transfers.

THE PERSISTENT PERMANENCE PROBLEM: For review of other water banking and non-sale water transfer programs, the most comprehensive source, though somewhat dated now, is Clifford, P., C. Landry, and A. Larsen-Hayden, 2004, Analysis of Water Banks in the Western States. Washington State Department of Ecology, and WestWater Research; available from <http://www.ecy.wa.gov/biblio/0411011>. But, some kind of sale may be needed to meet demands for permanence. Why can't it meet the other goals as well? So far, no source has been found which addresses the limits of what can be done within a sale, though there are shared ownership features of condominium and time-share deals, with careful allocation of operating responsibilities, costs and benefits. These create permanent division of rights to use of an asset, and such divisions are common in assignment of rights to revenues and investment deals. Has such a thing been done with water? Are there any sources or issues affecting creative forms of deals?

The goal is climate-responsive management: water arrangements that maintain agricultural productivity and capacity, and can sustain resources, resource users, and the ability to adapt to what look like exciting times that have already begun. The next project will use modeling of agricultural water supply as the basis for thinking harder about what kinds of contracts look good, and how to use collaborative processes to meet many interests, avoid problems, and allow greater participation in support of conditions that people want. Soil changes are an increasing concern, too. **NOTE:** The various written comments and materials from John Wiener are not the opinion of NOAA, NCAR, or the University of Colorado. Please inquire if you wish further information from these projects.