

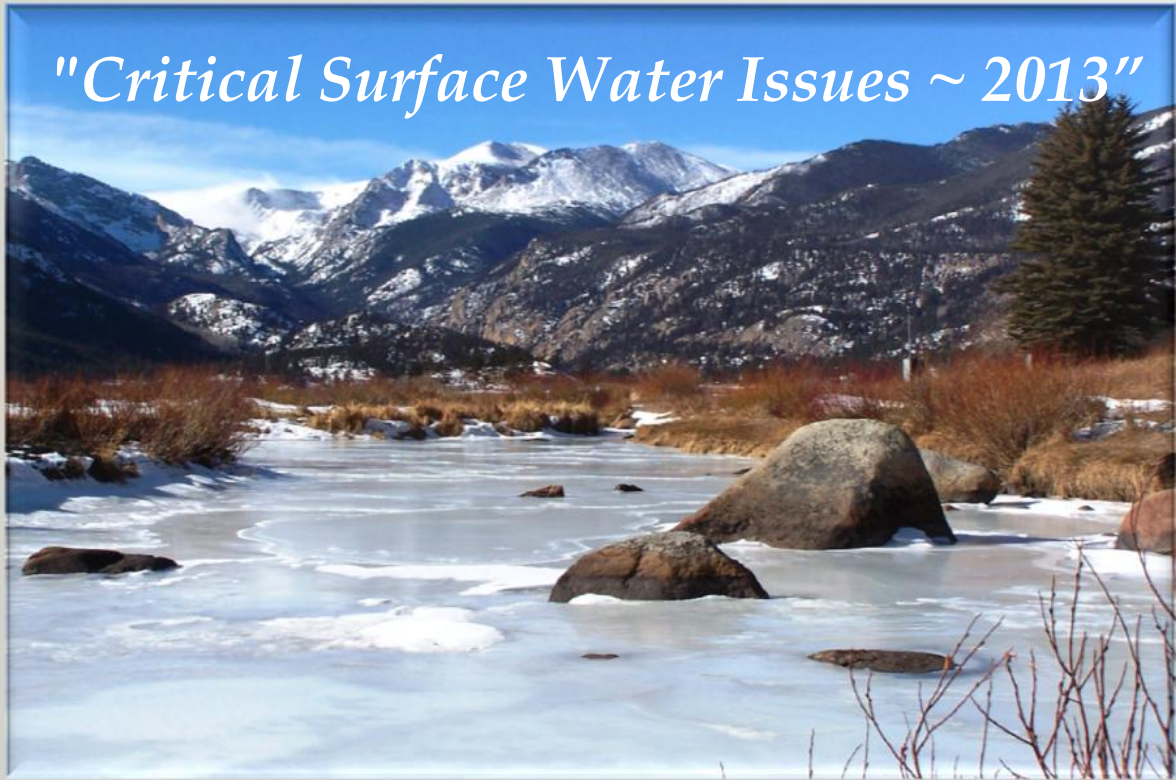


**BIG THOMPSON
WATERSHED
FORUM**

2013 Watershed Conference

~ THE FUTURE OF WATER QUALITY IS IN OUR HANDS ~

"Critical Surface Water Issues ~ 2013"



Big Thompson River ~ Rocky Mountain National Park, CO

ISLAND GROVE REGIONAL PARK

Greeley, Colorado

Thursday, February 28, 2013



**Our mission is
to protect and improve water quality
in the Big Thompson River Watershed
through collaborative monitoring,
assessment, outreach, and
restoration projects.**



Conference Agenda

Thursday, February, 28, 2013
(8:00 AM - 4:00 PM)



8:00 AM	Registration and Continental Breakfast
8:30 AM	Opening Remarks and Forum Update - John Matis and Zack Shelley
9:00-10:00 AM	<i>Session I Panel: 'Agriculture Water Sharing & Development, Ecosystem Initiatives in Northern Colorado and Sylvan Dale Guest Ranch Nutrient Pilot Project'</i>
	George Wallace, Ph.D., Professor Emeritus, Colorado State University and Larimer County Agricultural Advisory Board
	David Jessup, General Partner and Owner, Sylvan Dale Guest Ranch
	Zack Shelley, Program Director, The Forum
10:00-10:30 AM	Break & Refreshments
10:30 -11:30 AM	<i>Session II Panel: 'Wildfire Effects on our Water Quality, Wildlife and Watershed Management'</i>
	John Stednick, Ph.D., Professor, Warner College of Natural Resources, Colorado State University
	Daniel Baker, Ph.D., Research Scientist, Department of Civil & Environmental Engineering, Colorado State University
	Brad Piehl, Principal and Partner, JW Associates
11:30 AM - 1:00 PM ~Luncheon~	<i>Keynote Speaker, Patricia Limerick, Ph.D., "A Ditch in Time - The City, the West, and Water."</i> Dr. Limerick is a Professor of History at the University of Colorado and Faculty Director and Chair of the Board of the Center of the American West <i>Dave Cole Environmental Scholarship Award Presentation & Recipients</i>
1:00-2:30 PM	<i>Session III Panel: 'Hydraulic Fracturing in the Front Range and Colorado'</i>
	Laura Belanger, P.E, Water Resources Engineer, Western Resource Advocates
	Shane Davis, Chair, Poudre Canyon Group, Sierra Club
	Thom Kerr, Permit and Technical Services Manager, COGCC
	Ken Carlson, Ph.D., Professor, Department of Civil & Environmental Engineering, Colorado State University
2:30-2:45 PM	Break & Refreshments
2:45-3:45 PM	<i>Session IV Panel: 'Water Supply Taste and Odor Issues and Treatment Approaches in our Region'</i>
	William Bellamy, Ph.D., Vice President, Water Supply & Treatment, CH2M HILL, Inc.
	Dr. Pinar Omur-Ozbet, Ph.D., Professor, Department of Civil & Environmental Engineering, Colorado State University
3:45 PM	Wrap-Up and Closing Remarks - John Matis and Zack Shelley
4:00 PM	Adjourn

