



FY2008/2009 Activities and Impact Report
November 21, 2008

Colorado Water Institute

Assembled and Reviewed by:

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CWI Advisory Committee Agenda Denver Water Board Room

**November 21, 2008
9:30 AM – 1:00 PM**

Denver Water
1600 West 12th Avenue
Denver, Colorado 80204
303-628-6000

- | | |
|----------|---|
| 9:30 AM | Welcome & Introduction |
| 9:40 AM | Research Report - Jerry Johnson |
| 10:05 AM | Research Report - Thomas Borch |
| 10:30 AM | Research Report - Bob Siegrist |
| 10:55 AM | Research Report - Stephanie Kampf |
| 11:20 AM | Advisory Committee discussion on funding for Kampf & student projects |
| 11:40 AM | FY 09-10 Research priorities |
| 12:00 PM | Lunch: Continue setting research priorities |
| 12:30 PM | Discussion and feedback on CWI operations |

CWI Funded Current Research Projects

Year	Name	Project Name	Amount	End Date	Progress Report
FY08	Mazdak Arabi	Developing a GIS Database for Source-Tracking of Human Versus Agricultural Inputs of Antibiotic Resistance Genes (ARG) in the Watershed	\$ 13,891.00	12/31/2008	
FY08	Rajagopalan Balaji	Risk Assessment and Forecasting of Indian Summer Monsoon for Agricultural Drought Impact Planning	\$ 86,646.00	1/31/2009	
FY07	Abdel Berrada	Direct Determination of Crop Evapotranspiration in the Arkansas Valley with a Weighing Lysimeter	\$ 45,450.00	9/30/2009	V25.1, pg 8-12
FY07	Thomas Borch	Occurrence and Fate of Steroid Hormones in Sewage Treatment Plant Effluent, Animal Feeding Operation Wastewater and the Cache la Poudre River of Colorado	\$ 45,403.00	12/31/2008	V25.3, pg 10-14
FY07	Nolan Doesken	Detecting Trends in Evapotranspiration in Colorado	\$ 43,457.00	12/31/2008	V25.1, pg 24-27
FY07	Luis Garcia	Refining Water Accounting Procedures Using the South Platte Mapping and Analysis Program	\$ 20,895.00	12/31/2008	V25.3, pg 21-22
FY07	Lawrence Goodridge	Simultaneous Water Quality Monitoring and Fecal Pollution Source Tracking in the Colorado Big Thompson Water Project	\$ 45,450.00	12/31/2008	V25.3, pg 29-32
FY07	Jerry Johnson	Development of Oilseed Crops for Biodiesel Production under Colorado Limited Irrigation Conditions	\$ 43,394.00	12/31/2008	V25.2, pg 16-19
FY08	Stephanie Kampf	Hydrologic Analysis and Process-Based Modeling for the Upper Cache la Poudre Basin	\$ 18,182.00 \$ 15,000.00	12/31/2009 2/28/2009	
FY08	Jeffrey Niemann	Characterizing Non-Beneficial Evaporative Upflux from Shallow Groundwater under Uncultivated Land in an Irrigated River Valley	\$ 36,364.00 \$ 31,752.00 \$ 15,000.00	12/31/2008 9/30/2008 2/28/2008	V25.1, pg 13-17
FY08	James Pritchett	Water Reallocation and Bioenergy in the South Platte: A Regional Economic Evaluation	\$ 29,983.00 \$ 15,000.00	7/1/2009 2/28/2009	
FY07	Jose Salas	Predictability of the Upper Colorado River Streamflows	\$ 40,781.00	12/31/2008	V25.3, pg 23-28
FY07	Robert Siegrist	Evaluation of Engineered Treatment Units for the Removal of Endocrine Disrupting Compounds and Other Organic Wastewater Contaminants During Onsite Wastewater Treatment	\$ 49,746.00	9/30/2009	V25.3, pg 15-19
FY07	John Stednick	Effects of Pine Beetle Infestations On Water Yield and Quality at the Watershed Scale in Northern Colorado	\$ 34,658.00 \$ 15,000.00	7/31/2008 2/28/2008	V25.3, pg 3-7
FY08	Douglas Hultstrand Faculty: Fassnacht	Estimating Errors Associated With Calculated Sublimation From Seasonally Snow-Covered Environments	\$ 5,000.00	3/31/2009	V25.6, pg TBA
FY08	Kim Lemonde Faculty: Sale	Studies Supporting Sustainable Use of the Denver Basin Aquifers in the Vicinity of Castle Rock	\$ 5,000.00	3/31/2009	
FY08	Travis Steiner Faculty: Goodridge	Flow Device to Assess Biological Water Quality in Colorado Surface Water	\$ 5,000.00	3/31/2009	

