THE COLORADO WATER WORKSHOP

PRESENTS OUR 34th PROGRAM



ACCOMMODATING COMPLEXITY: EXPLORING THE CHALLENGES AND OPPORTUNITIES OF NONCONSUMPTIVE USE

July 22-24, 2009

Mt. Crested Butte, Colorado

Colorado Water Workshop

WESTERN STATE COLLEGE OF COLORADO

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Wednesday, July 22

12:30-1:15 Opening Lunch in the Grand Ballroom

1:15-1:30 Welcome from the Colorado Water Workshop Director, Dr. Jerritt Frank

1:30-3:00 TOWARD A MORE PERFECT UNION: WATER AND DEMOCRACY IN MODERN AMERICA

Location: Grand Ballroom

Moderator: Dr. Jerritt Frank, Western State College

Colorado State Representative Kathleen Curry will offer introductory remarks: *"Nonconsumptive Uses: A Legislative Perspective"*

George Sibley, Freelance Writer, Retired WSC Faculty Member, and Former Director of the Water Workshop: *"How We Do Water: A Rocky Democracy Runs Through It"*

ABSTRACT: Hydraulic societies historically have been technocracies, run by knowledge elites; the great and growing cities of the American West carry that tradition forward. But because of the strong, if subordinated, streak of agrarian democracy that has consistently been present in the American experience, the West also evolved a strong (if subordinated) tradition of "hydraulic democracies" through the tenets of the appropriations doctrine coupled with the convenience or necessity of the local ditch company. Most of the water tension in Colorado since World War II can be traced to conflicts and misunderstandings between hydraulic technocracies and democracies. Colorado's Water for the Future Act (now beginning its fifth year) capped 30 years of efforts to bring balance between those two types of governance in regions where "if you touch water, you touch all."

Justice Gregory Hobbs, Colorado Supreme Court: *"The Role of a State Supreme Court in a Rocky Water Democracy"*

ABSTRACT: State supreme courts have authority to decide both federal and state issues of law and fact that come before them in water cases. The supremacy clause of the United States Constitution provides that state judges are bound by the constitution, laws, and treaties of the United States, despite anything to the contrary in state constitutions and laws. By the McCarran Amendment of 1952, Congress waived the sovereign immunity of federal agencies, officers, and Native American tribes, in order to provide state courts with jurisdiction to determine federal as well as state water claims.

Starting with the Mining Act of 1866, Congress has repeatedly recognized the authority of states to have their own water laws for allocating use rights to the unappropriated water of the public domain, subject to the establishment of federal water rights. Because the value of any water right, state or federal, depends on administration of its relative priority in time of scarce supply, the determination of water rights priorities is a significant judicial responsibility.

Judges must decide water cases fairly regardless of political controversies that may surround them. Fortunately, Colorado has removed the seven regional water court judges and the seven state supreme court judges from participation in partisan electoral politics. The Colorado General Assembly has long provided for direct appeal of local court water decisions directly to the Colorado Supreme Court. As a result, Colorado has an extensive body of case law, as well as state and federal statutes to guide water decision-making.

As the reflective branch of government, the judiciary brings scholarship to the resolution of individual legal controversies, case by case, a great privilege and duty.

3:15-5:00 DIVERSE VOICES: MANAGING FOR MULTIPLE MISSIONS

Location: Grand Ballroom

Moderator: Chris Treese, Colorado River Water Conservation District

Taylor Hawes, Director, Colorado River Program, The Nature Conservancy: *"Creating a Sustainable Colorado River System"*

ABSTRACT: Taylor Hawes will explore concepts of "sustainability" relative to the Colorado River system. Generally, sustainability refers to the concept of "living within our means" or ensuring that a resource will meet present AND future needs. In ecology the word describes how biological systems remain diverse and productive over time. For humans it is the potential for long-term improvements in well-being, which in turn depend on the well-being of the natural systems. It requires a balance between economic, social and environmental well-being. Sustainability is not merely the capacity to endure, but to do so with optimal quality of existence. Taylor will discuss the economics and social benefits of a healthy river system and present a few strategies on how we might work towards a sustainable Colorado River.

Rick Cables, Regional Forester for the Rocky Mountain Region, USFS: *"Water for the Forest: Managing for Nonconsumptive Uses"*

ABSTRACT: Camping by a mountain stream or lake, fishing, and enjoying a beautiful waterfall are some of the many reasons people visit national forests. Managing for these and other non-consumptive uses is a cornerstone of the Forest Service mission. Healthy functioning watersheds provide for recreation and renewal, essential ecosystem services, aquatic and terrestrial habitat, and make a significant contribution to the state's economy. They also yield high quality flows for downstream uses. In the context of multiple use management, advocating for non-consumptive uses of water is not always easy. However, striking a balance between consumptive and non-consumptive uses allows us to demonstrate how our forested headwaters can sustain natural systems while allowing some degree of use. As we address the challenges of managing for multiple uses in an era of increasing demand and changing climate, let's continue to work together to ensure the long term health and resilience of our forested headwaters.

