

The In, and Out, of the South Platte Basin

*Proceedings of the 24th Annual South Platte Forum
October 23-24, 2013
Longmont, Colorado*

Jennifer Brown, Editor

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The Ins and Outs of the South Platte Basin

Proceedings of the 24th Annual South Platte Forum
October 23-24, 2013—Plaza Conference Center—Longmont, Colorado

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Photo: "Our Future, Held in Each Drop of Water" by Janet Williams; winner of the South Platte Forum photo contest.

The In and Out of the South Platte Basin

Wednesday, Oct. 23 (The Ins)

7:45 **Registration and Continental Breakfast**

8:20 **Welcome**

Reagan Waskom, Colorado Water Institute

8:30 **Connecting Nine Billion People to Colorado Water**

Craig Beyrouthy, Dean, Colorado State University College of Agricultural Sciences

9:00  **Digging In** 

Moderator: Reagan Waskom, Colorado Water Institute

- *Farm Water Management*
Dave Petrocco, President, Petrocco Farms
- *On-the-Ground Flood Impacts on the Farm and in the Community*
Adrian Card & Keith Maxey, Colorado State University Extension
- *What's Going on with Water Providers after the Flood*
Sean Cronin, Executive Director, St. Vrain and Left Hand Water Conservancy District

10:15 **Networking & Exhibitors** *Sponsor: Applegate Group, Inc.*

10:45  **Swimming In** 

Moderator: Pete Conovitz, Colorado Parks and Wildlife

- *Will the Real Greenback Please Stand Up*
Kevin Rogers, Aquatic Research Group, Colorado Parks and Wildlife
- *Managing Fish by Managing Flows: A Wild Rainbow Story in Elevenmile Canyon*
Ken Kehmeier, Senior Aquatic Biologist, Colorado Parks and Wildlife
- *Improving Urban Streams for Native Warmwater Fishes*
Ashley Ficke, Fisheries Ecologist, GEI Consultants, Inc.

12:00 **Keynote Luncheon**

- *Friends of the South Platte Award*
- *Using Innovative Technology to Change the Conversation about Oil and Gas in Colorado*
Chris Reuter, CNG/LNG Development, Noble Energy

1:20  **Drilling In** 

Moderator: Dennis Coombs, Mayor, City of Longmont

- *Investigations of the Effects of Oil and Gas Development on Water Quality*
Joseph N. Ryan, Civil, Environmental, and Architectural Engineering, University of Colorado
- *Colorado Water Watch: Concerns at the Energy-Water-Agriculture Interface*
Ken Carlson, Civil and Environmental Engineering, Colorado State University
- *Flood Effects and New State Regulations on Set-backs and Groundwater Monitoring*
Thom Kerr, Colorado Oil and Gas Conservation Commission

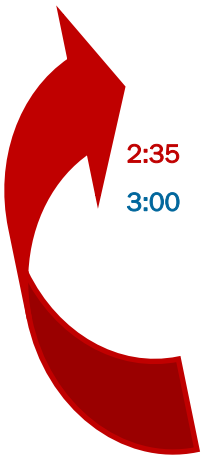
2:35 **Networking & Exhibitors**

3:00  **Jumping In** 

Moderator: Marcella Hutchinson, U.S. Environmental Protection Agency

- *Endocrine Disruptors and Emerging Contaminants in Remote and Not-So-Remote Locations*
Bill Battaglin, Consortium for Research and Education on Emerging Contaminants (CREEC)
- *Northern Water Stakeholders Emerging Contaminants Monitoring Program*
Jen Stephenson, Environmental Specialist, Northern Water
- *Flood Effects and Nutrients Management in Colorado: What's Next?*
Dick Parachini, Clean Water Program, Water Quality Control Division
- *Urban Waters Initiative*
Stacey Erickson, U.S. EPA & Devon Buckels, Colorado State Forest Service
- *Clear Creek Targeted Watershed Grant: Reflections*
Diane Kieilty, Project Manager, Clear Creek Watershed Foundation

5:00  **POND Reception & Silent Auction Fundraiser**  *In partnership with the Colorado Water Congress Professionals Outreach, Networking, and Development group (POND)*



The In's and Out's of the South Platte Basin

Thursday, Oct. 24 (The Outs)

7:45 Registration and Continental Breakfast

8:20 Welcome

8:30 From Drying Out to Flooding Out

Moderator: Reagan Waskom, Colorado Water Institute

- *From Drought to Flood in Three Days*
Nolan Doesken, Colorado State Climatologist
- *Gauging the Flood Waters*
Robert Kimbrough, Associate Director, Hydrologic Data, U.S. Geological Society
- *Infrastructure Damage and Other State Issues*
Kevin Houck, Flood Section Chief, Colorado Water Conservation Board

10:00 Networking & Exhibitors

10:30 Skiing Out

- *Water Usage and the Ski Industry*
Geraldine Link, Director of Public Policy, National Ski Areas Association

10:55 Blacking Out

Moderator: Richard Vidmar, Aurora Water

- *Targeting and Prioritizing: How to Prepare for and Respond to Wildfires*
Brad Piehl, Partner, JW Associates
- *Wildfire Preparedness and Incident Response*
Eric Howell, Forest Program Manager, Colorado Springs Utilities
- *Hayman: Long-Term Recovery and Its Influence on Waldo Recovery During the First Year*
Carol Ekarius, Executive Director, Coalition for the Upper South Platte

12:15 Keynote Luncheon

- James Eklund, Director, Colorado Water Conservation Board

1:45 DARCA Workshop

In partnership with the Ditch and Reservoir Company Alliance (DARCA)

Authorizing Ditch Crossings:

Practical Considerations as Development and Oil & Gas Activities Heat Up

- *Legal Considerations of Ditch Crossings*
Scott Holwick, Esq., Lyons Gaddis Kahn Hall Jeffers Dworak & Grant, P.C.
- *Technical Considerations of Ditch Crossings*
Branden Effland, P.E., Deere & Ault Consultants, Inc.
- *Recent Issues Involving Ditch Crossings*
Stuart Corbridge, Esq., Vranesh and Raisch, LLP; Jim Yahn, P.E., North Sterling Irrigation District

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Wednesday, Oct. 23, 8:20 a.m.

Welcome

Reagan Waskom, Ph.D.

Director, Colorado Water Institute, Colorado State University, 1033 Campus Delivery, Fort Collins, CO 80523-1033, 970-491-6308, Reagan.Waskom@ColoState.EDU

Wednesday, Oct. 23, 8:30 a.m.

