

Basin Water Management — Challenges in Water Management at the Basin Scale

USCID 12th International Conference on Irrigation and Drainage



USCID

The U.S. society for irrigation and drainage professionals

Peppermill Resort Spa Casino

November 5-8, 2019

Reno, Nevada

Program

Tuesday, November 5

7:00 a.m. - 5:30 p.m. **Registration**

8:00 a.m. - 11:30 a.m. **Field Tour**

Sponsored by **HUESKER Inc.**

The Field Tour will include a visit to the Verdi Hydroelectric Power Plant, Donner Lake and Dam, and the Donner Lake State Park Museum. The Museum chronicles the fate of the Donner Party, the building of the Transcontinental railroad over the Sierra Nevada Mountains, and other local History.

12:00 noon - 1:15 p.m. **Lunch with Speaker**

Sponsored by **WEST Consultants, Inc.**

Moderator — **Brian T. Wahlin**, WEST Consultants, Inc., and President, USCID

Watershed Management from the Tribal Perspective

Mervin Wright, Environmental Manager, Pyramid Lake Paiute Tribe, Nixon, NV

1:30 p.m. - 3:00 p.m. **Opening Plenary Session**

Moderator — **Samuel W. Schaefer**, Conference Co-Chair and GEI Consultants, Inc., Santa Barbara, CA

Keynote Address

Ernest Conat, Regional Director, Bureau of Reclamation, Sacramento, CA (invited)

Future of Basin Water Management in Nevada

Micheline N. Fairbank, Deputy Administrator, Nevada Division of Water Resources, Carson City, NV

The First International Young Professional Training Program and Workshop on Climate Resilient Smart Irrigation Systems

Pooneh Pahlevani, Water Resources Engineer, WSP, Charlotte, NC

3:00 p.m. - 3:30 p.m. **Break**

Sponsored by **MBK Engineers**

3:30 p.m. - 4:30 p.m. **Opening Plenary Session (continued)**

The Water Authority's Perspective in Managing the Humboldt River Basin

Jeff Fontaine, Executive Director, Humboldt River Basin Water Authority, Carson City, NV

A Practical Understanding of Cybersecurity Risk

Christopher G. Ipsen, Desert Research Institute, Reno, NV

4:30 p.m. – 5:00 p.m. **USCID Update**

Speaker— **Brian T. Wahlin**

5:00 p.m. - 5:30 p.m. **Meet the Exhibitors**

5:30 p.m. - 7:30 p.m. **Networking Reception, Exhibition and Poster Session**

Sponsored by **Provost & Pritchard Consulting Group**

Shrink Analysis of Telog Measurements in the Walker River Irrigation District

Shasta Banchio, California Polytechnic State University, San Luis Obispo, CA

Irrigation with RO Concentrate and Brackish Groundwater Impacts on Pecan Trees Growth and Physiology

Akram R. Ben Ali, Brian J. Schutte, Manoj K. Shukla and Charlotte Gard, New Mexico State University, Las Cruces, NM

Repurposing of Wastewater for Irrigation

Jake Bruel, California Polytechnic State University, San Luis Obispo, CA

Comparison of Water Hammer Relief Valves

Emma Gray, California Polytechnic State University, San Luis Obispo, CA

Flow Verification Using Current Metering in Walker River ID

Mary Hambly, California Polytechnic State University, San Luis Obispo, CA

Laminar Flow in Irrigation Applications

John Harle, California Polytechnic State University, San Luis Obispo, CA

Groundwater Subsidence in California and Groundwater Hydrology

Sam Morita, California Polytechnic State University, San Luis Obispo, CA

Distribution Uniformity Assessment on Sprinklers in the Salinas Valley

Michaela Sewell, California Polytechnic State University, San Luis Obispo, CA

Variable Frequency Drives for Pump Control

Gracely Speth, California Polytechnic State University, San Luis Obispo, CA

Minor Losses at Pipe Entrances for Turnout Design

Alicia Swanson, California Polytechnic State University, San Luis Obispo, CA

Microirrigation System Maintenance, Plugging, and Filtration in Cirrus and Avocado Orchards

