

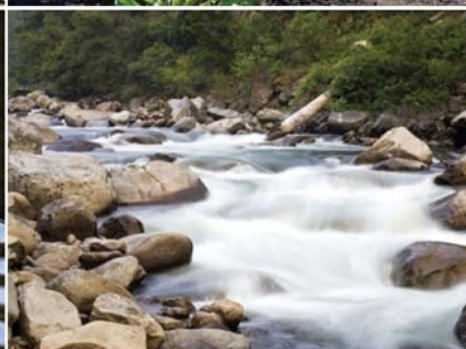
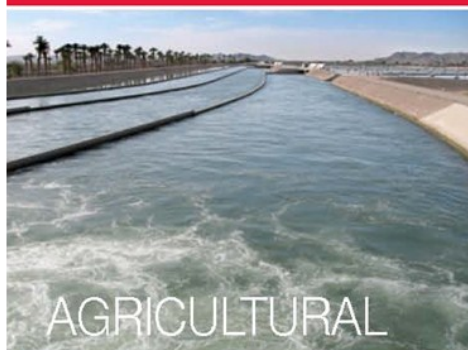
**CSU**

**The California State University**

WATER RESOURCES AND POLICY INITIATIVES

# 4th Annual Conference June 7, 2012 Sacramento, CA

[www.calstate.edu/water](http://www.calstate.edu/water)



## **CSU Water Resources and Policy Initiatives Working Draft Document**

### **Vision**

The Water Resources and Policy Initiatives (WRPI) will contribute to a long-term, sustainable water supply for California through education, research and policy development while balancing the needs of urban, agricultural and environmental concerns.

### **Mission**

The Water Resources and Policy Initiatives will link the capabilities and resources within the twenty-three California State University campuses to provide academic preparation, applied research and policy development that addresses all aspects of water use. WRPI optimizes and links the many centers and programs of excellence within CSU on water issues. The scope of WRPI activities include:

- Provide critical faculty and staff-based expertise to support California's need for appropriate and sustainable water resources in the 21<sup>st</sup> century;
- Promote education, training and professional capacity development with the water industry, governmental agencies, and the wider community;
- Develop new and advanced water technologies and services that will help drive economic development and job creation.

WRPI will also enhance the universities' ability to attract exceptional students and faculty by providing a culture of collaboration and innovation within a multi-disciplinary water curriculum.

### **Key Goals**

The goals listed below support the key elements in the WRPI mission. The goals reflect the CSU comparative advantage in addressing current and emerging statewide water issues. WRPI will be a leading resource for:

***Partnerships with the water industry and government agencies*** – WRPI will engage a broad group of water industry stakeholders and government agencies to leverage university resources to pursue the development of “good science” from which to base decision making and emerging water policy.

***Education, training and professional capacity building*** – WRPI will raise awareness on careers in water and develop academic pathways for the next generation of professionals to meet the needs of businesses, government officials, tribal nations, water professionals and the general public through outreach and training programs, professional capacity building, university curriculum development, and formal post-secondary and graduate education.

***Technology and economic development*** – WRPI will provide a strong science base and business development support to help commercialize new ideas in water industries, services and professions in California. The outcome will be a creative climate of innovation, furthering economic growth in water technology.

## Conference Agenda

June 7, 2012

Alumni Center at Sacramento State

### Conference Objectives:

- *Connect CSU faculty/staff/students with State Agency leaders*
- *Align CSU faculty/staff/students expertise to State Agencies needs*
- *Expedite contracting and availability of CSU technical services for State Agencies support*

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8:00am **Conference Registration and Continental Breakfast**

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9:00am **Welcome**  
**WRPI Overview & Update**

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9:20am **Participant Introductions**

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9:50am **The CSU and State Agencies Connection**

- EPA MOU Presentations  
*Melanie Wallace (EPA)*
- CSU Faculty Panel (A) Presentation  
*Rob Negrini (Bakersfield), Doug Smith (Monterey Bay), Jeff Thompson (San Bernardino)*
- CSU Faculty Panel (B) Presentation  
*Jean Moran (East Bay), Matt Rahn (San Diego), Juneseok Lee (San Jose)*
- AB 20 Update  
*Sue DeRosa (Sponsored Program Administration-Office of the Chancellor)*

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12:00pm **Lunch/Networking/View Student Posters**

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1:30pm **Concurrent Breakout Sessions**

- A. Discussion on EPA MOU Development
- B. Discussion on Water Quality
- C. Discussion on Water Supply/Modeling

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3:30pm **Reconvene and Wrap-Up**

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4:00pm **Conference Adjourn**

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**\*\* Note:** *There will be a separate meeting with Agency Staff and CSU Contract Staff (not part of WRPI Conference) scheduled from 4:00pm – 5:00pm*