Opening Keynote

Connecting Nine Billion People to Colorado Water

Craig Beyrouly

Dean, Colorado State University, College of Agricultural Sciences, 121 Shepardson, Fort Collins, CO 80523, 970-491-6274, craig.beyrouly@colostate.edu, <http://home.agsci.colostate.edu/>

It is predicted that the global population will likely reach or exceed nine billion people by 2050. That is an increase of at least two billion people over the next 37 years or 4.5 million extra mouths to feed each month. By 2050 we will need 30% more food and 40% more water than is currently available. We only have 37 growing seasons to accomplish this task, creating a sense of urgency worldwide. Every acre of land and every drop of water that is currently dedicated to food production in Colorado and the U.S. will be needed to ensure food security throughout the world. CSU is contributing to the effort to sustain agriculture in many ways in the South Platte River basin and throughout the entire state of Colorado. Examples will be provided that showcase several of these efforts by CSU scientists.

Craig Beyrouly received a B.S. in soil science from Cal Poly State University in San Luis Obispo in 1977. He received both his M.S. and Ph.D. from Purdue University in the areas of soil chemistry. During college, Craig mapped soils in Oregon with the Soil Conservation Service and worked as a research scientist on a commercial mushroom farm in Illinois for the Dole Corporation. He was on the faculty at the University of Arkansas from 1984 through 2001 where he conducted research in root ecology and plant nutrition, taught several courses in soil science, and held several leadership positions including interim dean and president of the Teaching Academy. From 2001 until 2009, Craig served as Head of Agronomy at Purdue University and provided leadership for one of the larger departments in the College of Agriculture with 52 faculty (nine adjunct USDA-ARS), 70 staff, and more than 250 undergraduate and graduate students.

Craig currently serves as Dean of the College of Agricultural Sciences at Colorado State University. In this position, he serves as the CEO for five departments, 1325 undergraduate students and 250 graduate students. He has received several research and teaching awards and honors throughout his career, including the Ciba Geigy Award for research and teaching, Fellow of the American Society of Agronomy and the Soil Science Society of America, Sigma Xi Physical Sciences Research Award, and the Alpha Zeta Outstanding Teaching Award.

Craig and his wife of more than 36 years, Valerie, have three children, Eryn, a Purdue graduate in elementary education and currently a fourth grade teacher in Fort Collins, Colorado; Matthew, a recent graduate of NYU in Public Health; and Claire, a Purdue graduate in speech, language, and hearing and a speech therapist in Houston, Texas.



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Wednesday, Oct. 23, 9:00 a.m.

Digging In (Agriculture)

Moderator: Reagan Waskom

On-Farm Water Management

David A. Petrocco

President, Petrocco Farms, Inc., 14110 Brighton Rd., Brighton, CO 80601, 303-748-6691, davesr@petroccofarms.com, petroccofarms.com

Dave Petrocco, Sr., is a lifetime vegetable farmer of Adams and Weld County. Petrocco Farms is located in Brighton. They operate in Ft Lupton, Gilcrest, LaSalle, and the Greeley area. Their irrigation consists of flood, sprinkler, and 500 acres of drip. Petrocco Farms grows onions, green beans, cabbage, peppers, spinach, lettuce, squash, collard, mustard, kale, and turnip greens. Dave is a third generation farmer whose grandparents farmed in Italy. He and his wife, Susan, have three children and ten grandchildren.

On-the-Ground Flood Impacts on the Farm and In the Community

Adrian Card

Ag/Natural Resources Extension Agent Colorado State University Extension, 9595 Nelson Rd., Box B, Longmont, CO 80501, 303-678-6383, adrian.card@colostate.edu, <http://www.extension.colostate.edu/boulder/ag.shtml>

Keith Maxey

Director/Livestock Agent, Colorado State University Extension, Weld County, 525 N. 15th Ave., Greeley, CO 80631, 970-304-6535, kmaxey@co.weld.co.us

Adrian Card serves as Ag/Natural Resources Extension Agent with Colorado State University in Boulder County. His work areas include: small farms and specialty crops, beginning farmer development, irrigation management, food and ag policy, vegetable production and marketing and produce food safety. He is currently coordinating a group of ag professionals in Boulder County for a planned and networked response to ag sector flood related issues.

Adrian started in local foods in 1993, working with Happy Heart Farm CSA in Ft. Collins. He managed field operations for this 75 share CSA farm in 1995. He then led the student organic garden movement on the Colorado State University campus in 1998, sold at farmers markets in Ft. Collins, worked as an assistant manager at the CSU Horticulture Farm in 1999, worked as a research associate in the Foodlinks research project at CSU in 2000, spearheaded an experiential education program for food crops students at CSU in 2002, worked with colleagues on organic agriculture programs at CSU in 2002, and in 2003 managed Student Organic Farm at the Center for Environmental Farming Systems at North Carolina State University. Adrian started as an Extension Agent for Colorado State University Extension in Boulder County in 2004. Current efforts include small farms, specialty crops, and food system programming. He is the coordinator for the Boulder County Commissioner advisory committee, the Boulder County Food and Agriculture Policy Council.

Adrian's work with beginning farmers gained traction in 2007 with the pilot project in Boulder County following a USDA RMA conference on beginning farmer programs in the US. This approach teaches business planning and management in a classroom setting drawing on the community of producers and professionals as instructors. The project gained momentum with a grant from the Western Center for Risk Management Education in 2009 to expand the Boulder County Building Farmers program statewide into four other regions. Again with the work of a team of ag business professionals from CSU, CBF launched into five Western states under Building Farmers in the West in 2010 with a grant from USDA Beginning Farmer and Rancher Development program. The ultimate success of these beginning farmer programs is a core of committed producers and professionals advising, developing content and providing support to the program.

In addition to beginning farmer development Adrian's current professional passions include foods systems development, enhancing the capacity of experienced specialty crops farmers, the agricultural literacy for all populations, and developing the agricultural community in Boulder County and in Colorado.



What's Going on with Water Providers after the Flood

Sean Cronin

Executive Director, St. Vrain and Left Hand Water Conservancy District, 9595 Nelson Rd., Ste. 203, Longmont, CO 80501
303-772-4060, sean.cronin@svlhwcd.org, www.svlhwcd.org

Sean is the executive director for the St. Vrain and Left Hand Water Conservancy District. He has over 17 years experience in water resource planning and policy. Sean earned his Bachelor's Degree in environmental science from the University of North Carolina at Charlotte and spent two years as a natural resources agent with the North Carolina Cooperative Extension Service before moving to Colorado. Prior to joining the District, Sean spent 13 years with the City of Greeley, including the last six as their Water Resources Manager. Sean is chairman of the South Platte Basin Roundtable and serves on the Board of Directors for the Colorado Section of the American Water Resources Association.