FISCHER, BROWN, BARTLETT & GUNN, P.C.

ATTORNEYS AT LAW

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September 12, 2008

Regan Waskom, Director
Colorado Water Institute
1033 Campus Delivery
Fort Collins, CO 80524

Dear Regan:

I wanted to express how impressed the directors of the Cache La Poudre Water Users Association and I are with Dr. Stephanie Kampf and graduate student Eric Richer.

You may recall that the Association's directors have been somewhat concerned that in the last several years the actual flow of the Poudre River has been less, or at least significantly different, from that which was forecast. Over the last year or so, Dr. Kampf has spearheaded an effort to improve the forecasting of the flows of the Poudre. On August 21, 2008, Dr Kampf and Mr. Richer made an excellent and most appreciated presentation to the Association's board. They were impressed. Dr. Kampf and Mr. Richer's clear visual aids and explanation distilled a great deal of complicated data and conclusions which the entire audience found not just interesting, but illustrative and convincing.

The Cache La Poudre Water Users Association encourages and supports Dr. Kampf's study and efforts. On behalf of the Association's board, I wish to express our appreciation for her excellent presentation.

Sincerely,



William R. Fischer

cc: Shawn Hoff, President, CLPWUA
Stephanie Kampf

Potential and Suggested FY09-FY10 Water Research Priorities

- Economics of dredging reservoirs
- Documentation of water resource needs to meet food, feed, fiber and biofuel requirements of Colorado.
- Historic reconstruction of the Yuma, AZ Colorado River gauge that was used for the 1922 Compact
- Development of “Prescribed Water Stress” for urban landscapes
- Development of new low water use crops and cropping systems for CO
- Methods to document and verify actual water used under alternatives to Ag water dry-up
- Impact and mitigation of Selenium on endangered species
- Methods for coping with stream nutrient standards and economic impacts (to be promulgated in 2010)
- Others??

A question: Is there interest and support for the idea of an annual water science meeting to set priorities and discuss water research in Colorado?

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Mission

CWI Mission Defined by:

- Federal Water Resources Research Act (42 USC Sec. 10301 et. seq.) – last amended on January 11, 2007, President Bush signed this act into law (by PL 106-374) (114 STAT. 1434 and the Water Resources Research Act Amendments of 2006) (PL 109-471) – a five-year authorization extension (fiscal years 2007 through 2011)
- Colorado Legislature
 - SB06-183
 - HB07-1096
 - HB08-1026
 - Bill changed name to Colorado Water Institute and expanded the mission.
 - HB08-1405

CWI Mission Statement

Connect all of Colorado's higher education expertise to the research and education needs of Colorado water managers and users.

Reporting

CWI Reports to:

1. Vice Provost for Outreach and Strategic Partnerships, Lou Swanson
2. CWI's Advisory Committee on Water Research Policy (per SB06-183)
3. USGS External Research Officer (Per Federal Water Resources Research Act – annual proposal and report required)
4. National Institutes for Water Resources annual report

Personnel

Current Water Center and Colorado Water Institute Faculty:

The CWI office is located in Room E-102 of the Engineering Building on the campus of Colorado State University. CWI consists of:

