



Colorado Water

Newsletter of the Water Center at Colorado State University

August 2005

Groups like this one provided comments on the water Roundtables exercise at the Colorado Water Workshop in July.



INSIDE: Water Roundtables

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WATER ITEMS AND ISSUES . . .

Let's Talk Water — Editorial by Robert C. Ward, Director 3
HB 1177: The Role of Dialogue and Negotiation in Charting Colorado's Water Future by Russ George 4
HB 1177: Tables Separate People and Bring Them Together by Mark Fiege..... 6
HB 1177: Water War and (or) Peace? by Stephen Schulte 7
HB 1177: Pieces Are in Place by Charles (Chuck) Howe 9
HB 1177: What Will Make It Succeed? by Neil Grigg..... 10
HB 1177: Water Quality Bugs and Water Management Buffalos by William M. Lewis Jr., 11
HB 1177: Investing in Colorado's Water Future by Marie Livingston..... 13
HB 1177: Water in the Rocky Mountains, 2025 by Lyn Kathlene..... 14
HB 1177: Sociology of Water Roundtables 17
HB 1177: Value of the Future by Lou Swanson..... 19

Other Articles:
Sandra Postel's Publication on Watershed Protection..... 16
Chief Geologist Named Acting Director of USGS 20
Water Resources Archive..... 21
Poeter at Colorado School of Mines Awarded USGS Grant 33

Upcoming Meetings, Seminars, Professional Development Opportunities
Colorado School of Mines Short Courses 21
CSU Water Resources Seminar 36
Kip Solomon 36
University of Colorado Continuing Engineering Education 37
Effective Best Management Practices Workshop 37
Calendar..... 39

Meeting Briefs: Colorado Water Workshop..... 22
Meeting Briefs: Hard Times on the Colorado River.....30
Meeting Briefs: UCOWR.....32

Research Awards.....34

Volume 22, Issue 4

COLORADO WATER

Editor: Gloria Blumanhourst

August 2005

COLORADO WATER is a publication of the Colorado Water Resources Research Institute. The scope of the newsletter is devoted to enhancing communication between Colorado water users and managers, and faculty at the research universities in the state. This newsletter is financed in part by the U.S. Department of the Interior, Geological Survey, through the Colorado Water Resources Research Institute. The contents of this publication do not necessarily reflect the views and policies of the U.S. Department of the Interior, nor does mention of trade names or commercial products constitute their endorsement by the United States Government.

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EDITORIAL**Let's Talk Water****by Robert C. Ward****Director of Colorado Water Resources Research Institute**

The Colorado Legislature, in its 2005 session, passed HB 1177, entitled "Colorado Water for the 21st Century Act". The Act establishes basin roundtables designed to 'facilitate continued discussions within and between basins on water management issues, and to encourage locally driven collaborative solutions to water supply challenges'. This issue of *Colorado Water* is devoted to exploring the contributions Colorado's higher education system can make to the successful implementation of HB 1177.

As Russ George, whose leadership led to enactment of HB 1177, notes on page 4 in this issue of *Colorado Water*, Colorado needs the flexibility created within the roundtable structure to allow problems be addressed before the problems become a serious issue in a time of crisis. He notes the success of Delph Carpenter in the first half of the 20 century, in negotiating agreements among western states to allocate interstate waters, as an inspiration for current interbasin discussions in Colorado. Russ also notes the importance of good data and full disclosure as a basis for negotiations. The Department of Interior's Water 2025 is another attempt to resolve western water crises and conflicts in ways that are built on good data, sound science and negotiation.

Universities and colleges create, transmit and share new knowledge and, thus, are able to contribute to stimulating dialogue about many subjects, especially water resources in our semi-arid state. In fact, the Natural Resources Law Center at University of Colorado Boulder and Western State College in Gunnison conducted meetings this summer that provide excellent information about water resource management (see summaries of these two meetings in this issue of *Colorado Water*). Mesa State College hosted several water sessions in May during the Rocky Mountain Geological Society of America meeting (see the June 2005 issue of *Colorado Water*). CSU is planning a CSU Water Dialogue later this fall. CSU's annual water resources seminar this fall is devoted to exploring the use of dialogue and negotiation in implementing water resource development plans.

As we all know, professors can profess! Their job is to work at the cutting edge of science, thus enabling them

to bring the latest scientific and technological insights to the roundtables. For example, they can share the latest thinking about the theory and application of negotiation processes in seeking solutions to water conflicts; share examples of similar negotiations in other states and countries; recount the history of previous water supply negotiations; explore the evolving nature of societal goals and human organizations in managing water resources; and discuss and, in some cases, quantify projected environmental impacts of alternative water development strategies. On page 6 begin a series of observations regarding successful implementation of HB 1177 contributed by higher education faculty. These remarks are not the result of new research, but rather comments generated from existing expertise.

Cooperative Extension, a state agency located at CSU, has a 'tag line' that states 'Putting Knowledge to Work'. In many ways, the Basin Roundtables will be putting knowledge to work as they seek a common understanding and an agreed upon future direction for water resources management in Colorado. Extension personnel, located in communities across Colorado, are well connected to both the communities they serve and water knowledge. They can assist Basin Roundtable participants in blending local conditions and needs with existing and emerging water knowledge. Reagan Waskom, State Water Resources Extension Specialist, will be facilitating the capabilities of Cooperative Extension in service to the Basin Roundtables.

As implementation of HB 1177 proceeds, higher education is willing to assist, in any way it can, to the success of the upcoming water dialogue and negotiation processes. I hope the above list of activities, already underway, comments from faculty beginning on page 6, and remarks about Cooperative Extension indicate the knowledge, insight, and capabilities higher education is willing to bring to roundtable discussions.

This stylized view of a test case roundtable discussion at the 20th Colorado Water Workshop signifies contributions from Colorado's higher education faculty regarding implementation of HB1177.



HB 1177: The Role of Dialogue and Negotiation in Charting Colorado's Water Future

by Russ George

Executive Director of the Colorado Department of Natural Resources

Coloradans are faced with water issues and problems that will surely become more demanding as the state's population continues to grow, and as the demand for water puts an even greater stress on the state's already stretched resources. While all areas of the state face similar pressures from growing metropolitan complexes and other demands for water, each area has unique circumstances that must be recognized.

The Interbasin Compact Committee (IBCC) and the Basin Roundtables that are created by HB05-1177, also known as the Colorado Water for the 21st Century Act, will allow the different water basins within the state to work together to find long-term collaborative solutions to the issues that currently exist and may arise in the future. There is no need to solve problems that currently do not exist, but the flexibility created within the roundtable structure will allow problems to be addressed before those problems become a serious issue.

At this point in Colorado's development, sub-basin conflicts are as significant as traditional east slope-west slope discord. The economic, political, and legal conflicts within and across Colorado's internal basins are generally analogous to the circumstances that existed during the golden age of interstate compacts, and thus may be more amenable to that model, which exemplifies a win-win solution in which each party received something it wanted.

Many of the same factors exist today as in 1922 when Delph Carpenter helped negotiate the Colorado River Compact. Basins are attempting to gain advantages over others, and litigation is being used as the method of achieving their goals. HB 1177 sets up a process that is similar to the one Carpenter used will require leadership to expand traditional thought processes beyond parochial squabbles and demands. Consensus building, as well

as patience, will be required to accomplish a comprehensive solution to water needs across the entire state.

This new law sets up a voluntary process that allows basins to participate as much or as little as they want in the roundtable process, once they've completed their mandated role of creating a water needs assessment for their

basin. Upon the completion of the needs assessment, each basin will know what waters they have that are already appropriated, and how much water they have that is unappropriated and can possibly be used to help solve the shortfall of another basin and satisfy new demands in the basin.

While this cannot be a forced process, I believe that, with

a little give and take, people can have more control over the outcome of any dispute that may arise by negotiating a solution, rather than resorting to litigation.

Successful negotiation needs to be based on full disclosure, trust among the participants, presentation of accurate data, and time. Delph Carpenter repeatedly underscored the necessity of accurate, credible information as a basis for negotiations. Several common themes also came from his successful compact negotiations. The longer discussion continues and the more freely ideas can be exchanged, the more likely the parties will move towards a middle ground in which all can agree. If there is accurate data, water problems can be resolved in a manner beneficial to future generations.



Rick Brown (Colorado Water Conservation Board) and George Sibley (Western State College) listen as Russell George addresses the Colorado Water Workshop.

The Statewide Water Supply Initiative (SWSI) will provide the foundational data for the roundtables once negotiations begin. SWSI strives to ensure that all sides are aware of the future water needs and demands throughout the state. When everyone can work with the same set of data, the trust among negotiators can grow while fear of concealment is minimized on both sides. Success will depend on the commitment of all negotiating parties, and the consistent political and financial support by those parties. Crises over which people have no control could lead to ultimate failure. Progress requires consensus.

Even though each roundtable will be responsible for negotiating any compact or project within the basin, there must be as much input from non-members as possible. The greater the dialogue among all concerned groups and individuals, the greater will be the legitimacy of any plan or solution developed by the roundtable. The IBCC and Basin Roundtables can also use their positions to educate citizens who know little about the water issues facing the state. This process must include the general public as the roundtables and the IBCC disseminate information about what they are doing and what they seek to accomplish for the citizens of their basin and the state.

Currently, the Department of Natural Resources (DNR) is helping with the initial stages of creating the basin roundtables. DNR has sent out letters to interested groups and municipalities asking for their nominations for initial members of the basin roundtables. DNR is also in the process of creating information packets that will be given to these initial members who will be responsible for drafting their basin roundtable's bylaws.

Included in the packet will be a sample set of bylaws suggesting the "rules of play" of the roundtable, establishing goals and objectives, definitions, roundtable membership, roundtable leadership, a decision-making process, meetings and governance procedures, and

roundtable powers. DNR will provide guidance on any issue that may arise while each roundtable is drafting bylaws. Once the roundtables begin to meet, they will also be appointing their two representatives to the Interbasin Compact Committee.

I have been appointed as the director of Compact Negotiations by Governor Owens, and will serve as the chairperson of the committee. The IBCC will discuss and begin drafting a charter at the first meeting. DNR will be involved in this process as well. We plan to have a rough charter developed when the IBCC meets for the first time in November of this year to help facilitate discussion about what the representatives believe should and should not be in the charter that will be sent to the General Assembly. February is the current target date for submission of the IBCC charter to the General Assembly for ratification.

Once the IBCC charter has been ratified by the General Assembly, the roundtables may begin negotiating with each other. It is hoped that all citizens of Colorado will be served if the basins work together to develop water storage projects within the state to help meet future demands.

The General Assembly passed what could be a historic bill to help Colorado solve its future water needs by developing long-term planning strategies between the state's water basins. While no solution is perfect, the water problems facing us today may be avoided with foresight.

Strong participation throughout the state by both the roundtables and the general public will result in a more educated population working towards productive solutions. These roundtables can find real solutions to water issues that might arise in Colorado, and these solutions can only benefit all the citizens of this state for generations to come.

HB 1177 is available on line.

Go to

<http://www.leg.state.co.us/Clics2005a/csl.nsf/MainBills?openFrameset>

Type "1177" in the "go directly to Bill Number" box,
and then use the "enter" button

Editor's note: This stylized view of a test case roundtable discussion at the 20th Colorado Water Workshop signifies contributions from Colorado's higher education faculty regarding implementation of HB1177.



HB 1177: Tables Separate People and Bring Them Together

by Mark Fiege

Professor of History at Colorado State University

When we think about the history of water in the American West, our minds often turn to images of conflict. "Whiskey's for drinking; water's for fighting," Mark Twain purportedly said, reminding us which of the two liquids would most likely provoke men to draw pistols or Bowie knives. In addition to Twain's wry, ironic comment there are numerous other maxims, catchphrases, slogans, and rules-of-thumb—"first in time is first in right," "use it or lose it," "water always flows uphill toward money"—all of which call to mind a grim struggle for the control of a limited resource. That conflict has been at the heart of western water is true enough. It is difficult to identify a dam, river, aquifer, canal, or water right that has not been, at some time or another, the center of a bitter contest.

Thinking about western water solely in terms of conflict, however, presents a problem. Too often, popular sayings, stories, and images reinforce myths that collapse the complexities and possibilities of lived experience into stereotypes. Reduce the history of western water to a simple sentence or phrase, and people struggling over water become stand-ins for gunfighters in showdowns.

A realistic appraisal of western American history acknowledges that conflict alone cannot explain the region's water heritage. Conflict has been central to western water, but so has another condition: cooperation. Rivers have united individual people and communities as much as turned them into rivals. Anyone entering into a dialogue on the disposition of a western state's precious water would do well to think about this dual heritage and to realize that it is just as western to negotiate, compromise, and cooperate as it is to fight.

Examples of cooperation in western water abound. Every mutual irrigation company and irrigation district embodies the principle that self-interest can be realized through cooperation with neighbors. Sizeable ethnic groups in the West—Hispano communities in southern

Colorado and Mormon settlements in Utah, for example—have built entire societies on collective effort. In conjunction with these pervasive forms of water organization, westerners have fashioned an astonishing array of compacts and agreements by which they have supplemented and elaborated upon prior appropriation and other orderly systems of water distribution. The Colorado River Compact is but the most well-known of these arrangements; there are many more around the region.

This alternative history of western water certainly doesn't generate much interest. Water as a liquid that inflames passions is exciting; water as a liquid that calms those feelings is not. Nevertheless, it is important

“Conflict has been central to western water, but so has another condition: cooperation.”

to acknowledge the West's dual heritage of cooperation and conflict, and that of the two, cooperation has brought the region its greatest

achievements and still holds the greatest promise for its future.

Many books, articles, and treatises speak to this other western impulse, but *Community and the Politics of Place*, a slim, readable volume by the political theorist and Montana native Daniel Kemmis, surely stands among the best. Kemmis likens a place to a table. A table, he says, separates people but also brings them together so that they must face each other and communicate. It is reasonable to think of a river or any other body of water in similar terms. A river certainly divides people according to their proximity to the stream and their degrees of self interest in it. But because people share the river, it also brings them together.