Tyler Tsuji, California Polytechnic State University, San Luis Obispo, CA

Utilization of Turbines in Pipelines

Perry Walker, California Polytechnic State University, San Luis Obispo, CA

Power Generation Through Ag Pipeline Turbines

Nick Wilson, California Polytechnic State University, San Luis Obispo, CA

Wednesday, November 6

7:00 a.m. - 5:30 p.m. **Registration**

7:00 a.m. - 8:00 a.m. **Continental Breakfast with Exhibits and Posters**

Sponsored by Jacobs

8:00 a.m. - 9:30 a.m. **Panel Discussion — Implementing Basin Water Management Plans at the District Level**

Moderator — **Steve Knell**, Oakdale Irrigation District, Oakdale, CA

Panel Members:

Eric Thorburn, Oakdale Irrigation District, Oakdale, CA

Forrest Killingsworth, South San Joaquin Irrigation District, Manteca, CA

Kara Steeland, Truckee Meadows Water Authority, Reno, NV

Micheline Fairbank, Nevada Division of Water Resources, Carson City, NV

9:30 a.m. - 10:30 p.m. **Break with Exhibits and Posters**

Sponsored by MBK Engineers

10:30 a.m. - 12:00 noon **Panel Discussion — Economics of Water Pricing and Market Development**

Moderator — **Steve Knell**, Oakdale Irrigation District, Oakdale, CA

Panel Members:

Ellen Hanak, Public Policy Institute of California, San Francisco, CA

Audrey Arnao, WestWater Research, Phoenix, AZ

Jose Gutierrez, Westlands Water District, Fresno, CA

Tina Shields, Imperial Irrigation District, Imperial, CA

12:00 noon - 1:15 p.m. **Lunch with Speaker**

Moderator — **Brian T. Wahlin**

Sponsored by Sense Gateway

Speaker — **Rusty D. Jardine**, General Manager, Truckee Carson Irrigation District, Fallon, NV

1:30 p.m. - 3:00 p.m. **Concurrent Session A — Technology**

Moderators — **Sara Harper**, Dewberry, Sacramento, CA; and **W. Martin Roche**, Consulting Engineer, Grass Valley, CA

Designing PI and Ratio Control Routines for Two Main Canal Reaches in the Elephant Butte Irrigation District

Blair Stringam, New Mexico State University, Las Cruces, NM; and **Zachary Libbin**, Elephant Butte Irrigation District, Las Cruces, NM

Innovations in Water Budget Development

Todd Hillaire, California Department of Water Resources, Red Bluff, CA; **Abdul Khan**, California Department of Water Resources, Sacramento, CA; **Saqib Najmus** and **Frank Qian**, Woodard & Curran, Sacramento, CA; and **Paul Shipman**, California Department of Water Resources, Sacramento, CA

SCADA Preventative Maintenance: Reducing the Potential of Unexpected Failures

Kyle Feist, **Zach Markow**, and **Charles M. Burt**, Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo, CA

1:30 p.m. - 3:00 p.m. **Concurrent Session B — Environmental Issues**

Moderators — **Khaled Bali**, University of California Extension, Parlier, CA; and **Ryan Fulton**, Davids Engineering, Inc., Chico, CA

Float Actuated Gate for Slow Dewatering of Remnant Flood Plain and Fish Passage

Daniel J. Howes, Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo, CA; and **John Carlon**, River Partners, Chico, CA

CV-SALTS: Salt and Nitrate Control Program for the Central Valley Region of California

Richard Meyerhoff, GEI Consultants, Inc., Denver, CO

Instream Flow Development through Water Conservation Sharing

Lee Baxter, **Rich Tullis** and **Walter Findlay**, Central Utah Project Completion Act, Provo, UT

1:30 p.m. - 3:00 p.m. **Concurrent Session C — Water Supply and Water Transfers**

Moderators — **Aung K. Hla**, Bureau of Reclamation, McCook, NE; and **Franklin E. Dimick**, Dimick Water Resources Engineering, Monroe, UT

Managing Water and Salinity through Drought and Irrigation Modernization at the San Luis Canal Company