- Full-time Director: Dr. Reagan Waskom
- Full-time Assistant to the Director: Nancy Grice
- Full-time Research Associates: Julie Kallenberger and Faith Sternlieb
- Part-time Technical Writing: Laurie Schmidt
- Part-time Office Support: Jan Wright
- Part-time Student Support: Five to six students

Activities, Services, Training or Research Performed

CWI activities required to implement both Federal and State legislation including:

FY08-09 Activities

1. Organized Interdisciplinary faculty to prepare proposals for national competitions (See Page 9)
2. Organized an annual, graduate level, water resources seminar (GRAD592)
3. Administered graduate and undergraduate 'water' scholarships funded by private donors and through federal competitions
4. Organized the Global Water Colloquium and International Water Initiative
5. Provided a venue for education, discussion and exposure of regional and global water resource issues through Spring Interdisciplinary Water Resources Seminars on CSU campus
6. Promoted CSU's annual Hydrology Days symposium that brings national and international hydrological scientists to CSU
7. Prepared nominations of outstanding CSU 'water' faculty for state and national awards
8. Supported the CSU Water Archives via collection, identification, and promotion
9. Graduate students funded through grants
10. Conducted annual state-based water research competition

Technology Transfer

Research Reports and Publications

Research reports are prepared for each CWI water research project and for those with high public interest, a 'Water in the Balance', short and concise, research summary is published and distributed widely. Recent reports and publications include:

1. CR209 – Some Economic Effects of Changing Augmentation Rules in Colorado's Lower South Platte Basin: Producer Survey and Regional Economic Impact Analysis
2. IS104 – 18th Annual South Platte Forum: A River of Change
3. IS105 – Colorado Water History: A Bibliography
4. IS106 – 19th Annual South Platte Forum: News, Weather and Water
5. IS107 – High Altitude Revegetation Workshop No. 18
6. SR16 – Agricultural Chemicals and Groundwater Protection in Colorado 1990-2006
7. Colorado Ag Water Alliance Produces White Paper on Agricultural Water Conservation
8. Rapid Detection of FRNA Bacteriophages, and Their Use in Water Quality Assessment

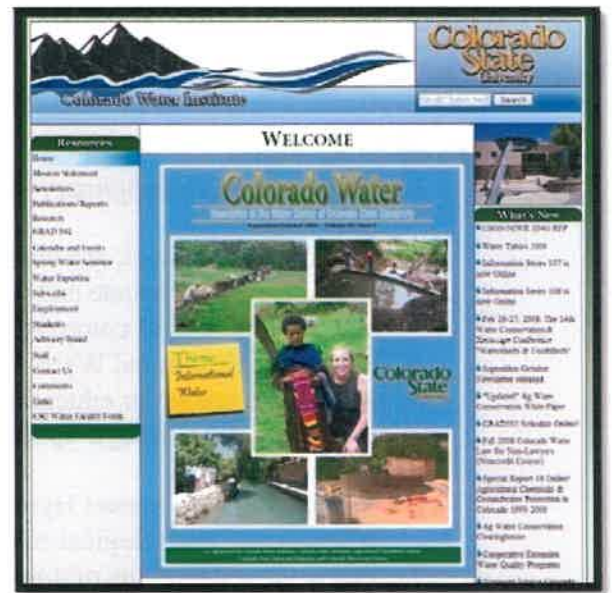
Meetings

Actively sponsored or supported water meetings in Colorado:

1. South Platte Forum
2. Agricultural Outlook Forum
3. Ogallala Symposium
4. Colorado Water Congress Annual Convention
5. Global Water Colloquium: From Conflict to Sustainability – Challenges and Opportunities in an Interdependent World

Websites

- Colorado Water Institute (revamped in 2007)
<http://www.cwi.colostate.edu>
- Colorado State University Water Center
<http://www.watercenter.colostate.edu>
- Northern Plains & Mountain Region Water
<http://www.region8water.org>
- Global Water Colloquium
http://vpr.colostate.edu/pages/water_colloq.asp
- Ag Water Conservation Clearinghouse
<http://agwaterconservation.colostate.edu>
- CSU Water Faculty Expertise
<http://www.cwi.colostate.edu/CSUWaterFaculty/>



Newsletter

Colorado Water newsletter, which was revamped in 2007, is sent to over 2000 Colorado water managers and users, including all members of the Colorado Legislature and Colorado Congressional delegation.