Sean lives in his adopted home of Colorado with his wife and two children. When Sean isn't spending time with family, working, or volunteering, you can find him on a river trying to master the art of making a trout rise.

Wednesday, Oct. 23, 10:45 a.m.

Swimming In (Fishes)

Moderator: Pete Conovitz

Colorado Parks and Wildlife, 317 W. Prospect, Fort Collins, CO 80526, 970-472-4356, pete.conovitz@state.co.us

Will the Real Greenback Please Stand Up: Chasing the Heritage of Colorado's State Fish

Kevin Rogers

Aquatic Research Group, Colorado Parks and Wildlife, PO Box 775777, Steamboat Springs, CO 80477, 970-846-7145, kevin.rogers@state.co.us

Thought extinct in 1937, the greenback cutthroat trout has since been held as one of the shining stars of the Endangered Species Act. Listed in 1973 as endangered, the subspecies was downlisted to threatened in 1978, and a candidate for delisting entirely in the early 2000s given the success of many conservation efforts. Unfortunately, a flurry of recent research with modern molecular methods suggested that most populations thought to represent Colorado's state fish were in fact founded from west slope sources of Colorado River cutthroat trout in the early 20th century. A thorough inspection of DNAs obtained from cutthroat trout specimens housed in the nation's premier museums (collected in the late 1800s prior to the advent of widespread stocking events) confirmed that assertion. That work also suggested more cutthroat trout diversity was present historically than previously thought, with Colorado being home to six different lineages of native trout rather than four. Of particular interest was the identification of a lineage native to the South Platte basin that can only be found in a single population outside of Colorado Springs today. Ironically, the very stocking activities that jeopardized the existence of native trout in Colorado appear to have preserved the true greenback cutthroat trout in what would have been a fishless stream above a natural barrier.

Kevin Rogers has a pair of undergraduate degrees from University of Colorado, Boulder as well as a master's and a doctorate in fisheries science from Colorado State University in Fort Collins. He has worked for the Division of Wildlife for the past 18 years, spending the last decade as the state's native cutthroat trout research scientist.

Managing Fish by Managing Flows: A Wild Rainbow Story in Elevenmile Canyon

Ken Kehmeier

Senior Aquatic Biologist, Platte Basin, Colorado Parks and Wildlife, 317 W. Prospect, Fort Collins, CO 80526, 970-472-4350, ken.kehmeier@state.co.us

Elevenmile Canyon is located downstream of Elevenmile Reservoir in Park County Colorado, southwest of Lake George. The upper section of Elevenmile Canyon is managed as a wild rainbow trout fishery, which recently has shown a population decline. Based on historic flows, Colorado Parks and Wildlife (CPW) staff was able to identify the flow regimes out of Elevenmile Reservoir and Spinney Mountain Reservoir that were beneficial and detrimental to rainbow trout year class strengths. For the past two years, CPW staff worked cooperatively with Aurora Water and Denver Water on reservoir releases in the spring to produce larger year classes of rainbow trout.



Ken Kehmeier is a Colorado native that has worked for Colorado Parks and Wildlife for 28 years. He was the biologist for the North Platte, Laramie and Poudre Rivers for 22 years and has spent the last six years as the senior aquatic biologist for the Northeast Region, Platte River Basin. Most of his attention in recent years has been focused on the development of fish and wildlife mitigation for proposed water development projects along the Front Range.

Improving Urban Streams for Native Warmwater Fishes

Ashley Ficke

Fisheries Ecologist, GEI Consultants, Inc., 4601 DTC Blvd., Ste. 900, Denver, CO 80237, 970-290-4374, aficke@geiconsultants.com

Like many other streams that transition from the mountains to the plains in Colorado, the South Platte River and its tributaries are highly affected by urban land use. These streams are disturbed at multiple scales: altered flow regimes and water quality affect the South Platte throughout the Denver Metro area, the presence of multiple barriers disrupts fish migration and ranging behaviors at moderate scales, and channelization and removal of woody debris alters local physical habitat. Despite these limitations, the South Platte has a resource that is much less secure in other, less modified plains streams in Colorado: water. The South Platte Drainage supports a native fish community that is adapted to unpredictable environmental changes and sudden disturbances. The combination of a relatively secure water supply and a resilient fish fauna provide an opportunity to explore the question of whether highly modified urban streams can be adapted to provide habitat for native warmwater fishes.



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Ashley received her B.S. in wildlife and fisheries biology at U.C. Davis in 1996. After a not-so-brief sabbatical as a ski bum, she attended Colorado State University and received a M.S. in fish, wildlife, and conservation biology in 2006. In 2007, she began working for GEI Consultants as a fisheries ecologist. In 2008, she began pursuing a Ph.D. (also at Colorado State University) while remaining at GEI. She expects to complete her Ph.D. by the end of this year and rediscover what it's like to have a little bit of spare time.

Wednesday, Oct. 23, 12:00 p.m.