Jason Smesrud, Jacobs, Portland, OR; **Craig Cooledege**, Jacobs, Redding, CA; and **Alejandro Paolini** and **John Wiersma**, San Luis Canal Company, Dos Palos, CA

Use of Water Conservation Tools to Reduce Demand and Water Deliveries, Utah Lake Drainage Basin Water Delivery System, Bonneville Unit of the Central Utah Project

Mark A. Breitenbach and **Lee Baxter**, Central Utah Project Completion Act, Provo, UT

Water in the Southern San Joaquin Valley — Haves and Have Nots

Daniel J. Howes, Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo, CA

3:00 p.m. - 3:30 p.m. **Break with Exhibits and Posters**

Sponsored by MBK Engineers

3:30 p.m. - 5:30 p.m. **Concurrent Session A — Technology (continued)**

Analytic Solution for Optimization of Groundwater-Connected Pond Seepage Losses

Brandon House, Roger Burnett and **Subhrendu Gangopadhyay**, Bureau of Reclamation, Denver, CO

Modeling Evapotranspiration using Multispectral and Thermal Infrared Imagery Acquired with a Low Altitude Unmanned Aerial System

Mitchell S. Maguire, University of Nebraska Lincoln, Lincoln, NE; **Christopher M.U. Neale**, University of Nebraska Lincoln, and **Robert B. Daugherty** Water for Food Global Institute, Lincoln, NE; and **Wayne E. Woldt**, University of Nebraska Lincoln, Lincoln, NE

Does a Partial Root Zone Drying Irrigation Regime Increase Water Use Efficiency in Field-Grown Pecans?

Curt A. Pierce, Richard J. Heerema and **Blair L. Stringam**, New Mexico State University, Las Cruces, NM

An Approach to Rank and Recommend Potential Grower and District Owned Sites to Expand Recharge within the Poso Creek IRWM Region and Discussion of Sub-Surface Recharge Installation

Samuel W. Schaefer, Oscar Daza and **Arjun Bharadwaj**, GEI Consultants, Inc. Bakersfield, CA

3:30 p.m. - 5:30 p.m. **Concurrent Session B — Environmental Issues (continued)**

Controlling Salt in the Colorado River Basin

Kib Jacobson, Bureau of Reclamation, Salt Lake City, UT

Wildfire Impacts to Water Quality and Watershed Preservation and Restoration

Gerard Yates, Central Utah Water Conservancy District, Orem, UT

Hobble Creek Restoration Projects

W. Russ Findlay, Central Utah Project Completion Act, Provo, UT; **Mike Mills**, Central Utah Water Conservancy District, Orem, UT; and **Melissa Stamp**, Utah Reclamation Mitigation and Conservation Commission, Salt Lake City, UT

Northern Nevada Water Supply Operations for M&I

Bill Hauck, Truckee Meadows Water Authority, Reno, NV

3:30 p.m. - 5:30 p.m. **Concurrent Session C — Water Supply and Water Transfers (continued)**

Case Study: Modernization of the Walker River Irrigation District

Stuart W. Styles, Irrigation Training and Research Center, California Polytechnic State University. San Luis Obispo, CA; **Robert C. Bryan**, Walker River Irrigation District; Yerington, NV; and **Sierra Layous**, Irrigation Training and Research Center, California Polytechnic State University. San Luis Obispo, CA

Water Supply And Demand Management Scenario At Kotri Barrage, Sindh, Pakistan — A Case Study

Sajid Ali Bhutto, Riaz Ali Bhutto, and **Syed Ahmed Ali Shah**, Government of Sindh, Sindh, Pakistan

North Fork Siphon Replacement Project: Design and Construction

Blake Buehler, Central Utah Water Conservancy District, Orem, UT

More Management, Less Technology

Ricardo Aguirre, WEST Consultants, Inc. Tempe

6:30 p.m. - 7:00 p.m. **Reception**

7:00 p.m. - 9:30 p.m. **Dinner with Speaker**

Moderator — **Brian T. Wahlin**

Speaker — **Edwin James**, General Manager, Carson Water Subconservancy District, Carson City, NV