Catchphrases, images, or histories that overemphasize conflict and verge into myth are traps that keep us from seeing alternatives. A more realistic appraisal of the western past allows us to imagine resolutions to resource conflicts that respect individual rights while

honoring the democratic process and acknowledging the reality that people often get what they want by negotiating, compromising, and working together—in short, by cooperating.

Water, as Mark Twain reminds us, exposes the nasty side of human nature just as surely as does whiskey.

But it need not necessarily be that way. People who sit down together for a sip of whiskey might do so as a means to talk and communicate. In such circumstances, they might even allow whiskey and water to mingle. In Montana, a drink of whiskey tempered with water is called a ditch. Water in a ditch, western history tells us, can provoke a fight. Or it can encourage a more constructive end.



HB 1177: Water War and (or) Peace?

by Steven Schulte
Professor of History at Mesa State College

The recent passage of the Water Roundtable legislation (HB-1177) may mark the beginning of a new era in state water relations. On the other hand, it might just be another chapter in an old story—a continuation of the state's water wars. A brief survey of these conflicts might assist in gaining some perspective on recent events and perhaps some expectations of things to come.

At several points in the last century, Colorado's politicians have heralded a "new day" in state water deliberations. The most notable early example occurred during the debate over the Colorado-Big Thompson Project and the creation of the Colorado Water Conservation Board. In the mid-1930s, relations between the Western and Eastern Slopes were tense. Congressman Edward T. Taylor (D-Glenwood Springs) vowed to use his position as Chairman of the powerful United States House Appropriations Committee to withhold funding for the Big Thompson Project unless the Western Slope received "acre-foot for acre-foot" compensatory water storage. After a heated war of words, the matter was resolved to the satisfaction of both sections of the state. While the resolution was short of the exact "acre-foot for acre-foot" compensation hoped for by Taylor and Western Slope interests, the principal of seeking benefits for both sections was realized. This idea would hover over future East and West Slope water negotiations.

Maybe more importantly, in 1937 the Colorado Water Conservation Board (CWCB) was established at the time of the Colorado-Big Thompson controversy to try to develop a statewide consensus for water planning. For too long, many Coloradans had regarded water from only a sectional perspective. The new CWCB, according to newspaper accounts from the time, represented a

new spirit of cooperation on water matters in the state. This rhetoric, of course, sounds strangely like recent utterances surrounding the passage of Colorado's Water Roundtable legislation. The CWCB's mandate—to enhance and protect all of Colorado's water—would place this body in the midst of sectional water conflicts in the decades ahead. Its authority to speak for all of Colorado on water matters would be challenged with the all but inevitable renewal of Colorado's water wars in the 1950s.

At that time, the focal point of the controversy concerned the Denver Water Board's designs upon the Western Slope's Blue River, and plans for a Fryingpan-Arkansas Project. For much of the 1950s, the Western Slope and Denver Water Board dueled with heated words and costly legal maneuvering until Denver won the right to divert the Blue and build the Dillon Reservoir. It is little wonder the Western Slope looked upon the plans of the growing and thirsty south central Colorado cities of Colorado Springs and Pueblo to divert the Fryingpan River into the Arkansas River system with suspicion and hostility. Already, Northeastern Colorado was being watered courtesy of the Colorado-Big Thompson; Denver had several transmontane diversions operating or on the drawing boards, and now the southern part of the Front Range was eyeing still other Western Slope streams.

The Western Slope and Front Range fought over the Fryingpan-Arkansas Project in its various forms, including a renewed debate over compensatory storage for water diverted to the East Slope. After 1959, the Western Slope had an "ace in the hole" when Congressman Wayne N. Aspinall (D-Grand Junction) ascended to the

Chairmanship of the House Interior and Insular Affairs Committee. From this position, “Mr. Chairman,” as he was known, was in a position to preside over and shape almost every piece of legislation of importance to the American West, including all of its water project legislation. Aspinall asked the state of Colorado to present a united front against the perceived machinations of California and other states competing for the use of the West’s limited water resources. He refused to seriously advance the long sought after Fryingpan-Arkansas Project until Colorado’s water users could work out a project design that would benefit all sections of the state.

While Coloradans have fought regularly over the state’s limited water supply, the state has also demonstrated an ability to unify in the face of larger, outside threats to its water. Examples of this include support for the numerous interstate water treaties negotiated throughout the twentieth century and the strong and unified stance taken in regards to the Central Arizona Project in the mid-1960s. Colorado’s politicians were unanimous in arguing that not enough water existed in the Colorado River system to satisfy both lower and upper basin claims on the river. Thus, Colorado, using both hydrological studies and the raw political power wielded by Wayne Aspinall, held out for additional water projects before agreeing to support Arizona’s water plans.

While more stories of conflict and healing could be discussed, including several renewed assaults on the Western Slope’s water from the 1970s to the present, it is clear that several patterns may be discerned from the history of Colorado’s water wars. Conflict will always occur where water is concerned. As writer John Gunther said in his 1940s book *Inside U.S.A.*, “Water is blood in Colorado. Touch water in the West and you touch everything.” Coloradans will continue to fight among themselves over this scarce resource, and in the face of larger threats (i.e. from California, Las Vegas, or other parts of the Lower Basin), Colorado will unite, at least temporarily and maybe even join with other Upper Colorado River brethren to protect its share of the river under the Colorado River Compact of 1922.

Yet the charge from the editor of this publication, *Colorado Water*, is to discuss how Colorado’s higher

education establishment can best support the impending dialogue on water. Will the Colorado Water Roundtable be a panacea to chart a peaceful discourse on water into the future? If history is our guide, don’t bet on it.

Some respondents to this question will argue that there are solid grounds for optimism today after years of intrastate conflict—that the Eastern and Western Slopes’ mutual realization of a difficult water supply future must

inevitably bring us together. The *Denver Post* (July 18, 2005) sounded the drum-beat for this hoped-for new era in Colorado water dealings, proclaim-

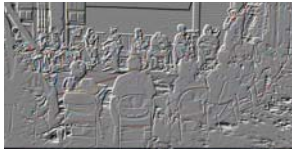
“One thing is certain, for every new era of water cooperation, an era of conflict has followed. Maybe we can break out of the historical pattern this time. Maybe.”

ing in a bold editorial: “Cooperation [is] key to future water supply; environmentalists and water providers must cooperate to meet demand in the coming decades as Colorado’s population continues[s] to grow.” Still others will side with Colorado State Natural Resources Director Russell George, who is fond of paraphrasing of Daniel Tyler’s excellent study of Colorado water statesman Delph Carpenter. George contends that if Carpenter’s guidelines are followed, success will inevitably result. Good people, fair intentions, open dealings, and no secret agendas, according to George (and Carpenter), will produce water decisions all Coloradans can live with. But will these qualities be enough to ensure success in the 21st century?

A soaring population and an economy predicated on rapid growth will strain the goodwill of the best-intentioned water politicians. At what point will the Western Slope believe once again that it is surrendering too much of its future by consenting to yet another water diversion plan? How much water still exists for diversions? What compensation could the Western Slope receive? Are further diversions feasible or desirable from an environmental perspective? The academic community can provide information relevant to these questions and give badly need perspective on questions that each generation of Coloradans has grappled with. One thing is certain, for every new era of water cooperation, an era of conflict has followed. Maybe we can break out of the historical pattern this time. Maybe.

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HB 1177: Pieces Are In Place

Charles W. Howe

**Professor Emeritus of Economics at University of Colorado-Boulder
and Professional Staff at Institute of Behavioral Science**

The State of Colorado now has three major components of a state-wide mechanism for agreeing on the uses of our water supplies.

1) We have the results of Phase One of the Statewide Water Supply initiative that provides a foundation of data on water supplies and demands, plus an understanding of the concerns and values of residents of the several basins (Colorado Water Conservation Board, Nov. 2004). The new Interbasin Compact Commission and the eight roundtables must build on this foundation. There has been some concern that the roundtables established under SWSI are not fully representative of all basin stakeholders.

2) We now have authorization for permanent Basin Roundtables (HB 05-1177) that are charged to develop basin-wide consumptive and non-consumptive water supply needs, to determine the volume of unappropriated water in each basin, and to propose projects (structural and non-structural) for meeting the needs and using the unappropriated waters as appropriate. Each roundtable's recommendations are to be shared with the Interbasin Compact Commission and all other basins.

3) We have legislative authorization for the establishment of "water banks" in each major basin (HB 03-1318). Water banks have proven valuable instruments for increasing the efficiency of water use in other states (Howitt, 1994; Olmstead, Sunding, Parker, Howitt and Zilberman, 1997; Howe, 1998). Water banks, both intra-basin and inter-basin, should be given serious consideration by the roundtables and the Commission. The fact that the Arkansas River Pilot Water Bank (HB 1354) failed to generate transactions can be explained by the unusual climatic and regulatory conditions under which it was established and should not discourage further water bank developments.

These three components can be made to complement each other and to work together smoothly. The 1991 proposal by the Colorado River Board of California

(CRBC, 1991) suggests a very workable format for the establishment of interbasin water banking in Colorado.

Major areas in which our academic institutions can make major contributions to the formation of goals and functioning of the Basin Roundtables are:

1) Reviews of the history of and problems with interstate compacts that are analogous in many ways to the proposed intra-state compacts (Muys, 1971; McCormick, 1994; Bennett, Howe and Shope, 2000);

2) Description and analysis of "basins of origin protection" mechanisms that are appropriate and have been successful (MacDonnell and Howe, 1986). Methods

include monetary compensation, compensatory storage, "benefit-sharing", use of remote monitoring for real-time management and compact enforcement;

3) Methods for describing and estimating the community and social impacts of in-basin and out-of-basin water transfers in Colorado (Howe and Goemans, 2003; Weber, 1992).

4) Procedures and conditions for establishment and proper functioning of water banks (Howe, Schurmeier, and Shaw, 1986).

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HB 1177: What Will Make it Succeed?

By Neil Grigg

Professor of Civil Engineering at Colorado State University

HB 1177 creates for the first time a mechanism to negotiate wise uses of water between the basins in the state. It creates a 27-person committee to oversee the process, and committee in each of the state's seven river basins, plus two more in the metro areas of the Platte and Arkansas Rivers. We congratulate the legislature and officials who worked on the bill, in particular Russell George, who was a champion for it.

What will it take to make this process succeed in the face of the complexity and realities of water law and politics in Colorado? At their roots, these complex realities involve struggles over ideas and money. Water right owners want to make sure they get the best deals in transactions and individuals and groups want to push their agendas, either for development or preservation of water (for ag? Free flowing?).

So, how can these competing agendas be managed under HB 1177? What will keep individuals and interest groups from absenting themselves from the discussions until it is time to torpedo proposals they don't like?

There's no simple answer to that question, but lessons learned from other experiments in water planning can

help inform our process. Perhaps the first lesson is to forget the idea that centralized water plans work. Experience shows that in the absence of a crisis, people do not like top down plans.

Then, it will be important to look for win-win solutions, and this can be a slow and painful process. These must be found both within basins and between basins. Until folks within basins have agreed on their plans, you can forget about planning something between basins. The keys to successful water dialogues will be to start slow, build dialogue to include wide bands of stakeholders, to under-promise and over-deliver.

Examination of past interbasin compact negotiations reveal built-in mechanisms for failure, and furthermore, many stakeholders had an interest in failure, not success. To overcome this, negotiators must hang in there to build coalitions so that positive stakeholders can persevere. A few keys to coalition building are patience and careful preparation, good and valid information, transparency, and opportunities for participants to spend time together.

“A few keys to coalition building are patience and careful preparation, good and valid information, transparency, and opportunities for participants to spend time together.”

Of course, one of the interbasin issues that requires negotiation is Front Range requirements for West Slope Water. Under HB 1177, several Roundtables could have stakes in a particular issue. Say an individual Front Range city has negotiated a water deal with a West Slope entity, but has not lined up support from the appropriate Roundtables. Even if the issue had the support of the Roundtables, dissident members or other interests may want to shoot down the plan because they have not bought into it. Under HB 1177 the Front Range city has a mechanism to identify groups who can do the negotiating and ward off challenges from dissident groups. In other words, it can be a consensus-building tool. It is true that mechanisms already exist for the city to convene groups of local stakeholders, gain support, then negotiate with the West Slope. The differ-

ence under HB1177 will be the availability of the built in forums to seek consensus, or at least broad agreement with plans.

So, going slow and involving all stakeholders is key, as is looking for win-win solutions over the long haul. The negotiating groups will also need effective staff work. It is not yet clear where this will come from, along with the money and data that are required.

The state's educators, especially higher education, can pitch in to help by stimulating discussions and involving students in the exercises. Departments and faculty can build interesting programs around the negotiating sessions. Higher Education does not always have as much up-to-date information as state agencies, but it has enough to be an effective participant.



HB 1177: Water-Quality Bugs and Water Management Buffalos

by William M. Lewis, Jr.

Professor and Director of Center for Limnology at University of Colorado at Boulder

In 1972, the U.S. Congress aggressively amended the Federal Water Pollution Control Act, which became known as the Clean Water Act. The Clean Water Act, which deserves to be called daring in its basis and scope, established for the first time a strong federal authority over the quality of most waters in the United States. In any earlier era, the legislation would have been infeasible because a reasonable reading of U.S. Constitution would show the regulation of water quality to be the business of individual states, except in the case of large waters that are used for interstate commerce.

In 1972, however, the overriding interest of the public, and thus of many politicians, was in establishing an immediate and forceful set of tolerance limits on environmental degradation, especially as it affects the quality of air and water. Thus, the weight of public and political opinion overrode what otherwise might have been an inadmissible strategy for bringing the nation to its feet environmentally. Although there has been and continues to be significant court action exploring the appropriate limits of federal authority under the Clean Water Act, most of the objectives envisioned by Congress as it passed the Clean Water Act have withstood both legal challenge and attempts at legislative reversal.