Speaker Abstracts & Bios

Session I Panel

Agriculture Water Sharing & Development, Conservation Initiatives in Northern Colorado & the Sylvan Dale Guest Ranch Nutrient Pilot Project

'Agriculture water sharing & development'

-- George Wallace, Ph.D., Professor Emeritus, Colorado State University and Larimer County Agricultural Advisory Board

Irrigated agriculture in Larimer County provides local foodshed security, ground water recharge, flood surge control, open space, wildlife habitat, recreational flows during the summer, community separators, and adds to a robust local economy. During years when development pressure in Larimer County was intense and farm prices low, considerable irrigation water was purchased by developers, cities and special districts. The future of irrigated agriculture with all the benefits it provides, depends on strategies like water sharing with domestic users that will minimize further "buy and dry" water transfers. The irrigated landscape is itself a reservoir with a highly developed storage and delivery infrastructure. With proper planning, agriculture can agree to forgo some irrigation and provide drought year water supplies for domestic and commercial use. In return, domestic providers could agree not to change the agricultural decrees they currently hold and continue to rent that water back to agriculture during years of normal precipitation. They could also agree to accept cash from developers for domestic water taps in lieu of asking developers to purchase water from agriculture. The devil is in the details but this the time has come to seriously explore water sharing arrangements in Larimer County and the West in general.

Dr. Wallace is Professor Emeritus, in Colorado State University's Warner College of Natural Resources. He is also the founder and former director of CSU's Center for Protected Area Management and Training (CPMAT). His areas of expertise include land use planning, park and protected area planning and management, private land conservation, and the human dimensions of natural resource management including the resolution of resource conflicts.

He has served on and chaired variety of Larimer County, and Ft. Collins boards and commissions related to planning and natural resources. He served 9 years as a planning commissioner for Larimer County and is in his eighth year on the Larimer County Agricultural Advisory Board. George and his wife have owned and operated a farm/ranch North of Ft. Collins Colorado for over 40 years where they raise alfalfa, grass hay, pinto beans, corn and livestock. They have received both State and County environmental stewardship awards for their conservation and restoration practices on the farm.

'A ranchers view on the Colorado Conservation Exchange & the Sylvan Dale Guest Ranch nutrient pilot project'

-- David Jessup, Partner, Sylvan Dale Guest Ranch

-- Zack Shelley, Program Director, Big Thompson Watershed Forum

(David and Zack's bios are noted under Forum staff and board section)

The Colorado Conservation Exchange (CCEX) is being organized by a coalition of university, rancher and environmental groups to develop a market for ecosystem services in northern Colorado. So far, it has set up a financial management component with the help of the Community Foundation, raised seed money from a brewery and a university organization, built a sizeable coalition of private-public stakeholders to advise and support the effort, and launched two pilot projects to demonstrate viability of the market concept. One of those projects, the Sylvan Dale Guest Ranch, we will be discussing today.

The Sylvan Dale Ranch pilot project is designed to measure nutrient runoff from cattle pens into the Big Thompson River both before and after new management practices are implemented to reduce the load. Loveland water utilities, the Big Thompson Watershed Forum, NRCS, Northern Water and university groups are cooperating in this effort. Knowing the concentrations and how many pounds of nutrients are generated by a given number of cows confined for a particular period and subjected to a measurable amount of precipitation allows for the creation of a model with application to other non-point source livestock operations. This information is critical for establishing credible and transparent monetary values for the implementation of similar water quality projects on other farms and ranches.

The CCEX has engaged both potential "buyers" and "sellers" in a non-regulatory based market. To gauge interest among land stewards, interviews were conducted with 16 ranchers and 7 natural resource agency heads. Most ranchers in the survey said they needed at least some income from off-ranch sources, and reported increasing development pressure on their land. There is openness to working with local government and environmental groups to implement an eco-services market. Significantly, when asked about promising aspects of a payment for ecosystem services system, 57% of the ranchers mentioned new income, while 85% mentioned enhancing conservation on their land, which they would like to do anyway if they had the resources. However, there is skepticism about the time and energy required, the possibility rigidity of new management practices, and the cost of their implementation. With ranchers, the question is whether the tradeoff between payments and interference is worth it.