Harris Sherman, Executive Director, Colorado Department of Natural Resources: *"Water Supply in 2050: How Do We Get to the Colorado We Want?"*

ABSTRACT: Population growth, climate change, energy development, and the growing importance of nonconsumptive water uses in Colorado's economy are presenting unprecedented challenges to water planners. Under a business-as-usual scenario, many things that Coloradans take for granted – like agriculture –face an uncertain future. What needs to happen to ensure that Colorado in 2050 has the water it needs to power a diverse economy and support an healthy environment? Is the state's prior appropriation system up to the challenge? What is the appropriate responsibility of the state to help advance and secure solutions beyond the traditional role of facilitating conversation and funding projects? What about local governments and the private sector? Will new approaches or even fundamental changes to our time-tested system be required?

5:00-7:00 Dinner on your own

7:00-9:00 We welcome you to a presentation by Colorado Supreme Court Justice Gregory Hobbs entitled *"Water in the 21st Century: What Have We Got and Where Do We Go?"* The Crested Butte Policy Forum will charge a modest fee for the presentation.

Location: Grand Ballroom

Thursday, July 23

7:00-8:00 Breakfast and Social Hour in the Grand Ballroom Lobby

***Please note: Choose one of two concurrent sessions for the 8:00 session and for the 11:00 session.**

8:00-9:45 THE ENVIRONMENTAL CHALLENGES OF NONCONSUMPTIVE USE

Location: Alpine Room

Moderator: Dr. Jerritt Frank, Western State College

Angela Kantola, Assistant Director, Upper Colorado River Endangered Fish Recovery Program: *"Managing Nonnative Fishes to Benefit Endangered Fishes in the Upper Colorado River Basin"*

ABSTRACT: Established as a multi-agency partnership in 1988, the goal of the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) is to recover four endangered fish species in the upper Colorado River basin (upper basin) while water use and development continue to meet human needs. The partnership of the Recovery Program is a collaboration of public and private interests to enhance instream flows, restore habitat, manage detrimental nonnative fishes, stock endangered fishes, and conduct research and monitoring necessary to restore self-sustaining populations of humpback chub (Gilacypha), bonytail (G. elegans), Colorado pikeminnow (Ptychocheilus lucius), and razorback sucker (Xyrauchen texanus) in the upper basin. Predation or competition by nonnative fish species is a serious threat to the endangered fishes and the most challenging to manage. Currently, nonnative smallmouth bass and northern pike are the principal target species for management in the Green and Colorado River systems. These species are being managed through intensive removal efforts, screening reservoir outlets, regulating stocking and changing fishing regulations, and identifying nonnative fish sources. The Recovery Program's nonnative fish management also recognizes the dual responsibilities of state and federal wildlife agencies to conserve native fish species while providing sportfishing opportunities. Where feasible, sportfish removed from rivers are translocated to off-channel ponds and reservoirs accessible to local anglers.

Brad Taylor, Assistant Professor, Department of Biological Sciences, Dartmouth College: *"Disruption of Nonconsumptive Water Uses Caused by the Nuisance Diatom,* Didymosphenia geminata*: Effects on Stream Invertebrates, Fish, and Ecosystem Functioning"*

ABSTRACT: *Didymosphenia geminata* is a diatom native to Colorado rivers that has attracted local and global attention because it forms nuisance blooms due to the production of stalks, or filaments. Blooms can cover >75% of the stream bottom and mats can be 3 cm thick with a biomass 50 times greater than average mountain streams. The cause of *Didymosphenia* blooms is unknown, but streams with nuisance blooms are 2 ^{0}C warmer, dammed by humans or beaver, have low phosphorus concentrations but higher concentrations of some micronutrients, and do not differ systematically in hydraulic disturbance metrics. Using experiments and comparisons among four streams with and four without *Didymosphenia* blooms in the East River Valley, I've tested the effects of *Didymosphenia* blooms on stream food webs and ecosystem properties. *Didymosphenia* had no effect on invertebrate taxa richness, but interestingly the relative abundances of particular taxa were strongly affected by *Didymosphenia*. These changes in invertebrate composition propagated up the food web to negatively affect fish growth rates. At the ecosystem-level, the unusually high organic matter biomass caused by *Didymosphenia* increased community respiration thereby lowering diurnal oxygen concentrations even in these cold, turbulent rivers. The export of organic matter that can fuel bacteria respiration in downstream rivers, lakes, and reservoirs is also much greater out of rivers with *Didymosphenia* blooms. Taken together, *Didymosphenia* is disrupting multiple properties of western Colorado rivers and it may push these rivers to a new state that will challenge their nonconsumptive water uses.