1. June/July 2007 – Water Education
2. August/September 2007 – Water Quality
3. October/November 2007 – Groundwater
4. January/February 2008 – Crop Evapotranspiration
5. March/April 2008 – Water Conservation
6. May/June 2008 – Research Updates
7. July/August 2008 – Research Updates
8. September/October 2008 – International Water
9. November/December 2008 – Snow

Water Education

GRAD592 — Interdisciplinary Water Resources Seminar — Fall 2007

1. **Life After Two Forks**—Dave Little, Denver Water
2. **Colorado's water development needs for the 21st Century**—Rick Brown, CWCB
3. **Intrabasin, interbasin and transmountain water movement to meet growing water demands**—Dave Merritt, Colorado River Water Conservation District
4. **The Prairie Waters Project**—Mark Pifher, Aurora Water
5. **Elkhead Reservoir Enlargement**—Dan Birch, Colorado River District
6. **Permitting, water acquisition and other legal aspects of developing water projects**—Frank Jaeger, Parker Water
7. **Urban partnership and competition for a limited water supply**—Dave Kaunisto, East Cherry Creek Valley Water & San District
8. **Navigating the EIS process**—Carl Brouwer, Northern CO Water Conservancy District
9. **Integrated Water Resources Planning in Northern CO**—Sean Cronin, Greeley Water
10. **Development of new water resources, Southern Delivery System, planning, process, and challenges**—Wayne Vanderschuere, Colorado Springs Utility
11. **The Super Ditch**—Jay Winner, Lower Arkansas Water Conservancy District
12. **South Metro water needs and supply options**—Kelly DiNatale, CDM
13. **Highlands Ranch: 0 to 100,000 in 30 years**—John Hendrick, Centennial Water & San
14. **Animas La Plata Project – Last of the big federal projects in Colorado?**—David Robbins, Council for the SW Colorado Water Conservation District

Spring Interdisciplinary Water Resources Seminar — Spring 2008

1. **NAS – Study on Colorado River & Climate Change**—Luis Garcia, Department Head of Civil & Environmental Engineering, CSU
2. **Incorporating Climate Change Information in Water Utility Planning**—David Yates, Hydrologist, NCAR, Research Application Program
3. **Managing Transboundary Waters in the context of extreme hydrological events**—Evan Vlachos, Sociology, CSU
4. **Effect of Mt. Pine Beetle on Water Quantity and Quality**—John Stednick, Forest Rangeland & Watershed Stewardship, CSU
5. **The National Park Service's Experience in Applying Science in Water Rights**—Bill Hansen & Dan McGlothlin, NPS
6. **Economic Value of Water**—Robert Young, Professor Emeritus, Agricultural and Resource Economics
7. **International Water Governance**—Valerie Assetto, Political Science, CSU
8. **Water Management Challenges in the Iberian Peninsula**—Rodrigo Maia, Civil Engineering, University of Porto, Portugal
9. **High Plains Regional Ground Water Study-Current Understanding and Future Directions**—Bret Bruce & Pete McMahon, USGS Denver
10. **The Medium Term Impact of Natural Disasters in Brazil**—Chris Goemans, Agricultural & Resources Economics, CSU
11. **Climate Change and Issues of Water Availability**—Bob Reynolds, Denver Museum of Natural Science
12. **National Drought Information Systems**—Roger Pulwarty, NOAA