A key concession by Congress that may have been the difference between success and failure in forcing the states to engage in environmental protection was delegation of federal authority to the states, except in instances where states either rejected the delegation or proved incapable of discharging the delegated responsibilities. Colorado, like most states, assumed partial control of its own destiny by accepting the delegation of Clean Water Act responsibilities under review of the USEPA.

There was no significant public outcry in Colorado against The Clean Water Act. In fact, the public of Colorado clearly viewed the legislation as harmonious with its general view of the natural environment as an attribute to be enjoyed daily and to be integrated into sound economic development of the state. Interestingly, the public and private water purveyors of Colorado, who have been consistently an awesome force in matters affecting Colorado waters, also were not aroused in any notable way by the Clean Water Act. The explanation for their passivity lies in the ironies of water law and water-quality regulation: it might be perfectly legal to remove completely the water from a stream, whereas it would be illegal to release a few parts per billion of residual chlorine to the same stream because chlorine

is harmful to aquatic life. A Coloradan can acclimate to this ambiguity of purpose, but still may have trouble explaining it to anyone who lives east of Kansas.

Although there was little open or organized opposition to the Clean Water Act, behind closed doors there was much anger and opposition within agencies and companies that bore responsibility for implementing the act or meeting its requirements. Some public officials were outraged at this prime example of an unfunded federal mandate in a state that had meager financial resources and preferred not to borrow or overextend itself. There was strong resentment among wastewater dischargers, including both industries and municipalities, on grounds that they must pay the bill for meeting requirements set beyond their own boundaries and in effect even beyond the boundaries of the state. Their response, understandably, was to mount a resistance, which took mainly the form of legal wrangling over specific standards or policies and use of other tactics generally intended to ease the burden of regulation. During this era of adjustment to regulation, the dominant figures on the scene were attorneys and the people who hired them.

At present, the environment surrounding implementation of the Clean Water Act within Colorado has changed completely. Legal resistance to regulation proved essentially futile, as the state water-quality authority has recourse to the USEPA in any legal matter and in any event has limited ability to be lenient because of EPA oversight. It became evident that legal maneuvering was not only unsuccessful, but also expensive and, even more importantly, cause for delay in solving problems that were of pressing urgency because of deadlines that were derived from the Clean Water Act.

Dominance in both the strategy and tactics of adaptation to Clean Water Act regulations now has shifted from attorneys to managers and technical staff. A niche has developed for staff people knowledgeable about the basis and rationale for regulation, and the course of action

for cities and other dischargers often now is in the hands of the individuals who occupy this niche. The climate of meetings has changed from legalistic and rancorous toward technical analysis, voluntary negotiation with the water-quality control authorities, and even cooperation among dischargers for mutual benefit. It is worth asking if the much more static business of water management could be made to evolve similarly.

David Getches (2003) argues persuasively that water management by the western states has adapted very slowly to major shifts in water use and societal trends that call for changes in management. He also argues that federal agencies and interest groups have been more successful than state governments in orchestrating changes in management practices. Individuals who have participated in such “unconventional” adaptation often have backgrounds in engineering, environmental science, or policy but do not have law as an easy recourse and therefore think in terms of negotiation rather than legal formalities. While they have not removed

“David Getches argues persuasively that water management by the western states has adapted very slowly to major shifts in water use and societal trends that call for changes in management.”

the element of legal entitlement from water use in the West, they have provided some site-specific ex-

amples of alternatives to the legal gladiator system that has so often thwarted intrastate adaptation to change.

It would be neither realistic nor desirable to remove attorneys from water management. On the other hand, to conduct water management in the state of Colorado or elsewhere mostly through legal and judicial channels probably would stifle the flexibility and innovation that are now so much needed. The political leaders of Colorado may yet be able to bring forward modes of reform, which almost certainly must involve greater state executive authority over water, that place legal conflict as a last resort rather than a point of departure. Otherwise, fine lawyering may prove to be a tragedy of the commons for water management in Colorado.

HB 1177 is available on line.

Go to <http://www.leg.state.co.us/Clics2005a/csl.nsf/MainBills?openFrameset>
Type “1177” in the “go directly to Bill Number” box, and then use the “enter” button



HB 1177: Investing in Colorado's Water Future

By Marie Leigh Livingston

Professor of Economics at University of Northern Colorado

The passage of HB 05-1177 constitutes a step towards addressing a fundamental challenge for water management in Colorado that will have an effect on the entire state for many years to come. The bill encourages inter-basin dialogue in the struggle to make wise decisions about water allocation. Economic concerns are a key element for nearly everyone involved. The paragraphs below contain a brief outline of the economic viewpoint that might be helpful in highlighting and sorting out some important issues that must be faced.

The fundamental question concerns how water resources should be allocated in the state of Colorado. Resource allocation is the central focus in the discipline of economics and economists have a very "big picture" perspective on this topic. While the business perspective looks at the ability of specific companies to make a profit under various conditions, economists look at the entire economic system, including producers, consumers, individuals who use water directly and those that benefit or suffer indirectly. In the case of water resources, there is a very large array of stakeholder interests involved.

Ironically, the key to successful water dialogue in Colorado may be the ability of negotiators to rise above individual stakeholder interests in pursuing a vision of what is best for the entire state of Colorado. In order to guide negotiations on resource allocation, economists would frame the question this way: How should the rules governing water allocation be designed to result in the incentives to use the resource wisely? Wise use is defined by economists as using water in a way that that maximizes net benefits to the entire state of Colorado over a long period of time. The economic benefits from water use are manifest in high quality drinking water, profits to water using industries, valuable recreational experiences, healthy ecosystem habitats and more.

It is important to distinguish between the short run (say the next 20 years) and the long runs in addressing the water allocation question. In the short run, economists

have confidence in the ability of capitalistic principles to guide individual stakeholders to behave in a way that maximizes short run economic net benefits. The critical role of allocation policy is to ensure competition. This means investing in sound, long lasting physical infrastructure and the institutional water infrastructure (like the ability to transfer water, while protecting other uses and accurate pricing to reflect supply and demand) to enable competition to occur. This is no simple task.

Choosing water allocation rules that ensure the long run health of the state is even more challenging. The key to future economic performance and sustainability hinges on making investments today that enable future generations to survive and prosper. This will, very likely, require some sacrifice in consumption in the short run. It would be foolish to make water decisions by focusing solely on economic performance in the short run. We must instead have an intergenerational view, which means we must integrate the interest of future generation who do not have a direct political or economic voice today.

“How should the rules governing water allocation be designed to result in the incentives to use the resource wisely?”

One of the key difficulties in devising policy for the long run is that the future is inherently

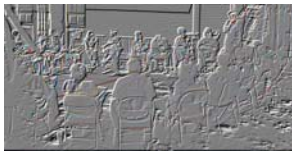
uncertain. We know that demand for water is bound to increase, but we don't know the particular configuration of need among municipal, commercial recreational, wilderness, and other potential uses. We do not know, with any certainty, what the macroeconomic conditions for the entire nation will be or Colorado's particular role in the national economy. We do know that water supply conditions constantly fluctuate and we don't know if, when, or exactly how, climate change may affect water circumstances in Colorado. We do know that almost all the important decisions in life must be made under uncertainty and this certainly includes water policy.

The reality of uncertainty underscores the importance of building flexibility into our water system. In would be an economic tragedy to lock in a particular set of irreversible water uses. Our institutional arrangements

must allow future water managers the ability to adjust to changing social, economic, and environmental conditions. Fortunately, water is regenerative and can be used many times over when managed correctly. But we must still take great care to avoid irreversible water decisions that prevent future generations the opportunity to deal with changing circumstances.

The prospects for successful stakeholder dialogue and effective policy making will be greatly enhanced if

participants are held to a high standard interchange. To hold any sway, arguments should be made in terms of what is best for the long run prosperity of our great state. Participants would do well to distinguish between short run and long run economic performance in their deliberations. Recognizing the interplay between uncertainty and flexibility will be critical to making sound decisions. Sophisticated thinking in this regard promises to pay off for the entire state of Colorado for generations to come.



HB 1177: Water in the Rocky Mountain West, 2025

by Lyn Kathlene

Director of Colorado Institute of Public Policy at Colorado State University

The Colorado Institute of Public Policy (CIPP) at Colorado State University (CSU) recently launched a white paper series, “Living in the Rocky Mountain West, 2025.” The papers address the institute mission of bringing together basic and applied research to encourage effective public problem solving about the connections among environment, agriculture, and people. Over the next four years, the papers will address water, energy, governance, demographics shifts, public health, and urban development. The white papers are an interdisciplinary tool for policy assessment and formation. They are written through a partnership of

researchers across the colleges at CSU, external partners, focus groups, and other methods for incorporating community concerns and knowledge. The series white papers bring together the state of knowledge on pressing policy issues and serve to:

- Engage community and statewide voices on the policy concerns and options;
- Implement approaches for effective citizen participation in interdisciplinary research efforts;
- Provide information to policymakers, researchers, communities, and advocates; and
- Identify community policy concerns about the intersection of agricultural, environmental, and people issues.

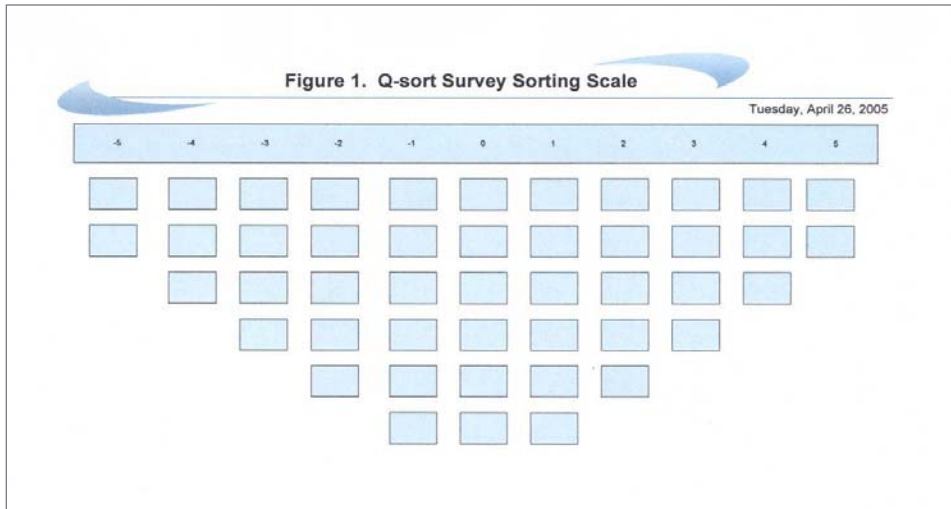
The Institute is presently developing a white paper focused on water issues. The paper explores future problems related to supply and demand, addresses environmental concerns, and considers both water quantity and quality as it examines current conflicts over water use.

The goal of the Institute’s water white paper is to help the water community (the broad array of stakeholders) engage in productive conversations regarding problems the semi-arid West faces with its water today and in the future.

To meet this goal, the white paper will provide insight into the values associated with water, fundamental frameworks for allocating and sharing limited water, and trends in water use and supply. It will identify the most pressing problems



MaryLou Smith (AquaEngineering), David Schneider (Loveland Utilities), and Rachel Kullman (Aqua Engineering) test the CIPP survey process at the Colorado Water Workshop.



the multiple demands placed on a limited amount of water.

By identifying and articulating these key beliefs, Q-sorts help find common ground and foster a better appreciation for differences. This sets the stage for constructive dialogues that precede changes in policy and water management practices.

For example, participants are provided with a set of statements (generated by stakeholders and

then tested for validity) to “sort” on a continuum of extreme disagreement (-5) to extreme agreement (+5). The scale shown in Figure 1 limits the participant to placing a fixed number of statements under each scale number. For example, only two statements can be placed under each end of the scale (-5 and +5), three statements under -4 and +4, etc.

In this study, participants will be stakeholders in water issues, including but not limited to: legislators; state Departments of Natural Resources, Departments of

Agriculture; water managers; water lawyers; university, non-profit, private sector water researchers and consultants;

the water community is facing today and in the future; and identify the information gaps to addressing the issues. It will discuss areas of conflict over water that may hinder constructive conversations. Finally, it will provide frameworks to help stakeholders move toward more productive partnerships. Guiding the paper will be systematically collected data about the values that drive water policy and water use in Colorado and underlie many of the ongoing conflicts. The white paper will help foster constructive dialogue in the upcoming Water Roundtables established by the Colorado Legislature this session, and inform research and discussion in the Colorado State University Water Dialogue Conference planned for December 2005.

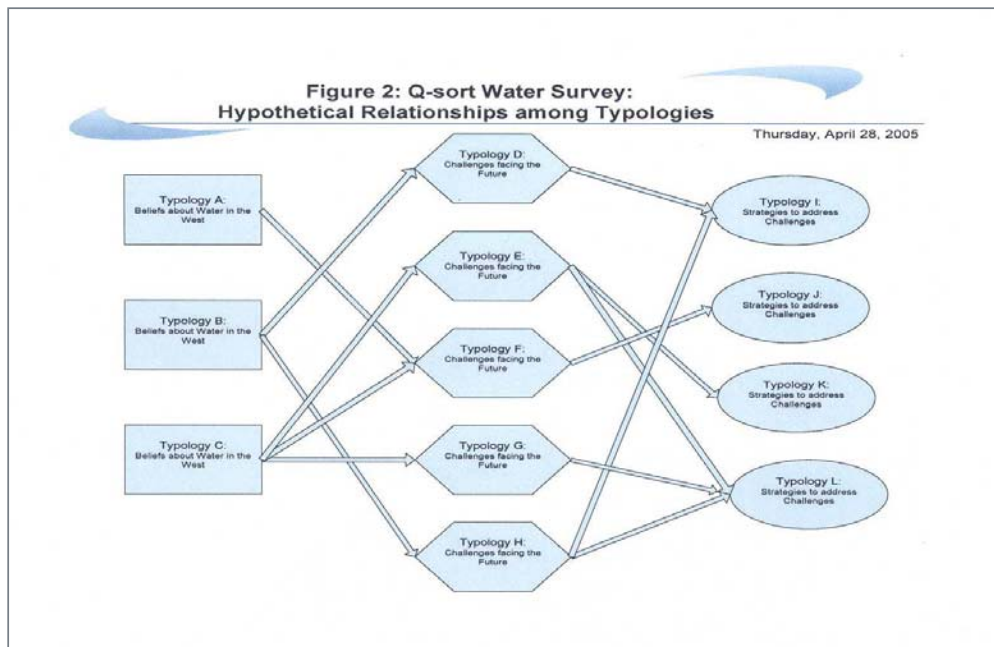
Q-sort Survey

To articulate and understand the multiple beliefs and values underpinning water issues, a survey of water stakeholders across Colorado will be conducted. The Institute will employ Q-sort methodology as a survey instrument. The strength of the Q-sort over traditional survey techniques is that it requires participants to prioritize their beliefs *in relation to* other beliefs. Life choices are always a trade-off and capturing how priorities relate to each other is important to move contentious groups toward constructive conversations.