Mark Anderson, Aquatic Resources Management Chief, National Park Service, Glen Canyon National Recreation Area: *"Zebra and Quagga Mussel Prevention at Lake Powell"*

ABSTRACT: Glen Canyon National Recreation Area (NRA) has operated a zebra/quagga mussel (*Dreissenidae*) prevention program at Lake Powell since 2000. With the discovery of quagga mussels in the lower Colorado River in 2007, the program has been expanded to address the heightened threat brought with each year. A brief history of zebra mussel prevention at Lake Powell and details of the program expansions since 2007 will be discussed. New requirements supported by park-specific regulations, for all boaters have been instituted at the park and codified in law for the whole state of Utah. Thousands of boats have been decontaminated at new facilities developed to meet the increased demand at Glen Canyon. After a false positive detection of mussel veligers in 2007, monitoring efforts on Lake Powell were greatly expanded. All essential elements of a comprehensive prevention program, including education, monitoring, interdiction, and management, have been developed at Glen Canyon and kept Lake Powell free of dreissenid mussels. With the impacts of dreissenid mussels being so severe and no suitable eradication options currently existing for most locations, prevention is the only hope. Glen Canyon NRA offers a strong reason to believe that prevention can work.

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8:00-9:45 THE POLITICAL AND LEGAL CHALLENGES OF NONCONSUMPTIVE USE

Location: Elko/Floresta Room

Moderator: Bruce Whitehead, Executive Director, Southwestern Water Conservation District

James Eklund, Assistant Attorney General with the Federal & Interstate Water Unit: *"Protecting Colorado's Colorado River Water"*

ABSTRACT: The state of Colorado maintains a proud heritage of defending its water from challenge. Colorado's earliest challenge was to formulate a system of water administration better suited to the arid west than the eastern riparian system. Our solution was to codify the prior appropriation system—otherwise known as the "Colorado Doctrine" or "first-in-time, first-in-right." Another monumental challenge followed a U.S. Supreme Court suggestion that the doctrine of prior appropriation may apply across state lines in interstate disputes. The interstate application of the prior appropriation doctrine would have created a difficult situation for Colorado and other headwater states—the more populous downstream states (e.g. California) would have appropriated a great deal of water earlier than less populated upstream states (e.g. Colorado). Colorado's water lawyer, Delph Carpenter, promulgated the idea of an interstate water compact to allow upstream states to develop at their own pace. Since the compacts were ratified, the challenges in protecting Colorado's Colorado River water have ranged from issues of reservoir management to reining in overuse. A recent challenge lies in balancing Colorado's nonconsumptive and consumptive water needs. Nonconsumptive uses have grown in prominence since 1922 as demonstrated by flows for endangered fish, recreation, and preservation of the natural environment. Such nonconsumptive needs must be met while adhering to the body of law that serves to protect Colorado's future water use.

Linda Bassi, Section Chief, Stream and Lake Protection Section, Colorado Water Conservation Board: *"Instream Flow Protection: Balancing Environmental and Consumptive Needs"*

ABSTRACT: In 1973, the Colorado General Assembly established Colorado's Instream Flow and Natural Lake Level Program ("ISF Program"), expressly recognizing "the need to correlate the activities of mankind with some reasonable preservation of the natural environment." The General Assembly vested the Colorado Water Conservation Board with the exclusive authority to appropriate instream flow and natural lake level water rights "to preserve the natural environment to a reasonable degree." Since 1973, the Board has faced numerous challenges, both political and legal, to its implementation of the ISF Program and its efforts to strike the appropriate balance between human needs and the needs of Colorado's water dependent natural environment. This presentation will address how

the law governing the ISF Program has evolved and been shaped by those challenges, and will discuss some of the current challenges faced by the Board.

Ken Neubecker, President, Colorado Trout Unlimited: "*Watching the River Flow: Non-Consumptive Needs for the 21st Century"*

ABSTRACT: Non-consumptive water use has been controversial in Colorado since the first hydroelectric plant was built over 100 years ago. Today's non-consumptive needs for environmental flows and recreation are no different. These fully recognized beneficial uses are nevertheless of great importance to Colorado's future. For nearly a decade now Colorado has been wrestling with its future water supply; consumptive, non-consumptive and whatever might be left to develop. SWSI and the Basin Roundtable process have looked at these needs and pursued projects and processes to provide for them. Throughout the conflicting values, the different paradigms of water reality have danced, sometime in harmony, sometime in discord. Providing for both consumptive and non-consumptive needs as we move into the 21st century will become evermore complicated. Water projects are more than just a matter of rights and engineering. Healthy rivers and a healthy recreation economy balanced with providing water to a growing population, changing agriculture and a budding energy industry are our greatest challenges. The status quo, based on 19th century ideals, no longer works. We need a paradigm with corresponding institutional structures where the real needs for environmental and recreational non-consumptive uses are more than just a junior minimum in-stream flow right. As Thomas Jefferson said, "…laws and institutions must go hand in hand with the progress of the human mind. As that becomes more developed, more enlightened, as new discoveries are made, new truths discovered and manners and opinions change… institutions must advance also to keep pace with the times."