Keynote Luncheon

Friends of the South Platte Award Presentation

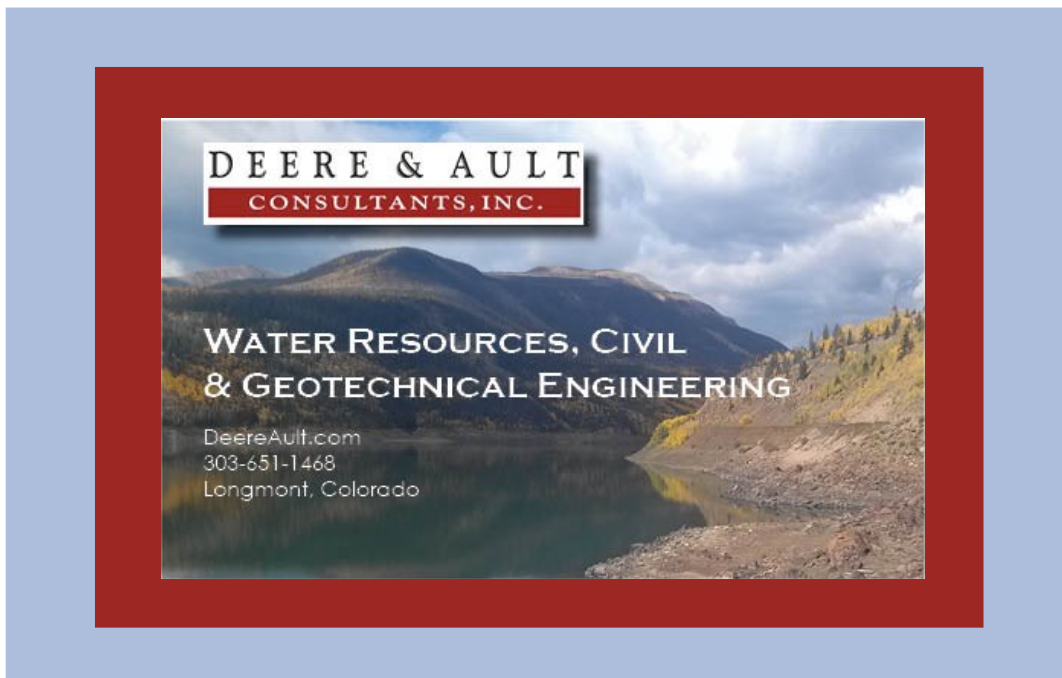
Using Innovative Technology to Change the Conversation about Oil and Gas in Colorado

Curtis Rueter

Manager, CNG/LNG Development, Noble Energy, 303-228-4048, crueter@nobleenergyinc.com

The activities of the oil and gas industry are not well understood and may arguably be misunderstood by significant segments of the general public, in large part because the industry has not told its own story well and has not helped the public gain an understanding of the benefits of oil and gas production as well as the industry's considerable efforts to mitigate the risks associated with oil and gas production. This keynote address will touch on some of the challenges in addressing public perception, highlight Noble's efforts to reduce its environmental footprint through its use of innovative approaches and technologies for both its water supply/recycling strategy and its LNG/CNG strategy, and discuss ways that the oil and gas industry and other groups are working to change the conversation about oil and gas in Colorado.

Curtis Rueter is the LNG/CNG development manager for Noble Energy, Inc. In this role, he is responsible for promoting and implementing the use of natural gas as a motor fuel for drilling, pressure pumping, trucks, and other applications within Noble as well as in Noble's supply chain. Prior to his current role, Mr. Rueter was the environmental and regulatory manager for Noble, where his responsibilities included environmental and regulatory permitting and compliance as well as the oversight and development of Noble's strategy for water supply, recycling, and disposal. Mr. Rueter received his B.S. in chemical engineering from Texas A&M University.





Wednesday, Oct. 23, 1:20 p.m.

Drilling In (Energy/Oil and Gas)

Moderator: Mayor Dennis Coombs

City of Longmont, 350 Kimbark St., Longmont, CO 80501, 720-442-2329, dennis.coombs@ci.longmont.co.us

Dennis Coombs is a second generation Coloradoan. Born in Boulder, he grew up in West Seattle and has lived in Longmont for 33 years. Coombs has both bachelor's and master's degrees in electrical engineering from University of Washington. Having worked as an engineer in the aerospace industry for more than 33 years, he retired at age 55 from Ball Aerospace. Dennis is a founder and co-owner of the Pumphouse Restaurant and Brewery in Longmont. The Pumphouse Brewery, which has been in business for more than 16 years, is a cornerstone business in Downtown Longmont. He currently works as the corporate treasurer of Pumphouse Brewery and has been Longmont's Mayor for the past 18 months.

Dennis has been an avid age-group athlete in Longmont for 28 years. He has competed in two Ironman World Championships in Hawaii. He also was selected in a National Championship race in Wisconsin to become a member of the United States age-group tri-athletes to compete in World Triathlon Championships in New Zealand in 2003. Dennis and Kristen have a son, Aaron (31 years old), and a daughter, Alison (28 years old). Aaron is an attorney in Washington D.C., and Alison is an attorney in Las Vegas, Nevada.

Investigations of the Effects of Oil and Gas Development on Water Quality in the Denver-Julesburg Basin

Joseph N. Ryan

Professor; Bennett-Lindstedt Faculty Fellow, Department of Civil, Environmental, and Architectural Engineering, University of Colorado, 428 UCB, 1111 Engineering Drive, ECOT 441, Boulder, CO 80309-0428, 303-492-0772, joseph.ryan@Colorado.EDU, <http://www.colorado.edu/ceae/environmental/ryan/>

As part of a National Science Foundation-funded research project, we have been initiating investigations of the effects of oil and natural gas development on groundwater quality in the Denver-Julesburg Basin. Our investigation includes examination of existing water quality data, sampling of groundwater from wells, and assessment of the fate and transport of hydraulic fracturing fluid compounds in laboratory columns. This presentation will provide an update of these investigations.

Dr. Joseph Ryan is a professor and Bennett-Lindstedt Faculty Fellow in the Department of Civil, Environmental, and Architectural Engineering at the University of Colorado Boulder. He has been teaching and conducting research at the University of Colorado Boulder since 1993. At the University, he is also affiliated with the undergraduate Environmental Engineering Program in the College of Engineering and Applied Sciences, the Environmental Studies Program in the College of Arts and Sciences, and the Center of the American West. Dr. Ryan holds a B.S. degree in geological engineering from Princeton University and M.S. and Ph.D. degrees in civil and environmental engineering from the Massachusetts Institute of Technology. The emphasis of Dr. Ryan's research and teaching is on the fate and transport of contaminants in natural waters. Dr. Ryan's research interests include the role of colloids and organic matter in the speciation and transport of contaminants in subsurface and surface waters, the role of organic matter in the speciation of trace metals in natural waters, and the transport of microbes in subsurface waters. He and his co-authors have published more than 60 articles in environmental engineering and science journals on these topics. His research is currently supported by grants from the National Science Foundation, the Department of Energy, and the Tennessee Valley Authority. He is faculty director of the National Science Foundation-funded AirWaterGas Sustainability Research Network, a multi-institution team addressing the effects of oil and gas development on air and water resources. Dr. Ryan is a member of the American Geophysical Union, the American Chemical Society, and the Association of Environmental Engineering and Science Professors.



Have a nominee for the Friends of the South Platte?

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Friends of the South Platte

This award program was initiated in 2004 to recognize individuals and organizations who, through diligence and dedication, have made exceptional contributions in the South Platte River Basin.