Session II Pane

Fire Effects on Our Water Quality, Wildlife & Watershed Management

'Look at what the fire did to my watershed! Effects of High Park Fire on Cache la Poudre water quality'

**– John Stednick, Ph.D., Professor, Warner College of Natural Resources,
Colorado State University**

The High Park Fire started on 9 June 2012 and was contained on 1 July 2012 after burning over 87,200 acres. The largest fire in Larimer County history burned a portion of the Cache la Poudre watershed, which provides water for many beneficial uses including drinking water, wildlife, and irrigation. Streamflow generation mechanisms and flow routing processes are the determinants of water quality. Forested watersheds are usually associated with excellent water quality. Infiltration rates are rarely exceeded by precipitation rates and thus streamflow generation is via subsurface flow routing. Forest vegetation provides stream shade, which moderates water temperatures, and provides a source of organic material and nutrients. Thus, natural disturbances such as wildfires that remove or disturb forest vegetation may alter hydrologic flow paths and affect water quality. Immediately after the fire, observed water quality changes included increased pH, turbidity, suspended sediment, nutrients, and heavy metals, although most of these responses were storm-related and thus short-lived. The largest and most persistent water quality effect has been an increased sediment flux from small side tributaries to the main channel. This sediment flux includes inorganic and organic materials that affect channel form and function, water quality chemistry and drinking water taste. Although many areas have reseeded naturally or by restoration efforts and decreased new sediment additions, the sediment flux through the main channel will require higher streamflows/energy and recovery will take years.

Dr. Stednick is a professor of watershed science at Colorado State University. His area of expertise is the understanding of land use effects on water quality and quantity. He earned a B.S in Forest Sciences and a Ph.D. in Forest Resources, both from the University of Washington. Teaching and research interests focus on the effects on natural disturbances and land use activities on water resources. Recently-funded research projects include: the effects of climate-induced tree mortality and pine beetles on water resources; effects of fire on water resources at different spatial and temporal scales; effects of co-produced coal bed methane water discharge on soils and water quality, and the conjunctive use effects on water quality. Before coming to CSU he worked as a hydrologist in Alaska, with other professional experiences as a commercial fisherman, fire fighter, EMT, and logger.

'What happens downstream? A discussion of life in the river after the fires'

– Daniel Baker, Ph.D., Research Scientist, Department of Civil and Environmental Engineering, Colorado State University

The legacy effects of the summer 2012 fires on the Cache la Poudre River will not be fully realized for a number of years. To better track the duration and magnitude of these effects we are monitoring the sediment conditions, channel geometry, and aquatic insect condition at eight sites along the River. This presentation will provide an overview of the range of possible impacts to the river system in the context of the data being collected. Additionally the implications for enhancing resiliency to fire impacts of future fires will be discussed.

Dan earned his Ph.D. from CSU in 2009 and has recently returned from a two-year postdoctoral fellowship at Johns Hopkins University. He specializes in stream-restoration education, decision making, and design; the development of monitoring and adaptive management programs; and nutrient processing in aquatic systems. He is currently leading a multi-year, post-fire monitoring project on the Cache la Poudre running from high in the Poudre River canyon down to I-25.

'Big Thompson River Watershed wildfire assessment & zones of concern'

– Brad Piehl, Principal and Partner, JW Associates

The Big Thompson watershed has not experienced any large wildfires recently, although portions of last year's High Park fire burned into the watershed. But, there are some significant wildfire hazards in this watershed. This presentation will review the large-scale Big Thompson Wildfire Watershed Assessment and identified Zones of Concern. It will also present some of the current efforts and partnerships that have been formed for watershed protection in this watershed.

Brad 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, including the Big Thompson watersheds. He is currently working for several water providers on pre- and post-fire planning and watershed protection following wildfires.

Keynote Speaker

' A Ditch in Time – The City, the West, and Water'

– Patricia N. Limerick, Ph.D., Professor of History, University of Colorado

For many years, the writing of Western water history focused on agricultural water use and on the activities of the Bureau of Reclamation. In the last twenty-five years, the scope of study has broadened to include many case studies in urban water history, and in the fragmented and decentralized patterns of multiple agencies and organizations competing for control of water. Patty Limerick will use the history of the Denver Water Department to capture this change in the big picture of Western water history, and to suggest historical lessons that might be of value to Westerners directly involved with water management.

*Dr. Limerick is the Faculty Director and Chair of the Board of the Center of the American West at CU, where she is also a Professor of History and Environmental Studies. Limerick has dedicated her career to bridging the gap between academics and the general public and to demonstrating the benefits of applying historical perspective to contemporary dilemmas and conflicts. Limerick is also known as an energetic, funny, and engaging public speaker, sought after by a wide range of Western constituencies that include private industry groups, state and federal agencies, and grassroots organizations. Her second book, *The Legacy of Conquest* (1987), played a central part in the revitalization of the field of Western American history (2012 is the 25th anniversary of its publication). Limerick is also a prolific essayist, and her most widely read article is "Dancing with Professors: The Trouble with Academic Prose," first published in *The New York Times Book Review*.*

Limerick has received a number of awards and honors recognizing the impact of her scholarship and her commitment to teaching, including the MacArthur Fellowship and the Hazel Barnes Prize, CU's highest award for teaching and research. She is currently the vice president for the Teaching Division of the American Historical Association, and she will be the President of the Organization of American Historians in 2014. She has served twice as a Pulitzer Nonfiction jurist, as well as serving as chair of the Pulitzer Jury in History for 2011. Under her leadership, the Center of the American West serves as a forum committed to the civil, respectful, problem-solving exploration of important, often contentious, public issues.