GRAD592 — Interdisciplinary Water Resources Seminar — Fall 2008

1. **The Looming Global Water Crisis**—Ellen Wohl, CSU
2. **Integrated Water Resources Management in South America**—Neil Grigg, CSU
3. **Global Change, Global Water and Responses to Stress and Scarcity**—Evan Vlachos, CSU
4. **Water Organizations and the Developing World**—David Freeman, CSU
5. **Water for People**—Colleen Stiles, Executive Director
6. **Irrigation Water Management and Agriculture**—Terry Podmore, CSU
7. **Engineers Without Borders/CSU Global Impact program**—Gabriel Miller & Brian Bledsoe, CSU
8. **Transboundary Water Management on the U.S.-Mexico Border**—Stephen Mumme, CSU
9. **Water Quality in a Changing Environment**—KJ Reddy, University of Wyoming
10. **Water Development in the Peace Corps**—Ben and Kelly Latham, CSU
11. **River Basin Decision Support Systems: the Nile**—Larry Brazil, Riverside Technology
12. **Global Change and Global Water**—Scott Denning, CSU
13. **Service/Career Opportunities in International Water**—Peter McCornick, Duke Univ

Upper Yampa Conservancy District Scholarship

The Upper Yampa Water Conservancy District (UYWCD) funds an annual scholarship in support of CSU students preparing for careers in water-related fields. The scholarship program is administered by the CSU Water Center and provides financial assistance to committed and talented students who are pursuing water-related careers at CSU. The UYWCD \$3,000 scholarship is open to any major at CSU.

The Upper Yampa Water Conservancy District Scholarship recipient for the 2008–09 academic year is Kyle Eitel. A senior majoring in civil engineering at CSU, Kyle was born and raised in Craig, Colorado. During the summers of 2007 and 2008, he participated in an internship at Colowyo Mine in Meeker, Colorado, where he gained valuable experience with GPS and SurvCAD and assisted with project management. His coursework at CSU has stimulated his interest in water-related engineering topics, and he hopes to further his studies and pursue a career in fluid mechanics, hydraulics, and water resources management and securities. Kyle has been a member of the American Society of Civil Engineers (ASCE) Chi Epsilon, the civil engineering honors society, and the National Honor Society. On a personal level, he enjoys the outdoors, particularly activities and recreation involving water.

Other Outreach

- Administer undergraduate ‘Water’ Minor - for any CSU major
- Hydrology Days Annual Meeting on CSU Campus
- Information for new ‘water’ graduate students at CSU (for recruiting high quality ‘water’ students to CSU)
- Lists of CSU ‘water’ faculty and courses on CWI webpage
- Administer water scholarships sponsored by Colorado water organizations
- Emerging Issues in Soil and Water – On the Sustainable Management of Soil and Water Resources: Historical and Contemporary Perspectives
- "Walking Through the Water Year"

Recognition and Awards

UCOWR Water Policy & Socioeconomics Award — Mariam Masid

Dr. Mariam Masid has been selected as the first place recipient of the Ph.D. Dissertation Award in the field of Water Policy and Socioeconomics. The title of Mariam’s dissertation is “Reforming the Culture of Partiality: Diffusing the Battle of the Experts in Western Water Wars”. Her research explored some of the complexities of the water court process in Colorado.

The award consists of a certificate, a \$750 check, reimbursement up to \$1,000 for travel expenses, and waived conference registration for the 2008 UCOWR/NIWR Conference being held at the Marriott at the Civic Center in Durham, NC, July 22-24. This award will be presented at the Awards Banquet, to be held from 7:00–9:00pm on Wednesday July 23.

Global Water Research Colloquium

The Global Water Research Colloquium – From Conflict to Sustainability: Challenges and Opportunities in an Interdependent World, held at the Hilton, Fort Collins on March 25, 2008 and sponsored by the Colorado State University (CSU) Vice Provost for Research, the Office for International Programs and the Water Center was one such effort. The Colloquium's primary goal was to highlight current water research at CSU and bring the university community together to discuss ways in which faculty and students can collaborate on local, regional, national and international water projects.

