



American Water Resources Association 2007 Annual Conference

Embassy Suites Hotel
Albuquerque, New Mexico
November 12-15, 2007



WELCOME TO ALBUQUERQUE AND TO AWRA'S 2007 ANNUAL WATER RESOURCES CONFERENCE ... MICHAEL E. CAMPANA, GENERAL CHAIR

Until I came to New Mexico, I never realized how much beauty water adds to a river. - Mark Twain

Whether there is water in the river or not, the American Water Resources Association's (AWRA) Annual Conference is back in Albuquerque for the second time in six years, this time at the Embassy Suites Hotel. Autumn is an even nicer time of year in the *Land of Enchantment* now that AWRA is in town.

AWRA's 43rd Annual Conference promises to be one of the best. I don't use the word "best" lightly; we received over 420 abstracts, an all-time record. The presentations are organized into 81 oral/panel and 6 poster sessions, featuring over 300 talks and over 75 posters.

So there are close to 400 presentations - what else is there? How about

- Five great pre-conference (November 11) workshops
- Two exceptional Sunday (November 11) field trips
- Keynote address by Cynthia Barnett, author of *Mirage: Florida and the Vanishing Water of the Eastern U.S.*, a book some are hailing as "Cadillac Swampland"
- Opening Networking Reception (Monday evening)
- Special showing of the film *Waterbuster* (www.waterbuster.org), with filmmaker J. Carlos Peinado (Monday evening). See the impact of the Garrison Dam on the Fort Berthold Indian Reservation (North Dakota). You will not soon forget this moving story.
- Awards Luncheon keynote address by the dynamic Oregon State Representative Jackie Dingfelder (D-OR), an environmental professional and state legislator.
- Panel discussions on Reviving the Santa Fe River, Water Policy, Climate and Water Issues, and more!
- Corporate and Book Exhibitors
- Special sessions on Distributed Hydrologic Modeling, Energy-Water, Urban Ecosystems, Hydrophilanthropy, and more!
- A memorable Tuesday night Southwestern extravaganza at Dusty Nussbaum's Los Amigos Roundup Ranch
- Student Career Night (Wednesday). You will hear a variety of individuals from different organizations talk about what they do, how to get started, etc. Refreshments will be served. This event is open to all students, registered or not. Don't miss it!



This conference results from the efforts of an extraordinary Conference Planning Committee: Karl Williard (Technical Program Chair), Don Young (Finance Chair), Bruce Thomson (Field Trip Chair), and Committee Members Julie Coonrod, Stephanie Moore, Jerry Sehlke, and Paul Wichlacz. Karl deserves special thanks, as he did an amazing job assembling the technical program. This is never an easy job but was even more challenging this year with the record number of abstracts. Please be sure to thank the committee members, the moderators, special session/panel conveners, and the outstanding AWRA staff for making all this possible. The many sponsors who helped to enable the conference also deserve our gratitude.

Thank you for coming, and welcome! Enjoy Community, Conversation, Connections in Albuquerque!

Michael

AWRA ACKNOWLEDGES AND IS GRATEFUL FOR THE SUPPORT GIVEN BY THE SPONSORS OF INDIVIDUAL EVENTS. THEY ARE RECOGNIZED THROUGHOUT THE FINAL PROGRAM. PLEASE SUPPORT ALL OF OUR SPONSORS ... THEY ARE HELPING TO SUPPORT AWRA'S COMMUNITY, CONVERSATION, AND CONNECTIONS!



AWRA
Community, Conversation, Connections
AMERICAN WATER RESOURCES ASSOCIATION

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Listing of sponsors
with logos
pg. 2

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Listing of Sponsors
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Terry's
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listing
Attachment 3

CONFERENCE PLANNING COMMITTEE

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MEETING REGISTRATION INFORMATION

REGISTRATION - ALL PERSONS INCLUDING PRESENTERS ARE REQUIRED TO REGISTER FOR THIS MEETING AND MUST PAY THE APPROPRIATE REGISTRATION FEE.

REGISTRATION DESK HOURS OF OPERATION

SUNDAY • NOVEMBER 11 • 4:00 P.M. TO 6:00 P.M.

MONDAY • NOVEMBER 12 • 7:30 A.M. TO 6:00 P.M.

TUESDAY • NOVEMBER 13 • 7:30 A.M. TO 5:00 P.M.

WEDNESDAY • NOVEMBER 14 • 7:30 A.M. TO 5:00 P.M.

THURSDAY • NOVEMBER 15 • 7:30 A.M. TO 12:00 NOON

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PLEASE NOTE

This printed version of the Final Program contains all changes as of October 19, 2007. Additional changes may have been necessary after the program was sent to press. Late changes will be announced during the Conference or will be noted on session signs that will be in front of assigned rooms.

**AWRA'S 2007 ANNUAL WATER RESOURCES CONF. ~ NOV. 12-15 ~ ALBUQUERQUE, NM
TECHNICAL & POSTER SESSIONS AT-A-GLANCE**

• MONDAY ~ NOVEMBER 12 •

8:30 AM-10:00 AM

OPENING PLENARY SESSION
SPEAKER ~ CYNTHIA BARNETT
JOURNALIST
GAINESVILLE, FLORIDA

LUNCH ~ ON YOUR OWN
12:00 NN-1:25 PM

OPENING NETWORKING
RECEPTION
5:00 PM-6:30 PM

10:30 AM-12:00 NOON

CONCURRENT SESSIONS 1-5

- 1 Water Markets-I
- 2 Climate Change-I
- 3 Watershed Planning & Mgmt.-I
- 4 Developing Countries-I
- 5 Wetlands

POSTER SESSION 1

Wetlands / Aquatic Ecosystems / GIS / Water Quality

1:30 PM-3:00 PM

CONCURRENT SESSIONS 6-10

- 6 Water Markets-II
- 7 Climate Change-II
- 8 Watershed Planning & Mgmt.-II (Modeling)
- 9 Developing Countries-II
- 10 Riparian Restoration

POSTER SESSION 2

Climate Change / Developing Countries / Hydrophilanthropy

3:30 PM-5:00 PM

CONCURRENT SESSIONS 11-15

- 11 Economics/Finance
- 12 Climate Change-III
- 13 Watershed Planning & Mgmt.-III (Scenario Analysis)
- 14 Developing Countries-III
- 15 Ecosystem Restoration

POSTER SESSION 3

Integrated Water Resources Planning / Watershed Planning & Mgmt.

• TUESDAY ~ NOVEMBER 13 •

8:30 AM-10:00 AM

CONCURRENT SESSIONS 16-20

- 16 Transboundary-I
- 17 Hydrophilanthropy-I
- 18 Watershed Planning & Mgmt.-IV
- 19 Urban Ecosystems
- 20 Lakes & Ponds

LUNCH ~ ON YOUR OWN
12:00 NN-1:25 PM

SPECIAL EVENT
LOS AMIGOS RESTAURANT
6:00 PM-9:00 PM

10:30 AM-12:00 NOON

CONCURRENT SESSIONS 21-25

- 21 Transboundary-II
- 22 Hydrophilanthropy-II
- 23 Watershed Planning & Mgmt.-V (Urban)
- 24 Panel: Addressing Climate Change: in Long-Term Water Resource Planning
- 25 Forest Roads

POSTER SESSION 4

Aquifer Storage & Recovery / Ground Water / Water Demand Mgmt.

1:30 PM-3:00 PM

CONCURRENT SESSIONS 26-30

- 26 Transboundary-III
- 27 Hydrophilanthropy-III
- 28 Watershed Planning & Mgmt.-VI
- 29 Flooding
- 30 Forest Mgmt

POSTER SESSION 5

Human Dimensions of Watershed Mgmt.

3:30 PM-5:00 PM

CONCURRENT SESSIONS 31-35

- 31 Panel: Linking Climate & Water Resource Mgmt. Knowledge Networks
- 32 Hydrophilanthropy-IV
- 33 Watershed Planning & Mgmt-VII
- 34 Floodplain Mgmt.
- 35 Environmental Flow Requirements

POSTER SESSION 6

Agricultural BMPs / Hydrology / Modeling / Stormwater / Stormwater BMP Performance / TMDLs-Nonpoint Source / Wastewater Disposal

• WEDNESDAY ~ NOVEMBER 14 •

8:30 AM-10:00 AM

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- 36 Shared Vision Planning
- 37 Everglades Water Quality Using Stormwater Treatment Areas
- 38 Water Demand Mgmt.
- 39 Fluvial Geomorphology
- 40 GIS & Remote Sensing
- 41 Water Quality-I

STUDENT CAREER NIGHT
5:00 PM-7:00 PM

10:30 AM-12:00 NOON

CONCURRENT SESSIONS 42-47

- 42 Integrated Water Resources Planning
- 43 Modeling-I
- 44A Managing Competing Water Uses
- 44B Education and Outreach
- 45 Panel: Financing the Everglades Restoration
- 46 Rio Grande-Albuquerque Diversion Structure
- 47 Water Quality-II

1:30 PM-3:00 PM

CONCURRENT SESSIONS 48-53

- 48 Human Dimensions of Watershed Mgmt.
- 49 Surface Water/Ground Water Interactions
- 50 Meeting Future Water Demand-I
- 51 Mining
- 52 Panel: How (and Why) to Revive the Sante Fe River
- 53 Water Quality-III

3:30 PM-5:00 PM

CONCURRENT SESSIONS 54-59

- 54 Certification
- 55 Water Quality Standards/Recreational Use
- 56 Meeting Future Water Demand-II (Florida)
- 57 Agricultural BMPs
- 58 Panel: 2007/8 WRDA: Prospects for Policy Change or for Stalemate?
- 59 Ground Water

CONFERENCE AWARDS LUNCHEON ~ 12:00 NN-1:30 PM
SPEAKER ~ THE HONORABLE JACKIE DINGFELDER
OREGON HOUSE OF REPRESENTATIVES ~ PORTLAND, OREGON

• THURSDAY ~ NOVEMBER 15 •

8:30 AM-10:00 AM

CONCURRENT SESSIONS 60-65

- 60 Stormwater Modeling
- 61 Meeting Future Water Demand-III
- 62 Artificial Recharge
- 63 Panel: WP-1 – Resolving the Tension Between Land-Use & Drinking Water Policies
- 64 Energy/Water Policy
- 65 Hydrologic & Geomorphic Impacts of Urbanization

10:30 AM-12:00 NOON

CONCURRENT SESSIONS 66-71

- 66 SW Collection & Treatment Innovative Approaches
- 67 Panel: Legal, Admin., & Policy Constraints to Water Reallocation in the SW
- 68 TMDLs: Nonpoint Source-I
- 69 Panel: WP-II – Moving Toward Integrated Water...
- 70 Alternative Energy & Water
- 71 Modeling-II

1:30 PM-3:00 PM

CONCURRENT SESSIONS 72-76

- 72 Stormwater Mgmt.
- 73 Water Reuse
- 74 TMDLs: Nonpoint Source-II
- 75 Science, Policy, & Economics of Energy Exploration-Related & Production-Related Waters
- 76 Distributed Hydrologic Modeling

3:30 PM-5:00 PM

CONCURRENT SESSIONS 77-81

- 77 Stormwater BMP Performance
- 78 Water Conservation
- 79 TMDLs: Urban
- 80 Communicating Science to Policy Makers
- 81 Energy/Water Assessments

LUNCH ~ ON YOUR OWN ~ 12:00 NN-1:25 PM

DAY-AT-A-GLANCE / MONDAY / NOVEMBER 12, 2007

AWRA CONVERSATION CORNER OPEN / 6:00 A.M.-7:00 P.M. / SANDIA BALLROOM FOYER

REGISTRATION DESK OPEN / 7:30 A.M.-6:00 P.M. / MEETINGS REGISTRATION DESK / SANDIA BALLROOM FOYER

AWRA NEW MEMBER WELCOME BREAKFAST (INVITATION ONLY) / 7:00 A.M.-8:00 A.M. / PINON ROOM

BOOK & JOURNAL EXHIBIT OPEN & EMPLOYMENT OPPORTUNITY BOARD ON DISPLAY
8:00 A.M.-6:30 P.M. / SANDIA BALLROOM FOYER

MORNING NETWORKING BREAK / 8:00 A.M.-10:30 A.M. / SANDIA BALLROOM V-VIII
SPONSORED BY CH2M HILL • ALBUQUERQUE, NEW MEXICO

COMMERCIAL AND EDUCATIONAL EXHIBITS OPEN / 8:00 A.M.-6:30 P.M. / SANDIA BALLROOM VI-VIII

ORGANIZATIONAL DISPLAYS OPEN / 8:30 A.M.-6:30 P.M. / SANDIA BALLROOM FOYER

SPEAKERS' PREPARATION ROOM OPEN / 9:00 A.M.-8:00 P.M. / AGAVE ROOM

CONFERENCE OPENING PLENARY SESSION / 8:30 A.M.-10:00 A.M. / SANDIA BALLROOM I-IV

CONCURRENT SESSIONS 1, 2, 3, 4, 5, POSTER SESSION 1 / 10:30 A.M.-12:00 NOON

| | | | | | |
|---|---|---|--|--|---|
| <u>SESSION 1</u> WATER MARKETS-I SIERRA BALLROOM I | <u>SESSION 2</u> CLIMATE CHANGE-I SIERRA BALLROOM II | <u>SESSION 3</u> WATERSHED PLANNING & MANAGEMENT-I SIERRA BALLROOM III | <u>SESSION 4</u> DEVELOPING COUNTRIES-I OCOTILLO ROOM I | <u>SESSION 5</u> WETLANDS OCOTILLO ROOM II | <u>SESSION POSTER 1</u> • WETLANDS • AQUATIC ECOSYS. • GIS • WATER QUALITY SANDIA BALLROOM V-VIII |
|---|---|---|--|--|---|

JAWRA ASSOCIATE EDITORS' LUNCHEON MEETING (INVITATION ONLY)
11:30 A.M.-2:00 P.M. / SANDIA BALLROOM III

LUNCH BREAK / 12:00 NOON-1:25 P.M. / ON YOUR OWN

CONCURRENT SESSIONS 6, 7, 8, 9, 10, POSTER SESSION 2 / 1:30 P.M.-3:00 P.M.