# Agency Information

## Areas of need for technical information or studies:

Department of Water Resources	<ol style="list-style-type: none"> <li>1. Improving geospatial awareness for statewide hydrography both from a cartographic perspective and a modeling network (national Hydrography Dataset)</li> <li>2. Common model schematic for California water</li> <li>3. Common conceptual model for California water management</li> <li>4. Integrated/aggregation of Urban Water Management Plans across regions</li> <li>5. Quality of groundwater; conservation practices; draught trends</li> </ol>
Department of Forestry and Fire Protection	<ol style="list-style-type: none"> <li>1. Estimate pollutant loadings from land management activities</li> <li>2. Estimate changes in water balance from forest management and other land use</li> <li>3. Influence of expected climate change on forest hydrology</li> </ol>
Department of Fish and Game	<ol style="list-style-type: none"> <li>1. Ecosystem impacts of aquatic contaminants</li> <li>2. Climate change impacts on natural and managed water systems</li> <li>3. Water conservation and benefits to ecosystem services</li> </ol>
Governor's Office of Planning and Research	<ol style="list-style-type: none"> <li>1. Technical work on groundwater mapping and data</li> <li>2. Studies about groundwater</li> <li>3. Coordination/benefits of better data information, etc.</li> <li>4. Table comparing various water supply strategies across the following criteria: range of relative costs per acre foot, energy/GHG impacts, equity issues, permanent jobs created</li> </ol>
Department of Food and Agriculture	<ol style="list-style-type: none"> <li>1. Understand nitrogen movement in irrigated lands</li> <li>2. Ecosystem services</li> <li>3. Technologies to enhance on farm environmental stewardship</li> </ol>
State Water Resources Control Board	<ol style="list-style-type: none"> <li>1. Effect of flow on ecological response</li> <li>2. Environmental impacts of ocean discharges of saline brines from desalination activities</li> <li>3. Salt and nutrient management in groundwater basins.</li> </ol>
Department of Conservation	<ol style="list-style-type: none"> <li>1. Rangeland management practices that improve water conservation</li> <li>2. Relative efficiencies of native grasses, compared to annual crop grasses, for soil moisture retention and use</li> <li>3. Surface hydrology and rangeland management - let's slow it down</li> </ol>
Department of Public Health	<ol style="list-style-type: none"> <li>1. Drinking water treatment technology for existing and emerging contaminant (chromium 6, arsenic, nitrate, disinfection by-products, etc.)</li> <li>2. Long term effects in the use of recycled water for augmentation of surface and groundwater supplies</li> <li>3. Transport and fate of emerging contaminants of concern in drinking water (PPCP's)</li> </ol>
<b>Additional projects, initiatives, and/or mandates that your agency has that will benefit from support by faculty, staff, and/or students from the CSU:</b>	
Department of Water Resources	Proposed tunnels to transport water
Department of Forestry and Fire Protection	Updates to state mandated forest and range report
Department of Fish and Game	Yes - several. Of great importance is the ability for CSU to support both the integration of science into natural resources management decisions and to help educate society about the complexities of water in regards to California's ecosystems
Department of Conservation	Valuation and incentives for public benefit/ecosystem goods and services in California crop and rangeland.

**Based on the workforce planning (see State of California Department of Personnel Administration, “Workforce Planning Model and Guide”) of your agency (and branches or sections within the agency) what is the approximate number positions in the following areas of expertise your agency expects to hire within the next 5 years?**

Department of Fish and Game	Engineering - low to moderate*, Science – high*, Business – moderate*, Health – low*, Education - low to moderate*, Agriculture – moderate*, Other - Communications and computer sciences - low to moderate* * estimating a number extremely difficult due to very uncertain budget forecasts
State Water Resources Control Board	Engineering - The Division of Water Quality hires primarily engineers and scientists. For information on hiring numbers, I recommend you contact our HR supervisor, Estela Gonzales at <a href="mailto:egonzales@waterboards.ca.gov">egonzales@waterboards.ca.gov</a>
Department of Conservation	Engineering - Geology; Energy Mineral Resources: more than ten, Science - Environmental: less than ten, Business - Business Services; Accounting: less than ten, Health - none, Education - none, Agriculture - Environmental Planner: less than five, Other - Environmental Planner: less than ten
Department of Public Health	Engineering - Varies (based on vacancies) - Civil and Chemical Engineers, Science - Varies (based on vacancies) - Environmental Scientists
<b>Internship Information:</b>	
Department of Water Resources	Amanda Jack, <a href="mailto:amandaj@water.ca.gov">amandaj@water.ca.gov</a> , <a href="http://www.water.ca.gov/jobs/studentjobs.cfm">http://www.water.ca.gov/jobs/studentjobs.cfm</a> <a href="http://www.water.ca.gov/jobs/dwr_job_vacancies.cfm">http://www.water.ca.gov/jobs/dwr_job_vacancies.cfm</a>
Governor's Office of Planning and Research	Ben Rubin, <a href="mailto:ben.rubin@opr.ca.gov">ben.rubin@opr.ca.gov</a> , <a href="http://opr.ca.gov">opr.ca.gov</a> , Number of potential internships - We are working with full time summer interns, next round would be in the fall
Department of Food and Agriculture	Amrith Gunasekara, <a href="mailto:amrith.gunasekara@cdfa.ca.gov">amrith.gunasekara@cdfa.ca.gov</a> , <a href="http://www.cdfa.ca.gov/EnvironmentalStewardship/EcosystemServices.html">http://www.cdfa.ca.gov/EnvironmentalStewardship/EcosystemServices.html</a>
State Water Resources Control Board	Rachael Horsley, <a href="mailto:rhorsley@waterboards.ca.gov">rhorsley@waterboards.ca.gov</a> , <a href="http://www.waterboards.ca.gov">www.waterboards.ca.gov</a> , Number of potential internships - It depends on the timing. We have lots of student interns, who are primarily funded through contracts with the Community Colleges Foundation.
Department of Public Health	District Engineers, Refer to map: <a href="http://www.cdph.ca.gov/programs/Documents/DDWEM/OriginalDistrictMapCDPH.pdf">http://www.cdph.ca.gov/programs/Documents/DDWEM/OriginalDistrictMapCDPH.pdf</a> , <a href="http://www.cdph.ca.gov/programs/Pages/DWP.aspx">http://www.cdph.ca.gov/programs/Pages/DWP.aspx</a>