A few of the highlights from the Colloquium include: Keynote Speaker Brian Richter, Director of the Sustainable Waters Program for The Nature Conservancy; the Art Poster Competition, directed by graphic design art professors Phil Risbeck and Jason Frazier; and the technical posters from five of eight colleges across CSU. The winners of the art post completion are Elizabeth Schmidt, Amber Crowe and Erin Dubinski. In addition to our keynote speaker, we were very pleased to host two distinguished guests. Professor Rodrigo Maia from the University of Porto in Portugal is a visiting scholar in Engineering at CSU and was able to attend the Colloquium. Eugene Z. Stakhiv from the Army Corps of Engineering participated in our fourth panel discussion and announced the formation of the UNESCO International Center for Integrated Water Resources Management (ICIWaRM). ICIWaRM is a conglomeration of professional organizations, governmental agencies and research institutions working together on interdisciplinary projects towards advanced solutions for global water issues.

As a part of CSU's internationalization strategy, the Global Water Advisory Committee would like to continue the momentum initiated with the Colloquium by offering an outlet for collaboration on potential projects regarding international water research via monthly Global Water Roundtable gatherings. Throughout the upcoming year, the VPR, OPI and the CSU Water Center in cooperation with colleges across campus will organize such venues to connect established water experts and alumni at large with new researchers and faculty at CSU to bring forth a new generation of CSU water professionals.

Director Accomplishments

Coordination Accomplishments

- Currently serve as the Project Director for the 6 state Region 8 USDA-CSREES Water Program to deliver integrated programs on water and water quality
- Worked with the Colorado Ag Council to organize the 2007 Ag Water Summit
- Organized a team of Cooperative Extension agents to represent CSU at the HB1177 Water Roundtables around the state. Also responded to a request by DNR to assist in putting together the Compact Commission Charter documents in collaboration with Lyn Kathlene of CIPP. Serve on the IBCC Public Education Committee
- Worked with scientists at Montana State University, Utah State University and the University of Wyoming on landowner issues relative to coal bed methane development. Developed a manual and training program for landowners. Worked with MSU and UC
- Provided the Col Dept. of Public Health and Environment and USDA-NRCS with requested input on agricultural water quality standards. Confer regularly with staff at CDA on pesticide labeling issues
- Lead coordinated effort to develop and submit CSU Super Cluster proposal
- Reestablished undergraduate water law course at CSU
- Served as search chair for Irrigation Engineer and as search committee member for Extension Water Specialist and Extension Associate Director
- Provided support for state funded lysimeters at Rocky Ford Experiment Station

Represent CSU

Represent CSU in 5 national, 11 state, and 1 local water organizations:

National

1. National Institutes for Water Resources
2. National Co-Chair USDA-CSREES National Integrated Water Program (2006-Present)
3. Board of Directors – Universities Council on Water Resources (2007- Present)
4. NASULGC Water Seminar Planning Team

State

1. President, Board of Directors of the Colorado Watershed Network (2006-Present)
2. Board of Trustees - Colorado Foundation for Water Education (2002 – Present)
3. Board of Directors – Colorado Water Congress
4. Cooperative Extension Water Program Team
5. College of Agricultural Sciences Managed Ecosystems Strategic Planning Team
6. Co-Chair Cooperative Extension Drought Team
7. Chair of Education Committee for the Colorado Foundation for Water Education
8. Colorado AWARE Advisory Board
9. Colorado Governor's Water Availability Task Force (2002 – Present)
10. Colorado Dept of Health / EPA 319 Advisory Committee
11. NRCS State Technical Committee
12. IBCC Public Education Committee
13. Served on review panel for NRI Water and Watersheds and NRCS CEAP program