| | | | | | |
|--|--|---|---|--|--|
| <u>SESSION 6</u> WATER MARKETS-II SIERRA BALLROOM I | <u>SESSION 7</u> CLIMATE CHANGE-II SIERRA BALLROOM II | <u>SESSION 8</u> WATERSHED PLANNING AND MANAGEMENT-II (MODELLING) SIERRA BALLROOM III | <u>SESSION 9</u> DEVELOPING COUNTRIES-II OCOTILLO ROOM I | <u>SESSION 10</u> RIPARIAN RESTORATION OCOTILLO ROOM II | <u>SESSION POSTER 2</u> • CLIMATE CHANGE • DEVELOPING COUNTRIES • HYDROPHILANTHROPY SANDIA BALLROOM V-VIII |
|--|--|---|---|--|--|

AFTERNOON NETWORKING BREAK / 3:00 PM-3:30 P.M. / SANDIA BALLROOM V-VIII
SPONSORED BY DANIEL B. STEVENS AND ASSOCIATES, INC. • ALBUQUERQUE, NEW MEXICO

CONCURRENT SESSIONS 11, 12, 13, 14, 15, POSTER SESSION 3 / 3:30 P.M.-5:00 P.M.

| | | | | | |
|---|--|---|---|---|---|
| <u>SESSION 11</u> ECONOMICS/ FINANCE SIERRA BALLROOM I | <u>SESSION 12</u> CLIMATE CHANGE-III SIERRA BALLROOM II | <u>SESSION 13</u> WATERSHED PLANNING & MANAGEMENT-III (SCENARIO ANALYSIS) SIERRA BALLROOM III | <u>SESSION 14</u> DEVELOPING COUNTRIES-III OCOTILLO ROOM I | <u>SESSION 15</u> ECOSYSTEM RESTORATION OCOTILLO ROOM II | <u>SESSION POSTER 3</u> • INTEGRATED WATER RESOURCES PLANNING • WATERSHED PLAN. & MANAGEMENT SANDIA BALLROOM V-VIII |
|---|--|---|---|---|---|

STUDENT ATTENDEE CONFERENCE ORIENTATION / 4:30 P.M.-5:00 P.M.
MEET IN FRONT OF THE SANDIA BALLROOM V-VIII (SEE PG. 39)

OPENING NETWORKING RECEPTION / 5:00 P.M.-6:30 P.M. / SANDIA BALLROOM V-VIII
(COMMERCIAL & EDUCATIONAL EXHIBITS OPEN - SEE PG. 39)

SPECIAL SCREENING OF MOVIE "WATERBUSTER" / 7:00 P.M.-9:00 P.M. / SIERRA BALLROOM III
(SEE PG. 40)

CONFERENCE OPENING PLENARY SESSION
MONDAY ~ NOVEMBER 12 ~ 8:30 A.M. -10:00 A.M. ~ SANDIA BALLROOM I-IV

WELCOME AND OPENING REMARKS

GERALD E. GALLOWAY
President, American Water Resources Association
University of Maryland ~ College Park, Maryland

MICHAEL E. CAMPANA
Conference General Chair
Oregon State University ~ Corvallis Oregon

KARL W.J. WILLIARD
Conference Technical Program Chair
Southern Illinois University ~ Carbondale, Illinois

KEYNOTE SPEAKER

SPONSORED BY THE
ANN CAMPANA JUDGE FOUNDATION ~ CORVALLIS, OREGON

MIRAGE
FLORIDA AND THE VANISHING WATER OF THE EASTERN USA
CYNTHIA BARNETT
Journalist
Gainesville, Florida

10:00 A.M.-10:30 A.M. • MORNING NETWORKING BREAK • SANDIA BALLROOM V-VIII
SPONSORED BY ~ CH2M HILL ~ ALBUQUERQUE, NEW MEXICO

AWRA CONVERSATION CORNER
SANDIA BALLROOM FOYER

The American Water Resources Association's mission is to foster communication across all disciplines involved in the water resources community thereby creating lasting connections which will help forge solutions to our nation's ever increasing water resources challenges. A "Conversation Corner" has been set aside to provide a space to engage your colleagues in meaningful dialogues. Internet connections will also be available to check email. Opening times are listed in each Day-at-a-Glance listing in the Final Program.

AWRA EMPLOYMENT OPPORTUNITY BOARD
SANDIA BALLROOM FOYER • OPEN THROUGHOUT THE CONFERENCE

All jobs listed on the AWRA website Career Page will be printed and displayed for your perusal. If you have an opening at your place of employment, you are encouraged to put an announcement on the Board. If you are currently seeking a position, you are encouraged to put a copy of your resume on the Board and to have some for distribution. Forms will be available at the conference for recent position openings. This service is available to everyone and is not contingent upon registering for the meeting.

★ ★ PLEASE TURN OFF YOUR CELL PHONES WHEN ENTERING THE SESSION ROOMS! ★ ★

PLEASE NOTE

Throughout the Technical Program the PRESENTER of each paper/poster is in BOLD type immediately following the paper title. The affiliation given is that of the Presenter. Co-authors are then listed in parentheses.

CONCURRENT SESSIONS 1,2,3,4,5, POSTER 1

10:30 A.M. - 12:00 NOON

MONDAY ~ NOVEMBER 12

SESSION 1 • SIERRA BALLROOM I

WATER MARKETS-I

MODERATOR • GARRETT WALLACE • SOUTH FLORIDA WATER MANAGEMENT DISTRICT • WEST PALM BEACH, FLORIDA

- 10:30 A.M. **Market Power, Price Volatility, and Market Mechanisms in Water Markets - Janie Chermak**, University of New Mexico, Albuquerque, NM (co-author: Robert H. Patrick)
- 10:50 A.M. **Designing User-Driven Markets for Drought Management in the Rio Grande - Ereny Hadjigeorgalis**, New Mexico State University, Las Cruces, NM
- 11:10 A.M. **Designing a Water Market for the Rio Grande Basin of New Mexico - Brandon Winchester**, New Mexico State University, Las Cruces, NM (co-author: Ereny Hadjigeorgalis)
- 11:30 A.M. **A Water Leasing Framework for the Middle Rio Grande With a Focus on the Farmers Decision Making Process - Craig D. Broadbent**, University of New Mexico, Albuquerque, NM (co-authors: David Brookshire, Don Coursey, Vince Tidwell)

SESSION 2 • SIERRA BALLROOM II

CLIMATE CHANGE-I

MODERATORS • DAGMAR LLEWELLYN AND KAREN MACCLUNE
S.S. PAPADOPULOS & ASSOCIATES • BOULDER, COLORADO

- 10:30 A.M. **Adapting to Climate Change Impacts in Water Resource Management: A Framework for Progress - J. Randall Freed**, ICF International, Fairfax, VA (co-authors: Joel D. Scheraga, J. David Allan, Susan Asam, Michael Loughran)
- 10:50 A.M. **Current Issues in Adapting Civil Infrastructures to Climate Change: The Time to Act is Now - Latham Stack**, Syntectic International, LLC, Portland, OR (co-author: Michael Simpson)
- 11:10 A.M. **Impacts of Climate Change on Groundwater Recharge: Implications for Water Management - Karen MacClune**, S.S. Papadopoulos & Associates, Boulder, CO (co-author: Dagmar Llewellyn)
- 11:30 A.M. **Climate Change and Its Implications for New Mexico's Water Resources and Economic Opportunities - Brian Hurd**, New Mexico State University, Las Cruces, NM (co-author: Julie Coonrod)

SESSION 3 • SIERRA BALLROOM III

WATERSHED PLANNING AND MANAGEMENT I

MODERATOR • MARIAN NORRIS • NATIONAL PARK SERVICE • WASHINGTON, D.C.

- 10:30 A.M. **Conducting Rapid Watershed Assessments in Arizona - Kristine Uhlman**, University of Arizona, Water Resources Research Center, Tucson, AZ (co-authors: Dino DeSimone, Sharon Megdal, D. Phillip Guertin, Myrtho Joseph, Melisa Kennedy, Keith Larson, Lainie Levick, Terry Sprouse, Erin Westfall, Dilruba Yeasmin)
- 10:50 A.M. **Alabama Watersheds: Assessments of Land Use, Sedimentation, and Effectiveness of Treatments for Water-Quality Improvement - Marlon Cook**, Geological Survey of Alabama, Tuscaloosa, AL
- 11:10 A.M. **Integrating Hydrology, Wildlife Biology, and Forestry Considerations Into Watershed Planning in Sugarite Canyon, New Mexico - Joanne Hilton**, Daniel B. Stephens & Associates, Inc., Albuquerque, NM (co-authors: Amy Ewing, Amy C. Lewis, Melissa Savage, Jean-Luc Cartron)
- 11:30 A.M. **Watershed, Systems, and Operations Evaluation of the Lake Okeechobee Fast Track (LOFT) Project - Lena Rivera**, CDM, Maitland, FL (co-authors: Kirk Westphal, Michael Schmidt, Mark Long)

SESSION 4 • OCOTILLO ROOM I

DEVELOPING COUNTRIES-I

MODERATOR • PAUL PICKETT • WASHINGTON STATE DEPARTMENT OF ECOLOGY • OLYMPIA, WASHINGTON

- 10:30 A.M. **Obtaining Drinking Water From Bedrock in Developing Countries: Some Peculiarities and Liabilities - John Cherry**, University of Waterloo, Waterloo, ON, Canada
- 10:50 A.M. **Groundwater Exploration and Development; Six Village Pilot Program Hambantota District Sri Lanka - Anthony Rana**, Uhl, Baron, Rana & Associates, Lambertville, NJ (co-authors: K. Nagabhushanam, V. W. Uhl, A. Rangarajan)
- 11:10 A.M. **Characterization of Water Quality in Murchison Bay, Lake Victoria, Uganda, Africa - Roger Ruggles**, Lafayette College, Easton, PA (co-authors: Arthur Kney, David Brandes, Bailey Simone, Christa Kelleher, Hugo Sindalar, David Kendall, Karen Ruggles)
- 11:30 A.M. **Sustainable Technologies for Arsenic and Fluoride Removal and a Business Model for Implementing Them in Developing Areas - Laura R. Brunson**, University of Oklahoma, Norman, OK (co-authors: Thabani B. Mlilo, David A. Sabatini)

SESSION 5 • OCOTILLO ROOM II

WETLANDS

MODERATOR • CHRISTOPHER WOLTEMADE • SHIPPENSBURG UNIVERSITY • SHIPPENSBURG, PENNSYLVANIA

- 10:30 A.M. **Nitrate Removal in a Restored Spring-Fed Wetland, Pennsylvania: Results of a Three-Year Monitoring Study - Christopher Woltemade**, Shippensburg University, Shippensburg, PA
- 10:50 A.M. **Wastewater Infrastructure, Wetlands, and the Recovery of Hurricane Katrina – Gordon C. Austin**, Sewerage and Water Board of New Orleans, New Orleans, LA (co-authors: Sarah Mack, Robert S. Reimers, John W. Day, A.J. Englande)
- 11:10 A.M. **Ecosystem Restoration at Cape May, New Jersey: Partnering for Success - Josephine Axt**, Northern Ecological Associates, Inc., Santa Fe, NM (co-author: Beth Brandreth)
- 11:30 A.M. **Multi-Criteria Wetlands Mapping Using an Integrated Pixel-Based and Object-Based Classification Approach - Hsu Chengmin**, University Colorado at Denver, Denver, CO (co-author: Lynn E. Johnson)

POSTER 1 • SANDIA BALLROOM V-VIII • 10:30 A.M. -12:00 NOON

WETLANDS

- Biological and Ecological Significance of Wetlands and Aquatic Habitats in Idaho's Sinks Drainages - Cynthia K. Johnson**, NR Systems, Inc. dba Natural Resources Consulting, River Heights, UT (co-author: Michael Jablonski)
- Characterization of a Restored Wetland in Uganda, Africa - Roger Ruggles**, Lafayette College, Easton, PA (co-authors: David Brandes, Bailey Simone, Christa Kelleher, Hugo Sindalar, David Kendall, Karen Ruggles)
- A GIS-Based Methodology to Score Wetland Habitat Contributions to Amphibian Health as a Guide to the Evaluation of Transportation Right-of-Ways - Miriam Romero**, University of Missouri, Department of Civil and Environmental Engineering, Columbia, MO (co-author: Kathleen M. Trauth)

AQUATIC ECOSYSTEMS

- Water Quality Evaluations for a Proposed Lake - Richard Wagner**, CDM, Jacksonville, FL
- Land Use Impacts on Stream Ecosystem Processes at Multiple Scales - Marty Matlock**, University of Arkansas, Fayetteville, AR (co-authors: Kyle M. Kruger, K. Page Shurgar)
- Heterotrophic Activity in the Stream Bed of an Experimental Flume - Rebecca Stark**, Department of Ecology, Evolution and Behavior, University of Minnesota, St Paul, MN (co-authors: Jacques Finlay, Cailin Orr)
- The Effect of Wildfire and Fire-Induced Debris Flows on Stream Food Web and Trophic Structure: Stable Isotope Analyses 14 Years After the Fires - Pete Koetsier**, Boise State University, Boise, ID (co-author: Quenton Tuckett)
- Stream Fish Assemblages in Headwater and Low-Order Streams; Conservation Planning Based on Land Cover Distribution in Small Watersheds - Peter E. Schweizer**, Ohio University, Athens, OH (co-author: Glenn R. Matlack)
- A Description of the Landscape Development Intensity Index and Its Effect on the Stream Condition Indexes of Florida's Streams and Rivers - Jessica Taft**, BCI Engineers and Scientists, Jacksonville, FL (co-authors: Sarah Seitz, Nathan Martin, Adrian Lin)

GIS

- Remote Sensing and GIS-Based Approach for Delineation of Groundwater Prospect Zones in a Semi-Arid Area in Rajasthan, India - Himadri Biswas**, Florida International University, Miami, FL (co-authors: Assefa Melesse, Michael McClain)
- Development of a Local Resolution NHD for West Virginia - Jacquelyn Strager**, West Virginia University, Morgantown, WV (co-authors: Kurt Donaldson, Kevin Kuhn, Michael Strager)
- Monitoring Rangeland Health Using ArcPad GIS Software - Andrew Pantel**, Ministry of Forests and Range, Prince George, BC, Canada (co-author: Doug Fraser)
- Development of NHDPlus-Based Spatial Tools for Water Quality Analysis Through Web Services - Kevin Pickren**, RTI International, Durham, NC (co-authors: William Cooter, James Rineer, Sunil Rao, Brandon Bergenroth)
- River Basin Management System – A Dynamic Decision Support Tool for Developing Long-Term Water Quality Improvement Plans - Michael Waddell**, CDM, Cambridge, MA (co-authors: Lawrence P. Kelley, Darren Mackiewicz)

WATER QUALITY

- Relations Among the Use, Occurrence, and Flux of Azoxystrobin, Propiconazole, and Other Fungicides in U.S. Streams, 2005-2006 - William Battaglin**, U.S. Geological Survey, Lakewood, CO
- Water Quality Information Management Systems: Water Quality Analysis, Reporting and Documentation System (WARD) and the Clean Water Act Information Center (CWAIC) - Staci Stolp**, Montana Department of Environmental Quality, Helena, MT (co-authors: Michael Pipp, Rosie Sada, Pam Arroues, Mark Bostrom, Suresh Falor, Dave Highness)

12:00 NOON-1:25 P.M. • LUNCH BREAK • ON YOUR OWN

CONCURRENT SESSIONS 6,7,8,9,10, POSTER 2

1:30 P.M. - 3:00 P.M.