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Special thanks to John Fielder for his generous donation of the picture “South Platte Sunset” and his support of the Friends of the South Platte Award. “South Platte River Sunset” can be found with John’s other fine art prints at John Fielder’s Colorado, his art gallery in the Cherry Creek mall. You can also view his work, learn about workshops and order books at www.johnfielder.com.



Colorado Water Watch: Concerns at the Energy-Water-Agriculture Interface

Ken Carlson

Professor, Civil and Environmental Engineering, Colorado State University, Dept. of Civil and Environmental Engineering, Fort Collins, CO 80523, 970-491-8336, kcarlson@engr.colostate.edu

Significant oil and gas development is occurring in Northeast Colorado as horizontal drilling and hydraulic fracturing technology allows cost effective extraction of new resources. This energy development is largely occurring in agriculture areas with a significant reliance on water resources. This presentation will describe research that is being conducted at Colorado State University to understand the risks of oil and gas development relating to water resources including quantity and quality.

Ken Carlson is professor of Civil and Environmental Engineering at Colorado State University with more than 20 years of experience in water related issues. He is director of the Center for Energy Water Sustainability within the CSU Energy Institute and has a B.S. in chemical engineering from the University of Wisconsin, M.S. in civil engineering from Colorado State University and a Ph.D. in environmental engineering from the University of Colorado – Boulder.

Flood Effects and New State Regulations on Set-Backs and Groundwater Monitoring

Thomas J. Kerr

Permit and Technical Services Manager, Colorado Oil and Gas Conservation Commission, 1120 Lincoln, Ste. 801, Denver, CO 80203, 303-894-2100 X5127, thom.kerr@state.co.us, <http://colorado.gov/cogcc>

The Colorado Oil and Gas Conservation (COGCC) was created by legislation in 1951. Since its inception it has been charged with the protection of groundwater and proper management of the waste created by oil and gas development. The agency has continuously modified its regulation to address changes in the development techniques and the ever-changing technologies used by the oil and gas industry. With Colorado's expanding population and well numbers, its rules have focused more and more on the environment and the interface between the people impacted by the increase in drilling and production operations. This presentation will explore the regulatory changes brought in 2013 to setbacks from building and the sampling and monitoring requirements for groundwater.



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Thomas J. Kerr, permit manager of the Colorado Oil and Gas Conservation Commission, started with the COGCC in August of 1990 as the permit technician. In April of 1998 Thom took over the information manager position and was the project manger for the computer systems conversion. He has been the permit and technical services manager since 2008 including six months as acting director of the agency in 2012. Prior to coming to the COGCC he worked for two years on a federal contract to the MMS. Before that Thom spent 13 years in various capacities at several independent oil and gas exploration companies including nine years of field work.

Wednesday, Oct. 23, 3:00 p.m.

Jumping In (Water Quality)

Moderator: Marcella Hutchinson

Environmental Science, U.S. Environmental Protection Agency Region 8, 1595 Wynkoop St., Denver, CO 80202, 303-312-6753, hutchinson.marcella@epa.gov

Marcella Hutchinson is an environmental scientist with the Office of Ecosystems Protection and Remediation at the U.S. Environmental Protection Agency Region 8 office in Denver, Colorado. She is responsible for Watershed and Non Point Source programs for the State of Colorado. She holds Bachelor of Arts and Master of Science degrees, both in geology, from the University of Colorado at Boulder. Ms. Hutchinson has worked in EPA's water programs since 1996.



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From Rocky Mountain High to Below LoDo: Endocrine Disrupters and Emerging Contaminants in Remote and Not-So-Remote Colorado Locations

William A. Battaglin

Research Hydrologist, U.S. Geological Survey, Box 25046, MS 415, Bldg. 53, DFC, Lakewood, CO 80225, 303-236-6872, wbattagl@usgs.gov

Kelly Smalling, Paul Bradley, and Timothy J. Reilly

Due to the proximity of their use and/or their association with wastewater discharges, pesticides, hormones, and other synthetic endocrine disrupting compounds (EDCs) are commonly detected in surface water in urban and agricultural areas. Recent studies indicate that these chemicals also can occur in more remote locations and that hormonally caused malformations in fish and amphibians have been detected at some of these locations. We present a brief history of the occurrence of EDCs in remote locations and a summary of recently collected occurrence data from locations such as Rocky Mountain National Park and compare them to concentrations and detection frequencies from more developed locations in Colorado. In 2009-2012 we sampled for EDCs and pesticides in remote and more developed locations in Colorado. A wide range of pesticides, pharmaceuticals, waste-water indicator compounds, and hormones were detected in water, sediment, and frog tissues from both remote and more developed locations. The results show that even in remote locations amphibians and other aquatic wildlife are exposed to pesticides, hormones, EDCs, and other contaminants from water and sediment, some of which are known to cause malformations.

Bill Battaglin is a research hydrologist for the U. S. Geological Survey in Lakewood, Colorado. Bill received a bachelor's degree in geology from the University of Colorado, Boulder, in 1984, and a master of engineering in geological engineering from the Colorado School of Mines in 1992. He has worked with various offices of the USGS since 1982. He has helped design and conduct studies investigating the occurrence of pesticides and other contaminants in streams, reservoirs, groundwater, rain, and the air. He is currently working on investigations of the occurrence of glyphosate in Midwestern streams, fungicides in potato growing regions, the effects of pesticides on amphibian populations in North America, the fate of emerging contaminants in Colorado surface and groundwater, and the potential effects of climate change on Colorado snowpack. Bill is currently (2013) the American Water Resources Association (AWRA) Past President and Consortium for Research and Education on Emerging Contaminants (CREEC) treasurer. Bill enjoys hiking, skiing, camping, ultimate, golf, and just about anything else that can be enjoyed outdoors.

Northern Water Stakeholders Emerging Contaminants Monitoring Program

Jen Stephenson

Environmental Specialist, Northern Water, 220 Water Ave., Berthoud, CO 80513, 970-622-2334, jstephenson@northernwater.org, www.northernwater.org

Emerging contaminants are a growing concern to human health and the environment, particularly in drinking water supplies. The laboratory analyses can be costly and there is currently no clear standard list of constituents as analytical methods continue to develop. In 2008 Northern Water launched a collaborative emerging contaminants monitoring program co-funded by the cities of Boulder, Broomfield, Fort Collins, Greeley, Longmont, and Loveland, the Town of Estes Park, Northern Water and the U.S. Bureau of Reclamation. The program was designed to more cost effectively take a pro-active approach to determine the presence of pharmaceuticals, personal care products, hormones, and pesticides in the Colorado Big-Thompson Project and other source waters associated with drinking water supplies. The program develops a baseline of data for these compounds and will allow monitoring of any changes in the future. This presentation will discuss how the program operates, the compounds monitored, and highlight findings from 2008-2011.

