



2009 Annual Water Symposium  
**MANAGING HYDROLOGIC EXTREMES**

August 30 - September 2, 2009  
Westin Kierland Resort & Spa  
Scottsdale, Arizona  
[www.hydrosymposium.org](http://www.hydrosymposium.org)

Jointly hosted by:  
Arizona Hydrological Society  
American Institute of Hydrology

## 2009 Annual Water Symposium -Technical Program

*Subject to change*

### MONDAY AUGUST 31, 2009

#### PLENARY SESSION 1 8:30-10:00AM

**David Modeer**-General Manager, Central Arizona Project

**David Salisbury**-President and CEO, Resolution Copper Mining

#### TECHNICAL SESSION 1 10:30-NOON

##### *Session: Water Resource Management*

**Drought and adaptive water resources management in Southern AZ.**

Anne Browning-Aiken and Christopher A. Scott

**Flagstaff, AZ Water Supplies – What is sustainable?**

Bradley Hill

**Total Water Management – a business model to ensure resource conservation**

Trevor Hill

##### *Session: Groundwater Quality*

**Water quality parameters for the Yaqui Valley Aquifer.**

Juan Manuel Cortes-Jimenez, et al

**100% clean water for rural communities of Mexico**

Florence Cassassuce

**Bacteriological water quality of rural drinking supply schemes in Nepal**

Suman K. Shakya

**Session: TBA**

**Methods for Estimating Magnitude and Frequency of Floods in Arizona.**

Nick Paretti

**Session: Hydrogeology**

**Recovery, not only for our economy, but also for Groundwater, changes in the N aquifer, Black Mesa, AZ.**

James Macy

**The application of gravity methods in diverse hydrologic systems**

Robert Carruth

**Geologic and hydrologic issues related to uranium mining in the Grand Canyon region**

Donald J. Bills and Robert J. Hart

**TECHNICAL SESSION 2-1:30-3:00PM**

**Session: Water Resource Management**

**Integrated Water Management in La Paz, Mexico**

Lorenzo Castaneda dl Pozo

**A new perspective on well sitting, groundwater management plan, City of Phoenix, AZ.**

Paul R. Plato, Brad D. Jeppson and Gary M. Gin

**Management of Hydrologic Extremes-Scenario Based Planning Tool to test Management Alternatives Under Conditions of Future Uncertainty**

Kathleen O'Neil

**Session: Remediation**

**Use of cross-borehole flow meter testing to support the evaluation of remedial alternatives in a fractured bedrock aquifer**

Thomas R. Suriano

**Mine reclamation within a floodplain – the Klondyke WQARF registry site**

Michael J. Henrich and Todd E. Rlnsmuth

**In Situ chemical reduction for groundwater chromium stabilization**

John Valkenburg

**Session: Surface Water Quality**

**Improving CO river water quality: a lesson in patience**

Doyle Wilson

**Detecting the undetectable – using passive sampler technology to identify emerging containments in a spring downstream from a wastewater treatment plant**

Nick Paretti and Bruce Gungle

**Optimal water quality monitoring network design for Altamaha River System**

Ilker T. Telci and Mustafa M. Aral

**Session: Panel Discussion**

**The Future of Geology in Arizona Colleges**

**TECHNICAL SESSION 3- 3:30-5:00PM**

**Session: Water Resource Management**

**Desalting Water: an Option within a Sustainable Aquifer Management**

Ruben Chavez-Guillen

**Can an Ancient Water Supply Technology be Adapted to Sustain the San Pedro River, AZ?**

Charles Graf

**Sustaining river flows in the face of growing water demands in AZ**

Jeanmarie Haney, et al

**Session: Remediation**

**EHC-O – oxygen releasing compounds for in-situ bioremediation of petroleum hydrocarbons**

Ravikumar Spirangam et, al

**In Situ chemical reduction of 1, 2 - DCA in groundwater**

Fyaz Lakhwala et, al

**JP-5 distribution and recovery performance – a case study at a military hydrocarbon spill site**

David Li et, al

**Session: Flood Part 1**

**A simplified look at concurrent flooding**

David B. Thompson

**Observation made of the Aug. 17, 2008 high flow in Havasu Creek, Steps taken to setup a flood warning system for Supai**