10:00-11:45 CLIMATE CHANGE: THE PAST, PRESENT, AND FUTURE OF WESTERN WATER

Location: Alpine Room

Moderator: Dr. David Marchetti, Western State College

Matthew K. Reuer, Technical Director, Environmental Sciences at Colorado College: *"Future Regional Snow Pack Estimates and Their Impact on Ski Resort Winter Tourism"*

ABSTRACT: Reduced alpine snowpack will have serious implications for future winter tourism, alpine ecosystems, and water availability in the Rocky Mountain West. Snowpack changes have been previously estimated by climate models at coarse resolution; this study presents two high resolution (12 km^2) model estimates under different carbon emission scenarios (business-as-usual and emission mitigation). Changes in snowpack, precipitation, and temperature were determined from a historical reference period (1961-1990) until 2070-2099. Precipitation changes were generally small and localized for the business-as-usual scenario (0 ± 5 cm yr^{-1}), except for increased precipitation in northern Idaho and northwest Montana (+20 to 35 cm yr^{-1}). Significant snowpack losses, measured as the change in April 1st snow water equivalence, were observed in the business-as-usual emission scenario for the southern Rockies (-75% losses or more). For specific ski resorts, snowpack losses largely followed a meridional gradient, ranging from -89% for Taos, New Mexico to -26% in Jackson Hole, Wyoming. "Average" snowpack losses do not capture the year-to-year variability that might occur under different warming scenarios, but these results demonstrate the expected changes are significant and the spatial heterogeneity warrants attention. A variety of new resort strategies have been recently adopted to reduce their water use impact; these must be considered in the context of future climate change and other competing uses.

Bobbi Peckarsky, Honorary Fellow & Adjunct Professor, Departments of Zoology & Entomology, University of Wisconsin, and Matt Harper, Andrea Encalada, Carrie Robbins (Rocky Mountain Biological Laboratory): *"The Potential for Human-Accelerated Climate Change to Affect Stream Insects"*

ABSTRACT: While much of the focus on the potential for human-accelerated climate change has been on temperature, another important problem is the associated increase in the frequency and intensity of extreme weather events, such as droughts and floods. Students and senior investigators at the Rocky Mountain Biological Laboratory have been conducting research to measure the potential for those events to negatively affect stream insects. As an undergraduate at Cornell University, Matt Harper used survey data from years of contrasting flow and temperature regimes to show that the timing of emergence to the adult stage of a mayfly important to trout diets (*Baetis bicaudatus*) occurs early in warm, dry years and late in cooler, wet years. Controlled experiments demonstrated that warmer temperatures, rather than lower flows provided the cues to trigger early emergence of this mayfly. Costs of early emergence included higher mortality and lower fecundity (reproductive output). As a graduate student at Cornell University, Andrea Encalada showed that in lower flow years, recruitment of this mayfly could be compromised by drying of sites where they lay their eggs (protruding rocks). Her findings also have implications for the consequences of managing flows (leaving too little flow) in trout streams. Disruption of the natural flow regime could reduce the probability of these mayflies successfully completing their life cycles. Finally, an ongoing project by Carrie Robbins of the University of Wisconsin suggests that the prevalence of a mermithid nematode parasite may increase during low flow, high temperature years in streams of the Upper East River drainage basin. This effect may be related to the increase during drought years of a nuisance diatom (*Didymosphenia geminata*), which provides an excellent habitat for the pre-parasitic stages of the worms.

Margaret Matter, Ph.D. candidate, Civil and Environmental Engineering, CSU: *"Characterization of Hydroclimatic Variability in the Upper Colorado River Basin – WY 1911-2008"*

ABSTRACT: Aquatic ecosystems and society's water supplies in the Colorado River Basin (CRB) are shaped by hydroclimatic variations. Over the 20th Century, hydroclimatic variability increases, adversely affecting aquatic ecosystems and water resource planning, design, management and forecasting. While increasing hydroclimatic variability is often attributed to anthropogenic climate change, variability also stems from climate cycles. Three climate cycles occurred in the CRB during the 20th Century and were influenced by climate change and other external forcings, including air pollution, and modifications to land cover and water use. Thus, climate cycles are a reasonable basis upon which to characterize hydroclimatic variability over the 20th Century. Results of applying an innovative methodology to each of the three climate cycles in the Upper CRB show that hydroclimatic variability is more deterministic than previously thought and entails annual complementary temperature and precipitation patterns that are specific to climate cycle type, unique to each river basin, and are influenced by external forcings. The complementary temperature and precipitation patterns establish by fall, are detectable as early as September, persist into spring, and are related to magnitude of upcoming precipitation and annual basin yield (ABY). Thus, while much of the water supply in the CRB originates from winter snowpack, significant and reliable indictors of the magnitude of upcoming precipitation and ABY are evident in the fall, well before appreciable snow accumulation. Results have applications in river restoration, improving forecast accuracy, advancing lead time by as much as six months (from April 1 to October 1), and downscaling climate models.