Jen Stephenson has worked as an environmental specialist for Northern Water's Water Quality Department since 2008. Jen assists in managing Northern's Water Quality Monitoring program which includes planning, data processing and data analysis for water quality sampling in the Colorado-Big Thompson system. She manages Northern Waters' Emerging Contaminants Monitoring Program and is the lead author of Northern Waters' recently released 'Emerging Contaminants Program: 2008-2011 Summary Report'. She holds a degree in watershed science from Colorado State University.



Flood Effects and Nutrients Management in Colorado: What's Next?

Dick Parachini

Clean Water Program Manager, Water Quality Control Division, Colorado Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, CO 80246-1530, 303-692-3516, dick.parachini@state.co.us

The Water Quality Control Commission adopted Regulation #85 – Nutrients Management Control in June 2012, which became effective in September 2012. This new control regulation establishes effluent limitations for many domestic wastewater treatment plants and industrial wastewater dischargers that are likely to discharge significant levels of nutrients. It describes requirements for other point source dischargers and voluntary steps for nonpoint sources to address nutrients. It also establishes monitoring requirements for point source dischargers and a program aimed at monitoring of surface waters for nutrients and related parameters. This effort is geared toward better characterizing nutrient sources, and current nutrient conditions, to help inform future regulatory decisions regarding nutrients. This presentation will identify the important elements and the status of implementation.

Dick Parachini is the Clean Water Program manager of the Water Quality Control Division in the Colorado Department of Public Health and Environment. This position is responsible for all Clean Water related work plan, budget, and personnel activities in the Watershed, Permits, Engineering, and Field Services sections, and Compliance & Enforcement units totaling approximately 92 professional staff. Prior to that, he was the Watershed Program manager for the Water Quality Control Division. This program is comprised the Environmental Data (monitoring, assessment, and reporting), Standards (water quality criteria, standards, and classifications), and Restoration and Protection (TMDLs, Nonpoint Source, Source Water Protection, and Planning) units. From 2001 to 2007, Dick was the Outreach and Assistance unit manager for the Water Quality Control Division. This unit was responsible for Water Quality Planning, Nonpoint Source Management, Source Water Protection, and Wastewater and Drinking Water Grants and Loans. He started with the Water Quality Control Division in 1997 as the South Platte Watershed coordinator where he functioned as a point of contact for the division regarding non-point source pollution programs, wellhead and source water drinking water protection programs, regional water quality planning agency coordination, reservoir control regulations, and local watershed initiatives.

Dick has a Bachelor of Arts in zoology from the University of Northern Colorado and a Masters of Science in range ecology from Colorado State University. He is a fourth generation Coloradoan from a farming/ranching family in western Morgan County.

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Urban Waters Initiative

Stacey Eriksen

Ecosystem Protection and Remediation, U.S. Environmental Protection Agency Region 8 8EPR-EP, 1595 Wynkoop, Denver, CO 80202, 303-312-6692, eriksen.stacey@epa.gov

Devon Buckels, AICP

Urban Waters Partnership Coordinator, Colorado State Forest Service 303-312-6476, devon.buckels@colostate.edu

The South Platte Urban Waters Partnership is a collaboration of more than 40 organizations, working across governmental and disciplinary boundaries, to protect and restore lands and waters in the South Platte River watershed. It emphasizes stewardship and community connection, linking urban areas with forested watersheds, and people with nature. This partnership is all about resource efficiency – leveraging human capital and financial resources to for river restoration, community education and improving watershed health. This session will provide background and up to date information on what is happening with the partnership.

Stacey Eriksen has been an employee of the Environmental Protection Agency for 21 years. Currently she works on sustainable development, HUD/DOT/EPA partnership, LID/GI, Urban Waters, brownfields and urban agriculture. She has previously worked in a number of programs at EPA including, enforcement, community-based environmental protection, superfund, and hazardous waste. Stacey spent four years on loan from EPA to the City and County of Denver as their Brownfields Coordinator. She also worked on water quality, sustainable development, and affordable green housing issues for the City as part of Greenprint Denver. Prior to EPA, Stacey worked for three years for the Department of Energy at Rocky Flats on waste management and environmental remediation issues. Stacey is a Colorado native with a B.S. in chemical engineering from Colorado State University and a M.S. in ecological engineering from Colorado School of Mines. She is also a graduate of the Denver Community Leadership Forum and the Coaches Training Institute.

Devon Buckels, American Institute of Certified Planners (AICP), is the South Platte River Urban Waters Partnership coordinator. Prior to this position, Buckels' work in the public, private and non-profit sectors has focused on creating healthy and sustainable communities. Her work for URS Corporation and more recently for the City and County of Denver has included community and land-use planning, river corridor planning, infrastructure financing, civic engagement and the creation of strategic partnerships for project funding. She has a master's degree in urban and regional planning from the University of Colorado at Denver, and a Certification in Sustainability Leadership and Implementation from the Daniels College of Business at Denver University.



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Clear Creek Targeted Watershed Grant: Reflections

Diane Kiely

Project Manager, Clear Creek Watershed Foundation, 2060 Miner St., Idaho Springs, CO 80452, 303-567-2699, info@clearcreekwater.org, www.clearcreekwater.org

The goal of the Clear Creek Watershed Foundation Targeted Watershed Grant was to conduct cost-effective remediation of Upper Clear Creek segments listed on the State of Colorado 303(d) List of Impaired Waters and educate the community and visitors on watershed sustainability. During site characterization for the grant it was discovered that the disposal of sediment removed from project sites would become a barrier to remediation efforts. This barrier led to a revision of the grant. Funds were reallocated toward research into options for disposal of waste materials. For example, the feasibility of utilizing mine waste in conjunction with renewable energy development was investigated. A wider analysis was conducted on the upper Clear Creek basin which involved the water/energy nexus and a wider community approach toward renewable energy, water quantity and sustainable watershed management.

A qualitative analyst and project manager with more than 25 years of experience in business operations, Diane Kiely supports organizations with strategic business planning and implementation services, provides analysis, serves as project liaison, and facilitates discussions on planning, process and project development.

As a consultant with the Clear Creek Watershed Foundation (CCWF), Diane lead their Distributed Renewable Energy Initiative. She coordinated CCWF discussions, public forums, consensus building and presentation materials contributing to the formal rezoning of Clear Creek County for renewable energy as a use by right. Diane also serves CCWF as project manager for remediation of nonpoint source pollutants contributing to the State of Colorado's 303(d) list of impaired waters for trace metals.