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Diganta D. Adhikari is a Research Associate at the Center for Irrigation Technology (CIT) California State University, Fresno and also serves as a faculty member for the Department of Industrial Technology at CSUF where he teaches classes on automation and process control. Areas of expertise and research are air quality; soil salinity, land reclamation; crop co-efficient (Kc) and sensor networks.

### **David Alderete**

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- MS, Civil & Environmental Engineering, California State University, Sacramento, 2004
  - BS, Civil & Environmental Engineering, University of California, Davis, 1996
  - Professional Engineer, State of California Research Engineer, Office of Water Programs, California State University, Sacramento, 2000–present
  - Stormwater Best Management Practice (BMP) Research
  - Stormwater Monitoring and Characterization Project Engineer, Montgomery Watson Engineering Consultants, Sacramento, CA, 1993–2000
  - Environmental Documentation and Analysis
  - Surface Water and Groundwater Hydrologic Modeling
  - Flood Control Planning and Design
- Professional Interests: Water resources and environmental modeling; stormwater BMP development and testing; stormwater sampling

### **Augustine Avwunudiogba**

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Dr. A. Avwunudiogba is a fluvial geomorphologist with research and teaching interests in soil and water conservation, human-environment interactions in watersheds and the use of geospatial technology in environmental

modeling. He is currently conducting a study on the dynamics of riparian vegetation floodplain features of the Tuolumne Watershed, CA.

### **Dirk Baron**

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Dirk Baron is a Professor of Geology at CSU Bakersfield. His expertise is in hydrogeology and environmental geochemistry. His research focuses on the behavior of toxic trace elements such as arsenic and chromium in aquatic environments.

### **Trent Biggs**

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Dr. Biggs is a geographer and hydrologist interested in the impacts of land use and climate change on watershed processes, including water, nutrients, and sediment. He has worked in the Amazon basin, southern India, Himalaya, and Mexico, and has continuing research in American Samoa and San Diego. He is particularly interested in expanding his research program in California, with a focus on the impact of land use change on water quality.

### **Edward Bobich**

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I am a plant physiological ecologist with interests in plant anatomical, morphological, and physiological adaptations to arid environments. I am especially interested in responses of plants to extreme drought events and I am currently participating in WRPI Faculty Research Incentive Award Program.

### **David Brown**

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David L. Brown, PhD Professor, joined the Geological and Environmental Sciences Department at CSU, Chico in 1997. He teaches courses in hydrology and environmental science. He supervises undergraduate and graduate student research in agricultural nonpoint source pollution, riparian hydrology and restoration, groundwater surface, water interactions, conjunctive use, and pesticide runoff. He has published papers in groundwater hydraulics, agricultural and forestry water quality, mine reclamation, and forest hydrology. Dr. Brown regularly reviews grant proposals for the National Science Foundation, and has served on several national grant review panels. He has served on the Technical Advisory Committee of the Butte County Water Commission.

**Christian Carleton**

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- MS, Hydrologic Sciences, University of California, Davis, 2002
  - BS, Environmental Biology and Management (Water Resources Emphasis), University of California, Davis, 1998
  - Professional Hydrologist (PH)
  - Certified Professional in Storm Water Quality (CPSWQ)
  - Certified Professional in Erosion and Sediment Control
  - Research Hydrologist, Office of Water Programs, California State University, Sacramento, 2008–present
  - Surface water hydrology and water quality
  - Hydrologic, stormwater, and erosion control studies
  - Hydrologic data analysis, modeling, and measurements
  - Hydrologic methods
  - Associate Hydrologist/Project Manager, Foothill Associates, Rocklin, CA, 2003–2008
  - Water quality monitoring programs
  - NPDES General Construction site permit compliance
  - Water resources monitoring data
  - Hydrologic analysis for stream and wetland restoration designs
  - Stream geomorphic analysis
  - GIS hydrologic data analysis and modeling
  - Watershed and other water-related management plans
- Professional Interests: Stormwater impacts on surface water hydrology, open channel hydraulics, and water quality; pollutant source and transport pathway identification; stochastic processes; fluvial geomorphology; hydromodification; low impact design/development; hydrologic and erosion control training

**Florence Cassel S.**

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Florence Cassel S. is a Soil and Water Scientist with the Center for Irrigation Technology and an Adjunct Faculty with the Department of Plant Science at California State University, Fresno. Dr. Cassel's work focuses on optimizing water and fertilizer use efficiency in vegetable and fruit cropping systems. Her research also involves the applications of GIS and remote sensing to assess soil salinity, canal seepage and crop evapotranspiration. Dr. Cassel teaches Soil-Water Management and Laboratory Techniques classes. She serves on graduate thesis, research, and conference committees, and has published journal articles and book chapters related to soil salinity and soil-water relations.

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I've been with the Office of Water Programs at Sac State since 2005. I am responsible for the administrative operations and logistics for the Research Group.