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10:00-11:45 COMPLICATED CURRENTS: HYDROPOWER AND NONCONSUMPTIVE USES

Location: Elko/Floresta Room

Moderator & Panelist: Cat Shrier, Ph.D., P.G. Principal, Watercat Consulting LLC

"Hydropower and the Water-Energy Nexus"

ABSTRACT: The energy-water nexus has been the subject of increasing study and interest on Capitol Hill, and the current administration has further encouraged integrated approaches to planning for water and energy resources in the face of climate change. The American Recovery and Reinvestment Act (or Stimulus Act) and other recent legislation has addressed the need for the development of cleaner energy sources, focusing on such renewables as solar and wind, as well as for water infrastructure. Taking an integrated approach to water planning to consider energy needs is a challenge, given the differences in language, culture, and technological approaches used for managing each resource. The DOE Energy-Water Nexus program was created in response to direction from Congress to develop a Report to Congress (DOE, 2007) on the interdependencies between water and energy. This report was followed by several studies conducted at DOE's national energy labs on water needs for various types of energy and power sources and reduce water demands in energy development. In addition, DOE hosted series of "roadmapping" meetings with water providers and other stakeholders to gain a better understanding of water needs and constraints associated with energy development by region. At the same time, water provider organizations (e.g. American Water Works Association, Water Utility Climate Alliance) have begun to assess their demands for energy and need to reduce the "carbon footprint" of water supply, treatment, and distribution. In September 2009, DOE will host a national symposium with several energy and water interests to explore the latest research, case studies, and policy considerations for integrated water-energy planning and policy development. The Colorado Statewide Water Supply Initiative has taken an integrated river-basin approach to water needs that is considering demands for nonconsumptive uses as well as for energy resources, focusing on "extractive" resources such as oil and gas, coal, and uranium. Colorado also has extensive hydropower facilities, which may be utilized more extensively as a "green" energy source and as a supplement for interruptible supplies from solar and wind. While hydropower is a low-carbon source of energy, hydropower operations create unique challenges for other instream uses of water, such as habitat and recreation. This paper will provide an overview of the evolution of integrated energy-water planning efforts leading to the discussion of the unique challenges of hydropower and nonconsumptive uses of rivers.

Bradley S. Warren, Colorado River Storage Project Program Manager: *"Water for Hydroelectric Generation and Other Uses: The Search for Balance"*

ABSTRACT: The Colorado River Storage Project Act of 1956 was enacted to allow the upper Colorado River basin states of Colorado, New Mexico, Utah, and Wyoming to develop their entitlements to Colorado River water and to assist the states in meeting their requirements to deliver water to the lower basin states of Arizona, California, and Nevada. The Act authorized the construction of several dams in the upper basin including Glen Canyon, Flaming Gorge, and the Aspinall Units (Blue Mesa, Morrow Point, and Crystal). Hydropower produced from these dams is sold to repay the investments in the CRSP power and irrigation facilities. There are many interests affected by the operation of the dams for water development and hydropower production. These interests include, but are not limited to, agricultural irrigation, municipal and industrial water use, flood control, hydropower, river sport fishing, flat water sport fishing, whitewater boating, flat water recreation, environmental conservation, endangered species, and cultural resource protection. Changes to the operation of the CRSP dams can affect many of these interests in both positive and negative ways. The challenge in managing the CRSP resources is to find a balance of operations which complies with the Law of the River and meets the needs and desires of these often competing interests.

Michael Gabaldon, Director, Technical Resources for the Bureau of Reclamation: "*Water for Agriculture and Other Benefits"*

ABSTRACT: The Bureau of Reclamation's mission is "To manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public." The Bureau of Reclamation was created in 1902 to foster settlement in the West. This was accomplished through the development of water projects in the seventeen Western United States.

The original focus was on agriculture projects, but with construction of large dams came subsequent other benefits beyond agriculture such as hydropower, recreation, fish & wildlife, municipal & industrial, and flood control. As one of the nation's largest providers of hydropower, Reclamation has been a leader in the development of tools and technologies to support the operation of hydropower facilities in a manner that also supports use of rivers to support ecosystems, as well as recreational uses. There is active interest in developing additional hydropower generation at Reclamation facilities, as a clean energy source. Hydropower and the development of new hydropower sources could also help foster the growth of other renewable resources such as solar and wind. While variable renewable sources of generation, such as wind and solar, can be a valuable source of clean energy, they do not always produce power during times it is needed most and produce excess power when it is not needed. Increased use of hydropower as a clean energy source will require careful consideration of other water demands, including nonconsumptive uses.