Diane is actively involved in community revitalization efforts and was awarded the Outstanding Performance Award, Clear Creek Watershed Person of the Year. A sport enthusiast, Diane has a long history of involvement with women's lacrosse and served as President of the Colorado Women's Lacrosse Officials Association. She also was a volunteer for more than 10 years with the National Sports Center for the Disabled. She has her Bachelor of Arts degree in history from Slippery Rock University of Pennsylvania.



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Wednesday, Oct. 23, 5:00 p.m.

POND Reception

Thursday, Oct. 24, 8:30 a.m.

From Drought to Flood

Moderator: Reagan Waskom

From Drought to Flood in Three Days

Nolan Doesken

Colorado State Climatologist, Senior Research Associate, Colorado Climate Center, Dept. of Atmospheric Science, 1371 Campus Delivery, Colorado State University, Fort Collins, CO 80523-1371, 970-491-3690, nolan@atmos.colostate.edu

Nolan Doesken is the State Climatologist for Colorado at the Colorado Climate Center at Colorado State University. After obtaining degrees from the University of Michigan and University of Illinois in the 1970s, Nolan began his work as a climatologist at CSU in 1977 and was appointed State Climatologist in 2006. He is fascinated with all aspects of weather and climate, but pays particularly close attention to precipitation. After the Fort Collins flash flood of 1997, Nolan established a volunteer rain gauge network to track and map the local variations in northern Colorado precipitation. This project – the Community Collaborative Rain, Hail and Snow network (CoCoRaHS) – has now spread nationwide.

Gauging the Flood Waters

Robert Kimbrough

Associate Director, Hydrologic Data, U.S. Geological Survey, Colorado Water Science Center, 303-236-6902, rakimbro@usgs.gov

Additional information not available at press time

Infrastructure Damage and Other State Issues

Kevin Houck

Chief, Watershed and Flood Protection, Colorado Water Conservation Board, 1580 Logan St., Ste. 200, Denver, CO 80203, 303-866-3441 x3219, kevin.houck@state.co.us

Kevin Houck is the chief of watershed and flood protection for the CWCB and is responsible for supervising and directing the work of professional staff, multiple consultant contracts, and seasonal/temporary staff. He is a certified floodplain manager and a registered professional engineer. He has been with the CWCB for nine years, following eight years of private consulting work. He works frequently with the Board, the Attorney General's Office, the Legislature, and other stakeholder groups to develop and implement new statutes, regulations, and policies that are pertinent to the agency's mission. He also has project management responsibility for levees, multi-hazard mitigation planning, flood response and preparedness activities, and engineering design. He previously served as the community assistance program manager and project engineer prior to his appointment as section chief. Kevin is the Chair of the Colorado Flood Task Force. He is a past Chair of the Colorado Association of Stormwater and Floodplain Managers and past board member for the Association of State Floodplain Managers.



Thursday, Oct. 24, 10:30 a.m.

Skiing Out

Water Usage and the Ski Industry

Geraldine Link

Director of Public Policy, National Ski Areas Association, 133 S. Van Gordon St., #300, Lakewood, CO 80228, 720-963-4205, glink@nsaa.org

Geraldine Link directs public policy for the National Ski Areas Association in Lakewood, Colorado. She has held this position with NSAA for more than sixteen years. The association is the trade group for resort owners and operators nationwide, and its members represent more than 90% of the skier/snowboarder visits in the United States. Before joining the NSAA, Ms. Link was an attorney with the law firm of Arnold & Porter. At Arnold & Porter, she specialized in environmental and natural resources law and corporate litigation.

Ms. Link has served on a number of boards and committees relating to public lands and natural resources issues. She served as member of the Roadless Area Conservation National Advisory Committee by appointment of the Secretary of Agriculture. Ms. Link has served on the Board of Directors for the University of Colorado School of Law and the Continental Divide Trail Alliance. She served as a Colorado Hazardous Waste Commissioner in the 1990s by appointment of the Governor.

Ms. Link has a Bachelor of Arts degree in government from Georgetown University in Washington D.C. She graduated magna cum laude from Georgetown in 1987 and is a member of the Phi Beta Kappa honor society. Ms. Link received a Juris Doctorate degree in 1993 from the University of Colorado School of Law. She graduated Order of the Coif and served as the Editor-in-Chief of the University of Colorado Law Review.

Ms. Link resides in Denver, Colorado. She and her husband, Dave, have two kids, Sophie and Charlie.

Thursday, Oct. 24, 10:55 a.m.

Blacking Out (Drought/Fire)

Moderator: Rich Vidmar

Senior Water Resources Engineer, Aurora Water, 15151 E. Alameda Pkwy., Aurora, CO 80012, 303-739-7326, rvidmar@ci.aurora.co.us

Richard Vidmar is a water resources engineer for Aurora Water specializing in water rights acquisitions, appropriations, and protection in the South Platte Basin. Rich holds a bachelor's degree in civil engineering from Colorado State University. Prior to earning his degree, Rich worked for the U.S. Bureau of Reclamation for six years at the Mt. Elbert power plant's water operations and maintenance division. Rich has been employed at Aurora Water for more than six years, working on many different projects including the Prairie Waters Project. Rich grew up in Buena Vista, CO where his father, Tom, is the superintendent of the Homestake Water Project. Rich also completed the Colorado Foundation for Water Education Water Leaders program.

Targeting and Prioritizing: How to Prepare for and Respond to Wildfires

Brad Piehl

Partner, JW Associates, PO Box 3759, Breckenridge, CO 80424, 970-406-0085, bpiehl@jw-associates.org, www.jw-associates.org

This presentation will be a review of wildfire/watershed assessments in Colorado and how they have been scaled to address pre- and post-disturbance planning for utilities in important water supply watersheds. The usefulness of the stakeholder process and collaboration will be discussed. Then the focus will shift to how some of those assessments have been scaled down to be useful tools for site-specific watershed protection planning and wildfire mitigation. Specific examples will be presented including the High Park Fire restoration efforts and pre- and post-fire planning for the Colorado-Big Thompson Project.