Local

1. City of Fort Collins Water Board (2003 – Present)

Grants and Contract Activity

Project Name	Sponsor	End Date	Amount
104B State Water Resources Research Institute Program Fiscal Year 2006	DOI-USGS-Geological Survey	2/28/2007	\$92,335
Development of Characterization Approaches and a Management Tool for Groundwater-Surface Water System in the Vicinity of Sutherland Reservoir and Gerald Gentleman station, Lincoln County, Nebraska (E. Poeter, CSM)	DOI-USGS-Geological Survey	1/31/2008	\$132,731
104B State Water Resources Research Institute Program Fiscal Year 2007	DOI-USGS-Geological Survey	2/29/2008	\$92,335
Continuation: Coordinated Agricultural Water Quality Programming for the Northern Plains and Mountains Region	USDA-CSREES-Coop State Rsrch Edu & Ext	9/14/2008	\$587,000
Studies to Support Sustainable Development of the Denver Basin Aquifers (Tom Sale, CSU)	City of Castle Rock	12/31/2008	\$25,000
104B State Water Resources Research Institute Program Fiscal Year 2008	DOI-USGS-Geological Survey	2/28/2009	\$92,335
NPS Outreach Coordinator	Colorado Dept Public Health & Environ	6/30/2009	\$199,904
NPS Outreach Coordinator-Program Income		6/30/2009	\$6,295
Developing a Decision Support System for the South Platte Basin (Luis Garcia, CSU)	Various "Non-Profit" Sponsors	6/30/2009	\$30,000
Development of a Correction Function for the Three- Inch, Thinwalled, Helley-Smith Sampler Deployed on Coarse Gravel Beds (S. Abt, CSU)	DOI-USGS-Geological Survey	7/31/2009	\$21,416
104G Competitive Grants National Institutes for Water Research Program (Garcia, McCray, Poeter, Waskom/Grigg - 4 projects total)	DOI-USGS-Geological Survey	8/31/2009	Not Funded
Public Values & Attitudes Toward Agricultural Water Use in the West	USDA-CSREES-Coop State Rsrch Edu & Ext	8/31/2009	\$170,000
OMS Internship (Robert S. Regan, USGS)	DOI-USGS-Geological Survey	8/31/2009	\$30,000
GEOLEM Internship (Roland Viger, USGS)	DOI-USGS-Geological Survey	8/31/2009	\$20,000
Walking Through the Water Year	DOI-Bureau of Reclamation	9/30/2009	\$70,720
Direct Determination of Crop Evapotranspiration in the Arkansas Valley with a Weighing Lysimeter	Colorado State Water Conservation Board	12/31/2009	\$378,000
New Methods for Sago Pondweed Management (Nissen, CSU)	Colorado State Water Conservation Board	12/31/2009	\$20,000
Agricultural Water Conservation Clearinghouse	Colorado State Water Conservation Board	12/31/2009	\$10,000
CWI Program Administration Project	DOI-USGS-Geological Survey	2/28/2011	\$49,849
CWI Technology Transfer & Information Dissemination	DOI-USGS-Geological Survey	2/28/2011	\$153,405
Coordinated Regional Water Resources Programming for the Northern Plains and Mountains Region	USDA-CSREES-Coop State Rsrch Edu & Ext	9/14/2012	\$2,399,995

CWI Highlights



COLORADO WATER INSTITUTE

About CWI

As a headwaters' state, the heavens are Colorado's water supply. And there are thirsty states downstream! As a result, Colorado water managers and users contend with the fickle nature of weather (and climate); the allocation of limited water among competing sectors of Colorado's economy and environment; and satisfying agreements with downstream states.

CWI works closely with Colorado water managers and users to develop sound science to assist water managers in reducing conflict among water users.

CWI facilitates the transfer of new water knowledge to water managers and also assists in educating the next generation of Colorado water managers by working with all Colorado institutions of higher education.

Research

CWI, an affiliate of Colorado State University, exists for the express purpose of focusing the water expertise of higher education on the evolving water concerns and problems being faced by Colorado citizens. We are housed on the campus of Colorado State University (CSU) but work closely with all institutions of higher education in Colorado.

CWI attempts to coordinate research efforts with a number of local, state and national agencies and organizations. Recent state funding has allowed CWI to fund 15 research projects at CSU, CU and Colorado School of Mines. Selected current research projects are listed on the following page.



Outreach/Information Transfer

CWI publications include research reports, the Water in the Balance series which provides a reader-friendly summary of project results, and Colorado Water, a bimonthly newsletter containing information on research, faculty, conferences and other events with a water focus. Outreach activities are conducted in conjunction with CSU Cooperative Extension, the U.S. Department of Agriculture, the Colorado Department of Agriculture, the Environmental Protection Agency, and Cooperative State Research, Education and Extension Service.