The goal of the Q-sort is to identify and categorize stakeholders’ beliefs about water in semi-arid states, challenges facing water policy and management, and strategies to address

“Ultimately, the future of water is not based solely on data; it is structured by policymakers and stakeholders’ expertise, passion, and desire for a better future.”

agricultural, environmental, recreational, and urban interests including the communities from within these sectors, e.g., rural communities, water basins. Three Q-sorts will be conducted to tap into three separate subjective assessments of water issues: (1) Beliefs or myths about water in the Rocky Mountain West; (2) Water challenges as we look toward the future; and (3) Strategies to address water challenges. The data will be analyzed using cluster analysis to produce “typologies” within each of the three Q-sorts. The typologies from all three Q-sorts are then linked, and this step will reveal relationships among beliefs, challenges, and strategies that are likely to be complex and may even surprise the actual participants.



As illustrated in Figure 2, Q methodology uncovers these subjective dimensions and shows how one set of beliefs (Typologies A-C) is related to one or more perceptions of challenges (Typologies D – H), and how these views lead to a set or sets of preferred strategies (Typologies I – L). This type of analysis is critical to open dialogue among polarized interest groups.

The survey findings are one component of the water white paper and serve the following functions:

- The findings will help interpret how the history of water in the West influences our thinking about the future (e.g., what are the beliefs held today, where do these beliefs diverge, what is the historical basis of these divergences; and why have these divergences emerged);
- It will address how the pressing issues identified and the questions being asked by the water community are embedded in broader conceptualiza-

tion about the challenges water users face in the Rocky Mountain West (including can we adequately answer the questions/address the challenges with the information we know presently; and what information do we need to have to make the best informed decisions); and

- It will provide insight about how the strategies/solutions being considered may or may not balance sound science and sound policy as Colorado citizens seek to reconcile the many contextual elements that affect reaching agreement on Colorado's water future.

The paper is specifically focused on the policy process and while it utilizes extensive data on water quantity, quality, droughts, and future demands, this is not its primary focus. Rather, the purpose of the Institute's water white paper is to provide a starting place to identify and examine the range of beliefs associated with water, understand the underpinnings of stakeholders' priority concerns about the future of water, uncover the commonalities that can serve to create a basis for building productive dialogues, and continue to address and rethink the strategies that can meet multiple interests. Ultimately, the future of water is not based solely on data; it is structured by policymakers and stakeholders' expertise, passion, and desire for a better future. These are the elements that shape policy and productive policymaking begins with a conversation to bring together new insights about how we have arrived at our respective perspectives.

Sandra Postel's Publication on Watershed Protection Available

In *Liquid Assets: The Critical Need to Safeguard Freshwater Ecosystems*, Sandra Postel posits the notion that healthy watersheds and freshwater ecosystems provide a low-tech alternative for cities and rural areas to use as they work to purify drinking water, alleviate hunger, mitigate flood damages, and

meet other societal goals at a fraction of the cost of conventional technological alternatives.

This publication is available in print or .pdf version. You can view the table of contents or order from <http://www.worldwatch.org/>.



HB 1177: Sociology of Water Roundtables

by David M. Freeman

Professor of Sociology at Colorado State University

When water moves from rivers and reservoirs through canals to fulfill crop consumptive requirements, when it moves through urban treatment plants to serve household needs, when it is left in-stream for recreational and aesthetic values, or to sustain functioning of some part of the biotic web, it is because people in arid environments have organized to make these things happen. People can purchase seeds, fertilizers, plows, tractors and many other privately produced and exchanged goods and services, but in no culture guided by any ideology can a person walk into a local private business and order three units of water control such that a given quantity of water will predictably arrive at the right place, proper time, and in sufficient quality to fulfill the requirements of a field of corn or those of cooking spaghetti.

The kind of control over water that sustains our civilization comes from a combination of public and quasi-public organizations that empower individual citizens to do things together that cannot be done as individual producers and consumers in private marketplace exchange. When Colorado State University (CSU) water sociologists look at a river, lake, reservoir, or canal, or at production agriculture, or lawns, they see physical artifacts of social organizations (social software) that works in conjunction with rivers and all the water storage and conveyance hardware installed on rivers. Our communities, large and small, are made possible by the social organization of water. There is nothing more social than a water molecule.

In the semi-arid western states, the central organizational components of the social water networks are state bureaucratic organizations (e.g., The Office of the State Engineer, the Colorado Water Conservation Board), federal agencies (e.g., the Bureau of Reclamation and

the Army Corps of Engineers), and local organizations chartered by the state (e.g., mutual irrigation companies, irrigation districts, conservancy districts, conserva-

tion districts). These local organizations divert water (and/or define those that do) to be put to beneficial use within the laws and regulations of state and federal authorities. Because these on-the-ground organizations actually own rights to divert the public's water, because they do the daily management, because they

have fitted the generalized water knowledge of our society to particular features of each individual landscape and canal, they are central to any discussion of water issues in any western state. The sociology of what makes them tick is strategic to any policy discussion involving the multiple and conflicting uses of water.

Sociologists at CSU have been systematically engaging in teaching, research, and service on water organizations for almost four decades. They have done so internationally, in several Western states, and most especially in Colorado. Major research themes have centered on how local organizations—functioning in the interface between central state bureaucracies and local individuals—empower (or not) citizens to employ their precious and highly constrained water assets to enhance productivity, equity in distribution, and environmental sustainability. In order to address the inherent complexities of water organization, sociologists at CSU have learned to:



David Freeman (Colorado State University) and Jason Ullman (Applegate Group) visit between sessions at “Hard Times on the Colorado River.”

- work across interdisciplinary boundaries to fit sociological insights with those of engineers, agronomists, economists, fish and wildlife professionals, and water lawyers; and
- work across the gap that too often divides the academic from the practical water manager.

When sociological analyses are tied in meaningful ways to those of other water disciplines and when they are tied to the local knowledge of local water organizations, the sociology of water becomes strategic and useful to academic and practitioner alike.

No brief statement can anticipate the possibilities that will unfold over the coming years as Colorado water organizations contemplate their interests and options as they participate in the Water Roundtable processes. Nor can any brief language convey the tools available to CSU sociologists as we organize to respond to invitations to render interpretable information in ways useful to roundtable discussions. Sociology and sociologists can clearly provide a few contributions.

First, sociology can employ reasoned, logically justifiable, field-tested, peer-reviewed methodologies that can, with the cooperation of relevant water organizations, reveal implications of contemplated courses of action. The analyses can reveal the distribution of gains and losses, benefits and burdens of proposed action alternatives in such a manner that people—technical experts and non-technical citizens alike—can see the places where patterns of win-lose will drive some into proverbial corners and set up conditions for destructive conflict. The same exercises will reveal places where win-win is possible and where discussion can proceed in ways where conflicts inherent in changing a water management program or practice can be constructive.

Additionally, sociology can employ these methodologies in a manner that reduces threat levels rather than exacerbates them. No negotiator wishes to approach the table with anything less than firmest resolve to protect and, if possible, to enhance organizational interests. Each organization is unique in many respects, but all water provider organizations have a fundamental need to protect their water project yields that have been put together over generations of engineering thought, economic struggle, and organizational savvy.

In the highly charged context of water negotiations—where re-thinking the uses of some fraction of those precious project yields is highly threatening—it may be of real help to specific roundtable dynamics to have participants revive implications of proposed water actions in a manner that is safe. Conditions of safety might include assurances that discussion will involve no commitment to anything where potentials can be discussed without fear of being trapped in untenable positions.

The methods require advance work in the area under consideration – stakeholders are to be identified, the existing water allocation system must be characterized in sufficient detail, specific proposed water actions must be formulated. Then, the methodologies all have in com-

mon a means for participants to share their support for, neutrality toward, or opposition to a given proposed option. The process prohibits direct confrontation, but maximizes information about gains and losses. The result is a revision of the proposal, or perhaps an entirely new proposal—with enhanced

understanding why various parties take the positions they do.

Sociologists can employ these methodologies with the assistance of local people with good local knowledge as well as those with requisite technical understandings.

Sociologists can employ these methodologies at varying levels of scale, depending on need.

Sociologists can generate maps of social organizational networks that permit participants to see opportunities and constraints. Any given individual will examine such a display, focus on one revealed connection and think “I have known that for years.” Another person will do the same with another connection. But each person develops a sensitivity to varying perspectives in new ways that enhance the quality of discussion.

A sociologist that can work in collaboration with analyst of other water-related disciplines and link to local stakeholders who possess essential site-specific knowledge, is a sociology that can, over time, make specific constructive contributions to the roundtable process. Most especially it can serve important information needs in a manner that is conducive to productive discussion, community building, and – done right – can significantly reduce destructive forms of conflict.

“Our communities, large and small, are made possible by the social organization of water.”



HB 1177: Value Of the Future

by Lou Swanson

Professor and Chair of Sociology at Colorado State University

No one blinks when told that water is the life blood of human settlement in arid regions. For more than 125 years, the contested terrain of water law, politics, and markets has yielded a unique if not peculiar arrangement of social institutions that shape and govern the distribution of water. During this extended period of time water policies and markets have experienced periods of transformations, though none have been recent. Wallace Stegner, in describing the emergence of irrigated agriculture in the last decades of the 19th century writes “. . . that a point had been reached in Western settlement where neither natural resources, especially water, nor social institutions were any longer adequate.” The west of that time was experiencing the first among several waves of immigration, triggering demographic and agricultural demands for the use of the West’s scarcest resource. Today, demographic pressures and the economic realities of a concentration of wealth and political power in the urban centers of the Front Range are rendering the qualified solutions of the past as inadequate.

The restructuring of Colorado’s population and wealth from rural and natural resource dependent to massive urban and service sector dependent has created new and politically powerful demands for water. These socio-economic pressures are triggering yet another transition period that likely will govern the future of water uses, both consumptive and non-consumptive, for generations to come. The contested terrain of water will yield new water laws, politics, and markets.

At issue is what the new configurations will look like, who will benefit, and what will be the ecological, economic, and social consequences for those places, people, and social institutions left in the wake of this new transformation. Are the outcomes so narrow that it matters little what we do now to mold this transformation into a set of new laws, cultures, and social institutions that address our values and goals for what we want Colorado to become? Or, can we make a difference

in determining what our future will be? In truth, both perspectives have validity. So, how do we agree upon a valued future and what will be necessary on our part to get there in the context of demographic, economic, and policy drivers?

I do not know much about water policy, but I am familiar with another significant transformation of an agriculturally-centered culture where the value of land was tied directly to laws and policies created in a different time than we now confront. There may be some lessons to be learned from the transformations of the tobacco-based cultures and policies and the consequences of the eventual elimination of market and policy induced dependencies.

To be sure, there are notable and significant differences between tobacco and water. There are at least three similarities. First, the policies and laws that shaped both throughout most of the 20th century were agrarian centered.

Second, the value of land included the value that those policies and laws created by their implementation. Third, the emergence of new powerful political interests outside of tobacco and water communities challenged the status-quo. These are significant similarities.

The New Deal tobacco policy imposed market and social institutional conditions that essentially froze the farm structure of tobacco production for 70 years. The value of the program was capitalized into the price of land through the establishment of a quota structure. While different, this quota structure was not dissimilar from current water laws of first use. The federal government, through the USDA and through local agricultural boards, enforced the quota system. Tobacco commodity organizations emerged as a direct response to the creation of the tobacco program. Because the program set production limits – limits that were self-imposed by tobacco producers, and set prices for different grades of tobacco, the program provided a significant source of wealth for landowners of acreage assigned a quota which accrued to the landowner. Over the years tobacco quota holders increasingly were non-farmers. In Kentucky, agricultural economists estimated that up

“So, how do we agree upon a valued future and what will be necessary on our part to get there in the context of demographic, economic, and policy drivers?”

to a quarter of an quota acre's values was directly tied to the quota.

There were two exogenous threats to the program. The first was the transformation of global tobacco markets that were not associated with the U.S. tobacco programs. The high non-market price of American tobacco created an off-shore demand for high quality tobacco globally. The second was associated with consumer and non-consumer health costs associated with smoking. Perhaps nowhere in American politics is there an example of a fundamental shift the configuration of political stakeholders for a policy than in tobacco. During the 1990s political support of the program by the international tobacco companies waned and was replaced by support of anti-tobacco consumption groups – primarily in the areas of health care.

Last year Congress approved the buy-out of tobacco allotments in a manner that will provide a more-or-less smooth transition. On the less-smooth side, it is expected that there will be a significant loss of small family farms that primarily produced tobacco. There will probably be a simultaneous increase in the average size of farms producing tobacco – the elimination of the program did not eliminate the production of tobacco.