12:15-1:00 Lunch in the Grand Ballroom

1:00-1:30 Duane Vandenbusche, Professor of History, Western State College, presents a slide show commemorating the 100th anniversary of the Gunnison Tunnel entitled *"The Black Canyon: A Historical Look."*

Location: Grand Ballroom

1:45-3:30 TO FLOAT OR NOT TO FLOAT

Location: Grand Ballroom

Moderator: Brian Werner, Public Information Officer, Northern Water

Greg Felt, Co-owner and Guide Service Manager of ArkAnglers FlyFishing: *"Merrily Down the Stream: Recreation and Private Property on Colorado's Rivers"*

ABSTRACT: Running rivers, whether for the scenery, whitewater or fishing, has become emblematic of the "Colorado Experience". Residents and visitors spend approximately 520,000 guest/days each year with the state's 165 licensed river outfitters for a direct expenditure of approximately $56 million; numbers of private boaters are substantial as well. Of equal importance to the fiscal impacts, recreating on Colorado's rivers gives visitors and residents alike the chance to discover and experience our river and riparian environments, hopefully strengthening a desire to preserve them for future generations.

Against this backdrop, outfitters and guides labor in an atmosphere of uncertainty regarding the legitimacy of their trade. Despite statewide river outfitter licensing that has been in place for twenty five years and federal or state permitting on the individual rivers that has existed in many cases since the seventies, state law remains open to interpretation regarding the right to float across private land. As these land-owners assert their dominion, many public land managers back away from this difficult conflict.

The stage is set for conflict – any day could bring the encounter that escalates into a full-blown confrontation. Lawsuits, legislation, or initiatives will leave winners and losers. Finding a middle path will take leadership, but so far that has not been forthcoming.

John Hill, Bratton Hill Wilderson & Lock: *"Current Status of the Law in Colorado Regarding Access to Rivers Flowing through Private Lands"*

ABSTRACT: In Colorado, the law is settled that the adjacent landowners own the beds of streams flowing through their land. In 1979, the Colorado Supreme Court in *People v. Emmert*, held that the public has no right to float through private property without the consent of the landowners. That is the law of Colorado. While the *Emmert* case was pending in the Colorado Supreme Court the General

Assembly passed a statute defining "premises" for purposes of the criminal trespass statute. An Attorney General's Opinion purporting to interpret that opinion contained a disingenuous statement to the effect that the statute did not authorize landowners to control floating through their property. That statement has led the public to believe that there is a right to float through private property if the floater does not touch the bottom. The Attorney General's Opinion is wrong because no governmental body has to authorize landowners to keep people off their property. The United States Supreme Court had held the right to exclude others is one of the most important attributes of private property. In 2001 the Gunnison County District Court ruled that the premises definition discussed above is not a defense in a suit for civil trespass.

Lori Potter, Kaplan Kirsch & Rockwell: *"Float Like a Butterfly, Sting Like a Bee: A Boater's Right to Float on Western Rivers"*

ABSTRACT: More people—over 500,000 in 2007 and 2008—take commercial whitewater raft trips in Colorado than in any other state. Commercial rafting powers Colorado's summer tourism economy. Private recreational boating also draws countless kayakers, canoeists, and rafters to the rivers and streams of Colorado every year. The state is named for one of its mightiest and most boatable rivers.

But in spite of the popularity of the state's waterways, the right of public boaters to float rivers through private property in Colorado is frustratingly unclear. Thirty years ago, the Colorado Supreme Court concluded in a criminal trespass case under a now-superseded statute that the public has no constitutional right to touch the bed or banks of a non-navigable river overlying private lands.

That decision ("*Emmert*") raises far more questions than it answers, however. Don't citizens have a right to float on *navigable* waters? What if a boater does not touch the bed or banks? That was a criminal case; what happens when no one brings criminal charges?

Most other states recognize and protect a citizen's right to float through private property. What's the matter with Colorado? This presentation will address what other states have done to put the right to float on solid legal ground. It will also look at whether Colorado has laid an adequate legal foundation to support the public's right to float.

3:45-5:30 ADDRESSING COLORADO'S FUTURE CONSUMPTIVE USE NEEDS

Location: Grand Ballroom

Moderator: Richard Raines, Senior Water Resources Specialist, Applegate Group

Eric Kuhn, General Manager, Colorado River Water Conservation District: *"The Colorado River in 2050: How Will the Culture of Certainty Adapt to the Realities of Climate Change?"*

ABSTRACT: There have been a number of recent studies that suggest by 2050, climate change will reduce water availability for human uses on the Colorado River system. Currently, (2009) the total demand for Colorado River water and the available supply are approximately in balance, thus even a small reduction in system water availability will trigger shortages. The situation is complicated because within the Colorado River Basin, the Upper Basin states are continuing to develop additional Colorado River supplies. The prevailing wisdom is that every Upper Basin state has unused apportionment. Faced with the need to meet the demand of population growth, diminished supplies in the river basin that border the Colorado River, and the potential demands of a booming oil shale industry, there is already great political pressure within each Upper Basin state to develop additional water supply projects. Even without new water supply projects, increasing regional temperatures will increase consumptive uses above existing levels.