**Brian Currier**

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- MS, Civil & Environmental Engineering, University of California, Davis, 1998
- BS, Civil & Environmental Engineering, University of California, Davis, 1997.
- Professional Engineer, State of California Research Engineer, Office of Water Programs, California State University, Sacramento, 2002–present
- Literature review of the cost, performance, maintenance, and construction of treatment BMPs
- Analysis of technical feasibility of numeric limits in storm water permits
- Principal investigator for NPDES Stormwater Cost Survey
- Principal investigator for laboratory experiments of canister filters and drain inlet inserts

- Associate Engineer, Civil & Environmental Engineering, University of California, Davis, 1997–2002
  - Coordinated siting, design, construction management, operation, maintenance, and monitoring efforts for BMP retrofits for treatment of storm water runoff
- Professional Interests: Stormwater management effectiveness evaluation; funding storm water programs; source control and elimination; impact of water quality versus habitat degradation on beneficial uses; habitat conservation

**Thomas Dalton**

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Dr. Dalton has handled a variety of assignments for the president and provost at Cal State East Bay since being appointed in 2007. Areas of work have included education and workforce issues that include a STEM focus, University-Community collaborations, NSF grant proposals and university-state agency relationships that include water, fish and game research. Dalton has a PhD from the University of Massachusetts and has written extensively in the history of science and developmental science. He served previously as special assistant to the president and chief of staff at Cal Poly State University, San Luis Obispo from 2001-2007.

**Julianna Delgado**

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Dr. Julianna Delgado is an associate professor in the Department of Urban and Regional Planning at California State Polytechnic University, Pomona, where she teaches lecture and studio courses on sustainability. She is a Founder and Co-Director of the California Center for Land and Water Stewardship and serves on the President's Climate Commitment Task Force. A professional planner, Dr. Delgado served on the American Institute of Architects first Sustainable Design Assessment Team in California, is a former planning director for the City of Big Bear Lake, and former Chair of the City of Pasadena's Design Commission and its Transportation Advisory Commission.

**Elizabeth Eschenbach**

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Professor Elizabeth A. Eschenbach teaches Environmental Resources Engineering at Humboldt State University. Beth graduated with honors in mathematics and psychology from UC Santa Cruz. She earned an MS and PhD in Environmental and Water Resources Systems Engineering at Cornell University. She completed postdoctoral research at UC Boulder at the Center for Advanced Decision Support in Water and Environmental Systems (CADSWES), and assisted in the design of the optimization component of RiverWare. Beth teaches multiple courses including hydrology and water resources planning and management. She has served as co-chair of the Education Committee of the NSF funded WATERS NETWORK Project Office.

**Brad Finney**

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Dr. Finney has over 35 years of research and consultancy experience in surface water and groundwater quality modeling, water resources systems management, wetland wastewater treatment, and wastewater reuse systems. Current research includes (1) utilizing groundwater models to determine the impact that changes in land use and irrigation practices have on the interaction between surface and groundwater, (2) developing management models for constructed wetland wastewater treatment systems, and (3) water quality impacts of using tire derived aggregate (TDA) in place of gravel in septic tank leach fields.

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Philip Garone is Associate Professor of History at California State University, Stanislaus. His specialization is environmental history, and he has published a book and several articles on the environmental history and ecology of the Central Valley, with a special emphasis on both wetlands and on the valley's hydraulic infrastructure. His current research projects include the identity and water politics of the Sacramento-San Joaquin Delta, and the effects of global climate change on the management of public lands.



**Dave Goorahoo**

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Dave Goorahoo is an assistant professor in the Plant Science Department and a Soil Scientist with the Center for Irrigation Technology (CIT) at Fresno State. He teaches courses in Food-Society and Environment, Vegetable Production, Organic farming and Soils in the Environment at the Undergraduate level and courses related to Soil-Plant-Water and Energy interactions at the graduate level. His AgEnviron research focuses on nutrient and water use efficiency in vegetable crop production systems with an emphasis on examining the impact of agricultural practices on the environment. Dr. Goorahoo was born in Trinidad and Tobago where he obtained his BS in agriculture at the University of the West Indies. He completed his MS and PhD studies at the University of Guelph, Canada before moving to Fresno in December 1999.

**Sargeant Green**

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I am working on the San Joaquin Valley Integrated Water Management Plan process as well as the San Joaquin River Restoration Program as a landowner technical facilitator. I am also Clean Water Subcommittee Chair for the Association of California Water Agencies. In addition I am a member of the California Water Quality Monitoring Council.

**Todd Greene**

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I am an Assistant Professor/geologist (since 2007) studying the Tuscan Aquifer near Chico, CA. I specialize in sedimentology and stratigraphy of clastic sedimentary rocks. After earning a PhD at Stanford in 2000, I worked for Anadarko Petroleum Corporation in Houston, TX, as a company specialist on reservoir sedimentology and stratigraphy. These skills are easily transferable to aquifers. I have strong interests in how water-bearing strata are organized and distributed in the Tuscan Aquifer in the North Sacramento Valley.