What might be learned from the experience in tobacco? First, if the program has been summarily eliminated with no buy-out (very much the result of the political support of health-based interest groups), there would have been considerable financial hardship for both tobacco producers and tobacco-base landowners with significant negative multiplier effects for both local communities and the regional rural economy. Second, the transition was not revenue neutral. The U.S. taxpayer will pay for the buy-out. Policy and legal transi-

tions that are accomplished in the context of “planned change” usually require capital outlays to compensate for negative market impacts for stakeholders of the status quo. Third, planned transitions that seek to attain public goals can occur.

I understand that there are at least three significant concerns confronting the present transition for water in Colorado. These are (1) concerns for current “quota” holders that future changes in water policy might undermine current water values; (2) keeping water in agriculture so that Colorado does not lose its agricultural economy and culture; and (3) concerns for negative ecological transitions of irrigated land to arid land (eg. invasive plant species). Each of these have financial costs for land owners and possibly the public. For each, market-based policy options exist that the state and federal government could utilize to insure that current non-agricultural value of water be available at future points in time and thereby reduce market-based incentives for current water owners to sell. None of these options are likely to emerge spontaneously. The tobacco settlement required a shift in the policy objectives of both tobacco quota holders and the anti-tobacco community. And, it required external funding.

The tobacco program is not an example of what can or should be done in water, but it does offer several useful lessons. Significant and even seemingly intractable economic and political issues can be engaged with broad positive outcomes for society. That said, outcomes will not be revenue neutral – there will be costs. Presently, there continue to be a broad array of market and policy options available for scrutiny. It is unclear how long this window of opportunity will remain open, that is, before current policy, political, and market structures begin to pull this window shut.

Chief Geologist Named Acting Director of USGS

P. Patrick Leahy will take over as acting director of the U.S. Geological Survey, Interior Secretary Gale Norton announced recently. Leahy has been with U.S.G.S. since 1974. He served as associate director for geology at USGS and is also a former chairman of the U.S. National Committee for Geological Sciences for the National Academy of Sciences.

The agency director, Chip Groat, plans to resign at the end of the week after serving as U.S.G.S. director since November 1998. Groat will become founding director of the Center for International Energy and Environmental Policy at the University of Texas at Austin and take a teaching post in the School of Geosciences.



The Water Resources Archive at Colorado State University Libraries contains collections with materials related to

the various considerations raised by faculty members on the topic of the Water Roundtables. A list of collections and the content related to the Roundtables are listed below.

- **Morton W. Bittinger:** groundwater research and application of modern computer technology to groundwater research
- **Delph E. Carpenter and Family:** interstate compacts
- **Louis G. Carpenter :** irrigation instruction, projects, water law
- **Colorado Association of Soil Conservation Districts:** conservation, state and federal legislation regarding water and conservation
- **Colorado Water Resources Research Institute:** water issues and research in Colorado
- **DARCA :** ditch companies, reservoir companies, laterals, private ditches and irrigation districts
- **Eric Eidsness :** Clean Water Act of 1986 and 1987, water quality criteria, and toxics in municipal wastewater treatment plants
- **Robert E. Glover:** Gibson Dam, the Glen Canyon Dam, the Owyhee Dam and the Boulder (Hoover) Dam, groundwater movement, hydraulics, the trail-load method
- **Ival V. Goslin Water Resources Collection:** water project feasibility studies, finance plans for water and wastewater infrastructure, Colorado Water Resources and Power Development Authority

- **Groundwater Data Collection :** groundwater research, irrigation, artificial recharge, observation wells and irrigation pumping
- **Carl J. Hoffman :** Hoover Dam and the Grand Coulee Dam projects
- **Iliff and Platte Valley Ditch Company :** irrigation companies
- **Larimer County District Court Map Collection:** water-related structures, water rights, water disputes, water adjudication and litigation, descriptions, capacity and water sources of large canals, ditches, reservoirs and wells
- **North Poudre Irrigation Company Collection :** 22 storage reservoirs and approximately 200 miles of ditches, history of company
- **James L. Ogilvie:** Colorado-Big Thompson project and the Fryingpan-Arkansas Project in southeast Colorado.
- **Ralph L. Parshall:** irrigation engineering, including Parshall flume
- **Daryl B. Simons :** water-related projects at sites from the Mississippi River to Pakistan/Bangladesh
- **Rollin Q. Tenney:** North Poudre irrigation system, development of Terry Lake, Long Pond, Richard's Reservoir and the Sand Creek Irrigation Supply System
- **Colorado Water Conservation Board Papers of Herbert Vandemoer:** protection and development of waters in the state.
- **Colorado Water Conservation Board Papers of David Walker:** protection and development of waters in the state.

A complete list of the collections (with full titles, dates, and more detailed descriptions of the holding) is available at <http://lib.colostate.edu/archives/water/summaries.html> .

Colorado School of Mines International Ground Water Modeling Center Short Courses

Dates	Course Title
October 12-15, 2005	MODFLOW: Introduction to Numerical Modeling, Golden, Co.
March 20-24, 2006	Applied Environmental Statistics (location to be announced)
May 19-21, 2006	Polishing Your Ground-Water Modeling Skills
May 19-21, 2006	Intro to ArcGIS
May 18-21, 2006	Analysis of Surface Water/Ground Water Flow Using Integrated Codes
May 19-21, 2006	Finite Element Groundwater Modeling Using FEFLOW
May 19-21, 2006	MODFLOW-2000: Introduction to Numerical Modeling
May 24-26, 2006	Modeling Water Flow/Contaminant Transport using HYDRUS Software
May 24-26, 2006	Subsurface Multiphase Fluid Flow and Remediation Modeling
May 24-26, 2006	Phreeqc Modeling: The Basics
May 24-26, 2006	GIS for Water Resources
May 24-26, 2006	UCODE-2005: Universal Inversion Code for Automated Calibration

All IGMWC courses are held in Golden, CO unless otherwise noted. For information on registration deadlines, fees, or to register online, go to <http://www.mines.edu/igwmc/short-course/>

MEETING BRIEFS

For three decades the Colorado Water Workshop has followed the changes taking place in Western and Colorado water management. After its founding in 1976, by Dick Bratton, Gunnison attorney, and Duane Vandebusch, historian at Western State College, the Water Workshop provided a forum to examine and study how to build a stable functional society in a wonderful but very challenging semi-arid region.

Over 220 people examined the changes in water management over the past 30 years during the July 27-29 Water Workshop on the campus of Western State College in Gunnison. A few of the themes examined included the growth, over the past 30 years, of concerns about water quality and the lead role assumed by the federal government in its management; the evolving nature of endangered

species management and recreation development on water resource utilization; maturing attitudes about the relationship between forests and water; 30 years in “the life, death and potential resurrection of environmentalism”; and the redefined role of the federal government in financially supporting water development. Former Colorado Governor Dick Lamm revisited the ‘angry West’ of his tenure from 1975-1987.

As usual, the Water Workshop also explored aspects of the future of water management in Colorado, this time by conducting an “1177 Process” test case. House Bill 1177, passed during the 2005 session of the Colorado legislature, established interbasin and intrabasin roundtable processes “concerning the negotiation of interbasin compacts regarding the equitable division of the State’s waters.” MaryLou Smith, with Aqua Engineering, set the stage for the test case with an overview of the legislation and current thinking about consensus building (her remarks are presented following this article). George Sibley, Water Workshop Director and a faculty member at Western State College, described an imaginary Chipeta River Basin, which served as the test case. Each member of the audience was



30th Annual Colorado Water Workshop





Attendees at the Colorado Water Workshop participated in the Water Roundtable exercise (shown in the photos on these two pages) and provided comments on the experience for organizers.



to envision themselves as a citizen interested in, but maybe a little cautious about, serving on the Chipeta Basin Roundtable as established under the 'Colorado Water for the 21st Century Act' (HB 1177).

The audience was divided into six 'roundtables' during which they were to determine what outcomes, end result, or vision they want for the Chipeta Basin in 2030; what the basin has and what it lacks for achieving the end vision/result; what the basin would have to give up to get what it lacks to achieve the agreed upon end result/vision; and whether the basin is willing to give up that much or instead needs to modify its end result/vision.

Finally, toward the end of each roundtable's discussion, each group was asked to analyze its experience with the four questions, and to suggest guidelines, caveats or principles for roundtable groups that would be sitting down to establish bylaws, operating procedures, goals and objectives. After an hour of roundtable discussion, each group reported its answers to the five questions to the whole assembly.

In responding to the last question above, several themes emerged from the test case experience. For example, visions, or core values, are hard to define and, as observed by several groups, are dynamic and changing over time (as the earlier look back over 30 years of change in Colorado's water management goals and strategies clearly illustrated). An agreed upon quantifiable vision, however, is viewed as key to the success of the roundtable discussions.

As several of the roundtable discussions wandered off into larger issues, such as population growth control, transportation

and land use issues, it was agreed that the roundtables need to draw a clear line between water issues and larger issues that are beyond the scope of the water roundtables. This does not mean that the larger issues are not important to the roundtables and need to be understood in the discussions, but the purpose of the water roundtables is to negotiate regarding equitable division of the State's waters.



The designation of a facilitator was deemed critical to the success of the roundtables. Ground rules for the operation of the roundtables were mentioned by several of the groups. Who speaks when, and at what length, needs to be understood by all participants? At the same time, most groups felt each person needs to have time to express his or her vision for the basin – everyone needs to hear and understand the visions of all as it was felt there may be more commonality in the visions than many participants expect.



It was noted in several roundtable discussions that a common understanding of the water issues is weak, and in some cases, missing. The question was raised: are there common facts about water that are readily agreed upon? Is there a common understanding of water issues that can serve as a foundation for the negotiations? All agreed there is a need for 'good information' in support of the roundtable negotiations and the designation of personnel to collect and report data as well as document the roundtable proceedings (given that not all members can attend all meetings).

MaryLou's opening call for leadership in the 1177 process was confirmed by the participants during the report-back session - Colorado is in need of leadership at this point in its water history. The roundtable process provides a forum for such leadership to emerge and function. While there was caution expressed by some test case participants, in general the test case results indicated that people are interested in the process, willing to listen and initially to participate, have visions to convey, and are motivated by the prospects.

The 31st Colorado Water Workshop will be held July 26-28, 2006. Don't miss this highly educational and relevant workshop.

Colorado Water Workshop 2005 provided the 30th annual opportunity for Colorado water professionals to meet and discuss current water topics.

Upper right -- Bart Miller (Western Resource Advocates) and Butch Clark (Gunnison).

Upper left--Richard Lamm (former Governor of Colorado) and Steve Glasier (High Country Citizen's Alliance).

Left-- Eric Kuhn (Colorado River Water Conservation District), Russell George (Colorado Department of Natural Resources), Dan Merriman (Colorado Water Conservation Board) and Jennifer Lee (Applegate Group).

Below--Ed Marsten (former editor of High Country News) and Larry MacDonnell (Porzak, Browing and Bushong LLP).



Building Consensus Out Of Contention

by MaryLou Smith
Vice President at Aqua Engineering, Inc.

Presented at 35th Annual Colorado Water Workshop
July 27-29, 2005
Western State College, Gunnison, CO

My purpose in making this presentation at the Colorado Water Workshop is:

- To ignite enthusiasm for the Friday morning session on the “1177 process”
- To ignite enthusiasm for the “Colorado Water for the 21st Century Act”
- To give some encouragement from western governors and others
- To talk about trust: how important it is, how to build it
- To introduce the concept of working with paradoxes
- To give some practical pointers for how to act in a collaboration process

John Fetcher is one of Colorado’s water buffaloes. I met him at a Colorado Water Congress meeting two years ago. We both sat up front so we could hear. The Denver Post recently referred to the water buffaloes as “a handful of giants such as Glenn Saunders, John Fetcher, and Wayne Aspinall who worked political deals to snare huge chunks of federal money for large dams and reservoirs. The Post went on to say, “Their foresight and courage is said to have made possible today’s Colorado—large expanses of irrigated farms and Front Range cities.” I have great respect for John and others like him who used their best resources and resolve to build large structures to store water all over Colorado in places like Stagecoach and Dillon Reservoirs.

But now we need new water buffaloes. This time around, tenacity will be needed to build new water structures for Colorado. Some of these structures may be made of concrete, but most of them will be softer—intelligent, sometimes risky schemes which allow us to channel water

where it needs to go. Not distributive schemes which simply divide the pie, but what folks in the mediation business call integrative schemes—those which appear to actually increase the pie. The pie, of course has to feed a number of mouths: agriculture, the environment, recreation, not to mention the urbanites’ thirsty throats, landscapes and factories.

At the CWC meeting, Mr. Fetcher and I listened as the bellowing Dick MacRavey gathered to the table a panel of Colorado’s best water thinkers. They were convened to consider “What Next, After Referendum A?” What we heard over and over again, from folks like Harold Miskel and Ruth Wright, Chips Barry and Don Ament, Wally Stealey and Frank Jaeger was the need for dialogue.

Jaeger, from Parker Water and Sanitation District said it pretty graphically. He said *“I don’t want to see a hundred more bills come across my desk. I’ve got a stack that thick of water bills that don’t mean a hell of a lot to me other than half of them will injure me and the other half will move the fulcrum in my direction. We don’t need a plethora of bills that put power on one side of the table or the other, we need business deals, deals which require that both sides walk away feeling comfortable with what happened.”*

It seemed everyone was talking about dialogue, but no one had much of an idea about how to actually do it. As George Sibley would say, “The spirit seemed willing but the process was weak.”

There were a couple of exceptions. CWCB’s Harold Miskel seemed to be pinning his hopes for dialogue on the then newly launched statewide water



MaryLou Smith

supply initiative—SWSI. And we have to give credit to Aurora's Peter Binney for suggesting that day that the legislature start thinking about intrastate compacts, "*whether they be between basins or between users of the past and users of the future.*"

A second CWC panel was convened this year, this time to consider interbasin transfers. Once again, Dick MacRavey bellowed the crowd to gather. Once again panel members talked dialogue, with little clue about how that might happen.