Jennifer Gimbel, Director, Colorado Water Conservation Board: *"Addressing Colorado's Future Consumptive Use Needs: The State's Role"*

ABSTRACT: The Colorado Water Conservation Board has broad authorities to conserve, protect, and defend Colorado's water. The CWCB has existed since 1937. The CWCB helps meet Colorado's water use needs with loans to water providers and water users for water infrastructure. The CWCB also defends Colorado's water entitlements from other States, and from constraints posed by federal agencies, such as the Endangered Species Act, wild and scenic river designations, or other federal reserved water rights. The CWCB protects non-consumptive needs with the instream flow program, and with its role in RICDs. The CWCB also has flood protection responsibilities, and acts as a collaborator on such projects like the Chatfield reallocation project. Projects like the Chatfield reallocation project help Colorado meet its future consumptive needs. The CWCB also has water-planning responsibilities through the IBCC and the roundtables. The CWCB has a water information section that establishes and operates the Decision Support Systems. Finally, the CWCB has water conservation responsibilities. All of these important programs are in jeopardy given the current budget crisis. Each of these sections has its role in helping Colorado meet its water use needs, but we can only do so with appropriate support.

Dave Little, Director of Planning, Denver Water: "*Is Water for Growth vs. for Recreation a Zero Sum Game?"*

ABSTRACT: Water use will always be a zero-sum game (i.e., my win equals your loss and vice versa) if the advocates continue to view their special use as non-negotiable, God-given, morally pure, or legally justified instead of discussing compromises. The simple fact is that a discussion about water uses is a discussion about the trade-off of differing values. Is it more important to hook and land a trout, or have a burst of adrenaline careening on a raft through Gore Canyon, or water a lawn and garden to soften an urban asphalt jungle, or grow corn and high mountain hay to feed cattle? Not to mention the trade-offs within special interests (stream fishing vs. flat water fishing, rafting vs. kayaking, agricultural vs. municipal, etc.) or the transmountain diversion "religious" battles. Ask an advocate for any special use and you will hear words like "my right," "my ethic," "my economic existence," "my lifestyle," or "my water". In fact, every Coloradoan has a stake in all water uses in the state. The state of Colorado tried to initiate that broader discussion about water use within the Round Tables and the Interbasin Compact Commission. Unfortunately, that effort has been captured by a NIMBY and protectionism mentality. Must a disaster occur before there can be meaningful statewide discussions about water uses in Colorado? The answer depends on your willingness to check your special interest at the negotiation door and work on a statewide solution to the management of a finite resource. Are you up to the task?

6:30-8:00 BANQUET AND KEYNOTE ADDRESS

The Colorado Water Workshop welcomes Steve Martin, Superintendent of Grand Canyon National Park, who will present this year's Keynote Address entitled *"Stewardship at Grand Canyon National Park: Managing a Global Resource."*

Friday, July 24

7:00-8:00 Breakfast and Social Hour in the Grand Ballroom Lobby

8:00-9:45 SEEKING COLLABORATIVE SOLUTIONS

Location: Grand Ballroom

Moderator: Frank Kugel, General Manager, Upper Gunnison River Water Conservancy District

Heather Bergman, Keystone Center: *"Collaborative Solutions to Colorado's Water Challenges"*

ABSTRACT: Threats to water quality and water quantity in Colorado come from a variety of sources, making these issues particularly challenging to address. Individuals, communities, businesses, and governments all have a stake in the successful resolution of water-based conflicts, but these conflicts are often perceived as being intractable and thus continue to endure despite their destructive effect on human and natural communities. Bringing stakeholders together for a productive dialogue about complex and controversial water policies, problems, and solutions can be a successful alternative approach to lawsuits and other zero-sum approaches. The efforts of the Fountain Creek Vision Task Force exemplify the potential of collaboration-based problem solving in water-based conflicts. The 930-square-mile Fountain Creek watershed in southern Colorado crosses three counties and includes several towns and cities, substantial agricultural land, and a large military base. The health and stability of the watershed face a number of challenges, including 303(d) listing for E. coli and sedimentation, as well as flooding and stormwater runoff. To address these challenges, a variety of state and local government agencies, many of whom have not had friendly or even cordial relations in the past, came together with ranchers, community groups, and neighborhoods to prepare and begin to implement a strategic plan for the watershed, including successfully working with the Colorado State Legislature to pass a law to create a watershed management district. This groundbreaking collaborative effort has drastically reshaped the political landscape in southern Colorado and has great potential to improve the natural landscape as well.