Highlights Response to State Needs

Interbasin Water Roundtables

CWI, CSU Cooperative Extension and the Colorado Institute of Public Policy are collaborating with the Department of Natural Resources to facilitate the dialog between the various sectors of society engaged in a state mandated Interbasin Water Roundtable process. One result of these efforts, the paper "Living in the Rocky Mountain West, Water 2025: Beliefs and Values as a Means for Cooperation" is available at:
http://www.cipp.colostate.edu/cipp_reports.shtml

Colorado River Flow Forecasting

A unique partnership between a professor in the CSU College of Engineering and the Colorado River Water Conservation District generated a project to conduct "Hydrologic Analysis, Forecasting, and Simulation of the Upper Colorado River System." Report (CR208) is online at cwi.colostate.edu.

Produced Water

In collaboration with the Bureau of Reclamation and the National Institute of Water Resources, CWI hosted a national workshop on the opportunities and impediments for putting oil and gas product water to beneficial use. Scientific, social and policy gaps and needs were explored and key agencies discussed mechanisms for cooperation. Available online at www.cwi.colostate.edu.

Arkansas Valley Salinity

CWI water researchers are working with local legislators and water leaders to find ways to alleviate crop yield reductions due to salinity.

Lysimeter

State of Colorado, USDA/ARS, and Colorado State University are working together to install and instrument two scientifically sound large weighing lysimeters in the Arkansas Valley in support of the Arkansas River Compact settlement.

Colorado State University



COLORADO WATER INSTITUTE

Current Research Projects

Developing a GIS Database for Source-Tracking of Human Versus Agricultural Inputs of Antibiotic Resistance Genes (ARG) in the Watershed

Amy Pruden and Mazdak Arabi, Dept of Civil and Environmental Engineering, Colorado State University.

Hydrologic Analysis and Process-Based Modeling for the Upper Cache la Poudre Basin

Stephanie Kampf, Dept of Forest, Range and Watershed Stewardship, Colorado State University.

Water Reallocation and Bioenergy in the South Platte: A Regional Economic Evaluation

James Pritchett, Agriculture & Resource Economics, Colorado State University.

Effects of Pine Beetle Infestations on Water Yield and Water Quality at the Watershed Scale in Northern Colorado

John D. Stednick, Dept of Forest, Range and Watershed Stewardship, Colorado State University.

Development of Oilseed Crops for Biodiesel Production Under Colorado Limited Irrigation Conditions

Jerry J. Johnson, Dept. of Soil & Crop Sciences, Colorado State University.

Predictability of the Upper Colorado River

Streamflows Jose D. Salas, Colorado State University and Balaji Rajagopalan, University of Colorado.

Occurrence and Fate of Steroid Hormones in Sewage Treatment Plant Effluents, Animal Feedlot Wastewater, and the Cache la Poudre River of Colorado

Thomas Borch, Dept. of Soil & Crop Sciences, Colorado State University.

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Simultaneous Water Quality Monitoring and Fecal Pollution Source Tracking in the Big Thompson Watershed

Lawrence Goodridge, Dept. of Animal Sciences, Colorado State University.

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by Troy Bauder, Reagan Waskom, Rob Wawrzynski, Karl Mauch, and Greg Naugle (June 2008).

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by Nani Bay Teves and John D. Stednick (June 2005).

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The Water Resources Research Institutes represent cooperative agreements between public universities and federal and state government that engender lasting partnerships among state universities; federal, state, and local governments; businesses and industries; and non-governmental organizations aimed at solving problems of water supply and water quality at local, state, regional, and national levels.

At the land grant university of each state, a small federal grant provides base support for a program that identifies water resources research needs, finds university researchers capable of conducting useful research, and leverages federal funds with state and other resources to sponsor the needed investigations. More importantly, the modest federal grant creates an environment that encourages the other partners to incorporate science into their efforts and fund additional research in ways

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