Can that have been just six months ago? It seems we've come a long way. For one thing, we now have the initial results of SWSI to build on. But even more amazing, state lawmakers and the governor set aside their differences and passed into law Russ George's bold concept of an interbasin compact process. Formally dubbed "The Colorado Water for the 21st Century Act, HB 1177 establishes basin roundtables and an interbasin compact committee for "negotiation of interbasin compacts regarding the equitable division of the state's waters."

So now, the new water buffaloes are us. We are the ones who in a democracy have the exciting opportunity to figure out ways to get what we need. Water savvy people in Colorado are smart. We are resourceful. We know how to plan and to carry out plans. There is no reason we can't use these skills to build the solutions we need. What we also have, but have to be willing to acknowledge, is heart. We have the heart to care about all our needs, about the needs of each other.

That doesn't mean we will say to Chips Barry that every lawn in Denver can be plush green. That doesn't mean we will say to Don Ament that every farmer in the state can use the water he owns any way he wants. That doesn't mean we will tell Melinda Kassen that we will put up giant roadblocks along I-25 and I-70 to keep more people from coming into the state so that we can preserve the pristine beauty of Colorado's rivers. But it does mean that we will carefully consider the needs of all of us, and figure out ways to make creative and fair choices.

If this all sounds a bit too much like kum-bah-yah, let me quickly dispel the notion. It's not kum-bah-yah, it's hard work.

There are several labels for this hard work. Consensus building is one; conflict resolution is another. My favorite is collaboration. I didn't look it up in Webster's. But you can easily see the word means working together—Co-labor. Labor together.

This morning, a group of us working with Russ George under the orchestration of George Sibley have put together a challenging and fun exercise to practice just that—collaboration. The exercise is meant to let us play around some with the interbasin compact act, what some of us have started to refer to as the 1177 process. As we have fun with this exercise, we will have a chance to try our hand at what it means to collaborate—to come to consensus. We will learn something about the Interbasin Compact Act, and we will have a chance to share our insights with those who soon will be trying to implement it.

As the basin roundtables and then the compact committee begin to meet, they are charged with a most ambitious and bold agenda, beginning with the formation of a compact charter to be presented to the legislature in one short year. The charter will lay out the conditions under which interbasin compacts can be negotiated and adopted.

Delph Carpenter may just rise from the dead to come back and help us with all of this. We have recently come to know Carpenter better through the work of Dan Tyler who wrote about him in *Silver Fox of the Rockies*. Of course Carpenter is thought of as the father of the Colorado River Compact. The way I read Tyler's book, Carpenter wasn't exactly your kum-ba-yah kind of guy, but he was very big on courtesy, respecting of other's opinions, and cooperation. He thought it was important to draw out the other fellow's take on things and really understand it, as a basis for seeing how solutions might evolve. And of course, he said the key was that the process takes (and I quote) "time, time, and time."

My recommendation for the roundtables and compact committee process is that the organizers allow for plenty of Carpenter's "time, time, and time." The stakeholders will need time to build trust. They will need time for each of them to tell their unique story of where they got their insights about water in Colorado. They will need time to identify and examine the range of beliefs around the table. They will need time to begin to understand the underpinnings of where those beliefs came from. This trust building process cannot be rushed. Only with time

devoted in this manner can stakeholders begin to uncover their commonalities. Then they can begin to see the light of day—the “AHA” bits and pieces which they can build into creative solutions.

As they do this, there is a technique they could use which I think would be quite powerful. I learned about it from an article published last year in the journal *Society and Natural Resources*, written by Todd Bryan of Boulder. Todd says that conflict over a natural resource like water is full of paradoxes. He suggests we get to know about paradoxes and how we can work with them, as a means of using conflict creatively.

We all know what a paradox is, but let me refresh the concept for you. **A paradox is an apparently contradictory conclusion that is derived from what seem to be valid premises.**

For example, here is a classic paradox:

The statement below is true.

The statement above is false.

For an example of a paradox in the world of water conflict, let's look at a dilemma Carpenter was faced with during the Colorado River Compact negotiations:

The prior appropriation doctrine gives us the best way to appropriate water.

Upper basin states should get to use water that originates in their own back yard.

What a quandary Carpenter was in. He was a big promoter of prior appropriation, but carried out its full length, it would allow California to lay claim to all the water it needed starting in, say, 1930, regardless of how little water that would leave Colorado to develop when it began to need it, say, in 1960.

What Todd Bryan says we have to do with paradoxes, and what it seems to me Carpenter and others were eventually successful at doing, is to resist splitting the paradox in two. Or said even better, we have to take the paradox, which likely already IS split into two, and put it back together. We have to own the whole paradox, all of us. We have to see solving the paradox as our shared problem.

What we tend to do is line up on sides behind each side of the paradox, like the games we used to play at school. We line up on our side and bolster our arguments and yell them across to one another over and over.

Here's another example of a paradox.

I own the right to take that water and use it on my crops!

Society has a right to keep that water in the stream so the fish won't die.

And here's how we split it up:

I have the right to water my crops!

The fish have the right to live!

I have the right to water my crops!

The fish have the right to live!

Over and over, we stay in a loop. In the long run, we end up taking it to court, or we duke it out in the legislature, or we put it on the ballot in the form of a referendum so the public can choose. What we end up with is usually something none of us are happy with.

What Todd Bryan says we need to do is put the paradox back together. Recognize that both sides are true, and that the trick is for both sides to lay down their weapons and come together in a circle and scratch their heads and say, “Oh, duh. I guess the problem is that both of these statements are true. I wonder if we are smart enough to figure out how to solve this paradox?”

Then, with plenty of time for not only each side, but all other potential sides or angles to be uncovered and thoroughly examined, real solutions can evolve.

I like to think of this as “Not black, not white, not even gray, but some shade of turquoise, or purple, or even chartreuse.” William Ury, the well known author of *Getting to Yes* calls it “the third way.” Not my way, not your way, but a third way which meets the needs of both of us.

How do we do it? Are we up to the challenge? We're pretty good at coming up with technological answers to problems, but this people stuff is kind of tricky. What kind of skills and talents are called for?

Fortunately, the state of Colorado is not alone in this. Other trailblazers have stacked up some rocks to make cairns along the trail. Some which appear most helpful to us come from some western governors, a top-level government official, a national organization, and a group of professors.

Ruckelshaus

William Ruckelshaus, the first director of the EPA, gives us the clue of adaptive management. He says it's just as applicable to social experiments as biological ones. We don't have to expect to get it right the first time. We learn from our mistakes and keep on trekking. He also says we will be surprised how smart stakeholders are. When he tells about a collaborative effort he was involved in Tacoma Washington, he says "*I was struck by the ability of these citizens not only to drive to consensus on complex issues, but to invent solutions that had simply not been thought of in the heat of combat.*"

Then he warns us that we have to break through the shallow façade of rhetoric and reach to the heart of the issue. "Only then," he says, "when people are united despite their differences by hard-earned trust, does the astounding political power of collaboration become effective."

Kitzhaber

Another source for those of us interested in serious water consensus building at the state level comes from a former governor of Oregon, John Kitzhaber. He chaired a 2002 conference which led to the publication *WaterShed Solutions: Collaborative Problem Solving for States and Communities*. Kitzhaber is quick to point out that collaborative partnerships can't replace legal and regulatory tools but he says they can become the vehicle through which those traditional tools can be more successfully applied. He says the collaborative process:

- reduces conflict and litigation which often results in unsatisfactory, narrow decisions that don't address underlying problems.
- can turn apparently inflexible federal or state mandates into opportunities
- provides an alternative way of approaching problems that avoids the gridlock often associated with traditional governmental approaches

Further, he urges states to:

- appropriate funds for collaborative processes
- provide high level training to all levels of public officials and private stakeholders in fundamentals of collaboration
- develop demonstration projects to showcase collaboration
- request universities to conduct research on collaborative problem solving.

Policy Consensus Initiative

Kitzhaber, along with a former governor of Wyoming, J. Geringer, co-chair an organization called Policy Consensus Initiative. PCI is a national non-profit organization that works with state leaders to establish and strengthen consensus building and conflict resolution in states. The group's website is chockfull of experiences of states and others working through the arduous process of consensus building on a number of topics, including water. The group has published *Best Practices for Government Agencies: Guidelines for Using Collaborative Agreement Seeking Processes*, followed by a step-by-step guidebook on how to put it into practice called *A Practical Guide to Consensus*.

Geringer

Governor Geringer from Wyoming, the other PCI co-chair, has a more folksy way of talking about all this. He says collaborative governance is "*a fancy name for getting everyone with a stake in a particular issue to come together to talk about what ought to be done.*" Not a one-sided exercise in appearing to listen or a chance for vested interests to stand up and toot their horns, but a way to connect people rather than pit them against one another. Geringer says collaborative governance works best when it starts with people building trust. How do you build trust? He said it has to be done slowly, by asking participants to describe their backgrounds, what their careers have been like, what they care about. He says that doing this shows participants they have more in common than in conflict. "These aren't pie-in-the-sky ideas," he says. "All this has happened, in places from Montana to Ohio, from Texas to North Carolina. It just doesn't happen enough."

Sabatier

For those of you who are scientific types, there's a book hot off the press. It's titled *Swimming Upstream—Collaborative Approaches to Watershed Management* and it's by a half dozen professors, including Paul Sabatier from UC-Berkeley. They start off with a warning: "*Like the salmon swimming upstream to spawn in home waters, only the fittest collaborative projects are likely to survive in any institutionally complex political system.*" Then they set out to tell us what makes a "fit collaborative project." Like true scientists, they don't just give us their opinion. Instead, they spend whole chapters talking about their work testing a number of specific theories using systematic methods of data acquisition and analysis. And for the university folks among us, a note: they call for more such research to be undertaken by others—research in a variety of empirical settings with

a particular emphasis on the factors affecting policy outputs and real-world policy outcomes.

Among the questions they studied are:

- how scientific information should be incorporated into collaborative processes
- what personal and interpersonal attributes facilitate cooperation
- are the decisions derived from these processes typically good ones from an environmental and socio-economic perspective? Can they be implemented from a political and legal perspective?

Freeman

Right in our own backyard, CSU sociology professor David Freeman developed some intriguing collaboration tools in the 70s and 80s, working with several state and federal agencies. His task was to get local citizens to choose between a number of options presented as part of the NEPA process.

Freeman's tools gave folks a chance to work together to rank options in two important ways: the relative detriment of "foregone futures" and whether the inevitable conflicts involved in various options fell on a conflict map as constructive conflict or destructive conflict.

Assuming we agree to Carpenter's insistence that courtesy and respect for one another is an important ingredient for success in collaboration, what are some concrete, tangible ways we can practice that?

Here are some pointers which come from the field of facilitation and conflict coaching. I think they could be useful to the stakeholders participating in the roundtables and the interbasin compact committee. And of course, we can practice using them today as we collaborate in the exercise George Sibley has planned for us. In fact, these pointers can help any of us anytime we find ourselves in a situation where we are trying to resolve a conflict. If everybody were to follow them, including talk radio hosts Al Franken and Rush Limbaugh, we could return to a much more civil society. Here are the pointers; I am sure you can think of others:

- Come to the process having taken a moment to gather your thoughts and bring out your best heart (through reflection, meditation, prayer—whatever works for you.)
- Acknowledge conflict as potentially positive, growth producing—don't be afraid of it.

- Be aware of what your buttons are so when they are pushed (and they will be) you aren't as likely to react in a knee-jerk manner.
- Recognize when you are feeling defensive and try to relax.
- Don't take yourself too seriously. Be able to laugh or at least smile at yourself.
- Be alert to whether you are acting out of a need to maintain power.
- Listen. Few of us really know how to do that. Ruckelshaus says: "... it's easier to listen with your mouth closed."
- Focus on what the other person is saying instead of planning your response.
- Ask for clarification of what you heard in order to get to the heart of it.
- Really strive to understand fully what the other person is saying. Don't just assume you know, even if you have heard it before. There may be more depth to it than you imagine.
- Avoid going into lecture mode.
- Look for the ally in your adversary.
- Don't exaggerate or stretch the truth.
- Don't interrupt.
- Don't raise your voice.

As I said, collaboration is hard work. And it takes practice. We can't master these pointers all at once, but we can determine that they make good sense and when we fail, as we will, determine to keep trying.

In closing, I would like to remind us that we are Colorado's new water buffaloes. We can either wallow in the dust or we can hold our heads high and take out across the plains in unison, living the challenge given to us by the Great Spirit. Let's listen to one another, honor the precious resource, and use this opportunity to enrich the experience of all of us while reverently respecting God's green earth.

By the way, Mr. John Fetcher—the 93 year old water buffalo whose claim to fame is Stagecoach Reservoir? John tells me he has just been appointed to serve on the Yampa Basin Roundtable for the HB1177 process. Evidently you can teach an old buffalo new tricks!

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MEETING BRIEFS

Hard Times on the Colorado River University of Colorado Natural Resources Law Center

The Natural Resources Law Center, located on the CU Boulder campus, held its annual natural resources conference on June 8-10, 2005. The 2005 conference examined the hard times facing the Colorado River due to drought and population growth and explored the ability of the current institutional arrangements to address the challenges.

Approximately 200 attendees heard speakers review the history of the Colorado River Compact, describe the uncertainty surrounding the river's hydrology and 'firm water yield', examine ambiguities in the Law of the River, and report on environmental impacts due to increased stress on the river.

As the speakers described the current situation, there were questions raised regarding whether the numbers add up. There seemed to be acknowledgement that the river is overallocated and that full development of compact apportionments is unrealistic and unsustainable. But that's old news. What's new is the growing belief that current levels of use may be unsustainable. Average US-Mexico mainstem depletions (from 1996-2000), counting reservoir evaporation, are 15.4 MAF/year. (This figure increases by more than 1 MAF/year if over-deliveries to Mexico are considered.) The gauged record (1896-2004) plus the latest tree-ring estimates are converging around a long-term mainstem

average of 14.8 MAF/year. Firm yield is lower (especially when you consider the risk-averse nature of the growing municipal sector). Climate change projections suggest greater future variability and perhaps future declines in average flows.