Session III Panel

Hydraulic Fracturing ('fracking') in the Front Range and Colorado

'Fracking our future: addressing water and community impacts from oil and gas development'

– Laura Belanger, P.E., Water Resources Engineer, Western Resource Advocates

Increased oil and gas development, much in the South Platte Basin and in close proximity to populated areas, is raising questions about the industry's water demands and potential water quality impacts, among other issues. Ms. Belanger will discuss the water needed for new well development and why better data collection and planning are needed to understand and balance energy's needs with other uses. She will also briefly discuss new groundwater quality monitoring and well setbacks regulations.

Laura Belanger is a water resources engineer with Western Resource Advocates (WRA), a non-profit organization that works to protect the West's land, air and water. She is the lead author of WRA's recently released Fracking our Future report and has been working on the Colorado Oil and Gas Conservation Commission's baseline groundwater monitoring rulemaking. Ms. Belanger is a licensed professional engineer in Colorado and holds a M.S. in Civil Engineering from the University of Colorado.

"The hidden impacts of fracking in Colorado"

– Shane Davis, Chair, Poudre Canyon Group, Sierra Club

This presentation uses genuine COGCC data to arrive at analyses that demonstrate temporal trends of impacts caused by mining that uses hydraulic fracturing methods. The presentation is a visual journey of Colorado specific oil and gas incidents that have caused adverse impacts to the environment and human health. I use statistics, actual reported cases, reclamation issues, failures, Notice of alleged violations, API information, methods of improvements, satellite imagery, and various other data collected and compiled from Colorado Oil and Gas Conservation Commission's database(s).

Shane Davis currently chairs the Poudre Canyon Group of the Rocky Mountain Chapter of the Sierra Club, and serves as the Group's Conservation Chair. He serves as an At-Large Member of the Chapter Executive Committee and as the Information and Research Manager - Oil & Gas Mining.

'Colorado oil and gas regulatory challenges and changes'

– Thom Kerr, Permit & Technical Services Manager, Colorado Oil & Gas Conservation Commission

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 since its inception to address changes in the development techniques and the ever changing technologies. 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 with a focus on the protection of the states valuable water resources.

Thom started with the COGCC since August of 1990 as the Permit Technician. In April of 1998 Thom took over the Information Manager position and was the project manager 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 had worked for two years as a contractor on the MMS production reporting conversion project (PAAS). Prior to that spent thirteen years in various capacities at several independent oil and gas exploration companies including nine years of field work.

'Evaluating and mitigating water-related risks associated with oil and gas development'

– Ken Carlson, Ph.D., Professor, Department of Civil & Environmental Engineering, Colorado State University

Oil and gas activity is growing due to the advent of new technologies that have been developed in the last 5-10 years. As in other industrial activities, there are finite risks associated with this activity. An assessment of risks, risk mitigation approaches and progress toward environmental and community acceptable development will be discussed in this presentation.

Dr. Carlson is an Associate Professor in Civil and Environmental Engineering at Colorado State University with over 20 years of experience in water treatment, wastewater handling and environmental engineering. Dr. Carlson is the director of the Colorado Energy Water Consortium, a public-private partnership that is addressing water issues associated with oil and gas exploration and production in Colorado and the Rocky Mountain region. Through the consortium, Dr. Carlson is working with industry, the Colorado Oil and Gas Association and the National Renewable Energy Lab on water quantity characterization and frac flowback/produced water quality assessment. Dr. Carlson has been instrumental in organizing the Colorado State University Natural Gas Symposium in 2011 and 2012. Dr. Carlson has a BS in chemical engineering from the University of Wisconsin, MS in Civil Engineering from Colorado State University and a PhD in Environmental Engineering from the University of Colorado – Boulder. Before coming to Colorado State University, Dr. Carlson worked for over 10 years in private industry including multiple positions in the environmental consulting field.

Session IV Panel

Water Supply Taste & Odor Issues & Water Treatment Approaches in Our Region

‘Taste and odor issues in Northern Colorado municipal suppliers’

-- Bill Bellamy, Ph.D., Vice President, Water Supply & Treatment, CH2M HILL, INC.

The presentation will review some of the taste and odor observations from Northern Colorado (potential causation) and the resultant impact on water quality. This is followed by a discussion of the treatment challenges and treatment technologies with their respective effectiveness at eliminating taste and odor from potable water. The presentation ends with an overview of an approach to testing and decision making aimed at providing the greatest benefit for an acceptable cost.

Dr. Bellamy is a Fellow and Senior Vice President of Global Water Technologies at CH2M HILL. His career spans over 40 years and includes positions with Texaco, academia, US Environmental Hygiene Agency, and assignments with USEPA. He has led and participated in more than 200 water and energy projects assessing water needs, allocation, and water portfolio management; ranging in value from a few thousand dollars to over 4 billion; encompassing research projects to the design, construction, operations, and policy development with EPA and professional societies. Representative projects associated with taste and odor treatment include • preliminary design, build, and operate, 100 mgd membrane water treatment plant for San Diego County Water Authority with ozone and BAC • expert panel member for Metropolitan Water District of Southern California’s scenario planning exercise to recommend immediate and future water supply and treatment concepts including ozone, GAC • design of 100 mgd water treatment plant, with ozone and GAC filtration for Albuquerque Bernalillo County Water Authority, NM, • design of 120 mgd UV disinfection system for the City of Winnipeg, Canada including DAF, ozone, GAC filtration • development and design 20-mgd Waikato Plant for Auckland, NZ, PAC, membrane filtration, GAC adsorption • design of the 180 mgd ozone and UV disinfection facilities for Seattle Public Utilities.