Steve Wiele and Chris Smith

**Hydroplaning and roadway defects on roadways**

Elvin Aycock

**Session: Reuse**

**Survey of Public Perceptions Regarding Water Reuse in AZ: Challenges and Opportunities**

Channah Rock et, al

**Subsurface effluent injection adjacent to the CO River**

Doyle C. Wilson

**Vadose zone recharge wells 10 years later at the City of Scottsdale's Water Campus facility**

Jesus Gastelum, Mario Lluria and Gary G. Small

**TUESDAY SEPTEMBER 1, 2009**

**TECHNICAL SESSION 4 8:00-10:00 AM**

**Session: Policy and Education**

**How can predictive depth to static water level be modeled?**

George (Tom) Merrifield

**The School Water Audit Project**

Nancy R. Crocker

**Arizona Well Owner's Guide to water supply**

Kristin Uhlman and Janick Artiola

**Session: Recharge**

**UIC/ASR Expert Meeting Summary: May 2009 EPA Region 5 Headquarters, Chicago, IL.**

Doug Bartlett

**Conceptual plan for recovery of CAP water stored at Tonopah desert recharge project, Maricopa Co, AZ**

Mark Cross, Staffan Schorr and Taylor Shipman

**Effects of spatial hydrogeologic variability in recharge applications**

David J. Wrzosek

**Impacts of Ephemeral Flow Events on Recharge and Underlying Groundwater Flow in the Salt River Basin, Phoenix, AZ**

Bradley Cross, John Kevitt and Robert Forsberg

**Session: Erosion and Sedimentation**

**Determination of an Event-based Sediment Delivery Ratio for a small, Piedmont Watershed in Suburban Maryland**

Blaine W. Linkous

**Quantification of channel erosion rates in the Minnesota River Basin**

C. Nieber Lenhart, et al

**Biogeochemical connectivity in a semi-arid river basin- San Pedro River, AZ**

Thomas Meixner

**Geologic investigations of urban sedimentation in Tempe, AZ using retention structures**

Laila El-Ashmawy, Nathan A. Toke and J. Ramon Arrowsmith

**Session: Flood Part 2**

**Colorado Basin River Forecast Center Operations**

Kevin Werner

**FLODRO 4.0: Spreadsheets Based Flood Frequency Analysis Computer Package**

Jose A. Raynal-Villasenor

**Exploring monsoon hydrology through field observations, remote sensing, and numerical modeling**

Enrique R. Vivioni

**Preferred alternative selection for the Buckeye FRS#1 dam rehabilitation project**

Padinare Unnikrishna and Isaac Thomas

**TECHNICAL SESSION 5- 10:30-NOON**

**Session: Policy and Education**

**Valuing the Verde River – community input for decision-making**

Pamela A. West, et al

**Economic benefit of commercial and industrial water use in a semi-arid municipality**

David Hubler, et al

**The Water Campus: from dream to reality**

Leonard Dueker, Marshall Brown and Gary G. Small

**Session: Groundwater Modeling**

**Model accounting of water-use and availability in SE Union County, NM, part of Cimarron Co., OK, and parts of Dallam and Hartley Co, TX**

Dave M. Romero, and Steven E. Silver

**Applying spatial datasets to an improved Tucson model in Visual MODFLOW**

Kevin Krogstad

**Part 1 – how limited are analytical groundwater models?**

George (Tom) Merrifield

### **Session: Watershed Management**

#### **Extreme floods and riparian forest response**

Juliet C. Stromberg, et al

#### **Generation of simulated monthly rainfall accumulations and associated monthly evaporation depths for use in the management of small reservoirs and water harvesting for Central TX**