MONDAY ~ NOVEMBER 12

SESSION 6 • SIERRA BALLROOM I

WATER MARKETS-II

MODERATOR • GARRETT WALLACE • SOUTH FLORIDA WATER MANAGEMENT DISTRICT • WEST PALM BEACH, FLORIDA

- 1:30 P.M. **Meeting Water Demand by Controlling Groundwater Extraction and Recharge: A Hybrid Model in Developing Country - Bishwa Koirala**, The University of New Mexico, Albuquerque, NM (co-author: Steven J. Archambault)
- 1:50 P.M. **Filling the Data Gap: Experimental Results in Urban Water Consumer Response to Price Changes - Kate Krause**, University of New Mexico, Albuquerque, NM (co-authors: Janie M. Chermak, David Brookshire, Steve Stewart)
- 2:10 P.M. **Integrated Modeling to Test and Design Alternative Water Markets: Rio Mimbres, New Mexico - Alison Williams**, Sandia National Laboratories, Albuquerque, NM (co-authors: Vincent Tidwell, Will Cain, David Brookshire, Craig Broadbent, Don Coursey)
- 2:30 P.M. **Using Conservation Credit Offset Trading and Groundwater Permitting in a Groundwater Scarce Watershed to Protect In-Stream Ecological Service Values - Sandra Batie**, Department of Agricultural Economics, Michigan State University, East Lansing, MI (co-authors: Michael D. Kaplowitz, Saichon Seedang)

SESSION 7 • SIERRA BALLROOM II

CLIMATE CHANGE-II

MODERATORS • DAGMAR LLEWELLYN AND KAREN MACCLUNE
S.S. PAPADOPULOS & ASSOCIATES • BOULDER, COLORADO

- 1:30 P.M. **Independent Analysis of the NRCS SNOTELand Snow-Course Network for Signals of Hydroclimatic Trends Relevant to Western U.S. Water Resources - Thomas Pagano**, NWCC-NRCS-USDA, Portland, OR (co-authors: David Garen, Phil Pasteris)
- 1:50 P.M. **Climate Change Impacts on New Mexico's Mountain Sources of Water - Albert Rango**, USDA-ARS-Jornada Experimental Range, Las Cruces, NM (co-authors: Enrique Vivoni, David Gutzler, Brian Hurd, Stephanie Bestelmeyer)
- 2:10 P.M. **Assessment of Climate Change Impact on Water Availability in Global River Basins With a Semi-Distributed Macro-Scale Hydrology Model - Tingju Zhu**, International Food Policy Research Institute, Washington, DC (co-authors: Claudia Ringler, Mark W. Rosegrant)
- 2:30 P.M. **Understanding Watershed Sensitivity to Climate Variability and Change: A Case Study in the Monocacy River Watershed - Thomas Johnson**, U.S. EPA, Washington, DC (co-authors: John Kittle, Jr., John Imhoff, Mark Gray)

SESSION 8 • SIERRA BALLROOM III

WATERSHED PLANNING AND MANAGEMENT-II (MODELING)

MODERATORS • LEWIS LINKER • USEPA CHESAPEAKE BAY PROGRAM • ANNAPOLIS, MARYLAND
JING WU • UNIVERSITY OF MARYLAND CENTER FOR ENVIRONMENTAL SCIENCE • ANNAPOLIS, MARYLAND

- 1:30 P.M. **An Automatic, Mass-Balance Approach for Nutrient Calibration in Chesapeake Bay Watershed Model - Jing Wu**, University of Maryland Center for Environmental Science, Annapolis, MD (co-authors: Robert W. Burgholzer, Gary W. Shenk, Lewis C. Linker)
- 1:50 P.M. **A Spatially Explicit Watershed Modeling Approach Investigating Distribution of Land Cover and Their Influences on Watershed Condition - Peter E Schweizer**, Ohio University, Athens, OH (co-author: Glenn R. Matlack)
- 2:10 P.M. **The Use of a Distributed Hydrologic Model to Evaluate the Location of Flood Control Reservoirs - Andrea Zimmer**, Rice University, Houston, TX (co-author: Philip B. Bedient)
- 2:30 P.M. **A Water Supply and Decision Support Model For the Upper Hondo Watershed in Lincoln County, New Mexico - Thomas S. Lowry**, New Mexico State University, Las Cruces, NM (co-authors: L.I. (Tony) Davis, Mike Byrnes, Vincent C. Tidwell, Frank Ward)

SESSION 9 • OCOTILLO ROOM I

DEVELOPING COUNTRIES-II

MODERATOR • GEORGE ONWUMERE • WASHINGTON STATE DEPARTMENT OF ECOLOGY • OLYMPIA, WASHINGTON

- 1:30 P.M. **Watershed Management in Nepal: 30 Years of Lessons Learned in the Phewa Tal Watershed - Bill Fleming**, University of New Mexico, Albuquerque, NM (co-author: J.P. Fleming)
- 1:50 P.M. **Meeting the Millennium Development Target for Sanitation: Barriers and Solutions - Lauren Fry**, Department of Civil and Environmental Engineering, Michigan Technological University, Houghton, MI (co-authors: James R. Mihelcic, David W. Watkins)
- 2:10 P.M. **Characterization of Seasonal Effects on the Specific Capacity of Rope-Pump Wells in a Fractured-Rock Aquifer in Nicaragua - Essa Gross**, Michigan Technological University, Houghton, MI (co-authors: John S. Gierke, Antoinette Kome)
- 2:30 P.M. **A Well Should Be More Than a Hole in the Ground - Patrick Tucci**, U.S. Geological Survey (retired), Lakewood, CO (co-authors: Eve L. Kuniansky, David W. Litke)

SESSION 10 • OCOTILLO ROOM II
RIPIARIAN RESTORATION

MODERATOR • KARL W.J. WILLIARD • SOUTHERN ILLINOIS UNIVERSITY CARBONDALE • CARBONDALE, ILLINOIS

- 1:30 P.M. **Feasibility of Riparian Revegetation Using Native Seed on the Lower Colorado River - Matthew Grabau**, GeoSystems Analysis, Inc., Tucson, AZ (co-authors: Michael A. Milczarek, Martin Karpiscak, Barbara Raulston)
- 1:50 P.M. **Water Quality Impacts of the Invasive Species Autumn-Olive - Karl Williard**, Southern Illinois University Carbondale, Carbondale, IL (co-authors: Christine Goldstein, Sara Baer, John Groninger, Jon Schoonover)
- 2:10 P.M. **Integration of Science Into the Management of a Riparian Weed: Adapting to the Realities of a Perennial Pepperweed Invasion - Joshua Viers**, University of California-Davis, Davis, CA (co-authors: Rachel A. Hutchinson, James F. Quinn)
- 2:30 P.M. **Habitat Restoration in the Albuquerque Reach of the Middle Rio Grande: Basis of Design - Michael Harvey**, Mussetter Engineering, Inc., Fort Collins, CO (co-authors: Steven C. Sanborn, Dagmar K. Llewellyn, Nic Medley)

POSTER 2 • SANDIA BALLROOM V-VIII • 1:30 P.M. -3:00 P.M.

CLIMATE CHANGE

- Relationship Between a 700-mb “Dry/Wind” Index and Springtime Precipitation and Streamflow at Select Stations in New Mexico and Southern Colorado - Kerry Jones**, NOAA/National Weather Service, Spokane, WA
- Geospatial Mapping of Sea Level Rise-Induced Coastal Zone Inundation Using GIS and LIDAR Data: The Case of Miami-Dade County in South Florida – Himadri Biswas**, Florida International University, Miami, FL (co-authors: Debra Deras, Assefa Melesse)

DEVELOPING COUNTRIES

- Reducing Uncertainty in Hydrologic Predictions for Ungauged Basins in Southern Africa - Kathryn van Werkhoven**, Penn State University, University Park, PA (co-author: Thorsten Wagener)

HYDROPHILANTHROPY

- Why Is Haiti Poor? - Dale Easley**, University of Dubuque, Department of Natural and Applied Sciences, Dubuque, IA
- The Malongo Project: Partnering Academic and Private Resources to Provide Humanitarian Engineering Solutions to a Developing Community - Mark Costello**, South Dakota School of Mines and Technology, Box Elder, SD (co-author: Thomas Fontaine)

3:00 P.M.-3:30 P.M. • AFTERNOON NETWORKING BREAK • SANDIA BALLROOM V-VIII
SPONSORED BY ~ DANIEL B. STEVENS AND ASSOCIATES, INC. ~ ALBUQUERQUE, NEW MEXICO

CONCURRENT SESSIONS 11, 12, 13, 14, 15, POSTER 3

3:30 P.M. -5:00 P.M.

MONDAY ~ NOVEMBER 12

SESSION 11 • SIERRA BALLROOM I
ECONOMICS/FINANCE

MODERATOR • JING YEA-YANG • STANLEY CONSULTANTS, INC. • WEST PALM BEACH, FLORIDA

- 3:30 P.M. **Evaluation of Cost Effectiveness in a Major Water Resources Environmental Restoration Planning Project - Lewis Hornung**, HDR Engineering, West Palm Beach, FL (co-author: Anwar Khan)
- 3:50 P.M. **Putting a Value on the Priceless – One Utility's Solution - Alfredo Rodriguez**, Aurora Water, Aurora, CO (co-author: John Winchester)
- 4:10 P.M. **Cost-Effectiveness Analysis of Obtaining Operational Estimates of Reference Evapotranspiration, Peninsular, Florida, USA - Michael Kittridge**, University of South Florida, Tampa, FL (co-author: Mark C. Rains)
- 4:30 P.M. **Water Reuse Utility is Natural Selection for Environmentally Friendly Master Planned Communities - Dennis Cafaro**, Resource Conservation Systems, LLC, Bonita Springs, FL

SESSION 12 • SIERRA BALLROOM II
CLIMATE CHANGE-III

MODERATORS • DAGMAR LLEWELLYN AND KAREN MACCLUNE
S.S. PAPADOPULOS & ASSOCIATES • BOULDER, COLORADO

- 3:30 P.M. **Testing Vulnerability to Climate Change: The Evolution of Water Supply Planning for the Washington D.C. Region - Erik Hagen**, Interstate Commission on the Potomac River Basin, Rockville, MD (co-author: Mark Lorie)
- 3:50 P.M. **Using Paleoclimatological Reconstructions to Evaluate Drought Risk Under Climate Variability for the Washington, D.C. Region - Mark Lorie**, Interstate Commission on the Potomac River Basin, Rockville, MD (co-author: Erik Hagen)
- 4:10 P.M. **Evaluating Climate Change in the Chesapeake Bay Watershed - Lewis Linker**, U.S. EPA Chesapeake Bay Program Office, Annapolis, MD (co-authors: Thomas Johnson, John Kittle, Jr., Gary Shenk)
- 4:30 P.M. **Great Lakes Coastal Wetland Communities: Vulnerabilities to Climate Change and Response to Adaptation Strategies - Linda Mortsch**, Environment Canada, Waterloo, ON, Canada (co-authors: Andrea Hebb, Joel Ingram, Susan Doka)

SESSION 13 • SIERRA BALLROOM III
WATERSHED PLANNING AND MANAGEMENT-III (SCENARIO ANALYSIS)

MODERATOR • MARIAN NORRIS • NATIONAL PARK SERVICE • WASHINGTON, D.C.