Brad Piehl is a forest hydrologist. He has been working as a consultant in Colorado for more than 25 years. For the last 14 years he has focused on watershed hazard assessments and wildfire planning. He facilitated the Watershed Wildfire Protection Group during the creation of the procedure for wildfire/watershed assessments in Colorado. He has completed the technical and stakeholder process for more than 12 assessments in Colorado. He is currently working on High Park Fire mitigation as well as with several water providers on pre- and post-fire planning and watershed protection following wildfires.



Wildfire Preparedness and Incident Response

Eric Howell

Forest Program Manager, Catamount Wildland Fire Team Coordinator, Colorado Springs Utilities, PO Box 1103, Mail Code 930, Colorado Springs, CO 80947, 719-668-4554, ehowell@csu.org, www.csu.org

With catastrophic wildfire as an ongoing threat to Colorado water supplies and collection systems, many water providers are taking proactive steps to try and minimize post-fire impacts on their respective systems. Colorado Springs Utilities has long been active in forest management activities to reduce wildfire hazards and improve forest health on their properties. However, they have taken further steps to conduct comprehensive watershed wildfire risk assessments, expand funding to complete treatments on federal and private lands, and engage in fire suppression planning through their existing wildland fire team. This presentation will provide an overview of Colorado Springs Utilities Forest Management Program, and discuss how a water utility can engage in fire suppression planning and wildland fire incidents to protect their water resources and infrastructure.

Eric Howell currently works for Colorado Springs Utilities in watershed management as the forest program manager. His responsibilities include overseeing the development and implementation of forest management plans on Utility owned watershed lands as well as coordinating and participating on similar efforts with the U.S. Forest Service to manage critical watersheds on federal lands. As a deputy chief on the Colorado Springs Utilities Wildland Fire Team, he also works to coordinate wildfire suppression plans and responds to wildland fire incidents. Eric has been with Colorado Springs Utilities for 20 years, and has worked in source water quality protection, treatment plant support, and various other water and wastewater capacities to support the Utility. Eric holds Bachelor of Science in natural resources management from Colorado State University.

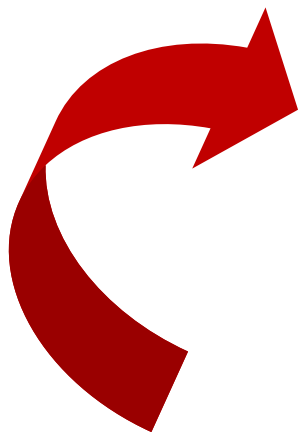
Hayman: Long-term Recovery and its Influence on Waldo Recovery During the First Year

Carol Ekarius

Executive Director, Coalition for the Upper South Platte, Box 726, Lake George, CO 80827, 719-748-0033, carol@uppersouthplatte.org

Wildfire has become a major water quality issue in much of the West, and the South Platte basin has become a poster child for the wildfire/water nexus. But, the lessons of the 2002 Hayman fire in the Upper South Platte watershed are now making a difference in post-fire recovery approaches on the 2012 Waldo fire, and on other fires around the state. Using natural channel design techniques, and working on alluvial fans and in ephemeral draws, as well as on hillslopes, we are pioneering new techniques to reduce the amount of sediment and debris making its way to rivers and reservoirs.

Carol Ekarius has been the executive director of the Coalition for the Upper South Platte (CUSP) since 1998. Over those years she has learned more about forests, fire, and post-fire flooding than she ever wanted to know. CUSP has helped lead Hayman recovery efforts and is now applying the lessons learned on Hayman to the Waldo Fire.



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Thursday, Oct. 24, 1:15 p.m.

Keynote Luncheon

James Eklund

Director, Colorado Water Conservation Board, 1313 Sherman St., Room 721, Denver, CO 80203, 303-866-3441

Posters & Exhibitors

Agricultural Water Conservation Clearinghouse: An Online Tool for Water Resource Professionals, Managers and Academia

Reagan Waskom, Julie Kallenberger, Troy Bauder, Faith Sternlieb, Alicia Shogbon and Jim Bauder

Primary Contact: Julie Kallenberger, Research Associate, Colorado Water Institute, 970-491-5124, julie.kallenberger@colostate.edu

Agriculture consumes an estimated 80% of available water resources in the western U.S. The urgency for policy makers and water users to implement agricultural water conservation has increased given the likelihood that future water needs for a growing population will come from agriculture. The challenge to meet the exponential global demand for agricultural outputs will be negatively impacted by the reduction of water resources in agriculture. Extensive collaboration between policy-makers, extension agents, farmers and water managers is therefore required to develop long-term solutions to tackle the pressures on limited water resources spurred by population growth and climate variability. To accomplish this, there needs to be an understanding of agricultural water conservation methodology, technology, and policy to make informed management decisions. Together with the Northern Plains and Mountains Regional Water Program, the Colorado Water Institute has addressed the need for increased knowledge, understanding, and adoption of agricultural water conservation through an innovative web-based project.

The Agricultural Water Conservation Clearinghouse (AWCC) (www.agwaterconservation.colostate.edu) seeks to join communities of practice to collaboratively address the complex issues of agricultural water use. The AWCC is designed as a comprehensive one-stop resource for the latest news, research, literature and tools related to agricultural water conservation. The AWCC has been searched by over 24,600 users since June 2012, and participation continues to grow. The focal point of the AWCC is a comprehensive library that identifies published materials on multiple aspects of agricultural water conservation. The library contains over 6,500 entries including refereed journal articles, books, reports, conference proceedings, theses and dissertations. Building the AWCC through partnerships, the Project Team has formed relationships with several irrigation and water-related organizations. These partnerships have increased access to proceedings and reports published through these organizations. Until recently, much of this literature has only been available in hard copy and was not available from traditional library or web sources.

Colorado State University Water Resources Archive

Patricia J. Rettig

Head Archivist, Water Resources Archive, Colorado State University, Morgan Library, Fort Collins, CO 80523-1019, 970-491-1939, Patricia.Rettig@ColoState.edu

The Colorado State University Water Resources Archive is a joint effort of the University Libraries and the Colorado Water Institute. Begun in 2001, the Archive consists of collections from individuals and organizations that have been instrumental in the development of water resources in Colorado and the West. Document types within the collections range from meeting minutes, reports, and correspondence to maps, photographs, and audio tapes. These primary materials relate to all aspects of water in Colorado and to contributions made by Coloradoans to water activities. Subject areas include engineering studies, law and legislation, water resources management, endangered species, and more. Geographic coverage focuses on Colorado but extends across the U.S. West and around the world. Visit the website <http://lib.colostate.edu/archives/water/> to learn more about Colorado water history, find historical resources for your research, or learn how you can donate funds or documents.

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