George R. Herrmann and Theodore Cleveland

#### **Recognizing and realizing the best opportunities for watershed restoration in drylands**

Craig Sponholtz

### **TECHNICAL SESSION 6- 1:30-3:00PM**

#### **Session: Climate Part 1**

#### **Construction and application of a linearized aridity index based on rainfall and air temperature data**

Enrique Troyo-Dieguez, et al

#### **Results of climate change and its probable influence on water resources in Azerbaijan**

R.N. Mahmudov

#### **Debris flows and drought: monitoring aquifer storage during hydrologic extremes in the upper San Pedro basin, 2000-08**

Jeff Kennedy

#### **Session: Wells Part 2**

#### **Borehole slug testing – value as a construction guide**

Peter Godfrey and Erin Young

#### **Recognition and successful development of fractured tight Navajo sandstone aquifer, SE Utah**

Clay M. Conway and Norman Carlson

#### **Working with Project-critical Contractors**

Barry Halterman

#### **Session: Surface Water Modeling Part 1**

#### **Inundation mapping for emergency action planning – examples from high hazard dams in AZ**

Ted Lehman

#### **Water resource risk analysis modeling in the Santa Cruz AMA**

Keith Nelson

## **TECHNICAL SESSION 7- 3:30-5:00 PM**

### **Session: Permitting**

#### **Groundwater protection in AZ – a foundation for augmenting water supplies**

Michele Robertson

#### **The ABCs of APPs – how to tell your PMA from your DIA and find your POC**

Lisa Spahr and Keith Scoular

#### **Best Management Practices applicable for the semi-arid SW – evaluation and recommendation**

Jonathan Burnett, Channah Rock and Kristine Uhlman

### **Session: Wells Part 2**

#### **Replace or Retrofit? – Part 1 – rehabilitation evaluation of problematic sand content in a west valley production well**

Wayne M. Feller and Lauren Handley

#### **Replace of retrofit? – Part 2 – design and installation of a pre-pack casing liner to mitigate sand invasion in a west valley production well**

Lauren Handley and Wayne M. Feller

#### **Unsolved mysteries in well construction – a case of hidden but substantial tensile stresses during filter pack sand installation**

Allison H. Jones and Marvin Glotfelty

### **Session: Surface Water Modeling Part 2**

#### **Distributed hydrologic modeling – a better tool for simulating AZ's hydrologic surface response**

Edward Clark

#### **Determining the uncertainty in hydrology for risk and uncertainty analysis**

David T. Williams

#### **Interaction of loss components, rational coefficients, and arid climate: a thought experiment**

George R. Herrmann and Theodore Cleveland

## **WEDNESDAY SEPTEMBER 2, 2009**

### **Technical Session 8 8:00-10:00 am**

#### **Session: Climate Part 2**

#### **How climate change may affect flows in the Verde River watershed**

Edwin McGavock

**Navajo nation surface water data collection – understanding climate change**

Jolene Tallsalt Robertson

**Graphical display of historical drought conditions for selected drainage basins in AZ**

James Leenhouts

**Review of Groundwater Monitoring Wells Throughout Arizona using established well criteria and statistical analysis of water level changes for the purpose of establishing a statewide drought indicator well network**

Steve Flora and Teri Davis

**Session: Tools**

**Combining GIS and MVS for 3-D analysis of lithology and groundwater flow in the eastern portion of the Salt River sub-basin, Phoenix, AZ**

Eric Rogoff, John Kivett and Christopher Hickman

**Deep Groundwater Exploration in the Flagstaff, Arizona Area using CSAMT**

Norman Carlson

**ADWR groundwater site inventory (GWSI) web application – a useful tool for AZ hydrologists**

Matthew Beversdoff, A. Fisher, and K. Martini

**Integrating a flood hydroclimatology database with the AZ hydrologic information system**

Matthew Garcia and Katherine K. Hirschboeck

**Plenary Session 2 - 10:30-Noon**

**Jonathan Overpeck, PhD**

Professor of Geosciences and Atmospheric Sciences University of Arizona.

Co-Director Department for Environment and Society.

**Terry Fulp, PhD**

Lower Colorado Deputy Regional Director – Bureau of Reclamation