Thursday, November 7

7:00 a.m. - 5:00 p.m. **Registration**

7:00 a.m. - 8:00 a.m. **Continental Breakfast with Exhibits and Posters**

Sponsored by **Jacobs**

8:00 a.m. - 10:00 a.m. **Flow Control and Management for Small-Medium Canals and Field Turnouts — A Special USCID Workshop**

Presenters — **Daniel J. Howes** and **Charles M. Burt**, Irrigation Training and Research Center, California Polytechnic State University, San Luis Obispo, CA

This applied Workshop will focus on open channel flow measurement on small-to-medium-sized canals (250-800 cfs) and also discuss field turnouts. Topics will include current options available for flow measurement, important considerations when designing a flow measurement site, and the maintenance and operation of various flow measurement devices and structures. Flow measurement options that will be discussed include rated gates, acoustic Doppler velocity meters in subcritical contractions, Replogle (ramp) flumes (various design), and weirs. The presenters have developed and implemented innovative designs for each of these options in recent years. In addition, Charles Burt will present the latest research currently being conducted by the Cal Poly Irrigation Training & Research Center on suppressed sluice gate discharge coefficients and control issues with different types of flow measurement.

8:00 a.m. - 10:00 a.m. **Concurrent Session D — Basin Water Management and Conjunctive Use**

Moderators — **Jason Smesrud**, Jacobs, Portland, OR; and **David E. Bradshaw**, Metropolitan Water District of Southern California, Sacramento, CA

Wasatch County Water Efficiency Project – 20 Years Later
Reed Murray, Central Utah Project Completion Act, Provo, UT; and **Devin McKrola**, Central Utah Water Conservancy District, Orem, UT

Quantifying Groundwater Resilience Through Conjunctive Use for Irrigated Agriculture and the Groundwater-Surface Water Ratio of Application on a Basin Scale
Erek H. Fuchs, **K.C. Caroll** and **K.P. King**, New Mexico State University, Las Cruces, NM

Columbia River Plateau Aquifer System (CRPAS): Groundwater Mining, Models, and Management in a Regional Aquifer System
Kevin Lingsey, GeoEngineers, Inc., Kennewick, WA

Aquifer Unitization: Applying Collective Governance Agreements to Aquifers
Jakob S. Wiley, Schroeder Law Offices, Portland, OR

8:00 a.m. - 10:00 a.m. **Concurrent Session E — Competing Uses and Basin Planning**

Moderators — **Zachary W. Dickens**, Glenn-Colusa Irrigation District, Willows, CA; and **Steve Knell**, Oakdale Irrigation District, Oakdale, CA

The Urban-Rural Divide: Water in the American West
Laura Schroeder and **Katherine Jourdan**, Schroeder Law Offices, Portland, OR

Trespass and Encroachment on Water Conveyance Lands
Ben Woolf, Bureau of Reclamation, Provo, UT

Drought Planning for the Middle Rio Grande Conservancy District: Infrastructure Assessment
A. Clemmens, WEST Consultants, Inc., Tempe, AZ; **D. Gensler** and **A. Marken**, Middle Rio Grande Conservancy District, Albuquerque, NM; **B. Thoreson**, Davids Engineering, Inc., Davis, CA; and **B.T. Wahlin**, WEST Consultants, Inc., Tempe, AZ

Drought Planning for the Middle Rio Grande Conservancy District: Vulnerability Assessment
L.K. Cunha, WEST Consultants, Inc., Folsom, CA; **D. Gensler** and **A. Marken**, Middle Rio Grande Conservancy District, Albuquerque, NM; and **B.T. Wahlin**, WEST Consultants, Inc., Tempe, AZ

10:00 a.m. - 10:30 a.m. **Break with Exhibits and Posters**

Sponsored by **GEI Consultants, Inc.**

10:30 a.m. - 12:00 noon **Flow Management Workshop (continued)**

10:30 a.m. - 12:00 noon **Concurrent Session D — Basin Water Management and Conjunctive Use (continued)**

Quantifying Disconnection of Groundwater from Managed Surface Water for Conjunctive Agricultural Use on a Basin Scale
Erek H. Fuchs, **K.P. King**, and **K.C. Caroll**, New Mexico State University, Las Cruces, NM