**Jason Gurdak**

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Jason is an Assistant Professor (Hydrogeology) in the Geosciences Department at San Francisco State University where he leads the Hydrogeology and Water Resources Research Group. Prior to SFSU, he was a USGS Hydrologist for 11 years and conducted research for the National Water Quality Assessment program. His SFSU research group addresses questions about groundwater management, vadose zone and soil-water processes, recharge and contaminant transport, groundwater vulnerability to contamination, and climate variability and change effects. He collaborates on a UNESCO Groundwater and Climate Change project that advances science, education, and awareness of the effects of climate change on global groundwater resources.

**Lisa Hammersley**

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Dr. Lisa Hammersley is an Associate Professor of Geology at Sacramento State, specializing in igneous petrology and mineralogy. She is also an author of the geology textbook Physical Geology. Dr. Hammersley is the chair of a taskforce developing the One World Initiative, a new initiative at Sacramento State designed to help students develop a global perspective by engaging the campus in year-long discussions of global themes. The first theme, starting in Fall 2012, will be Global Perspectives on Water.

**Don Hankins**

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As a geographer I work primarily in the area of natural resources management. My research is focused on conservation and resource management. Most of this research involves studies of indigenous fires as a means to maintain productive landscapes, which includes biodiversity, cultural plant/animal resources, and water. I have several concurrent projects involving the interface of fire and water. Beyond the applied

research I have been working with the Inter-Tribal Water Coalition regarding policy conflict, ecological restoration, and training of Tribal practitioners.

**Peggy Hauselt**

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Dr. Hauselt researches and teaches about the interaction of the environment and agriculture in California. One current project focuses on developing a spatial water-balance model in Sacramento Valley rice production.

**Eric Houk**

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Dr. Houk's research primarily focuses upon issues relating to efficient water resource allocation. Specifically, he has examined the economic impacts of water transfers from agriculture for endangered species preservation, the economic effects of irrigation induced waterlogging and soil salinization, and the impact of water conservation efforts on residential water demand. Along with publishing the results of this research in a variety of journal articles, Dr. Houk has made numerous presentations at regional, national, and international conferences.

**John Johnston**

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John is a professor of Civil Engineering at California State University, Sacramento. For the past 12 years, he has split his time between the civil engineering department and the Office of Water Programs where he provides technical assistance to the Caltrans stormwater research program in the areas of water quality monitoring and BMP performance. Before joining California State University, Sacramento, he taught at California State University, Fresno for 8 years. He earned his BS and MS degrees at Stanford and his PhD at UC Davis and is a Registered Civil Engineer in California.

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Kitting earned a Biological Sciences PhD on a Stanford U. full Fellowship in 1979. He then postdoc'ed at UC Santa Barbara, then served on the faculty at Univ. Texas Austin's Shore Lab until 1985. An Ecology Professor at CSU East Bay since 1985, he teaches and conducts research leading to restoration of entire ecosystems, especially bay-delta shorelines. His recent, related publications include biological filtration, habitat enhancement, and solutions to environmental degradation, including climate disruption. His recent funding is from US Fish and Wildlife Service, CalTrans, Santa Clara Valley Water District, and San Francisco Bay Wildlife Society.

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Jamie Kneitel is an Associate Professor in the Department of Biological Sciences at California State University, Sacramento. He received a BA from University of California, Santa Cruz, a MSc from California State University, Northridge, and a PhD from Florida State University. Jamie spent two years as the Tyson Postdoctoral Fellow at Washington University in St. Louis and has been at CSU Sacramento since 2004. He is a community ecologist who bridges theory, empirical, and applied fields in aquatic and terrestrial ecosystems. His research interests biodiversity, ecosystem functioning, food webs, spatial ecology, eutrophication, disturbance ecology, and invasive species.

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I began teaching the irrigation and water management courses in the Plant Science Department in 1979. During that period, I conducted research in the following areas: Irrigation Scheduling, Leaching of fertilizers

and pesticides from the root zone, Water Requirements of various crops, Infra-red Thermometry, and Air Quality problems. I retired from full time teaching in 2009 but continue to teach and conduct research part time.

**Rikk Kvitek**

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Dr. Rikk Kvitek is a professor and Director of the Seafloor Mapping Lab (SFML) within the Division of Science and Environmental Policy at California State University, Monterey Bay. He is also a founding member of the CSU Council on Ocean Affairs Science and Technology (COAST) Executive Committee. The SFML specializes in high-resolution acoustic and optical remote sensing of coastal habitats and fresh water reservoirs. Combining research and education with state-of-the-art geospatial technology, the SFML offers unique hands-on, field-to-finish experience to students while conducting professional bathymetric and habitat mapping surveys for geomorphic visualization and changed detection to address critical resource management issues and advance basic research along the continental margins.

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Dr. Lee has been an assistant professor in the Department of Civil and Environmental Engineering (CEE) at San Jose State University (SJSU) since fall of 2008. His educational qualifications include a BS in Civil and Environmental Engineering from Korea University, Seoul, South Korea and a MS and PhD in Civil and Environmental Engineering from Virginia Tech.

Overall research interests can be elaborated at macro- and micro-levels of the Water Distribution Systems. Macro indicates decision analysis from the Operations Research/ Management Science field and micro includes the various hydraulic & physical phenomena inside the drinking water infrastructures. Currently, he is working on the sustainability issues of water, energy, and infrastructures which indeed are the fundamental needs for us and our later generation. Specific approaches are by enhancing and combining both macro and micro-level evaluations knowing that macro will be strengthened by micro and vice versa.