For many in the Upper Basin, the long-term solution to the problem has been to wean California off of surplus flows. It now seems apparent, however, that addressing the "California problem" doesn't completely eliminate the management problems in either basin. If California eliminates the use of surplus flows (which they have since October 2003) and releases from Powell are limited to the 8.23 MAF (minimum objective release) target, Lake Mead likely still declines. An average of 8.23 MAF in annual releases is already higher than what the Compact requires (75 MAF/10 years, or an average of 7.5 MAF/year), so 8.23 MAF may already be a best case scenario for the Lower Basin – especially given that the Upper Basin still plans to develop additional Colorado River water in the future.

Representatives from the basin states are currently involved in tense and high-level negotiations to address the emerging water supply crisis and, specifically, to devise a strategy for shortage sharing should continue to worsen.

Despite a lack of progress thus far, the key players in these



Jim Booker (Sienna College, Loudonville, NY), Russ George (Colorado Department of Natural Resources) and Chuck Howe (University of Colorado) field questions after their presentations.

negotiations expressed surprising optimism in predicting a solution to the current problems. This optimism runs counter to several other themes expressed at the conference. For example, fundamental disagreements persist on several key legal issues, for example:

- What is the Upper Basin's obligation to provide releases to Mexico?
 - Is the 8.23 MAF minimum objective release a firm policy (or does 75/10 rule)?
 - How should Lower Basin use of tributaries be accounted for?
- Is underground storage of water in Arizona for later use a legitimate use for which unused Lake Powell water can be requested?
- Does the Upper Basin really have a "delivery obligation" to the Lower Basin?

It was also noted that no state, for political reasons, can agree to any reform that has the effect or appearance of reducing that state's promised apportionment—even though those promises are acknowledged as unworkable.

Finally, participants also seemed to agree that negotiation was the only hope for a real solution; involving the courts or pursuit of a federally imposed solution would likely be unsuccessful and counterproductive.

The general contours of a negotiated, short-term solution are open to speculation, but could possibly involve a new program of coordinated reservoir management for Lakes Powell and Mead that modify rules



Doug Kemper (City of Aurora) and Malcolm Wilson (Bureau of Reclamation) ponder the points of the previous presentation.

regarding equalization, thereby providing greater stability to Powell's storage levels. Lower Basin interests are likely to seek a commitment that the 8.23 MAF/year release from Powell will continue, even if the Upper Basin is ahead of its 75 MAF/10-year delivery schedule specified in the compact. Finally, compensated fallowing and agricultural conservation programs may be sought as part of drought-coping efforts. Resolving fundamental legal disputes, however, will likely remain a challenge for future negotiations.

In summary, the dominant theme of the conference was that the river has serious and fundamental problems in terms of over-allocation and over-use, but those close to the situation exude a surprising optimism that a solution—at least a short-term solution—to these problems can emerge from multi-state negotiations that revisit existing rules of reservoir operations. A little more rain wouldn't hurt either.

This brief overview of points raised during the conference does not capture the richness and candid nature of the dialogue. For additional references and conference materials, please visit: <http://wwa.colorado.edu/coloradoriver>.



David Getches (University of Colorado Law School), Brad Udal (Western Water Assessment) and George Sibley (Western State College) relax during a break between sessions.



MEETING BRIEFS

Henry Vaux Recognized by Universities Council on Water Resources

The Universities Council on Water Resources (UCOWR) held its annual meeting in Portland, Maine, July 12-14, 2005. The meeting, besides addressing a number of university-based water research and education issues, also discussed approaches and policies for river and lake restoration and enhancement.

CSU economist, John Loomis, presented a keynote address on the values and goals of river and lake restoration. His talk will be featured in an upcoming issue of *Colorado Water* that describes the research underway in Colorado relative to river and lake restoration.

Henry J. Vaux, Jr. received the 2005 Warren Hall Medal presented annually by UCOWR. Henry served as Director of the California Water Resources Center from 1986-1993 as well as Associate Vice President of the University of California System from 1993-2004. Most recently, Henry served as chair of two National Research Council panels exploring the current status and future role of water research in the United States. Henry's regional and national leadership in university administered water research programs has been outstanding. For example, he

organized and chaired the Powell Consortium during the time it was actively supporting the Colorado River Severe Sustained Drought study. Also, while serving as President of the National Institutes for Water Resources (NIWR) he positioned the organization to survive the recurrent appropriations battles in Washington, D.C.



Above: Ari Michaelson (Texas A & M) (left) congratulates Henry Vaux

The Hall Medal is a memorial to recognize Dr. Warren A. Hall, known worldwide for his active involvement and distinctive scholarly accomplishments in water resources research and education. He was one of the founders, 1962, of the Universities Council on Water Resources. Dr. Hall served on the CSU Civil Engineering faculty in the late 1970s and early 1980s.

Below: John Loomis (Colorado State University) and Steve Kohl (Plymouth State University, Plymouth, NH) go over goals of river restoration.

Gilbert White (1995) and Chuck Howe (2003), both with CU Boulder, and Neil Grigg (1998) and Bob

Young (2004), both with CSU, have also received the Warren Hall Medal in the year noted by their name.

The 2006 UCOWR annual meeting is scheduled for July 18-20 at the Landmark La Fonda Hotel on Santa Fe's historic plaza and, in addition to discussing water research and education issues, will address the theme "Increasing Freshwater Supplies". The abstract submission deadline for the meeting is December 1, 2005. Abstracts should be submitted electronically to: <http://wri.nmsu.edu/ucowr>.



Poeter at Colorado School of Mines Awarded U.S.G.S. Grant

One of the eight proposals funded in the Competitive Grants program of the National Institutes for Water Resources (NIWR) and the U.S. Geological Survey (USGS) was submitted by Eileen Poeter from Colorado School of Mines. The project, titled Development of Characterization Approaches and a Management Tool for the Groundwater-Surface Water System in the Vicinity of Sutherland Reservoir and Gerald Gentlemen Station, Lincoln County, Nebraska, received \$132,731 over two years. Poeter will collaborate on this project with Matthew Landon, U.S. Geological Survey, Water Resources Discipline, Lincoln, Nebraska, and Peter McMahon, U.S. Geological Survey, Water Resources Discipline, Lakewood, Colorado.

The abstract for this project and the other seven projects (listed below) are available at <http://water.usgs.gov/wrri/05grants/national/nationalindex.html>.

NIWR and USGS received 49 proposals requesting a total of \$6.8 million. With slightly less than \$1 million available and many excellent proposals, the peer reviewed competition was very intense.

The other proposals selected for funding under the NIWR/USGS National Competitive Grant Program are:

- **Chemolithotrophic Denitrification: The Missing Link in the Biogeochemical Cycle of Arsenic**, PIs Reyes Sierra and James A. Field, University of Arizona with Ronald Oremland, U. S. Geological Survey, Branch of Regional Research, Water Resources Discipline, Western Region through the Water Resources Research Center, The University of Arizona, Federal Funds of \$121,163 over two years.
- **Model Development for Conjunctive Use Planning and Aquifer Protection in Semi-arid Regions**, PI William Yeh, University of California, Los Angeles with Tracy Nishikawa, U.S. Geological Survey, Water

Resources Discipline, San Diego, California through Center for Water Resources, University of California, Riverside, Federal Funds of \$98,534 over three years.

- **Coastal Groundwater Management in the Presence of Positive Stock Externalities**, PI Kao Duarte and James Roumasset, University of Hawaii at Manoa through Water Resources Research Center, University of Hawaii at Manoa, Federal Funds of \$148,021 over three years.
- **Saltwater Intrusion Management with Conjunctive Use of Surface Water and Ground Water**, PIs Frank Tsai and Vijay Singh, Louisiana State University through Louisiana Water Resources Research Institute, Louisiana State University, Federal Funds of \$172,842 over three years.
- **Assessing the Ecotoxicology of Alkylphenol Mixtures Across the Aquatic Food Chain**, PIs Heiko Schoenfuss and Matthew Julius, St. Cloud State University with Larry Barber, U. S. Geological Survey, Branch of Regional Research, Water Resources Discipline, Central Region through Water Resources Center, University of Minnesota, Federal Funds of \$63,014 over two years.
- **The Impact of Rural Water Supply Systems on Property Values**, PIs Steven Shultz and Jay Leitch, North Dakota State University through North Dakota Water Resources Research Institute, North Dakota State University, Federal Funds: \$62,728 over two years.
- **Assessing the Effectiveness of Local Water Institutions in Water Management**, PI Robert Hearne, North Dakota State University with Nina Burkardt and Berton Lee Lamb, U.S. Geological Survey Fort Collins Science Center, Fort Collins, Colorado through North Dakota Water Resources Research Institute, North Dakota State University, Federal Funds: \$150,392 over three years.

RESEARCH AWARDS

COLORADO STATE UNIVERSITY, FORT COLLINS, COLORADO Awards for June 2005 to July 2005

Garcia,Luis--Civil Engineering--Colorado State Water Conservation Board--*Arkansas Valley Research Center Lysimeter Project* --
\$193,000.00

Salas,Jose D--Civil Engineering--DOI-Bureau of Reclamation--*Phase I: Development of Stochastic Hydrology for the Colorado River System*--**\$24,993.00**

Berrada,Abdelfettah--3040--Southeast Colorado Resource Conser & Dev--*Drip Irrigation as a Method of Reducing Movement of Pollutants in Patterson Hollow Watershed*--**\$26,820.00**

Niemann,Jeffrey D--Civil Engineering--DOD-ARMY-ARO-Army Research Office--*Scaling Properties & Spatial Interpolation of Soil Moisture*--**\$100,000.00**

Jacobi,William R--Bioag Sci and Pest Mgmt--Denver Water Department--*Water Usage by Cottonwood Trees* --**\$9,577.00**

Waskom,Reagan M--Soil Crop Sci--Colorado Department of Agriculture--*Training & Education for Agricultural Chemicals & Groundwater*--**\$25,000.00**

Pielke,Roger A--Atmos Sci--NSF-Polar Programs--*Winter Precipitation, Sublimation, & Snow-Depth in the Pan-Arctic: Critical Processes & a Half Century of Change*--**\$311,930.00**

Cooper,David Jonathan--Forest, Range & Watershed Steward--DOI-NPS-National Park Service--*Restore Snake River Gravel Pit, John D. Rockefeller, Jr. Memorial Parkway to a Self Sustaining Riparian ...*--**\$19,900.00**

Culver,Denise R--Fish & Wildlife Bio--DOI-BLM-Bureau of Land Management--*Survey of Critical Wetlands in Grand County on Bureau of Land Management Lands*--**\$6,000.00**

Culver,Denise R--Fish & Wildlife Bio--Colorado Division of Wildlife--*Survey and Assessment of Critical Wetlands of Archuleta County*--**\$60,000.00**

Macdonald,Lee H--Geosci--USDA-USFS-Forest Research--*Monitoring Runoff & Erosion in the Upper South Platte Restoration*--
\$49,083.00

Myrick,Christopher A--Fish & Wildlife Bio--Colorado Division of Wildlife--*Measuring & Mitigating the Impacts of Instream Drop-structures on Fishes from Colorado's Eastern Plains*--**\$29,501.00**

Lambert,Bradley A--Fish & Wildlife Bio--Colorado Division of Wildlife--*Boreal Toad Breeding Site monitoring* --**\$96,000.00**

Bestgen,Kevin R--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Entrainment of Larval Razorback Sucker* --**\$50,731.00**

Bestgen,Kevin R--Fish & Wildlife Bio--Colorado Division of Wildlife--*Inventory of Stream Fishes in Colorado* --**\$77,175.00**

Winkelman,Dana--CO Co-op Fish & Wildlife Res Unit--Colorado Division of Wildlife--*Pike/Trout Interactions in Colorado Reservoirs (Exhibit D)*--**\$25,000.00**

Gates,Timothy K--Civil Engineering--Colorado Dept Public Health & Environ--*Evaluation of the Impact of Best Management Practices on Ground Water and River Water Quality in an Irrigated*--**\$34,975.00**

Collett,Jeffrey L Jr--Atmos Sci--NSF - National Science Foundation--*Investigation of the Organic Composition of Fogs & Clouds*--
\$153,603.00

Reising,Steven C--Elec & Comp Eng--NSF - National Science Foundation--*CAREER: Three-Dimensional Measurements of Atmospheric Water Vapor Using Miniaturized Microwave Radiometers*--**\$80,000.00**

Knaff,John A--CIRA--DOC-NOAA-Natl Oceanic & Atmospheric Admn--*Development of an Annular Hurricane Eyewall Index for Tropical Cyclone Intensity Forecasting*--**\$45,500.00**

Gates,Timothy K--Civil Engineering--Colorado Dept Public Health & Environ--*Evaluation of the Impact of Best Management Practices on Ground Water and River Water Quality in an Irrigated*--**\$65,025.00**