‘Sensory and analytical methods for drinking water analysis’

-- Pinar Omur-Ozbet, Ph.D., Professor, Department of Civil & Environmental Engineering, Colorado State University

Tastes-and-odors (T&O) in drinking water have been a problem for decades for the water utilities. Researchers in US have been investigating the causes, detection, and treatment of T&O in drinking water since early 1900’s. Billions of dollars are spent each year to treat the off-flavors and to provide consumers with palatable drinking water. Hence it is essential for the water utilities to be able to identify the causes of off-flavors, to utilize sensitive and quick detection methods, and to select cost effective treatment options for efficient mitigation and handling of T&O problems.

This presentation will discuss the sensory and analytical methods to qualitatively and quantitatively measure the T&O compounds in source and drinking waters. Case studies will be presented to show the application and various uses of the discussed methods.

Dr. Pinar Omur-Ozbek is an Assistant Professor in the Department of Civil and Environmental Engineering Department at Colorado State University. She received her M.S. degree at Virginia Tech where she focused on taste-and-odor problems related to algal metabolites in source waters and its relation to human perception of tap water safety. She continued with a Ph.D. degree at Virginia Tech and conducted an interdisciplinary research to investigate the metallic flavor of drinking water caused by iron and copper. Her research evolved from sensory analyses to medical and biomedical field to further study the effects of metal ions on the oral epithelial cells. During conducting sensory analyses she developed the first international odor standard to be adopted and used for Flavor Profile Analysis of drinking water.

She is currently conducting research on efficient removal of geosmin and microcystin-LR by powdered activated carbon, monitoring Northern Colorado surface waters for algal metabolites, short and long term impacts of wildfires on aesthetic quality of water, decreasing nutrient outputs in wastewater effluents and occurrence of siloxanes in wastewater, activated sludge and biogas. She acts as a judge for the American Water Works' Best of the Best Water Taste Test. She has presented her work in many national and international conferences and published articles in top environmental engineering journals. She also developed and assisted several workshops on sensory analysis of drinking water and new sensory analysis methods.

Forum Staff, Board of Directors, Volunteers, & Scholarship Award

Forum Staff



Zack Shelley, Program Director

As the Forum's Program Director, Zack coordinates the Forum's education, outreach and water quality monitoring and assessment programs, data analysis, and reporting strategies. Before moving to Colorado in September 2006, Zack worked for the Florida Department of Environmental Protection (FDEP) in their Watershed Assessment Section. With FDEP, he developed sampling and analysis plans and conducted intensive field surveys of fresh and marine surface waterbodies and watersheds to determine potential impairment and corrective solutions/practices. In this capacity, he became familiar with water quality analyses, compliance with federal and state water quality standards, and the development of Total Maximum Daily Loads (TMDLs), 303(d) lists and 305(b) plans under the USEPA Clean Water Act and Florida Watershed Restoration Act. Zack's educational background includes a M.S. in Environmental Science and Policy from Johns Hopkins University and a M.S. in Health and Safety Management from West Virginia University. Zack resides in Loveland with his wife and daughter.



Tim Schmitt, Watershed Specialist

As the watershed specialist, Tim calibrates and maintains water quality sampling equipment and prepares field kits for the Forum's USEPA Volunteer Monitoring Program. Since June of 1998, Tim has worked full time as a technical advisor and trainer for Hach Company, a manufacturer of equipment and reagents for water quality testing. At Hach Company he has worked with a broad range of equipment used for sampling and analyzing water and as a trainer for other companies to utilize analytical laboratory equipment, use proper analytical techniques, as well as troubleshooting analytical procedures and equipment problems. Prior to moving to Colorado in 1997, Tim worked as a Wetlands Biologist for an environmental consulting firm in Nebraska, as well as working on a variety of limnology and water quality related projects as a research aide at the University of Nebraska. Tim graduated from the University of Nebraska - Lincoln, with a M.S. in Forestry, Fisheries and Wildlife, and a B.S. in Natural Resources - Water Sciences. Tim currently serves as the President of the Board for the Spring Canyon Water and Sanitation District, and has served on the Board since 2002. Tim resides in Fort Collins with his wife, daughter and son.

Forum Directors



John Matis, Chairman
U.S. Bureau of Land Management (ret.)

John served as geologist & hydrologist, environmental scientist, and manager in organizations dealing with pollution control & waste disposal operations; energy and mineral development; and environmental impact analysis. He served as Associate Director of the Colorado Alliance for Science while on loan from the US Bureau of Land Management (BLM); and concurrently served as Regional Education Officer for the US Department of the Interior at the Colorado School of Mines. He was assigned as BLM HAZMAT Program Lead in Denver, and subsequently served as Group Supervisor for Information & Communications Group with the National Applied Resource Sciences Center. He chaired National Recruitment Team for the BLM; served as primary BLM Lead and Coordinator for Tribal College programs; and served as SW Regional Recruiter for the BLM in Santa Fe, NM. Completed Federal Service with BLM in Santa Fe as Special Projects Officer & Geologist for the NM BLM Division of Mineral Resources. John also served as Faculty with the University of New Mexico, University College Sophomore Seminar Program; and served as Treasurer & Hydrogeologist for the Eldorado Area Water & Sanitation District (Santa Fe, NM).