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Gary Li is a professor of geography and GIS. His teaching and research interests are in hydro- and sediment processes, physical and numerical modeling, and geographic information systems. His publications appeared in top level refereed journals, such as Water Resources Research, Journal of Hydrology, Catena, Transactions of ASAE, Earth Surface Processes and Landforms etc. He is currently conducting research on overland flow dynamics and sediment transport.

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Marc Los Huertos works on nitrogen processes in soils and water along the Central Coast, with particular interest in bio-assessment of streams and rivers, learning to predict cyanobacteria harmful algal blooms, and developing management practices to limit agricultural nitrogen inputs to surface and ground water resources.

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Emir Jose Macari has been the Dean of the College of Engineering and Computer Science at Sacramento State since 2006. Previously Dean Macari was dean of the College of Science, Mathematics and Technology

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Macari holds both a doctorate and a master's degree in civil engineering geo-mechanics from the University of Colorado. He has a bachelor's degree in civil engineering geo-mechanics from Virginia Tech University.

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Richard R. Marcus is Associate Professor and Director of the International Studies Program at CSULB. His work focuses on issues of linking supply side water governance and policy to farmer perceptions in Madagascar, Kenya, Israel, and the Southeastern U.S. He has also worked in the Congo, Uganda, and Tanzania. He has been a regular PI or co-PI on grants from the National Science Foundation and the USDA-funded Southeast Climate Consortium, currently working on an EaSM-funded effort. Since 2010 he has also served as World Bank/Madagascar Lead Researcher for Governance advising on political economic decision-making down the value-chains of diverse sectors.

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Scott Meyer has worked at Sacramento State's Office of Water Programs for over 10 years. His work involves water quality studies, software development, database design, and GIS applications. He has also taught Engineering Geology for Sac State's Civil Engineering Department for the past eight years.

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  - Engineering Manager, Office of Water Programs, California State University, Sacramento, CA, 2002–present; Applied Research Engineer, 2000–2002
  - Stormwater Research Management
  - Stormwater Treatment BMP Research
  - Stormwater Runoff Monitoring Research
  - Stormwater BMP Distance Learning Courses Project Engineer, Radian International, Sacramento, CA, 1991–2000
  - Groundwater and Soil Remediation System Design and Construction
  - Regulatory Compliance Action Plans, Assessments, and Reports
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I am an Assistant Professor in the Department of Environmental Science & Management at Humboldt State University. I also serve as the Environmental Science Program Coordinator for ~360 majors in our program. My research is in ecological restoration and freshwater ecology. Most recently I have explored the biological communities of steep mountain streams and conducted several studies around the invasive cordgrass *Spartina densiflora* in salt

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Research Engineer, Office of Water Programs, California State University, Sacramento, 2002–present

\* Design and monitoring of pilot storm water BMPs, including Austin-type alternative media filters, small footprint underground vault filters, and sedimentation systems with chemical dosing

\* Pilot study planning and study design

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Environmental Engineer, Mott MacDonald Group Ltd., Cambridge, England, 1989–1998

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Dr. Rahn has been working in the fields of ecology, conservation biology, environmental sciences, land use, watershed planning and wildfires for nearly 20 years. He is primarily interested in the interface between science and policy and how they inform decision making at a local, regional, and national level.

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Mahesh Rao received his BS and MS degrees in 1986 and 1988, respectively, both degrees in Agricultural Science from A. P. Agricultural University, Hyderabad, India, and PhD degree (Environmental Science) from Oklahoma State University, Stillwater, in 1996. He served as an Associate Professor at Oklahoma State University until 2009. Currently, he is Associate Professor at Humboldt State University, and also serves as the director of the Institute of Spatial Analysis lab. His teaching and research interests pertain to the applications of geospatial technologies such as GIS and remote sensing in the field of natural resources management. He is particularly interested in applying LiDAR remote sensing and GIS-based tools for evaluating soil and water quality at watershed levels.

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My research interests are in plant physiology and ecology, specifically plant water relations and plant hydraulics. Current NSF-supported research focuses on patterns and mechanisms of xylem embolism repair in plants. This research also includes fruit trees, such as citrus, and crops, including wheat, tomato, and sunflower, with the aim to develop new plant-based measures to schedule regulated deficit irrigation. An important goal of the research is to contribute to water conservation in California by developing sustainable irrigation practices.

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- Engineer-in-Training, State of California Research Engineer, Office of Water Programs, California State University, Sacramento, 2010–present
  - Device testing of stormwater Best Management Practice (BMP) technologies
  - Technical assistance with infiltration, erosion and transport processes, and water quality
  - Review of data, analysis, and results for stormwater and erosion control studies
  - Development of infiltration and BMP models
  - Development of stormwater and erosion control research study plans
  - Part-Time Faculty, California State University, Sacramento 2009–present
  - Water Quality Lab (Lab Instructor)
  - Hydraulics
  - Engineering Fluid Mechanics
- Professional Interests: Surface water quality and processes; subsurface contaminant transport; infiltration modeling; multiphase flow in porous media; geotechnical and subsurface engineering.