- 3:30 P.M. **Hydrologic Model Calibration and Uncertainty in Scenario Analysis - Darius Semmens**, U.S. EPA Office of Research and Development, Las Vegas, NV (co-author: Mariano Hernandez)
- 3:50 P.M. **Scenario Studies: Linking Regional Concerns and Integrated Models in Local Applications - Holly Hartmann**, University of Arizona, Tucson, AZ (co-authors: Steve Stewart, Yuqiong Liu, Mohammed Mahmoud, Francina Dominguez, Thorsten Wagener)
- 4:10 P.M. **Applying Social-Ecological Fit and Adaptive Management Concepts to Irrigation Institutions in New Mexico - Michael Cox**, School of Public and Environmental Affairs, Indiana University, Bloomington, IN
- 4:30 P.M. **Automated Geospatial Watershed Assessment (AGWA): A GIS-Based Hydrologic Modeling Tool for Watershed Assessment and Analysis - D. Phillip Guertin**, University of Arizona, Tucson, AZ (co-authors: David C. Goodrich, William G. Kepner, Darius J. Semmens, Mariano Hernandez, Shea Burns, Averill Cate, Lainie Levick, Scott N. Miller)

SESSION 14 • OCOTILLO ROOM I
DEVELOPING COUNTRIES III

MODERATOR • PAUL PICKETT • WASHINGTON STATE DEPARTMENT OF ECOLOGY • OLYMPIA, WASHINGTON

- 3:30 P.M. **The Malingua Pamba Water Project: Improving the Reliability of Water Delivery to a Rural Village in the Ecuadorian Andes - Deborah Hathaway**, S.S. Papadopoulos & Associates, Inc., Boulder, CO (co-authors: Amy Hui, Kevin Greer, Zeke Houk, Bradley Davidson)
- 3:50 P.M. **Development of an Alternative Latrine Design With Improved Pathogen and Nutrient Removal Capacity for Poor, Densely-Populated, Peri-Urban Areas in the Developing World - Jesse Stimson**, University of Waterloo, Waterloo, ON, Canada (co-authors: Alexandra V. Suhogusoff, David W. Blowes, Carol J. Ptacek, Ricardo Hirata, William D. Robertson, Gi-Tak Chae, Monica B. Emelko)
- 4:10 P.M. **Water Markets and the Resource Gap: Help or Hindrance for Small Farms? - Ereny Hadjigeorgalis**, New Mexico State University, Las Cruces, NM
- 4:30 P.M. **Fecal Contamination of Springs in Mountainous Southwest China - Derek Chitwood**, International Health Resources, Sanger, CA

SESSION 15 • OCOTILLO ROOM II
ECOSYSTEM RESTORATION

MODERATOR • MONICA PEREZ • ECOLOGY & ENVIRONMENT, INC. • WEST PALM BEACH, FLORIDA

- 3:30 P.M. **Applying the New IWR Planning Suite to Ecosystem Restoration Projects - Lawrence Skaggs**, U.S. Army Corps of Engineers, Institute for Water Resources, Alexandria, VA (co-author: Darrell G. Nolton)
- 3:50 P.M. **Loss of Historical Riparian Wetlands on the Verde River - Alvin Medina**, Rocky Mountain Research Station, Flagstaff, AZ
- 4:10 P.M. **Development of the Adaptive Management Guidance Manual for Everglades Restoration - Thomas St. Clair**, PBS&J, Jacksonville, FL
- 4:30 P.M. **Rio Grande Cutthroat Trout Recovery Efforts in Cabresto Creek, New Mexico - Lee Bergstedt**, GEI Consultants, Inc., Littleton, CO (co-author: James W. Chadwick)

INTEGRATED WATER RESOURCES PLANNING

- Developing Procedures for Better Incorporating Social Well-Being Concerns in Water Resources Plans - C. Mark Dunning**, Marstel-Day Consultants, Fredericksburg, VA (co-author: Susan Durden)
- Designing Remedial Measures - Andrew Pantel**, Ministry of Forests and Range, Prince George, BC, Canada (co-author: Doug Fraser)
- RTI's Technical Assistance Center Supporting State Water Quality Monitoring and Assessment Efforts to Achieve Environmental Results - Kevin Pickren**, RTI International, Research Triangle Park, NC (co-authors: Jennifer Schimek, Peter Ilieve, William Cooter, Kristen Gunthardt, Cary McElhinney)
- Sea Level Rise and Water Infrastructure Investment - Laurel Phoenix**, University of Wisconsin-Green Bay, Green Bay, WI
- Regulation and Financing of Potable Water Systems in Puerto Rico: A Study in Failure in Governance - Harvey Minnigh**, CECIA/IUPR, RCAPS, Lajas, PR (co-author: Graciela I. Ramirez Toro)

WATERSHED PLANNING AND MANAGEMENT

- Quantifying Secondary Evapotranspiration - Josh Rice**, Brown and Caldwell, Golden, CO (co-author: Leo M. Eisel)
- Integrated Infrastructure Improvements in Hogpen Creek Subbasin – Roadway Widening, Flood Control, Channel Improvements, Water Quality Improvements, and Wetland Re-hydration - Greg McGrath**, CDM, Jacksonville, FL (co-authors: John Pappas, Patrick R. Victor, Michael Schmidt)
- Integrating Science and Policy to Resolve Management Issues in the Lake Maumelle Watershed - J. Trevor Clements**, Tetra Tech, Research Triangle Park, NC (co-authors: Kimberly Brewer, Bruno Kirsch)
- Thermal Impact Assessment of Storm Water Management Practices on In-Stream Temperatures of a Trout Production, Cold Water Fishery Headwater Stream in Northeastern Pennsylvania: A Watershed-Based Analytical Modeling Approach to Stormwater Management - Thomas Gillespie**, Environmental Liability Management, Inc., Bethlehem, PA (co-author: Kristy Aller)
- Analyzing the Main Habitat Parameters Affecting Biotic Integrity in Ohio and Maryland Using Self-Organizing Maps - Vladimir Novotny**, Northeastern University, Somerville, MA (co-author: David Bedoya)
- Scenario Development for Water Resources Planning and Management in Semi-Arid Regions - Steven Stewart**, University of Arizona, Tucson, AZ (co-authors: Mohammed Mahmoud, Yuqiong Liu, Holly Hartmann, Thorsten Wagener, Hoshin Gupta)
- Precipitation Variability of Streamflow Fraction in West Central Florida - Michael Scott**, GPI, Temple Terrace, FL (co-authors: Mark Ross, Kim Beth Clayback)
- A Leader in the Southeast: Gwinnett County's Watershed Improvement Program - Laurie Hawks**, Brown and Caldwell, Atlanta, GA (co-author: Pete Wright)
- Predicting Monthly Runoff of the Upper Blue Nile River Basin, Ethiopia, Using Regionalization Methods - Ungtae Kim**, Utah Water Research Laboratory, Logan, UT (co-author: Jagath J. Kaluarachchi)
- Determining the Contribution of Ungauged Tributaries to the Mainstem Gila and San Francisco Rivers Using GIS and System Dynamics Software - Geoff Klise**, Sandia National Laboratories, Albuquerque, NM (co-authors: Vince Tidwell, Carlos Aragon)
- Watershed Management and ArcGIS: The Release of AGWA 2.0 - Shea Burns**, USDA-ARS SWRC, Tucson, AZ (co-authors: Soren Scott, Lainie Levick, David C. Goodrich, D. Phillip Guertin, William G. Kepner.)

STUDENT ATTENDEE CONFERENCE ORIENTATION

MONDAY • NOVEMBER 12 • 4:30 P.M. TO 5:00 P.M.

MEET IN FRONT OF THE SANDIA BALLROOM

See "Student Career Program" on pg. 39 for details

SPECIAL EVENT

OPENING NETWORKING RECEPTION

MONDAY • NOVEMBER 12 • 5:00 P.M. TO 6:30 P.M. • SANDIA BALLROOM V-VIII

See "Special Events" on pg. 39 for details

SPECIAL EVENT

SPECIAL SCREENING OF THE MOVIE "WATERBUSTER"

A JOURNEY INTO THE PAST ... TO FIND THE FUTURE.

MONDAY • NOVEMBER 12 • 7:00 P.M. TO 9:00 P.M. • SIERRA BALLROOM III

See "Special Events" on pg. 40 for details

DAY-AT-A-GLANCE / TUESDAY / NOVEMBER 13, 2007

AWRA CONVERSATION CORNER OPEN / 6:00 A.M.-7:00 P.M. / SANDIA BALLROOM FOYER

**AWRA 5K FUN RUN / 6:30 A.M.-8:00 A.M. (SEE PG. 40 FOR DETAILS)
SPONSORED BY GROUNDS ANDERSON LLC • HOUSTON, TEXAS**

SPEAKERS' PREPARATION ROOM OPEN / 7:00 A.M.-8:00 P.M. / AGAVE ROOM

**BOOK & JOURNAL EXHIBIT OPEN & EMPLOYMENT OPPORTUNITY BOARD ON DISPLAY
7:30 A.M.-5:00 P.M. / SANDIA BALLROOM FOYER**

REGISTRATION DESK OPEN / 7:30 A.M.-5:00 P.M. / MEETINGS REGISTRATION DESK / SANDIA BALLROOM FOYER

**MORNING NETWORKING BREAK / 8:00 A.M.-10:30 A.M. / SANDIA BALLROOM V-VIII
SPONSORED BY GREENHORN & O'MARA • LAUREL, MARYLAND**

COMMERCIAL AND EDUCATIONAL EXHIBITS OPEN / 8:00 A.M.-3:30 P.M. / SANDIA BALLROOM V-VIII

ORGANIZATIONAL DISPLAYS OPEN / 8:30 A.M.-5:30 P.M. / SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 16, 17, 18, 19, 20 / 8:30 A.M.-10:00 A.M.

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|--------------------------|--------------------------|---------------------------------------|--------------------------|--------------------------|
| <u>SESSION 16</u> | <u>SESSION 17</u> | <u>SESSION 18</u> | <u>SESSION 19</u> | <u>SESSION 20</u> |
| TRANSBOUNDARY-I | HYDROPHILANTHROPY-I | WATERSHED PLANNING & MANAGEMENT-IV | URBAN ECOSYSTEMS | LAKES AND PONDS |
| SIERRA BALLROOM I | SIERRA BALLROOM II | SIERRA BALLROOM III | OCOTILLO ROOM I | OCOTILLO ROOM II |

MORNING NETWORKING BREAK (CONT'D.) / 10:00 A.M.-10:30 A.M. / SANDIA BALLROOM V-VIII

CONCURRENT SESSIONS 21, 22, 23, 24, 25, POSTER SESSION 4 / 10:30 A.M.-12:00 NOON

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|--------------------------|--------------------------|---|--|--------------------------|--|
| <u>SESSION 21</u> | <u>SESSION 22</u> | <u>SESSION 23</u> | <u>SESSION 24</u> | <u>SESSION 25</u> | <u>SESSION POSTER 4</u> |
| TRANSBOUNDARY-II | HYDROPHILANTHROPY II | WATERSHED PLANNING & MANAGEMENT-V (URBAN) | PANEL: ADDRESSING CLIMATE CHANGE IN LONG-TERM WATER RESOURCE PLANNING | FOREST ROADS | • AQUIFER STORAGE AND RECOVERY • GROUND WATER • WATER DEM. MGMT. SANDIA BALLROOM V-VIII |
| SIERRA BALLROOM I | SIERRA BALLROOM II | SIERRA BALLROOM III | OCOTILLO ROOM I | OCOTILLO ROOM II | |

LUNCH BREAK / 12:00 NOON-1:25 P.M. / ON YOUR OWN

CONCURRENT SESSIONS 26, 27, 28, 29, 30, POSTER SESSION 5 / 1:30 P.M.-3:00 P.M.

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| <u>SESSION 26</u> | <u>SESSION 27</u> | <u>SESSION 28</u> | <u>SESSION 29</u> | <u>SESSION 30</u> | <u>SESSION POSTER 5</u> |
| TRANSBOUNDARY-III | HYDROPHILANTHROPY III | WATERSHED PLANNING & MANAGEMENT-VI | FLOODING | FOREST MANAGEMENT | • HUMAN DIMENSIONS OF WATERSHED MANAGEMENT SANDIA BALLROOM V-VIII |
| SIERRA BALLROOM I | SIERRA BALLROOM II | SIERRA BALLROOM III | OCOTILLO ROOM I | OCOTILLO ROOM II | |

**AFTERNOON NETWORKING BREAK / 3:00 P.M.-3:30 P.M. / SANDIA BALLROOM V-VIII
SPONSORED BY INSTITUTE FOR WATER AND WATERSHEDS • OREGON STATE UNIVERSITY • CORVALLIS, OREGON**

CONCURRENT SESSIONS 31, 32, 33, 34, 35, POSTER SESSION 6 / 3:30 P.M.-5:00 P.M.

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|---|--------------------------|--|--------------------------|---------------------------------------|--|
| <u>SESSION 31</u> | <u>SESSION 32</u> | <u>SESSION 33</u> | <u>SESSION 34</u> | <u>SESSION 35</u> | <u>SESSION POSTER 6</u> |
| PANEL: LINKING CLIMATE CHANGE & WATER RES. MGMT. KNOWLEDGE NETWORKS | HYDROPHILANTHROPY IV | WATERSHED PLANNING & MANAGEMENT-VII | FLOODPLAIN MANAGEMENT | ENVIRONMENTAL FLOW REQUIREMENTS | • AGRICULTURAL BMPS • HYDROLOGY • MODELING • STORMWATER • STORMWATER BMP PERFORMANCE • TMDLS-NONPOINT SOURCE • WASTEWATER DISPOSAL SANDIA B.R.V-VIII |
| SIERRA BALLROOM I | SIERRA BALLROOM II | SIERRA BALLROOM III | OCOTILLO ROOM I | OCOTILLO ROOM II | |

**SPECIAL EVENT / 2007 SOUTHWESTERN ROUNDUP AT LOS AMIGOS ROUNDUP RANCH
6:00 P.M.-9:00 P.M. (MEET IN HOTEL LOBBY AT 5:45 P.M.) (SEE PG. 40)**

CONCURRENT SESSIONS 16, 17, 18, 19, 20

8:30 A.M. - 10:00 A.M.