- Stephens,Graeme L--CIRA--NASA-Goddard--*CloudSat* --\$134,787.00
- Stephens,Graeme L--Atmos Sci--NASA-Goddard--*CloudSat* --\$102,675.00
- Stephens,Graeme L--Atmos Sci--NASA-Goddard--*CloudSat* --\$200,824.00
- Stephens,Graeme L--Atmos Sci--NASA-Goddard--*CloudSat* --\$10,000.00
- Stephens,Graeme L--Atmos Sci--NASA-Goddard--*CloudSat* --\$51,714.00
- Cooper,David Jonathan--Forest, Range & Watershed Steward.--DOI-NPS-National Park Service--*Developing Concepts for Stream Channel & Floodplain Restoration at Canyon de Chelly Monument, Arizona*--\$83,484.00
- Baron,Jill--NREL--DOI-NPS-National Park Service--*Assessing Ecological and Biogeochemical Responses to Changing Atmospheric Nitrogen and Sulfur Deposition in Rocky ...*--\$17,625.00
- Clements,William H--Fish & Wildlife Bio--DOI-USGS-Geological Survey--*Effects of heavy metals in Rocky Mountain strems* --\$2,151.10
- Qian,Yaling--Hort & Landscp Arch--City of Westminster--*Management Options for Mitigating Sodium Stress in Wastewater Irrigated Turfgrass Systems*--\$24,000.00
- Cooper,David Jonathan--Forest, Range & Watershed Steward.--DOI-NPS-National Park Service--*Riparian and Wetland Restoration of LuLu Creek and the Colorado River, RMNP Phase I*--\$41,753.00
- Fausch,Kurt D--Fish & Wildlife Bio--DOI-NPS-National Park Service--*Tools to Increase Translocation Success of Colorado River Cutthroat Trout - RMNP*--\$10,000.00
- Deo,Shripad D--CIRA--DOC-NOAA-Natl Oceanic & Atmospheric Admn--*Advanced Hydrologic Prediction Service* --\$30,000.00
- Bestgen,Kevin R--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Effects of Flaming Gorge dam Releases on Lodore/ Whirlpool Canyon Fish Community*--\$60,584.00
- Snyder,Darrel E--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Identification & Curation of Larval Fish by Colorado State University Larval Fish Laboratory*--\$47,700.00
- Hawkins,John A--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Yampa River Nonnative Fish Control: Translocation of Northern Pike from the Yampa River*--\$215,400.00
- Bestgen,Kevin R--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Population estimate of humpback chub in Black Rocks*--\$4,000.00
- Bestgen,Kevin R--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Annual YOY Colorado Pikeminnow Fall Monitoring* --\$14,000.00
- Bestgen,Kevin R--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Verification of Stocked Razorback Sucker Reproduction in the Gunnison River via Annual Collections of Larvae*--\$24,000.00
- Bestgen,Kevin R--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Interagency Standardized Monitoring Program Assessment of Endangered Fish Reproduction in Relation to Flaming*--\$67,000.00
- Ramirez,Jorge A--Civil Engineering--NSF-GEO-Geosciences--*Quantifying the complex hydrologic response of an ephemeral system*--\$50,511.00
- Fausch,Kurt D--Fish & Wildlife Bio--Fisheries Conservatin Foundation--*Riverwebs: A Documentary Video - Phase II* --\$22,000.00
- Elliott,Adriane L--Soil Crop Sci--Colorado Dept Public Health & Environ--*HCSFO Anaerobic Lagoon Study* --\$48,307.00
- Bestgen,Kevin R--Fish & Wildlife Bio--DOI-Bureau of Reclamation--*Evaluating Effects of Non-native Predator Removal on Native Fishes in the Yampa River*--\$59,600.00
- Gates,Timothy K--Civil Engineering--Colorado Dept Public Health & Environ--*Assessing Irrigation-Induced Selenium and Iron in the Stream-Aquifer System of the Lower Arkansas River Basin, CO*--\$186,895.00

**Colorado State University Water Resources Seminar
Tuesdays, 4:10pm
August 23 through December 6, 2005
C-142 Clark Building
Colorado State University, Fort Collins campus**

The Role of Negotiation and Dialogue in Securing Colorado's Future Water Supplies

Colorado is a semi-arid state. By definition, Colorado citizens face water shortages – there are more uses of water than water available to meet the uses. During Colorado's history, there have been a number of successful efforts to resolve water allocation problems through dialogue and negotiation. A recently documented example is described in the Dan Tyler (CSU History Emeritus Professor) authored biography of Delph Carpenter. Delph lead Colorado into an era of negotiated river compacts as a way to have the states allocate water among themselves rather than leave the task to the Supreme Court.

The 2005 Colorado legislature also recognized the value of dialogue and negotiation, in resolving current needs to allocate and reallocate limited water resources in Colorado, by creating Water Roundtables for each of Colorado's major river basins.

The 2005 edition of GS 592 will follow up last year's study of water resources planning and development of Colorado's Statewide Water Supply Initiative (SWSI) by exploring the nature of dialogue and negotiation needed to meet the gaps between demand and supply identified in SWSI. More specifically, the seminar will:

1. Describe the theories and practice of water resources negotiations and constructive dialogue;
2. Examine the history of water resources dialogue and negotiations in the West;
3. Discuss strengths and weaknesses of water resources negotiation methodologies;
4. Examine the ways water dialogues are currently being employed in Colorado (e.g. implementation of HB 05-1177); and,
5. Explore how dialogues and negotiations can be used in the future to seek a commonly supported approach to water development and use.

All interested faculty, students and off-campus water professionals are encouraged to attend and participate. The full schedule including the roster of speakers will be posted on the webpage at www.cwri.colostate.edu before August 23rd.

Inert Gas Tracers in Ground Water

Dr. D. Kip Solomon
Department of Geology and Geophysics, University of Utah

August 31, 2005 4:10 PM
Department of Geosciences
Colorado State University
Fort Collins, CO
Room 320 Natural Resources Building

**University of Colorado at Denver and Health Sciences Center
Downtown Denver
Continuing Engineering Education Program
Fall 2005 Civil Engineering/Water Professional Development/Non-Credit**

NCES 8322: River and Floodplain Modeling with HEC-RAS, Version 3.1.3, Wednesday, Thursday, and Friday, August 10 - 12, 2005

NCES 8271: Engineering Essentials for Wetlands and Wetland Regulations, Friday and Saturday, August 26 and 27, 2005

NCES 8382: Construction Site Stormwater Management and Permitting, Fridays, September 23 and 30, 2005

NCES 8381: Constructing and Rehabilitating Dams in Colorado, Wednesdays, October 5, 12, and 19, 2005

NCES 8383: Introduction to Paleohydrology, Thursday and Friday, November 3 and 4, 2005

Visit www.cudenver.edu/engineer/cont and Click on Course Information and then the course number to read about these courses. Registration forms are posted online.

MEETINGS

Effectiveness of Best Management Practices Topic of Workshop

A research priority of the CWRRI Advisory Committee on Water Research Policy, for several years now, has been scientifically documenting the ability of Best Management Practices to improve water quality in Colorado rivers and lakes. The North Carolina Water Resources Research Institute, in cooperation with a number of local and national organizations, is Sponsoring the 13th National Nonpoint Source Monitoring Workshop, September 18-22, 2005, in Raleigh, North Carolina.

The 2005 edition of the workshop will bring together land managers and water quality specialists to share information on the effectiveness of best management practices in improving water quality, effective monitoring techniques, and statistical analysis of watershed data. The workshop will focus on the successes of Section 319 National Monitoring Program projects as well as other monitoring projects from throughout the United States.

Session topics include:

- Improving States' NPS programs through project monitoring results and lessons learned
- Determining the effectiveness and enhancing States' nonpoint source management programs
- Detecting change in water quality from agricultural or urban BMP implementation
- Modeling applications for NPS pollution
- TMDLs
- Education and Outreach on NPS pollution control
- Riparian area and stream protection/restoration
- Monitoring Low Impact Development

For additional information about the workshop, refer to: http://www.bae.ncsu.edu/programs/extension/wqg/nmp_conf/index.html .

Colorado Nonpoint Source Forum 2005
Watershed Cookbook: Watershed Plan Recipe
Hotel Colorado , Glenwood Springs, Colorado
September 7, 2005

Tentative agenda includes:

- Nonpoint Source Management Program update
- Watershed planning “ingredients” : Scoping, inventories, setting a goal, finding data, identifying partners
- “TMDLs –From Data to Listing and Beyond”
- Watershed planning “recipe” Do we mix, fold, blend or puree?
- Watershed planning “Presenting the creation,” Best served with collaboration; Feeds 1 to 1,000,000! Paper plates or crystal?
- 2006 Priorities for NPS Funding - Application schedule and process

Go to www.npscolorado.com for registration, final agenda and other information or email lorettalohman@npscolorado.com

Colorado Watershed Assembly
Sixth Annual Conference.
“Rivers, Roads, & Recreation - Our Working Watersheds”
Hotel Colorado - Glenwood Springs, Colorado
September 7 -- 9, 2004

Tentative agenda includes panel discussions, presentations, and brainstorming sessions on a variety of topics which include:

- Water for People and Nature – Collaboration and Innovation in Managing
- Flows for Human and Ecological Needs, David Harrison, Moses, Wittemyer, Harrison and Woodruff, PC (invited)
- Politics and Water – Current Issues in Colorado Colorado State Representative Kathleen Curry
- What’s the Difference between a Weatherman and a Climatologist? Nolan Doeskin Asst. State Climatologist

Concurrent tracks include

- Best Management Practices for roads, mine drainage, and ag bmps
- Fundraising/Capacity Building to address partnerships, merchandising, fundraising events, membership issues
- Monitoring with a Purpose - Getting the Most from Your Monitoring Effort including information on community/school involvement, STORET, and statistical tools and methods.

For more information please visit the website at www.coloradowater.org or contact Elizabeth Mozer at 970-484-3678 or Elizabeth@treeswaterpeople.org.

From the Headwaters Through the Urban Kidney to the State Line

This is a Hard-Working River
16th Annual South Platte Forum
October 26-27, 2005

Radisson Conference Center, Longmont, CO

Sessions include:

- Top 'O The Basin to Ya with Carol Ekarius (Upper South Platte Basin), Frank Dennis (CSFS), Mike Stevens (USGS and Stephen Lohman (Denver Water)
- Habitat by Humanity with Brad Johnson (Johnson Environmental Consulting) and Patricia Wells (Denver Water)
- Can We Soak the Urban Sponge? with Rick Brown (CWCB), Chandler Peter (U.S. Army COE), Dave Kaunisto (East Cherry Creek Valley Water and Sanitation District), Ray Christenson (Colorado Farm Bureau)
- What's Coming Down with Nolan Doesken (CSU), Brent Mecham (NCWCD), and Jeannette Hillery (League of Women Voters)
- The Royal Flush with Jörg Drewes (CSM), Todd Harris (Metro Wastewater Group), Peter Binney (City of Aurora), and Richard Kuchenrither (Black and Veatch)
- Is This Your River On Drugs? with Jim Lazorchak (USEPA), David Norris (CU) and Ken Carlson (CSU)
- Species: Are they Coming or Going? with Don Ament (Colorado Department of Agriculture) and Tom Neslet (Colorado Division of Wildlife)
- Special Bonus Session: Consortium for Research and Education on Emerging Contaminants will provide a forum on current work, future needs, and perspectives on the issue of emerging contaminants.

For more session information and registration forms, go to www.southplatteforum.org.

CALENDAR

Aug. 8-19	Dam Safety, Operation, and Maintenance International Technical Seminar and Study Tour , Denver, CO. For more information go to www.usbr.gov/international .
Aug. 10-12	River and floodplain modeling with HEC-RAS, Version 3.1.3 . Denver, CO. For more information go to: www.cudenver.edu/engineer/cont or contact csanders@carbon.cudenver.edu .
Aug. 17	CDPHE Fluoridation Seminar . Denver. For more information go to www.cdphe.state.co.us/op/ocb/ocbhom.asp .
Aug. 17-19	Colorado Rural Water Fall Conference and Certification Review . Grand Junction, CO. For more information go to www.crwa.net .
Aug. 25-26	Colorado Water Congress 2005 Summer Convention . Steamboat Springs, CO. For more information go to: www.cowatercongress.org , or phone 303/837-0812, or email macravey@cowatercongress.org .
Aug. 26-27	Engineering Essentials for Wetlands and Wetland Regulations . Denver, CO. For more information go to: www.cudenver.edu/engineer/cont or contact csanders@carbon.cudenver.edu .
Aug. 31	Inert Gas Tracers in Ground Water by Dr. D. Kip Solomon, Henry Darcy Distinguished Lecture . Fort Collins, CO. For more information go to http://www.cnr.colostate.edu/geo/seminars/ffall2005.html .
Sep. 12-16	ASSE Cross Connection Control Course . Red Rocks Community College, Lakewood, CO. For more information go to www.cdphe.state.co.us/op/ocb/ocbhom.asp .
Sep. 26-27	Colorado Water Congress Colorado Water Law Seminar . Denver, CO. For more information go to: www.cowatercongress.org , or phone 303/837-0812, or email macravey@cowatercongress.org .

Sep. 30	Rocky Mountain Water Quality Analyst Association Annual Water and Wastewater Symposium. Estes Park. For more information go to www.rmwqaa.org .
Oct. 12	Colorado Water Congress Water Quality Workshop. Denver, CO. For more information go to: www.cowatercongress.org , or phone 303/837-0812, or email macravey@cowatercongress.org .
Oct. 13	Colorado Water Congress Endangered Species Conference. Denver, CO. For more information go to: www.cowatercongress.org , or phone 303/837-0812, or email macravey@cowatercongress.org .
Oct. 12-15	MODFLOW: Introduction to Numerical Modeling, Colorado School of Mines IGWMC Shortcourse. Golden, CO. For information on registration deadlines, fees, or to register online, go to http://www.mines.edu/igwmc/short-course/
Oct. 17-18	UCODE: Universal Inversion Code for Automated Calibration. Golden, CO. Postponed until May 24-26, 2004.
Oct. 19-20	A Water Conservation Training and Certification Class. Westminster, CO. For more information go to www.coloradowaterwise.org .
Oct. 20	Colorado Water Congress The Initiative Process: What You Need To Know. Denver, CO. For more information go to: www.cowatercongress.org , or phone 303/837-0812, or email macravey@cowatercongress.org .
Oct. 25	CRWA Training A and B Water Training. Pueblo West. For more information go to www.crwa.net .
Oct. 26-29	SCADA and Related Technologies Irrigation Distribution Modernization. Portland Oregon. For more information go to http://www.uscid.org/05scada.html .
Nov. 6-10	American Water Resources Association 2005 Annual Conference. Seattle, WA. For more information go to: http://www.awra.org/ .
Nov. 8	Colorado Water Congress Legal Ethics in Water and Environmental Law. Denver, CO. For more information go to: www.cowatercongress.org , or phone 303/837-0812, or email macravey@cowatercongress.org .

Colorado State University
Colorado Water Resources Research Institute
Colorado State University
Fort Collins, CO 80523

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