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Dr. Douglas Smith received a PhD from U.C. Santa Barbara in Geological Sciences. He is a professor in the Division of Science and Environmental Policy at Cal State Monterey Bay. He teaches Geology, Geomorphology, and Hydrology in undergraduate and graduate courses. Advanced courses have GIS, geospatial analysis, hydraulics, hydrology, sediment transport, river restoration and computer modeling components. Dr. Smith's watershed research includes the impact of upland wells on base flow, urban and wildland river restoration, fire impacts on streams and water resources, wetland function, and combining LiDAR with seafloor mapping technology to quantify reservoir capacity.

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I teach irrigation and agricultural engineering technology at Chico State. I taught at Fresno State prior to my current position. I received numerous grants relating to water conservation and technologies. My current interests are in ET controller applications to tree crops.



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Director of the Irrigation Training and Research Center (ITRC) at California Polytechnic State University, San Luis Obispo (Cal Poly) and is a Professor in the Cal Poly BioResource and Agricultural Engineering Department. Current research interests include emerging electronic flow measurement technologies, salinity management, and drip irrigation. Dr. Styles has over 25 years of field experience in irrigation as a consultant and engineer and in 2004 was awarded the Irrigation Association Person of the Year. Dr. Styles is a Registered Civil Engineer in California and is a Certified Irrigation Designer with BS and MBA degrees from Cal Poly and a Doctorate in Engineering from UC Davis, California

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Dr. Jeffrey Thompson (BS physics and PhD molecular biophysics) spent 6 years at the NIH, then joined the College of Medicine, Department of Cell and Structural Biology, at the University of Illinois, Urbana-Champaign. For the last 24 years, he has been in the Department of Biology, California State University, San Bernardino. He served as Chair of the Biology Department since 1998 to 2005. He is currently the Associate Provost for Research. For three years, he has served as the Chair of the CSUPERB Stem Cell Task Force. His research interests include differentiation of adult stem cells into bone and neurons.

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Kaomine Vang is a project manager with good analytical and technical skills who works for the Center for Irrigation Technology (CIT) at California State University of Fresno. As a project manager he is involved in the development of water management plans, water-related research, and coordination of education programs. Kaomine is responsible for the WATERIGHT program, a web-based irrigation scheduling tool free to growers and the public. He is involved in the San Joaquin River restoration project identifying regulatory issues and concerns that growers may have. He co-wrote chapter 16 of the sixth edition of the Irrigation Association's Irrigation book and was involved in the agricultural water use report published by the Center for Irrigation Technology. Kaomine also works with the Rural Development Center on campus to help disadvantaged communities with water-related issues.

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Shannon Wells is a Career Counselor and Experiential Learning Coordinator at the Sacramento State Academic Advising and Career Center. Her professional experience includes assisting students and community members with career development. In her current position, she assists students with a variety of career related needs including exploring majors, identifying internship opportunities and job search strategies and techniques. While she advises students from all majors, her specific focus includes working with students from the College of Natural Sciences & Mathematics and the College of Education. She collaborates regularly with employers to identify volunteer, internship and employment opportunities assisting with recruitment needs. Shannon is a native of Sacramento having grown up in the greater Sacramento area and earned both her Bachelor's degree in Sociology and Master's in Career Counseling from Sacramento State University. She enjoys being active in her local community.

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Rhea is Dean of Research at Humboldt State University, responsible for all aspects of the research office, centers and institutes, IRB, IACUC and other policies related to research, and integrating HSU research efforts with the community and region. Her own research has focused on

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Dr. Wright began his career with Black & Veatch consulting engineers after earning a BS degree in Civil Engineering from UC Berkeley in 1986. Following that he earned MS and PhD degrees in Civil and Environmental Engineering at UC Davis and has been a faculty member in Civil Engineering at CSU Fresno since 1999. He is responsible for courses in environmental and water resources engineering. His research interests include water and wastewater treatment with an emphasis on removal of taste and odor compounds and nitrate; and vapor-phase bio filtration (an air pollution control technology that utilizes microorganisms to degrade volatile contaminants).

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David serves as the Water Resources and Policy Initiatives executive director and as the director of Fresno State's Center for Irrigation Technology and California Water Institute. He is currently serving as co-chair of the California Department of Water Resources strategic planning caucus for New Water Technology: Objective 11 and has served as president of the Irrigation Association and the California Chapter of the American Society of Agronomy. David has authored or co-authored over 100 articles on irrigation and water technology. Most recently he co-authored the CIT report "Agricultural Water Use in California: A 2011 Update" and Chapter 16 "Conservation and Environmental Protection" in Irrigation, Sixth Edition published by the Irrigation Association. Major areas of emphasis cover water use in agriculture, urban and the environment, and include policy, education and training, equipment testing and economic development.

## **STUDENT POSTER PRESENTERS**

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I am an undergraduate majoring in geography with a concentration in geospatial technology. This summer I am participating in a watershed research project of the Tuolumne River Watershed, funded by the USDA. My Professor and I plan to attend the conference together.

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I am a graduate student, starting my second year.

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I am a graduate student under Dr. Jamie Kneitel. I am looking at juvenile steelhead smolt migration from the lower American River through the Sacramento-San Joaquin Delta using acoustic telemetry. I am looking at timing, pathways and dispersal patterns.

**Bardia Dehghan Manshadi**

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I earned my BS degree in agricultural engineering in 2009. Currently I am a graduate student in plant science at Fresno state. My thesis topic is "Growth, Yield and Water Use Efficiency of Tomatoes subjected to Elevated Carbon Dioxide under two different water regimes." I am experienced in working with industries and agricultural institute. I have been working for the Center for Irrigation Technology since I started my project as a graduate student. My future goal is to continue my studies and work in the agricultural industry to develop sustainable agriculture.