TUESDAY ~ NOVEMBER 13

SESSION 16 • SIERRA BALLROOM I TRANSBOUNDARY-I

MODERATOR • MARK MURPHY • OFFICE OF THE STATE ENGINEER • ALBUQUERQUE, NEW MEXICO

- 8:30 A.M. **Transboundary Aquifers of the New Mexico-Texas-Chihuahua Border Region – The Need for Assessment - Bobby Creel**, New Mexico Water Resources Research Institute, Las Cruces, NM (co-authors: Alfredo Granados-Olivas, John W. Hawley)
- 8:50 A.M. **Bi-National Groundwater Resources of the Palomas Basin System - Peter Castiglia**, INTERA, Albuquerque, NM (co-authors: Jeffrey Parker, Peter J. Fawcett)
- 9:10 A.M. **Climate Change Impacts on Transboundary Groundwater Aquifers - Deborah Bathke**, New Mexico State University, Las Cruces, NM (co-authors: Bobby J. Creel, Alfredo Granados-Olivas, Erick Sánchez-Flores)
- 9:30 A.M. **Proposed Roadmap: A Draft Model for Collaborative Operation of Transboundary Watersheds - Elaine Hebard**, Facilitator, Mimbres Basin Dialogue, Border 2012 New Mexico-Chihuahua Rural Task Force, Albuquerque, NM

SESSION 17 • SIERRA BALLROOM II HYDROPHILANTHROPY-I

MODERATORS • MICHAEL E. CAMPANA • OREGON STATE UNIVERSITY • CORVALLIS, OREGON
DAVID A. SABATINI • UNIVERSITY OF OKLAHOMA • NORMAN, OKLAHOMA

- 8:30 A.M. **New Initiatives Regarding Drinking Water and Sanitation in the Developing World - Peter Fant**, WEFTA, Santa Fe, NM
- 8:50 A.M. **Improving World Water Conditions - \$10 At a Time - Michael Turvey**, Flowing Streams Ministries, Shawnee, KS
- 9:10 A.M. **El Porvenir: A Model for Water and Sanitation Projects in the Developing World - Thomas Green**, El Porvenir, North Freedom, WI
- 9:30 A.M. **Organizational Partnerships for Improved Sustainability - Christine Casey**, Pure Water for the World, Andover, MA

SESSION 18 • SIERRA BALLROOM III WATERSHED PLANNING AND MANAGEMENT-IV

MODERATOR • ROBERT J. MORESI • BLACK & VEATCH • TAMPA, FLORIDA

- 8:30 A.M. **Estimating the Ungauged Flows - Patrick Tara**, INTERA, Lutz, FL (co-authors: Mike Heyl, Harshal Parikh, Norapatt Ketprakong)
- 8:50 A.M. **Effect of Source and Resolution of Digital Elevation Models in Hydrologic Modeling of Small Watersheds Using the SWAT Model - Sushama Pradhan**, North Carolina State University, Raleigh, NC (co-authors: M.T. Hoover, H.A. Devine, J.G. Arnold, M. Di Luzio)
- 9:10 A.M. **Use of Cutting Edge Technology for Watershed Management - Suresh Hettiarachchi**, HDR Engineering Inc, Minneapolis, MN (co-author: Matt Moore)
- 9:30 A.M. **Real-Time Monitoring in the St. Lawrence: Department of Fisheries and Oceans' Tide Gauge Network – Jeremy Hancyk**, AXYS Technologies, Sidney, BC, Canada (co-authors: Paul Bellemare, Harry Weiler)

SESSION 19 • OCOTILLO ROOM I URBAN ECOSYSTEMS

MODERATOR • JON SCHOONOVER • SOUTHERN ILLINOIS UNIVERSITY • CARBONDALE, ILLINOIS

- 8:30 A.M. **Effects of Urbanization on Water Quality in Streams of the West Georgia Piedmont - Jackie Crim**, Auburn University, Auburn, AL (co-author: Graeme Lockaby)
- 8:50 A.M. **The Influence of Land Use on Biotic Assemblages and Food Webs in Streams of the Georgia Piedmont - Brian Helms**, Auburn University, Auburn, AL (co-authors: Jon Schoonover, Kyle Barrett, Jack Feminella)
- 9:10 A.M. **Land Use Impacts of Surface Water Quality Inputs to Apalachicola Bay, Florida – Christopher J. Anderson**, Auburn University, Auburn, AL (co-authors: Graeme Lockaby, Ana Cerro)
- 9:30 A.M. **Comprehensive Water and Salt Flux Models for Urban Systems - Paul Westerhoff**, Arizona State University, Tempe, AZ (co-authors: Peng Zhang, John Crittenden)

SESSION 20 • OCOTILLO ROOM II LAKES AND PONDS

MODERATOR • KRISTIN BENNETT • TETRA TECH EC, INC. • STUART, FLORIDA

- 8:30 A.M. **Regional Scale Stressor-Response Models in Aquatic Ecosystems - E. Conrad Lamon III**, Duke University, Durham, NC (co-author: Song S. Qian)
- 8:50 A.M. **Bacteria and Sediment Interaction in Stream Water Column and Bottom Sediments - Marissa Duff**, Biological Systems Engineering Department, Virginia Tech, Midlothian, VA (co-author: Tamim Younos)
- 9:10 A.M. **Utah Lake Water Level Fluctuations Under Past, Present, and Future Conditions - Steven Thurin**, HDR Engineering, Bellevue, WA (co-author: Terry Hickman)

CONCURRENT SESSIONS 21, 22, 23, 24, 25, POSTER 4

10:30 A.M. - 12:00 NOON

TUESDAY ~ NOVEMBER 13

SESSION 21 • SIERRA BALLROOM I
TRANSBOUNDARY-II

MODERATOR • MICHAEL E. CAMPANA • OREGON STATE UNIVERSITY • CORVALLIS, OREGON

- 10:30 A.M. **Mission: Impossible - Joseph Sheahan**, Optimal Resource Allocation, LLC, Lansing, MI
- 10:50 A.M. **Water Quality and Public Health Monitoring of Surface Waters in the Kura-Araks River Basin of Armenia, Azerbaijan, and Georgia - Amy Ewing**, Daniel B. Stephens & Associates, Inc., Albuquerque, NM (co-authors: Michael E. Campana, Armen Saghatelian, Bahruz Suleymanov, Nodar Kekelidze)
- 11:10 A.M. **Impacts of an Inter-Basin Water Transfer: Predictions of Future Water Quality in a Texas River - Emily Chen**, QEA, Austin, TX (co-authors: Jennifer Benaman, Leah Manning, Steve Fletcher)

SESSION 22 • SIERRA BALLROOM II
HYDROPHILANTHROPY-II

MODERATOR • DAVID A. SABATINI • UNIVERSITY OF OKLAHOMA • NORMAN, OKLAHOMA

- 10:30 A.M. **Working to Develop Water Resources With the Peace Corps - David Lawler**, INTERA, Inc., Albuquerque, NM
- 10:50 A.M. **Insuring Sustainable Water Resources in Developing Areas by Involving and Training the Receiving People – Weldon Hammond**, The University of Texas at San Antonio, San Antonio, TX (co-author: Louis Manz)
- 11:10 A.M. **Sooner Village – Integrating Engineering Design and Service Learning - Randall Kolar**, University of Oklahoma, Norman, OK (co-authors: D.A. Sabatini, K.A. Strevett, R.C. Knox, J.W. Everett)
- 11:30 A.M. **Equipping Engineers to Use Their Expertise in the Developing World - Graham V. Frank**, Christ Community Church, Omaha, NE (co-authors: Sarah Young, Eric Habermeyer)

SESSION 23 • SIERRA BALLROOM III
WATERSHED PLANNING AND MANAGEMENT-V (URBAN)

MODERATOR • JULIE COONROD • UNIVERSITY OF NEW MEXICO • ALBUQUERQUE, NEW MEXICO

- 10:30 A.M. **Potential CSO Reduction Techniques for New York City - Sheng Yue**, Hazen and Sawyer, P.C., New York, NY
- 10:50 A.M. **Estimating the Confidence of Land Use and Imperviousness Relationships at a Regional Scale - Drew Ackerman**, SCCWRP, Costa Mesa, CA (co-author: Eric D Stein)
- 11:10 A.M. **Heating Effects Due to Land Development - A. Karima Degia**, Florida Tech, Melbourne, FL (co-authors: Ashok Pandit, Sudhir Kulkarni, Nawazish Ali, Kunal Mitra, Daniel Kirk)
- 11:30 A.M. **A Win-Win Scenario for Rural/Urban Water Supplies - Bruce Lytle**, Lytle Water Solutions, LLC, Highlands Ranch, CO

SESSION 24 • OCOTILLO ROOM I
PANEL: ADDRESSING CLIMATE CHANGE IN LONG-TERM WATER RESOURCE PLANNING

MODERATOR • DAVID GROVES • RAND CORPORATION • OAKLAND, CALIFORNIA

PANELISTS

David Groves ~ RAND Corporation ~ Oakland, California
Robert Lempert ~ RAND Corporation ~ Santa Monica, California
Patricia Gober ~ Arizona State University ~ Tempe, Arizona
David Yates ~ National Center for Atmospheric Research ~ Boulder, Colorado

Water resource managers are accustomed to planning their investments and operations under conditions of uncertainty about future supply and demand. Weather is naturally variable on all time scales and persistent periods of drought and wetter weather are common. The emerging threat of longer-term climate change impacts, however, adds a new dimension to their planning. Potential climate change impacts are not well understood, yet water resources managers will need to determine how to cope with them as they revise their plans in the coming years. In this session, research teams from the RAND Corporation, Arizona State University, and the National Center for Atmospheric Research will describe on-going efforts to incorporate climate information into water resource planning activities. In the first talk, researchers from the RAND Corporation will present results from recent work with the Inland Empire Utilities Agency helping them to develop a modeling infrastructure and decision-framework to address

climate change in their long-term planning. In the second talk, the Co-Director of the Decision Center for a Desert City at Arizona State University will describe a recently created systems dynamic model to consider interrelationships among climate, population growth, land use change, and water supply and demand. This model has been used in an innovative decision theater to link scientists and decision makers in the production of policy-relevant information. The final talk will present the on-going work of an American Water Works Association Research Foundation (AWWARF) funded collaboration among the National Center for Atmospheric Research (NCAR), the Stockholm Environment Institute (SEI), and several water agencies across the United States to develop a framework for considering climate change in utility planning. Following the presentations, the panelists will lead a discussion about the advantages and challenges of the methodologies presented.

SESSION 25 • OCOTILLA ROOM II **FOREST ROADS**

MODERATOR • KARL W.J. WILLIARD • SOUTHERN ILLINOIS UNIVERSITY CARBONDALE • CARBONDALE, ILLINOIS

- 10:30 A.M.** **Forest Roads: A Primer and More – Pamela J. Edwards**, U.S. Forest Service, Northeastern Research Station, Parsons, WV
- 10:50 A.M.** **Particle Size Analysis of Eroded Material From Left Fork of Clover Run, West Virginia - Joshua Stedman**, Southern Illinois University Carbondale, Carbondale, IL (co-authors: Pamela J. Edwards, Jon E. Schoonover, Karl W.J. Williard)
- 11:10 A.M.** **Factors Affecting Erosion on a Gas Pipeline in the Central Appalachians - Dan Holz**, Southern Illinois University, Carbondale, IL (co-authors: Pamela Edwards, Karl W.J. Williard, Jon Schoonover)
- 11:30 A.M.** **Measuring and Modeling of Erosion From a Forest Road in the Ouachita Mountains of Oklahoma - Donald Turton**, Oklahoma State University, Stillwater, OK (co-authors: Elaine Stebler, Phil Busteed, Jami Nettles)

POSTER 4 • SANDIA BALLROOM V-VIII • 10:30 A.M. -12:00 NOON

AQUIFER STORAGE AND RECOVERY

- ASR Implementation: Techniques for Improving Success - Leslie Turner**, CDM, Maitland, FL (co-authors: Barika Poole, Lee Wiseman, Doug Munch, Glenn Forrest, W. Kirk Martin)
- Results of a Regional Underground Water Storage Study in Colorado - Gordon McCurry**, CDM, Denver, CO (co-authors: Andy Horn, Nathan Smith, Andy Moore)
- Modeling Aquifer Storage: Options for Albuquerque's San Juan-Chama River Allotment - Steven Archambault**, University of New Mexico, Albuquerque, NM (co-author: Bishwa S. Koirala)
- Numerical Simulation of a Proposed Artificial Recharge System - Eric Margrave**, California State University Northridge, Santa Clarita, CA (co-authors: Lance Eckhart, M. Ali Tabidian)
- Strategies for Groundwater Extraction in an Area With a Complex Spatial Planning and Enough Surface Water - Ritsche Anne (Rian) Kloosterman**, Vitens, Meppel, Netherlands

GROUND WATER

- Ground Water Modeling of the West Simi Valley, Ventura County, CA- George Clark**, CSU, Northridge, Northridge, CA (co-author: M. Ali Tabidian)
- Correlating Specific Capacity Based Hydraulic Conductivity Values to Aquifer Pumping Test Based Values - Matt Bliss**, CDM, Denver, CO (co-authors: Gordon McCurry, Mark McCluskey)
- Investigating Rio Grande Ground Water/Surface Water Interaction at the Albuquerque Diversion Dam Site - Christian LeJeune**, The University of New Mexico, Department of Biology, Albuquerque, NM (co-authors: Isaiah Pedro, John Stormont, Julie Coonrod, Cliff Crawford)

WATER DEMAND MANAGEMENT

- A Methodology for Estimating Wellfield Production for Water Resources Planning - Mark McCluskey**, CDM Inc., Denver, CO (co-author: Gordon McCurry)
- A Dynamic Water Budget Model of Nambe Pueblo - James Brainard**, Sandia National Labs, Albuquerque, NM (co-author: Vincent Tidwell)
- Level 1 Water Quality Monitoring in Areas Grazed by Livestock - Doug Fraser**, Ministry of Forests and Range, Mill Bay, BC, Canada (co-author: Andrew Pantel)
- Alternative Water Sources: Graywater and Brackish Ground Water for Vegetable Irrigation - Zhuping Sheng**, Texas A&M University, El Paso, TX (co-authors: Naomi Assadian, George Di Giovanni, Estrella Herrera)
- Capture of Ocean Rainfall to Augment Potable Water Supply - John Casana**, Booz Allen Hamilton, Inc., McLean, VA

12:00 NOON-1:25 P.M. • LUNCH BREAK • ON YOUR OWN

CONCURRENT SESSIONS 26, 27, 28, 29, 30, POSTER 5

1:30 P.M. - 3:00 P.M.