John Nahomenuk, BLM River Manager for Arkansas Headwaters Recreation Area: *"Voluntarily Managing Flows on the Arkansas: All Year Long"*

ABSTRACT: The impetus for the Upper Arkansas Voluntary Flow Management Program (VFMP) began in the early 90's when a group of commercial river outfitters noticed a lot of water being moved from reservoirs near Leadville downstream to Lake Pueblo during the winter and early spring. The group got the attention of the Colorado Division of Natural Resources to see if they could help them approach the Bureau of Reclamation (Reclamation) who manages the water as part of the Fryingpan-Arkansas Project (Project). The Southeastern Water Conservation District (Southeastern) participates in the VFMP as the holder of the decreed water rights for the water supplied by the Project. The river outfitters were hoping that they could get Reclamation to hold some of the project water in the upper reservoirs and move the water in the summer months to help prolong the rafting season.

The highest priority for the VFMP is to maintain a minimum year-round flow of at least 250 c.f.s. at the Wellsville gauge, to protect the fishery. The program also calls for maintaining flows at certain levels to provide conditions favorable to egg hatching and fry emergence. The summer component of the flow program calls for maintaining 700 c.f.s. at Wellsville from July 1st through August 15th. The Bureau, subject to storage and water availability, will hold 10,000 acre feet to supply the summer component. Any deliveries in excess of 10,000 acre-feet of project water for the program should be subject to review and consideration by Reclamation, CDNR and Southeastern.

Jana Mohrman, Hydrologist, U.S. Fish and Wildlife Service, and Angela Kantola, Assistant Director, Upper Colorado River Endangered Fish Recovery Program: *"Collaboration to Recover Endangered Fishes and Manage Water in the Upper Colorado River Basin"*

ABSTRACT: Established as a multi-agency partnership in 1988, the goal of the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) is to recover four endangered fish species in the upper Colorado River basin (upper basin) while water use and development continue to meet human needs. This partnership of public and private interests is working to enhance instream flows, restore habitat, manage detrimental nonnative fishes, stock endangered fishes, and conduct research and monitoring necessary to restore self-sustaining populations of humpback chub (Gila cypha), bonytail (G. elegans), Colorado pikeminnow (Ptychocheilus lucius), and razorback sucker (Xyrauchen texanus). Recovery Program partners cooperatively manage water in accordance with state water law, individual water rights, and interstate compacts to provide adequate instream flows for the endangered fishes

while meeting water needs of growing western communities. This is accomplished through coordinated water releases from upstream reservoirs, efficiency improvements to irrigation systems, water leases and contracts, and re-operation of federal dams and reservoirs.

10:00-11:45 CREATING THAT MORE PERFECT UNION

Location: Grand Ballroom

Moderator: Becky Long, Water Caucus Coordinator, Colorado Environmental Coalition

Amy Beatie, Executive Director, Colorado Water Trust: "*Water Trusts in the Western United States"*

ABSTRACT: The State of Colorado has clearly recognized the importance of instream water uses in addition to more traditional water uses. The placement of an instream flow program in the hands of the Colorado Water Conservation Board ("CWCB") in 1973 was its clearest pronouncement. Yet, the commitment to instream flows is young, as are many of the water rights that the CWCB has secured to protect Colorado's streamflows. As a result, more work to balance consumptive uses like irrigation and the needs of aquatic ecosystems must occur. This sentiment—heard around the West a bit louder and more often lately—has fueled the rate at which water trusts are springing up in many prior appropriation states. Most—if not all—water trusts have been formed to protect and enhance streamflows by using market-based, voluntary, cooperative transactions that put older, more defensible water rights back into streams for the benefit of aquatic ecosystems, the flora and fauna that depend on them, and the people who enjoy them. The water trust movement is a movement premised on the notion that the tools necessary to improve streamflows already exist in the Western state-by-state water allocation systems, that change—one from an outdated maximizing-diversions paradigm to a newer one of maximum use that includes instream uses such as recreation, piscatorial, and aesthetic uses—can be achieved within the constants of western water law.

Mely Whiting, Legal Counsel, Trout Unlimited, Colorado Water Project: *"Protecting Wild and Scenic Rivers through Consensus"*

ABSTRACT: No matter how diverse our views, most of us in the water community are likely to agree on two things: people need water and there are river segments that deserve special protection. Over the last year, stakeholders in the headwaters of the Colorado River and in the San Juan River basin have been working hard to reach consensus on how these two principles are to be balanced. The context for these efforts is the Wild and Scenic Rivers Act (WSRA). The WSRA provides special protections for designated rivers or river segments that are free flowing and possess "outstandingly remarkable values" – protections that can restrict the location of future water development. Traditionally, federal land managers recommend river segments for designation by Congress and a battle among competing interests is waged at the political level. The stakeholder process offers an alternative - an opportunity for parties with various interests and local communities to develop a shared vision for these special river segments in light of future water supply needs. Whether the outcome is WSRA designation or an alternative to designation, whether or not consensus is ever reached, the process can be valuable on its own.

12:00-1:00 Concluding Lunch

1:00-1:45 LOOKING AHEAD TO 2010

Location: Grand Ballroom

The Director of the Water Workshop would like to invite the Advisory Committee, speakers, and conference attendees to an optional and informal meeting to discuss potential themes, topics and speakers for next year's Colorado Water Workshop.

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