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I am a Geography Major at CSU Stanislaus. I am currently a senior preparing to graduate in one year. I was recently granted an internship with CSU San Bernardino and the USDA. I along with other students, will be studying the Tuolumne River watershed. I would like to attend this conference because it will be helpful to the research I intend to do, and would like to see other water-related projects that have been conducted. My ultimate goal is to work for a government agency, preferably the National Forest.

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Mauricio Loyola is an undergraduate student from the University of Sao Paulo Brazil where he is pursuing a degree in Agronomy Engineering. He is currently visiting California State University, Fresno and completed his internship. He is gaining experience in California agriculture and is assisting researchers in Plant Science. Particularly he is working on projects related to water management and soil analyses.

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Mr. Michael Machado is an undergraduate student at CSU Stanislaus where he is pursuing his BS degree with major in Geography and minor in Geology. He is interested in water resources issues in California's Central Valley.

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Navreet Kaur Mahal got her Bachelor's Degree in Agriculture from Punjab Agricultural University, India. She is currently a Graduate student at California State University, Fresno where she is pursuing her Master's Degree in the Department of Plant Science. The topic of her thesis research is on the Calibration and Validation of the Denitrifi-

cation- Decomposition Model to estimate nitrous oxide emissions from various cropping systems in California. Navreet has been awarded International Students Scholarships in 2011 and 2012. She is also working with the Center for Irrigation Technology on various research projects. Her research interests are in environmentally safe agricultural practices.

**Sujan Maharjan**

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I am a graduate student at San Jose State University. This is my last year and I am going to do my thesis on rain water harvesting under direct guidance from Dr. Juneseok Lee. He forwarded a message to take part in WRPI conference and will be a plus for my resume if I present in it. I look forward to the conference.

**Kelsey Padilla**

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I am currently an undergraduate at CSU Bakersfield. My existing short term goal is to finish out a four-year degree program to get my bachelors degree in geology. I plan on graduating by spring of 2013 with a BS in Geology and will likely continue on to graduate school, possibly as far as a PhD starting with the MS program at CSUB. CSUB has a strong program in the applied Geological Sciences including hydrogeology and is actively doing research on the future water resources in the San Joaquin Valley, one of the world's greatest agricultural centers.

**Oleta Picuch**

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My name is Oleta Picuch. I am a student at CSU Stanislaus and I am majoring in Geography. My minor is in Environmental and Resource Studies. Currently I have been accepted by the USDA for the Watershed Management Internship program. My career goal is to work with any agency interested in environmental conservation especially water resources use and management in California's Central Valley. I have taken numerous courses related to my area of interest and plan to take more in the future.

**Logan Prosser**

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I am a senior Geology student from CSU Bakersfield presenting a poster on my research that is titled "Discharge of Sierran Streams into the Southern San Joaquin Valley over the past Several Thousands of Years from Total Inorganic Carbon (TIC) Content of Tulare Lake Sediments."

**Janet Robles**

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I am a student at Fresno State, working on my bachelors degree in Business Administration with an emphasis in International Business. I have assisted with laboratory experiments for several research projects for over three years. In one particular project I helped organize and prepare 3,000 soil samples for analysis. I plan on pursuing a master's in Plant Science.

**Josue Samano**

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I'm Josue Samano. I came last fall as an Exchange student from México. This is my last year of university. My major in my home university is Agricultural Engineering, and here in Fresno State I have been focused in plant science. When I first came to Fresno I got involved and started collaborating in research projects on Plant Science Department coordinated by Dr. Dave Goorahoo. Currently I attend conferences, Ag events such as the irrigation show, CIT water conferences and, my special interest now is in irrigation design and water use efficiency, as well as getting involved in everything related to water and irrigation.

**Stephanie, Tanverakul**

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Graduate student in water resource engineering and working as a graduate research assistant under Dr. Juneseok Lee. Current research project is focused on residential water demand modeling, specifically on Cal Water Service

installation of water meters and implementation of a tiered water rate structure.

**Touyee Thao**

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Touyee Thao is a junior undergraduate student at California State University, Fresno. He is pursuing a degree in Plant Science/ Crop Production Management and has strong interest in crop research. Currently he has been working as a Student Assistant with Drs Dave Goorahoo and Florence Cassel at the Center for Irrigation Technology assisting with numerous projects on salinity assessment and water management. His involvement with Researchers has exposed him to soil and tissue analysis, field management, surfactant and herbicide application. Touyee Thao will be graduating in Fall 2013 and plans to get a Masters in Plant Science.

**Prasad Yadavali**

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Prasad Yadavali is a graduate student pursuing dual master's in Biotechnology and Plant Science at Fresno State. He has been working for the Center for Irrigation Technology since 2008. He is involved in research projects related to various environmental issues in the central valley. Prasad has extensive experience in designing and performing field and lab experiments. His thesis research emphasizes on the influence of Calcium fertigation and irrigation water acidification in producing high quality processing tomatoes in salt affected soils.

## State Agencies

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### California Department of Public Health 1616 Capital Avenue Sacramento, CA 95814

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### Department of Fish and Game 1234 E. Shaw Avenue Fresno, CA 93710

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