TUESDAY ~ NOVEMBER 13

SESSION 26 • SIERRA BALLROOM I

TRANSBOUNDARY-III

MODERATOR • AMY EWING • DANIEL B. STEPHENS AND ASSOCIATES, INC. • ALBUQUERQUE, NEW MEXICO

- 1:30 P.M. **Sharing the Benefits? Managing Aquifers and Effluent in the Upper Santa Cruz River Basin - Anita Milman**, Energy and Resources Group, University of California at Berkeley, Berkeley, CA
- 1:50 P.M. **Modeling San Juan-Chama Project Water With URGWOM - Craig Boroughs**, BH&H Engineering, Inc., Dillon, CO
(co-authors: Marc S. Sidlow, Brad Vickers, Garret K. Ross)
- 2:10 P.M. **The International Lake Ontario-St. Lawrence River Study – Towards Improved Bi-National Water Regulation in an Intensively Developed Basin - Tom McAuley**, International Joint Commission, Ottawa, ON, Canada (co-author: Mark Colosimo)
- 2:30 P.M. **Assessing the Nature of Coalition Among Riparian Countries Via Fuzzy Logic: The Case of the Euphrates and Tigris Rivers - Mehmet Ozger**, Istanbul Technical University, Istanbul, Turkey (co-authors: Mehmet Kucukmehmetoglu, Zekai Sen)

SESSION 27 • SIERRA BALLROOM II

HYDROPHILANTHROPY-III

MODERATORS • MICHAEL E. CAMPANA • OREGON STATE UNIVERSITY • CORVALLIS, OREGON
DAVID A. SABATINI • UNIVERSITY OF OKLAHOMA • NORMAN, OKLAHOMA

- 1:30 P.M. **Case Study: Engineers Without Borders-Site Assessment in Agou Avedje, Togo, West Africa - Curtis McHaley**, Camp Dresser & McKee, Albuquerque, NM (co-authors: Hanna Sloan, Stephanie Moraga-McHaley)
- 1:50 P.M. **Case Study: Groupement de Production Agricole and Water Supply in Togolese Villages - Bill Cocks**, Delaware DNREC, Dover, DE (co-author: Dzobi Okuola)
- 2:10 P.M. **Sustainable Ground Water Treatment for Axum, Ethiopia - David Hubly**, Water and Sanitation Consultancy Group, Centennial, CO (co-authors: Tsegaye Hailu, Patrick Tucci)
- 2:30 P.M. **Small Community-Based Water Development Projects in Kenya and Related Volunteer Opportunities and Experiences - Peter Boddie**, HRS Water Consultants, Lakewood, CO

SESSION 28 • SIERRA BALLROOM III

WATERSHED PLANNING AND MANAGEMENT-VI

MODERATOR • JULIE COONROD • UNIVERSITY OF NEW MEXICO • ALBUQUERQUE, NEW MEXICO

- 1:30 P.M. **Water Resources Management in the 21st Century: The Need for a U.S. Federal Department of Environmental Protection - Eric Fitch**, Marietta College, Marietta, OH
- 1:50 P.M. **Stakeholder Consensus Building: The South Florida Water Management District's Water Resources Advisory Commission - Rick Smith**, South Florida Water Management District, West Palm Beach, FL
- 2:10 P.M. **The Arid West Water Quality Research Project – Solutions to Regulatory Conflicts Between Endangered Species and the Clean Water Act - Mark Murphy**, Interstate Stream Commission, Office of the State Engineer, Albuquerque, NM
(co-authors: Richard Meyerhoff, Steve Canton, Robert Gensemer, Karen Ramage, Edward Curley)
- 2:30 P.M. **Wekiva Parkway and Protection Act Master Stormwater Management Plan Support - Barika Poole**, CDM, Maitland, FL
(co-authors: Danielle Honour, Mary Brabham)

SESSION 29 • OCOTILLO ROOM I

FLOODING

MODERATOR • PATRICK VICTOR • CDM • JACKSONVILLE, FLORIDA

- 1:30 P.M. **Paso del Norte 2006 Floods: Water Resource Agency Assessments and Recommendations for Improved Management and Preparation - Ari Michelsen**, Texas A&M University, El Paso Research Center, El Paso, TX (co-author: Zhuping Sheng)
- 1:50 P.M. **Real-Time Hydraulic Prediction Tool - Floodplain Map Library (FPML) - Zheng Fang**, Rice University, Houston, TX
(co-author: Philip B. Bedient)
- 2:10 P.M. **Managing Flash Floods: Risk Perception From a Cultural Perspective - Ashley Coles**, University of Arizona, Tucson, AZ
- 2:30 P.M. **Levee Maintenance Enhancements Prince George's County, MD - S. Ali Abbasi**, Greenhorne & O'Mara, Laurel, MD
(co-authors: Maureen P. Wilson, Hilary Stephens, El Hadji Fall)

SESSION 30 • OCOTILLO ROOM II
FOREST MANAGEMENT

MODERATOR • BORIS POFF • U.S. FOREST SERVICE • FLAGSTAFF, ARIZONA

- 1:30 P.M. **Water Yield From Harvesting and Thinning Southwestern Mountain Forests: Historical Experience From U.S. Forest Service Research - Dan Neary**, U.S. Forest Service, Flagstaff, AZ (co-authors: Karen Koester, Boris Poff)
- 1:50 P.M. **The Effects of Fire and Fire Surrogate Treatments on Soil Moisture Availability in Southwestern Ponderosa Pine Forests - Boris Poff**, U.S. Forest Service, Flagstaff, AZ (co-authors: Daniel G. Neary, Aregai Tecle)
- 2:10 P.M. **Fuel Reduction Treatment Effects on Ecohydrology in a Semiarid Woodland - Krista Bonfantine**, University of New Mexico, Cedar Crest, NM
- 2:30 P.M. **Pre-Harvest Calibration of a Paired and Nested Watershed Study to Evaluate Event-Based Suspended Sediment Export - Brian Dietterick**, Cal Poly State University, San Luis Obispo, CA (co-author: Michael Gaedeke)

POSTER 5 • SANDIA BALLROOM V-VIII • 1:30 P.M. - 3:00 P.M.

HUMAN DIMENSIONS OF WATERSHED MANAGEMENT

- From the Ground Up: A Community-Based Approach to Abandoned Mine Restoration - Elizabeth Russell**, Trout Unlimited, Boulder, CO
- Considering Conservation Outreach Through the Framework of Behavioral Economics: A Review of Literature - David Doerfert**, Texas Tech University, Lubbock, TX (co-author: Melinda Findley)
- How Do We Value Water? A Multi-State Perspective - David Doerfert**, Texas Tech University, Lubbock, TX (co-authors: Leslie D. Edgar, René P. Miller)
- Water Imagery in Spanish Baroque Poetry: Reflections of 17th Century Spain - Deborah Hathaway**, S.S. Papadopoulos & Associates, Inc., Boulder, CO
- Visualizing Flow Alteration as a Cause of Biological Impairment - C. Richard Ziegler**, USEPA, Washington, DC (co-author: K.A. Schofield)
- Calibration of a Hydrologic Model for Remote Regions in Central Canada Using North American Regional Reanalysis Data - Sung Joon Kim**, Department of Civil Engineering, University of Manitoba, Winnipeg, MB, Canada (co-authors: Woonsup Choi, Peter F. Rasmussen)
- InfoWorks CS Modeling for the Port Richmond Sewer Collection System in NYC - Joanne Liao**, Hazen and Sawyer, P.C., Philadelphia, PA (co-author: Sheng Yue)
- Dynamic Integration of a Biophysical Model to an Economic Model - Remegio Confesor**, Oregon State University, Corvallis, OR (co-authors: Gerald Whittaker, Rolf Färe, Shawna Grosskopf)
- Bootstrapping Input (Forcing) Variables for Model Prediction Uncertainty - Remegio Confesor**, AREC, Oregon State University, Corvallis, OR (co-author: Gerald Whittaker)
- Risk-Based Approach to Estimate Diffuse Phosphorus Loading in the Eastern River Basin District, Republic of Ireland - Matthew Gamache**, CDM, Inc., Cambridge, MA (co-authors: Henning Moe, Paul Mills)
- Modelling Exchange Processes Between Two Basins in Stockholm Archipelago - Muluneh Admass Mekonnen**, KTH, Stockholm, Sweden (co-author: Bijan Dargahi)
- Arizona NEMO: Assessing Potential Risks for Nonpoint Source Pollution in Arizona - D. Phillip Guertin**, University of Arizona, Tucson, AZ (co-authors: Kristine Uhlman, Lainie Levick)

3:00 P.M. - 3:30 P.M. • AFTERNOON NETWORKING BREAK • SANDIA BALLROOM V-VIII

SPONSORED BY ~ INSTITUTE FOR WATER AND WATERSHEDS ~ OREGON STATE UNIVERSITY ~ CORVALLIS, OREGON

CONCURRENT SESSIONS 31, 32, 33, 34, 35, POSTER 6

3:30 P.M. - 5:00 P.M.

TUESDAY ~ NOVEMBER 13

SESSION 31 • SIERRA BALLROOM I

PANEL: LINKING CLIMATE AND WATER RESOURCE MANAGEMENT KNOWLEDGE NETWORKS

MODERATOR • BARBARA MOREHOUSE • ISPE • UNIVERSITY OF ARIZONA • TUCSON, ARIZONA

PANELISTS

Barbara Morehouse

Deputy Director and Associate Research Scientist, Institute for the Study of Planet Earth ~ University of Arizona ~ Tucson, Arizona

David Feldman

Chair ~ Planning, Policy, and Design ~ University of California at Irvine ~ Irvine, California

Denise Fort

Professor of Law, School of Law ~ University of New Mexico ~ Albuquerque, New Mexico

Thomas Pagano

Water Supply Forecaster ~ National Water and Climate Center ~ NRCS-USDA ~ Portland, Oregon

One of a series of reports being produced by the Climate Change Science Program is a document summarizing the state of knowledge and forecasting for managing U.S. water resources under conditions of climate variability and change. The document, which is specifically designed to examine policy considerations, is innovative in considering the roles of knowledge networks and science citizenship in addressing the challenges of managing water resources in a changing climate. This panel will explore how such issues are framed and how these frames promote or impede policy change; the sorts of venues and forms of knowledge that offer possibilities for policy innovation; the structure and role of knowledge networks in mobilizing policy change; the nature and potential role of science citizenship in influencing the design and implementation of policies; and the low level of attention to mitigation – as opposed to adaptation – in the discourses of the water resource scientific and policy establishments.

SESSION 32 • SIERRA BALLROOM II
HYDROPHILANTHROPY-IV

MODERATORS • MICHAEL E. CAMPANA • OREGON STATE UNIVERSITY • CORVALLIS, OREGON
DAVID A. SABATINI • UNIVERSITY OF OKLAHOMA • NORMAN, OKLAHOMA

- 3:30 P.M. **Political Pitfalls Preventing People From Procuring Potable Provisions – A Case From Belize - Thomas Soerens**, University of Arkansas Civil Engineering, Fayetteville, AR
- 3:50 P.M. **Water Purification - An Inexpensive, Radical Solution for Small Communities - Julia Crown**, CardioStart International, Portland, OR (co-authors: Matthew Lowry, Ernesto Malaga, Monica Diaz Murillo, Kimberly Holmes, Susan Nesbit, Aubyn Marath)
- 4:10 P.M. **Water Planning for Santo Tomás, Chontales, Nicaragua - Paul Pickett**, Thurston-Santo Tomás Sister County Association, Olympia, WA
- 4:30 P.M. **Networking in Church to Provide Safe Water - Robert Adamski**, Gannett Fleming, Locust Valley, NY

SESSION 33 • SIERRA BALLROOM III
WATERSHED PLANNING AND MANAGEMENT-VII

MODERATOR • CATHLEEN VOGEL • THE CATALINA GROUP, INC. • FLAGLER BEACH, FLORIDA

- 3:30 P.M. **Bank Stabilization Alternative Analysis for Environmental Impact Reports - Tony Howze**, PACE, Fountain Valley, CA
- 3:50 P.M. **Benefits to Ground Water and Aquatic Ecosystems Through Collaborative Decision-Making - John Chatoian**, Consultant to the U.S. Forest Service, San Mateo, CA (co-authors: Gar Abbas, Mark Shaffer)
- 4:10 P.M. **Stormwater Management: Beijing Urban Stormwater Runoff Management System – Ming Jiang**, EDAW, Beijing, China (co-authors: Wang Yi, Ding Yueyuan, Stephane Asselin)
- 4:30 P.M. **Evolving Watershed Regulations and Local Government Response: A Case Study of Brewster, New York - John A. Degnan**, Mayor, Village of Brewster, N.Y., Brewster, NY

SESSION 34 • OCOTILLO ROOM I
FLOODPLAIN MANAGEMENT

MODERATOR • JOHN GROUNDS • GROUNDS ANDERSON, LLC • HOUSTON, TEXAS

- 3:30 P.M. **Tracking Development Within Special Flood Hazard Areas in Harris County, Texas - John Grounds**, Grounds Anderson, LLC, Houston, TX (co-authors: Jacob Spenn, Brandon Grimm, Elle L. Anderson)
- 3:50 P.M. **Comparison of 1-D and 2-D Wave Models for Coastal Flood Hazards - Guillermo Simon**, Taylor Engineering, Jacksonville, FL (co-authors: Christopher Bender, Michael DelCharco)
- 4:10 P.M. **Ethical Issues and Consequences of Development Regulations for Special Flood Hazard Areas - John Grounds**, Grounds Anderson, LLC, Houston, TX (co-author: Elle L. Anderson)
- 4:30 P.M. **Comparison of Hydraulic Model and Storm Water Collection Model for Floodplain Delineation - Denis Gilbert**, HDR Engineering, Inc, Omaha, NE (co-author: Paul Dierking)

SESSION 35 • OCOTILLO ROOM II
ENVIRONMENTAL FLOW REQUIREMENTS

MODERATOR • MONICA PEREZ • ECOLOGY & ENVIRONMENT, INC. • WEST PALM BEACH, FLORIDA

- 3:30 P.M. **Development of Seasonal Freshwater Minimum Flow Requirements - Adam Munson**, Southwest Florida Water Management District, Brooksville, FL (co-authors: Marty Kelly, Jonthan Morales, Douglas A. Leeper, Joseph J. Delfino)
- 3:50 P.M. **Climate Change and Prospects for Environmental Flows in New Mexico Streams - Stephen Earsom**, Duke University, Durham, NC
- 4:10 P.M. **Water Quantity and Its Impact on Quality: An Approach to Assessing Instream Flows for a Texas River - Jennifer Benaman**, QEA, Austin, TX (co-authors: Leah Manning, Steve Fletcher)
- 4:30 P.M. **Developing Flow-Ecology Science to Support Decision Making - Verde River Watershed, Arizona – Jeanmarie Haney**, The Nature Conservancy, Tucson, AZ (co-author: Dale Turner)

AGRICULTURAL BMPs

- National Agri-Environmental Standards Initiative (NAESI) - Michelle Bowerman**, Environment Canada, Environmental Stewardship Branch, Gatineau, QC, Canada
- The Productivity of Water in Irrigated NM Pecan Production: Measurements and Policy Implications - Rhonda Skaggs**, New Mexico State University, Dept. of Ag. Economics, Las Cruces, NM (co-authors: Z. Samani, A.S. Bawazir, M. Bleiweiss, V. Tran, and A. Pinon)
- Use of Acid-Ammonia Energy for Zero Waste Desalinization With Simultaneous Production of Liquid Fertilizer. - Gerald Grott**, Superior Salt, Inc., Twentynine Palms, CA
- Hydrology and Well Augmentation in the South Platte River Basin - Charles F. Leaf**, Platte River Hydrologic Research Center, Merino, CO (co-author: Forrest A. Leaf)

HYDROLOGY

- Assessing the Dependency of Streamflow on Antecedent Soil Moisture on the Salt and Verde River Watersheds, Arizona - Timothy W. Hawkins**, Shippensburg University, Shippensburg, PA
- Calibration of the DYNHYD5 Hydrodynamic Model to Travel Time Using Results From a Rhodamine WT Dye Study - Kenneth Heim**, ENSR Corporation, Westford, MA