Greg Dewey, Vice Chairman
City of Loveland

Greg is a Civil Engineer with the City of Loveland, Department of Water and Power. Greg completed his B.S. Degree in Civil Engineering in 1992 from Colorado School of Mines, and is a registered Professional Engineer in the State of Colorado. He has worked in both the public and private sectors. His variety of water quality and water resources project experience includes the fields of hydrology, water rights administration and engineering, water quality permitting, water resources planning and management, water and wastewater treatment, and endangered species issues. Greg is one of the City's liaisons to the ditch companies in the Big Thompson watershed, primarily because of the City's ownership interests in many of these ditches. Greg was raised in rural Weld County, and attended schools in Kersey, Colorado. His parents continue to farm ground which has been in the family for over a hundred years. Greg resides in Loveland with his wife and two daughters.



Gabri Vergara, Treasurer
Weld County

Gabrielle (Gabri) graduated from the University of Northern Colorado in 1994 with a Masters in Public Health. She lives in Greeley with her husband and two children. Gabri has been an employee with the Weld County Department of Public Health and Environment for the last 11 years. As the Solid & Hazardous Waste Education Specialist she works with the community in addressing the detrimental effects of improper disposal of solid and hazardous waste to the environment and humans. This includes the promotion and marketing of Weld County's two household hazardous waste facilities and providing presentations to community groups to create a greater awareness of this issue. Gabri has participated in the Big Thompson Watershed Forum since 2003 as a board alternate and, most recently, as a regular board member, representing Weld County. Gabri is also a board member of the Big Dry Creek Watershed.



Ed Young
City of Greeley

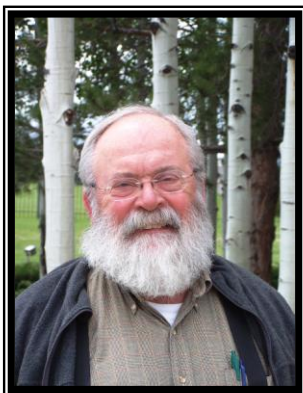
Ed graduated from the University of Northern Colorado in 1970 with a B.A. in Biology and Chemistry teaching. He has been in the Water Treatment field since beginning as an Operator Trainee in Salt Lake City in December 1972. After working in the Tri-Districts and Loveland Water Plants, he presently holds the position of Plant Superintendent of Greeley's Boyd Lake Water Treatment Plant. In the 1980's, Ed served as an instructor and advisory board member of the Larimer County Vo-Tech Water Operator's training course and was an instructor in the Colorado Operator's Training Course held annually in Boulder. For stress relief, Ed plays keyboards for a local band and is active in his church. Ed and his wife, Deb, live in Loveland, where their four grandchildren keep life from getting too boring. Ed is a founding Director of the Big Thompson Watershed Forum, and has served on the Board since 1997.



Judy Billica
Northern Water

Dr. Billica began working for Northern Water in 2011 as a Water Quality Specialist. Prior to that, Judy worked for the City of Fort Collins for 13 years as Senior Process Engineer/Watershed Manager. Judy has also worked for consulting firms in Fort Collins and California, starting with her first consulting position in 1980 with HDR in Santa Barbara. During Judy's professional career, she has worked on a wide range of water quality-related projects, including managing, designing and conducting water quality studies of

watershed and ground water systems; designing water and wastewater treatment processes; conducting full-scale and pilot plant drinking water treatment process optimization studies; and developing numerical models, conducting experiments, and performing tracer tests to better understand the movement of water and contaminants through natural and engineered systems. Judy received her M.S. and Ph.D. degrees in Civil Engineering from Colorado State University and her B.S. degree from the University of California at Davis. She is a registered Professional Engineer in Colorado.



Charles Olmsted
Professor Emeritus, University of Northern Colorado

Dr. Olmsted retired from the University of Northern Colorado after 26 years of directing the Environmental Studies Program and teaching courses that focused on how people interact with and depend on the natural world for their long-term welfare. He received his undergraduate Biology degree from Earlham College, a M.S. in Physiological Plant Ecology from the University of Oklahoma and a Ph.D. in Ecosystem Ecology from the University of Colorado. His research interests have emphasized the maintenance of constrained natural ecosystems and how humans can use ecological principles to develop more sustainable patterns of living. He has a long history of involvement with conservation work and environmental education and has served on the Boards of Directors of the Colorado Alliance for Environmental Education, the Colorado Wildlife Federation, the High Plains Environmental Center at Centerra, the Colorado

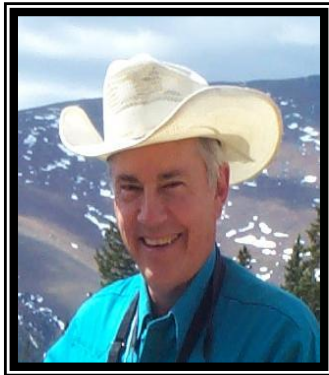
Native Plant Society, Defenders of Wildlife, and the National Wildlife Federation. His interests and involvement with the Big Thompson watershed and its resources span a variety of uses and locations. These include directing research on social trails in upper Forest Canyon and wildlife and tourism impacts in the lower meadows of the Park, fishing the reaches between RMNP and Drake, keeping a sailboat at Carter Lake, domestic use of the BT water supplied by CWCWD for drinking, cooking, etc., and viewing the lower floodplain as a major aesthetic component of the view from the passive solar house he and his family constructed near the confluence with the South Platte.