Utah's Perspective on Water Banking and Federal Reclamation Project Assistance and Barriers to Water Banking Systems
Justin Record, Bureau of Reclamation, Provo, UT; **Jonathan Clyde**, ClydeSnow & Sessions, Bend, OR; and **Emily Lewis**, ClydeSnow & Sessions, Salt Lake City, UT

Water Rights Regulation in the Upper Klamath Basin
Rob Annear and **James Peale**, Geosyntec Consultants, Portland, OR; and **Laura Schroeder** and **Sarah Liljefelt**, Schroeder Law Offices, Portland, OR

10:30 a.m. - 12:00 noon **Concurrent Session E — Competing Uses and Basin Planning** (continued)

Management of Independence Lake for Water Supply, Recreation, and the Environment

W. Martin Roche, Consulting Engineer, Grass Valley, CA

New Water Sources, Promises and Problems

John A. Replogle, Agricultural Research Service, USDA, retired, Phoenix, AZ

Yakima Basin Integrated Water Resources Management Plan

Urban Eberhart, Kittitas Reclamation District, Ellensburg, WA

12:00 noon - 1:15 p.m. **Lunch with Speaker**

Moderator — **Brian T. Wahlin**

Speaker — **Tony Wahl**, Bureau of Reclamation, Denver, CO

Sponsored by **Summers Engineering, Inc.**

1:30 p.m. - 3:00 p.m. **Panel Discussion — Conjunctive Management Issues in Nevada's Humboldt River Basin**

Moderator — **Therese Ure**, Conference Co-Chair and Schroeder Law Offices, Reno, Nevada

Panel Members

Kip Allander, U.S. Geological Survey, Carson City, NV

Jon Benedict, Nevada Division of Water Resources, Carson City, NV

Rosemary Carroll, Desert Research Institute, Reno, Nevada

Adam Sullivan, Nevada Division of Water Resources, Carson City, NV

1:30 p.m. - 3:00 p.m. **Concurrent Session F — Western U.S. Water Infrastructure Updates**

Moderators — **Reed R. Murray**, U.S. Department of the Interior, Provo, UT; and **Delbert M. Smith**, Conference Co-Chair and Bureau of Reclamation, Denver, CO

Oroville Dam Raise Update

Jeff Petersen, Kiewit Engineering & Design Co., Omaha, NE

California Department of Water Resources Update

David E. Bradshaw, Metropolitan Water District of Southern California, Sacramento, CA

Bureau of Reclamation Update

Delbert M. Smith, Bureau of Reclamation, Denver, CO

3:00 p.m. - 3:30 p.m. **Break with Exhibits and Poster Papers**

Sponsored by **GEI Consultants, Inc.**

3:30 p.m. - 5:30 p.m. **Panel Discussion — Groundwater Management Issues in Southern Nevada's Lower Whites River Flow System — Navigating Conjunctive Management in Combined Groundwater Basins While Protecting Endangered Species**

Panel Members

Therese Ure, Schroeder Law Offices, Reno, Nevada

Dwight Smith, Interflow Hydrology, Truckee, CA

Jay Dixon, Dixon Hydrologic, PLCC, Reno, NV

Tim O'Conner, Taggart & Taggart, Carson City, NV

3:30 p.m. - 5:30 p.m. **Concurrent Session F — Western U.S. Water Infrastructure Updates** (continued)

Lake Powell Pipeline

Rick Baxter, Bureau of Reclamation, Provo, UT

Northern Water and Gross Dam Raise Projects in Colorado

Joe Donnelly, Northern Water, Berthoud, CO

Infrastructure Activities in Arizona

George Cairo, George Cairo Engineering, Inc., Mesa, AZ

Bureau of Reclamation California Water Studies

David Van Rijn, Bureau of Reclamation, Sacramento, CA

Friday, November 8

8:00 a.m. - 5:30 p.m. **Field Tour — Truckee Carson Water Project**

This one-day tour will go south of Carson City to see diversions from the Carson River, then hear about open space requirements along the Carson. Following lunch, the tour will go to Lahonton Dam. Next will be the site of the Truckee Canal breach near Fernley, Nevada.

(Updated October 26, 2019)