MODELING

- Modeling Tools to Support the Lake Maumelle Watershed Management Plan: A Systematic Approach - Jonathan Butcher**, Tetra Tech, Inc., Research Triangle Park, NC (co-authors: Rui Zou, Scott Job, Bruno Kirsch)
- Hydraulic Modeling Study to Determine Groyne Interval - Jungseok Ho**, University of New Mexico, Albuquerque, NM (co-authors: In-Hwan Yang, Hong-Koo Yeo)

STORMWATER

- Comparison of Predicted and Observed Flood Flows and Floodplains Following the 2000 Cerro Grande Fire at LANL- Jake Meadows**, Los Alamos National Laboratory, Los Alamos, NM
- Rehabilitation of Piedra Liza Dam – Start to Finish - Doug Lantz**, Tetra Tech, Inc., Tucson, AZ (co-author: David Pacheco)

STORMWATER BMP PERFORMANCE

- Applying an LID Approach to Avoid Urban Runoff Impacts From an Extensive Water Infrastructure Project - James Sullivan**, Metcalf & Eddy, Inc., Wallingford, CT (co-authors: Frederick Brandon, Dominique Brocard)
- Effect of Input on Model Result —An Example of Using SWAT Model in Flow Simulation in Watersheds With Different Input Data Conditions - Chang-xing Jin**, ZFI Engineering & Construction, Inc., Orlando, FL (co-authors: D.E. Storm, G.O. Brown)

TMDLs-NONPOINT SOURCE

- Developing Nutrient Concentration Goals for the Restoration of Newnans Lake, Florida - Jian Di**, St. Johns River Water Management District, Palatka, FL (co-authors: Troy Keller, Erich Marzolf)
- Status and Trends in Water Quality at the St. Johns River Water Management District: Trophic State Assessment - Aisa Ceric**, St Johns River Water Management District, Palatka, FL (co-authors: Steve Winkler, Ed Lowe)
- Beyond the Grave - BMP Implementation in Cemeteries – Jonathon P. Marshall**, RBF Consulting, Walnut Creek, CA (co-author: James Brezack)
- Sourcewater Protection in Rural Agricultural Watersheds in Kentucky and Implications of Atrazine Monitoring - Jerrod Nelms**, Western Kentucky University, Bowling Green, KY (co-authors: Ritchie Taylor, Vijay Golla)

WASTEWATER DISPOSAL

- Public Health Impacts of Onsite Wastewater Disposal Systems - Stephanie Jackson**, University of New Mexico, Albuquerque, NM (co-authors: Kristine Tollestrup, Floyd Frost, Twila Kunde, Marylynn Yates)

SPECIAL EVENT

2007 SOUTHWESTERN ROUNDUP AT LOS AMIGOS ROUNDUP RANCH

TUESDAY • NOVEMBER 13 • 6:00 P.M. TO 9:00 P.M.

(MEET IN HOTEL LOBBY AT 5:45 P.M.)

See "Special Events" on pg. 40 for details

DAY-AT-A-GLANCE / WEDNESDAY / NOVEMBER 14, 2007

AWRA CONVERSATION CORNER OPEN / 6:00 A.M.-7:00 P.M. / SANDIA BALLROOM FOYER

SPEAKERS' PREPARATION ROOM OPEN / 7:00 A.M.-5:00 P.M. / SAGE ROOM

REGISTRATION DESK OPEN / 7:30 A.M.-5:00 P.M. / MEETINGS REGISTRATION DESK / SANDIA BALLROOM FOYER

**BOOK & JOURNAL EXHIBIT OPEN & EMPLOYMENT OPPORTUNITY BOARD ON DISPLAY
7:30 A.M.-5:00 P.M. / SANDIA BALLROOM FOYER**

MORNING NETWORKING BREAK / 8:00 A.M.-10:30 A.M. / SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 36, 37, 38, 39, 40, 41 / 8:30 A.M.-10:00 A.M.

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| <u>SESSION 36</u> SHARED VISION PLANNING SIERRA BALLROOM I | <u>SESSION 37</u> EVERGLADES WATER QUALITY USING STORMWATER TREATMENT AREAS SIERRA BALLROOM II | <u>SESSION 38</u> WATER DEMAND MANAGEMENT SIERRA BALLROOM III | <u>SESSION 39</u> FLUVIAL GEOMORPHOLOGY OCOTILLO ROOM I | <u>SESSION 40</u> GIS AND REMOTE SENSING OCOTILLO ROOM II | <u>SESSION 41</u> WATER QUALITY-I SANDIA BALLROOM II-III |
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MORNING NETWORKING BREAK (CONT'D.) / 10:00 A.M.-10:30 A.M. / SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 42, 43, 44, 45, 46, 47 / 10:30 A.M.-12:00 NOON

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| <u>SESSION 42</u> INTEGRATED WATER RESOURCES PLANNING SIERRA BALLROOM I | <u>SESSION 43</u> MODELING-I SIERRA BALLROOM II | <u>SESSION 44A</u> MANAGING COMPETING WATER USES <u>SESSION 44B</u> EDUCATION AND OUTREACH SIERRA BALLROOM III | <u>SESSION 45</u> PANEL: FINANCING THE EVERGLADES RESTORATION OCOTILLO ROOM I | <u>SESSION 46</u> RIO GRANDE- ALBUQUERQUE DIVERSION STRUCTURE OCOTILLO ROOM II | <u>SESSION 47</u> WATER QUALITY-II SANDIA BALLROOM II-III |
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**AWRA AWARDS LUNCHEON / 12:00 NOON-1:30 P.M. / SANDIA BALLROOM V-VIII (SEE PG. 40)
SPONSORED BY BLACK & VEATCH • OFFICES WORLD WIDE
SPEAKER ~ THE HONORABLE JACKIE DINGFELDER ~ OREGON HOUSE OF REPRESENTATIVES ~ PORTLAND, OREGON**

CONCURRENT SESSIONS 48, 49, 50, 51, 52, 53 / 1:30 P.M.-3:00 P.M.

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| <u>SESSION 48</u> HUMAN DIMENSIONS OF WATERSHED MANAGEMENT SIERRA BALLROOM I | <u>SESSION 49</u> SURFACE WATER/ GROUND WATER INTERACTIONS SIERRA BALLROOM II | <u>SESSION 50</u> MEETING FUTURE WATER DEMAND-I SIERRA BALLROOM III | <u>SESSION 51</u> MINING OCOTILLO ROOM I | <u>SESSION 52</u> PANEL: HOW (AND WHY) TO REVIVE THE SANTA FE RIVER OCOTILLO ROOM II | <u>SESSION 53</u> WATER QUALITY-III SANDIA BALLROOM II-III |
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AFTERNOON NETWORKING BREAK / 3:00 P.M.-3:30 P.M. / SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 54, 55, 56, 57, 58, 59 / 3:30 P.M.-5:00 P.M.

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| <u>SESSION 54</u> CERTIFICATION SIERRA BALLROOM I | <u>SESSION 55</u> WATER QUALITY STANDARDS/ RECREATIONAL USE SIERRA BALLROOM II | <u>SESSION 56</u> MEETING FUTURE WATER DEMAND-II (FLORIDA) SIERRA BALLROOM III | <u>SESSION 57</u> AGRICULTURAL BMPs OCOTILLO ROOM I | <u>SESSION 58</u> PANEL: THE 2007/8 WRDA: PROSPECTS FOR POLICY CHANGE OR FOR STALEMATE? OCOTILLO ROOM II | <u>SESSION 59</u> GROUND WATER SANDIA BALLROOM II-III |
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**STUDENT CAREER NIGHT / 5:00 P.M.-7:00 P.M. / SANDIA BALLROOM VI (SEE PG. 39)
SPONSORED BY BROWNSTEIN HYATT FARBER SCHREK, P.C. • ALBUQUERQUE, NEW MEXICO**

CONCURRENT SESSIONS 36, 37, 38, 39, 40, 41

8:30 A.M. - 10:00 A.M.

WEDNESDAY ~ NOVEMBER 14

SESSION 36 • SIERRA BALLROOM I **SHARED VISION PLANNING**

MODERATOR • ANTHONY EBERHARDT • USACE-INSTITUTE FOR WATER RESOURCES • ALEXANDRIA, VIRGINIA

- 8:30 A.M. **Shared Vision Planning - Richard N. Palmer**, University of Washington, Seattle, WA
- 8:50 A.M. **Shared Vision Planning Case Study: Lake Ontario Regulation - William Werick**, Werick Creative Solutions, LLC, Culpeper, VA
- 9:10 A.M. **Shared Vision Planning and the Use of Interest Satisfaction Relationships to Form the Framework for Revising Water Resource Management Operations - Anthony Eberhardt**, USACE-Institute for Water Resources, Alexandria, VA
- 9:30 A.M. **ComputerAided Dispute Resolution - Results of an Interagency Symposium – Vince Tidwell**, Sandia National Laboratories, Albuquerque, NM (co-authors: Hal Cardwell, Len Shabman, Kurt Stephenson, Mike Eng, Bill Werick, Rick Palmer, Dan Sheer)

SESSION 37 • SIERRA BALLROOM II **EVERGLADES WATER QUALITY USING STORMWATER TREATMENT AREAS**

MODERATOR • MICHAEL D. MARCUS • TETRA TECH • ALBUQUERQUE, NEW MEXICO

- 8:30 A.M. **Improving Everglades Water Quality With the Compartment B Stormwater Treatment Area - James Siegfried**, Brown and Caldwell, West Palm Beach, FL (co-author: Maria C. Clemente)
- 8:50 A.M. **Methodology to Predict Embankment Height of a Stormwater Treatment Area. - Xavier Foussereau**, Brown and Caldwell, Maitland, FL (co-author: William Miller, Jr.)
- 9:10 A.M. **Case Study: Practical Considerations for 2-Dimensional Modeling of a Large Complex Wetland Treatment System - Joanne Chamberlain** presenting for **Jackeline Luque**, Brown and Caldwell, West Palm Beach, FL (co-author: Emily McBryan)
- 9:30 A.M. **Treatment Performance Evaluation Using DMSTA - Joanne Chamberlain** presenting for **Jackeline Luque**, Brown and Caldwell, West Palm Beach, FL (co-author: Emily McBryan)

SESSION 38 • SIERRA BALLROOM III **WATER DEMAND MANAGEMENT**

MODERATOR • JING YEA-YANG • STANLEY CONSULTANTS, INC. • WEST PALM BEACH, FLORIDA

- 8:30 A.M. **Residential Demand Management as a Drought Coping Tool: Lessons From Aurora, Colorado – Chris Goemans**, Colorado State University, Fort Collins, CO (co-authors: Doug Kenney, Roberta Klein, Kevin Reidy, Jessica Lowrey)
- 8:50 A.M. **A Decision Support System to Analyze Drought Management Policies - Shawn Stoddard**, Truckee Meadows Water Authority, Reno, NV
- 9:10 A.M. **Valuing Water Efficiency Programs in the West – Jay Griffin**, RAND Corporation, Oakland, CA (co-authors: David Groves, Sara Hajjamiri)
- 9:30 A.M. **Sustainable Water Supply for South Florida - Brian Stitt**, Metcalf & Eddy - AECOM, Sunrise, FL (co-authors: John H. Creswell, Adelaide Hummel, Sheldon Barnes)

SESSION 39 • OCOTILLO ROOM I **FLUVIAL GEOMORPHOLOGY**

MODERATOR • CHRISTIAN LENHART • UNIVERSITY OF MINNESOTA • MINNEAPOLIS, MINNESOTA

- 8:30 A.M. **Stratification of Hydraulic Geometry by Rosgen Stream Type - S. Kyle McKay**, U.S. Army Engineer Research and Development Center, Athens, GA (co-authors: Gregory V. Wilkerson, J. Craig Fischenich)
- 8:50 A.M. **Quantification of Bankfull Discharge in Three Regions of Wisconsin - Jessica Haucke**, University of Wisconsin-Stevens Point, Stevens Point, WI (co-author: Katherine Clancy)
- 9:10 A.M. **The Influence of Channel Morphology on Suspended Sediment and Turbidity Levels in Two Southwestern Minnesota Streams - Christian Lenhart**, Water Resources Science Program, University of Minnesota, Minneapolis, MN (co-authors: Kenneth N. Brooks, Elon S. Verry, Joseph A. Magner)
- 9:30 A.M. **Long-Term Geomorphic Effects of Dams on Rivers in the Central Valley of California - J. Toby Minear**, University of California, Berkeley, Oakland, CA (co-author: G. Mathias Kondolf)

REMINDER . . . WILL YOU BE NEEDING A WRITTEN RECEIPT FOR YOUR REGISTRATION FEES? IF YOU DO, PLEASE STOP BY THE AWRA REGISTRATION DESK TO OBTAIN ONE SOMETIME BEFORE 12:00 NOON ON THURSDAY, NOVEMBER 15.