Al Paquet
CH2M HILL, INC.

Al is a Senior Project Manager for CH2M HILL INC., with 19 years of experience as a civil engineer specializing in planning, design, and construction management to support water and wastewater treatment facilities. Al has worked on a broad variety of projects throughout Northern Colorado and the Southwest that address customer water quality concerns as well as compliance with State and Federal regulations for drinking water, reclaimed water, groundwater recharge, and treated wastewater effluent discharges. He has worked closely with local utilities to consider watershed and receiving stream water quality in providing sustainable solutions that meet project objectives and regulatory compliance. Al was the former Special Projects Manager for the City of Loveland Water Utilities Group, responsible for management of capital improvement projects for the City's water

and wastewater treatment facilities. He has a Bachelor of Science degree from Northeastern University, Boston, MA, and is a registered Professional Engineer in Colorado and California. Al is a resident of Windsor, CO, and enjoys spending time outdoors with his wife and three sons.



David Jessup
Sylvan Dale Guest Ranch

David M. Jessup is co-owner of Sylvan Dale Ranch in Loveland, Colorado, where he introduces cattle and horses to guests, and guests to the ways of the West. He loves preserving open space, battling invasive weeds, catching wild river trout on a fly, singing cowboy songs, and telling stories about the American West – some of them true. Sylvan Dale is a 66 year old, 3200-acre working dude ranch that raises grass-fed beef for local consumption. David has managed two grants from the Natural Resources Conservation Service to implement rotational grazing by developing new water sources and fencing to increase the number of pastures on both private and national forest land, and to install two center pivots on the ranch's irrigated pasture, to conserve water. He worked to place eighty percent of the ranch lands, some 2200 acres, under permanent conservation easements. His dream is to build a sustainable, grass-fed cattle operation that restores health and diversity to the foothills ecosystem. David works with the Colorado Conservation Exchange (CCEX), an initiative to raise funds for conservation practices on working lands. Working with the Big Thompson Watershed Forum, he established a CCEX pilot project to measure and contain

nutrient runoff from the ranch's cattle pens. He's a member of the Colorado and Loveland Historical Societies, the Oregon-California Trail Association and the Downtown Loveland Association. He serves on the Board of Embrace Northern Colorado, a regional organization seeking to develop choices about quality future growth. His debut historical novel, *Mariano's Crossing*, published by Pronghorn Press in 2012, won first place for mainstream, character-driven fiction at the 2009 Rocky Mountain Fiction Writers Contest. He received a BA in Biology at the University of Colorado and an MA in Sociology at the University of California in Berkeley.



Lisa Voytko
City of Fort Collins

Lisa is the Water Production Manager for the City of Fort Collins Utilities. Her responsibilities include the managing of the City's water treatment facility (87 mgd), off-site reservoirs and pump stations, watershed program, and the source of supply at the Michigan Ditch at Cameron Pass down the Poudre River. After graduating from Colorado State University with a degree in wildlife biology, she completed her Masters degree in Civil Engineering from the Arizona State University. She is a registered Professional Engineer in Colorado, Arizona and Montana, a Level A Water Treatment Operator and level D Wastewater Operator in Colorado. Lisa worked in the consulting field, and had her own consulting business in water and wastewater treatment plant planning and design, prior to joining the City in 2008. Lisa's daughters are grown, so she and her husband are raising alpacas and chickens.



Ken Garrett
Soldier Canyon Filter Plant / Tri-Districts

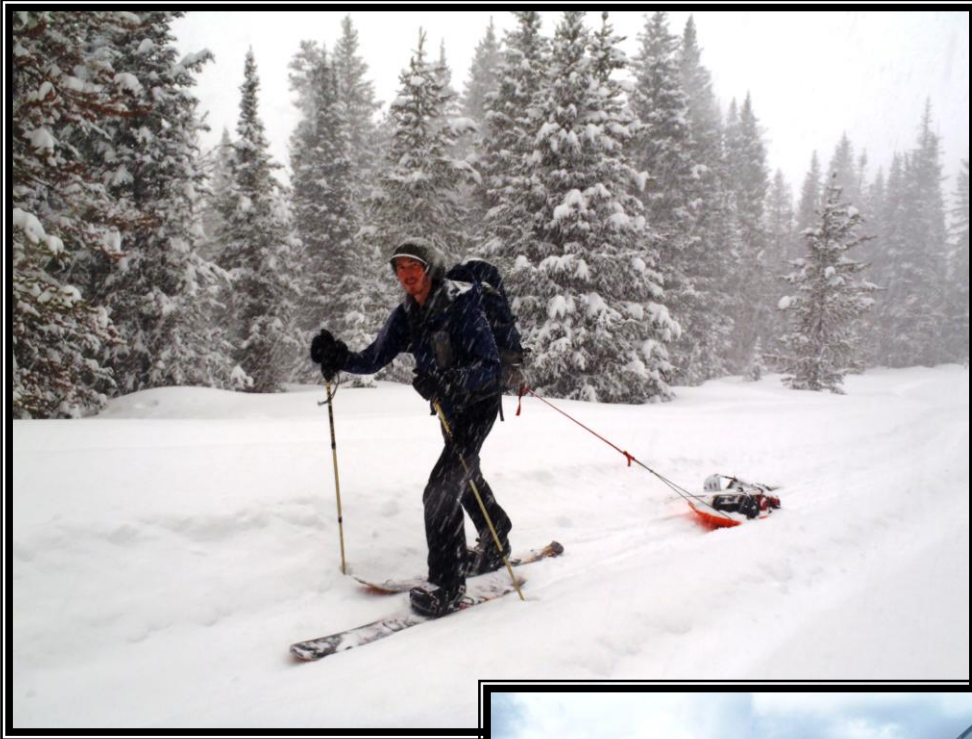
Ken is currently the compliance coordinator for the Tri-Districts Water Treatment Facility (Soldier Canyon Filter Plant) in Fort Collins. He has worked in the water treatment industry for 29 years. He started with the City of Fort Collins Water Treatment Plant in 1983, and has worked for Left Hand Water District in Niwot, Carter Lake Water Treatment Plant in Berthoud, and has also worked as a consultant for the Town of Berthoud, Central Weld County Water District and Little Thompson Water District. Ken has held the top water treatment certificate (Class "A") from the State of Colorado since 1989 and has worked extensively with the CDPHE with compliance issues. Protecting the public health and well-being by providing safe drinking water has been and continues to be a challenge for Ken, but a satisfying one.

Forum Monitoring Program Volunteers



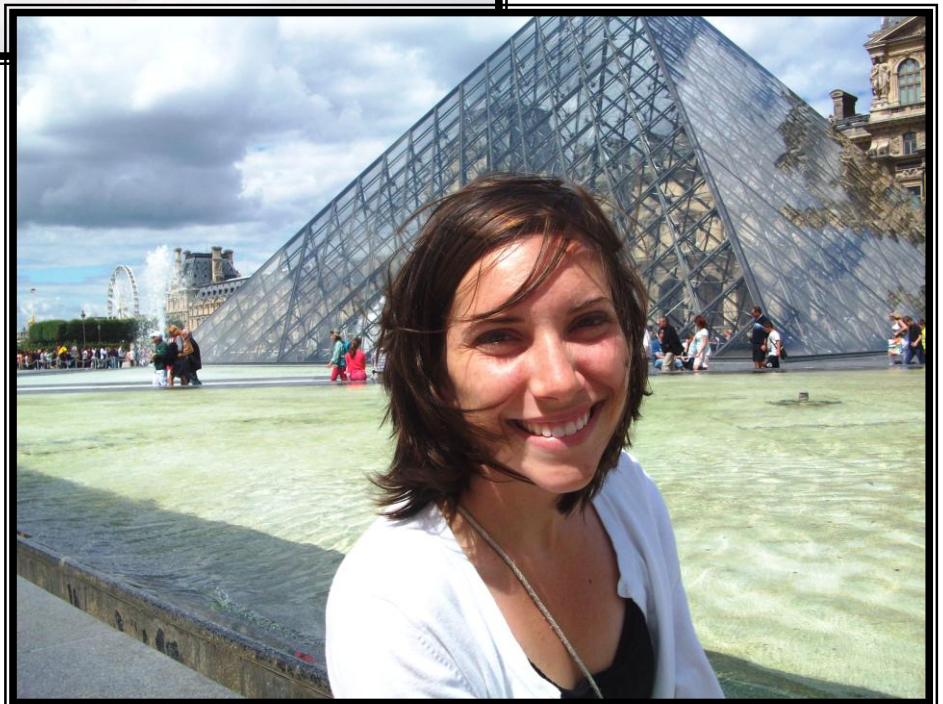
From L to R: Clint Jones (Fort Collins), Eddie Trevino (Greeley), Calvin Andrade (CSU), Robert Alexander (Greeley), Charlie Ferrantelli (Fort Collins), Jeri Feil (Wellington), Erik Anglund (Longmont), Fred Renner (Loveland), Donal O'Leary (CSU), Tim Schmitt (Fort Collins), Jennifer Stephenson (Windsor), and Elisa Baebler (CSU).

*2011 & 2012 Dave Cole
Environmental Scholarship Winners*



2011

Donal O'Leary
Colorado State University
Watershed Science Major



2012

Elisa Baebler
Colorado State University
Watershed Science Major

13th Watershed Meeting Attendees

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Special Thanks to the Forum's Major Contributors and Laboratory Service Providers

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Larimer County
NFRWQPA
Northern Water

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Town of Milliken
Tri-Districts
Weld County
Upper Thompson Sanitation District
USEPA Region VIII
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*'And Thank You to our Speakers
for sharing your time, knowledge and experience at this year's watershed meeting!'*

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