SESSION 40 • OCOTILLO ROOM II
GIS AND REMOTE SENSING

MODERATOR • BORIS POFF • U.S. FOREST SERVICE • FLAGSTAFF, ARIZONA

- 8:30 A.M. **Strategic Watershed Management: The Power of Customized Geographic Information System (GIS) Applications for Watershed Managers** - Jayson Romig, Ecostruction, LLC, York, PA
- 8:50 A.M. **Accuracy of Weighted Flow-Accumulation for Locating and Ranking Overland Flow Paths in Western NY-** Paul Richards, SUNY Brockport, Brockport, NY(co-author: Mark Noll)
- 9:10 A.M. **HyperSpectral/LIDAR/Radar Imagery for Water Quality Monitoring and Environmental Impact Assessment in South Florida** – Raul Mercado, WRMA, Stuart, FL
- 9:30 A.M. **Monitoring Snow-Cover Using MODIS Satellite Data for Predicting Drought Conditions in Nebraska, United States -** Vijendra Boken, University of Nebraska at Kearney, Kearney, NE (co-author: Stan Dart)

SESSION 41 • SANDIA BALLROOM II-III
WATER QUALITY-I

MODERATOR • ROBERT J. MORESI • BLACK & VEATCH • TAMPA, FLORIDA

- 8:30 A.M. **Enhancing Water Security Through EPA's Internet-Based Water Contaminant Information Tool** - Lori Apodaca, U.S. Environmental Protection Agency, Washington, DC (co-author: Gregory Beumel)
- 8:50 A.M. **Assessment of Water Quality Concentrations and Loads From Natural Landscapes** – Eric D. Stein, S. CA Coastal Water Research Project, Costa Mesa, CA(co-author: Vada K. Yoon)
- 9:10 A.M. **Sediment Transport and Delivery From the Atchafalaya** - Y. Jun Xu, Louisiana State University, Baton Rouge, LA
- 9:30 A.M. **Persistence of Water Quality Indicators in an East Tennessee Watershed** - Shesh Koirala, Civil and Environmental Engineering, University of Tennessee, Knoxville, TN (co-authors: Randy Gentry, Ed Perfect, John Schwartz, Patrick Mulholland)
- 9:50 A.M. **Genomic and Proteomic Approach to Characterizing Natural Variation in *E. coli*: Toward Construction of a Microbial Source Tracking Database to Identify Sources of Fecal Water Contamination in the State of Montana** - Margie Kinnersley, University of Montana, Missoula, MT

10:00 A.M.-10:30 A.M. • MORNING NETWORKING BREAK • SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 42, 43, 44, 45, 46, 47

10:30 A.M. - 12:00 NOON

WEDNESDAY ~ NOVEMBER 14

SESSION 42 • SIERRA BALLROOM I
INTEGRATED WATER RESOURCES PLANNING

MODERATOR • KATHRYN WINGERD • BUCHART HORN, INC. • YORK, PENNSYLVANIA

- 10:30 A.M. **Integrated Modeling of New Mexico's Rio Grande System for Real Time Scenario Analysis** - Vincent Tidwell, Sandia National Labs, Albuquerque, NM (co-author: Jesse Roach)
- 10:50 A.M. **Sensitivity of Water Supply Stress Index (WaSSI) to Climate Change, Population Growth, Groundwater Supply, and Land Management Across the Conterminous United States** - Erika C. Cohen, Southern Global Change Program, Raleigh, NC (co-authors: Ge Sun, Steven G. McNulty, Jennifer A. Moore Myers)
- 11:10 A.M. **Watershed-Based Permitting: The Minnesota Analysis of Feasibility, Cost-Effectiveness, and Legal and Political Obstacles** - Clifton Aichinger and Gary Oberts, Ramsey-Washington Metro Watershed District, Little Canada, MN, and Emmons & Olivier Resources, Inc., Oakdale, MN, respectively
- 11:30 A.M. **Coupled Socio-Biophysical Modeling of Ground Water Banking Alternatives in the Eastern Snake Plain, Idaho** - Beaudry Kock, Massachusetts Institute of Technology, Cambridge, MA(co-author: Bryce Contor)

SESSION 43 • SIERRA BALLROOM II
MODELING-I

MODERATORS • LEWIS LINKER • USEPA CHESAPEAKE BAY PROGRAM • ANNAPOLIS, MARYLAND
JING WU • UNIVERSITY OF MARYLAND CENTER FOR ENVIRONMENTAL SCIENCE • ANNAPOLIS, MARYLAND

- 10:30 A.M. **Decision-Support Systems for Efficient Irrigation Water Management in the Middle Rio Grande** - Ramchand Oad, Department of Civil Engineering, Colorado State University, Fort Collins, CO (co-authors: Nabil Shafike, Kristoph Kinzli)
- 10:50 A.M. **Modeling Groundwater-Surface Water Interaction Along the Middle Rio Grande With URGWOM** - Craig Boroughs, BH&H Engineering, Inc., Dillon, CO (co-authors: Mike Roark, Nabil Shafike, Michael Gabora)
- 11:10 A.M. **Addressing River Restoration and Water Management Problems Using High-Resolution Groundwater Models of the Near-River Zone** – Dagmar Llewellyn, S.S. Papadopoulos & Associates, Albuquerque, NM (co-authors: Karen MacClune, Deborah Hathaway, Gilbert Barth, Nabil Shafike)
- 11:30 A.M. **Accounting for Watershed Connectivity Through a Network Model: Ecological Insights in a Mined-Appalachian Watershed** – Samuel J. Lamont, West Virginia University, Morgantown, WV (co-authors: Michael Strager, J. Todd Petty, Jacquelyn M. Strager, Jerald J. Fletcher, Bob Eli)

SESSION 44A • SIERRA BALLROOM III
MANAGING COMPETING WATER USES

MODERATOR • N. EARL SPANGENBERG • STEVENS POINT, WISCONSIN (RETIRED)

- 10:30 A.M. **Enlarging the Rio Grande Reservoir: A Multi-Use Multi-Benefit Water Project - Kelly DiNatale**, CDM, Denver, CO
(co-authors: Erin Ansell, Travis Smith, Matthew Bliss)
- 10:50 A.M. **Can Water Conservation Programs Save Water? - Frank Ward**, New Mexico State University, Las Cruces, NM

SESSION 44B • SIERRA BALLROOM III
EDUCATION AND OUTREACH

MODERATOR • N. EARL SPANGENBERG • STEVENS POINT, WISCONSIN (RETIRED)

- 11:10 A.M. **Water Resources, Industrial Ecology and the Greening of Corporations – Joseph J. Delfino**, University of Florida, Gainesville, FL
- 11:30 A.M. **Marketing Strategies for Behavioral Change - Linda Burnette**, St. Johns River Water Management District, Palatka, FL

SESSION 45 • OCOTILLO ROOM I
PANEL: FINANCING THE EVERGLADES RESTORATION

MODERATORS • RICHARD MILLER AND ELAINE JAMES
EDWARDS ANGELL PALMER & DODGE, LLP • WEST PALM BEACH, FLORIDA

PANELIST ~ **Walter Kulakowski** ~ Citigroup ~ New York, New York

In an effort to fast-track the multibillion-dollar Everglades restoration, the South Florida Water Management District worked with its bond counsel, Edwards Angell Palmer & Dodge LLP, and Citi to develop certificates of participation (COPs) to finance eight of the most critical projects in the Comprehensive Everglades Restoration Plan. This presentation will discuss the reason for using this particular financing structure, the significant hurdles the parties faced in obtaining financing, and how we successfully achieved the largest public finance issue for environmental restoration in history.

SESSION 46 • OCOTILLO ROOM II
RIO GRANDE-ALBUQUERQUE DIVERSION STRUCTURE

MODERATOR • JULIE COONROD • UNIVERSITY OF NEW MEXICO • ALBUQUERQUE, NEW MEXICO

- 10:30 A.M. **Channel Routing for Albuquerque Diversion Structure on the Rio Grande - Jungseok Ho**, University of New Mexico, Albuquerque, NM (co-authors: Dong Ryul Lee, Won-Sik Ahn)
- 10:50 A.M. **Sediment Management Study for Albuquerque Diversion Structure on the Rio Grande - Jungseok Ho**, Department of Civil Engineering, Albuquerque, NM (co-authors: Kelly Isaacson, Julie Coonrod)
- 11:10 A.M. **Three Dimensional Visualization of Surface Water/Ground Water Interaction on the Rio Grande Near the City of Albuquerque Diversion Dam - Kelly Isaacson and Isaiah Pedro**, University of New Mexico, Department of Civil Engineering, Albuquerque, NM (co-authors: Julie Coonrod, Jungseok Ho, John Stormont)
- 11:30 A.M. **Trial Operations Study for Albuquerque Diversion Structure on the Rio Grande - Sheila Johnson**, University of New Mexico/URS, Albuquerque, NM (co-author: Don Lopez)

SESSION 47 • SANDIA BALLROOM II-III
WATER QUALITY-II

MODERATOR • THOMAS AMIDON • OMNI ENVIRONMENTAL • PRINCETON, NEW JERSEY

- 10:30 A.M. **Mound Springs of the Western U.S.: A Model for ‘Continental Smokers’ and Their Influence on Regional Water Quality and Local Geomicrobiology - Laura Crossey**, University of New Mexico, Albuquerque, NM (co-authors: Karl E. Karlstrom, Cristina Yakacs-Vesbach, Clifford N. Dahm)
- 10:50 A.M. **Understanding the Karst Landscape of Antietam National Battlefield Park - Marian Norris**, National Park Service, Washington, DC (co-authors: Michelle Carter, Earl A. Greene)
- 11:10 A.M. **Water and Sediment Yield Response to Multi-Year Precipitation Variations in a Central Oklahoma Watershed - Jurgen Garbrecht**, USDA, ARS, El Reno, OK
- 11:30 A.M. **A Multilevel Bayesian Model of the Impact of Farm-Level BMPs - Kenneth H. Reckhow**, Duke University, Durham, NC (co-authors: S.S. Qian, R.D. Harmel)

SPECIAL EVENT ~ SPONSORED BY BLACK & VEATCH ~ OFFICES WORLDWIDE
AWRA AWARDS LUNCHEON

WEDNESDAY • NOVEMBER 14 • 12:00 NOON. TO 1:30 P.M. • SANDIA BALLROOM V-VIII

ALL CONFERENCE ATTENDEES ARE INVITED TO ATTEND (INCLUDED WITH REGISTRATION) ~ SEE “SPECIAL EVENTS” ON PG. 40 FOR DETAILS

CONCURRENT SESSIONS 48, 49, 50, 51, 52, 53

1:30 P.M. - 3:00 P.M.

WEDNESDAY ~ NOVEMBER 14

SESSION 48 • SIERRA BALLROOM I

HUMAN DIMENSIONS OF WATERSHED MANAGEMENT

MODERATOR • BORIS POFF • U.S. FOREST SERVICE • FLAGSTAFF, ARIZONA

- 1:30 P.M. **Integrating Knowledge From 'Here' With Knowledge From 'Away' to Solve Stormwater Problems: The Falls Hill-Poplar Heights Stormwater Collaborative Process – Bradford R. Spangler and Juliana E. Birkhoff**, RESOLVE, Washington, DC
- 1:50 P.M. **Beginning at the Beginning With the Community - Jennifer Shira**, Katz & Associates, San Diego, CA (co-authors: Patricia Tennyson, Gina Molise)
- 2:10 P.M. **Quantifying the Effectiveness of Public Meetings to Generate Public Participation in Watershed Management - Jennifer Kingsley**, University of Wisconsin-Stevens Point, Stevens Point, WI (co-author: Katherine Clancy)
- 2:30 P.M. **Creating a National Monitoring Network to Link Upland Watersheds With Coastal Ecosystems Through Participation in the Advisory Committee Process - Toni M Johnson**, U.S. Geological Survey, Reston, VA (co-authors: Gail Mallard, Charles Spooner)

SESSION 49 • SIERRA BALLROOM II

SURFACE WATER/GROUND WATER INTERACTIONS

MODERATOR • DAVID R. DEWALLE • PENN STATE UNIVERSITY • UNIVERSITY PARK, PENNSYLVANIA

- 1:30 P.M. **Levee Seepage Estimation at Stormwater Treatment Area 3/4 Using the Analytic Element Method - Taiye Sangoyomi**, South Florida Water Management District, West Palm Beach, FL
- 1:50 P.M. **Field-Scale Testing With the Integrated Hydrologic Model (IHM) - Jing Zhang**, University of South Florida, Tampa, FL (co-authors: Mark A. Ross, Jeffrey S. Geurink)
- 2:10 P.M. **Surface Water and Shallow Groundwater Interactions in an Irrigated Valley in Northern New Mexico - Carlos Ochoa**, New Mexico State University, Dept of Animal and Range Sciences, Las Cruces, NM (co-authors: Alexander Fernald, Steven Guldan, Vincent Tidwell, Phillip King, Yeliz Cevik, Amber Helmus)
- 2:30 P.M. **System Dynamics Modeling for New Mexico's Upper-Gila and San Francisco Rivers - Amy Sun**, Sandia National Laboratories, Albuquerque, NM (co-authors: Vince Tidwell, Will Peplinski, Geoff Klise, Alison Williams, Jim Brainard)

SESSION 50 • SIERRA BALLROOM III

MEETING FUTURE WATER DEMAND-I

MODERATOR • JAMES BOLLETER • ECOLOGY AND ENVIRONMENT, INC. • WEST PALM BEACH, FLORIDA

- 1:30 P.M. **The Cost of Alternative Water Supplies in South Florida – Davies Mtundu**, South Florida Water Management District, West Palm Beach, FL (co-authors: Patrick Gleason, Curt Kiefer, Frank Brinson, Mark Elsner, Carl Woehlcke, Ashie Akpoji, Ching Garvey, Carmen Yee Batista, Ana Demelo, Carlyn Kowalsky)
- 1:50 P.M. **Investigating the Potential Implications of Climate Change on Water Supply Needs for the City of Greensburg, IN - Michael Hrzic**, HNTB Corp., Chicago, IL
- 2:10 P.M. **Use of Minnesota's Renewable Water Resources: Moving Toward Sustainability - John Wells**, Minnesota Environmental Quality Board, St. Paul, MN (co-author: Princesa VanBuren)
- 2:30 P.M. **Can an Idea From the 1960s Meet the Future Water Needs of Southeastern Colorado? - William A. Warmack**, Applegate Group, Inc., Denver, CO

SESSION 51 • OCOTILLO ROOM I

MINING

MODERATOR • PAMELA EDWARDS • USDA FOREST SERVICE • PARSONS, WEST VIRGINIA

- 1:30 P.M. **Watershed Organizations and Abandoned Hardrock Mines: Perceptions of Liability of Barriers to Cleanups in Colorado - Elizabeth Russell**, Trout Unlimited, Boulder, CO
- 1:50 P.M. **Monitoring the Quality of CBNG Produced Water and Associated Sediments Across the Powder River Basin, Wyoming - Cynthia Milligan**, University of Wyoming, Laramie, WY (co-author: K.J. Reddy)
- 2:10 P.M. **Hydrological Connectivity Between Clay Settling Areas and Surrounding Hydrological Landscapes in the Phosphate Mining District, Peninsular Florida, USA- Kathryn Murphy**, University of South Florida, Peabody City, GA (co-authors: Mark C. Rains, Michael G. Kittridge, Mark T. Stewart)
- 2:30 P.M. **Community Centered Research to Support Groundwater Management - Teresa Thornton**, Mount Saint Mary's College, Newburgh, NY (co-author: John Peckenham)

SESSION 52 • OCOTILLO ROOM II
PANEL: HOW (AND WHY) TO REVIVE THE SANTA FE RIVER

MODERATOR • FRANCOIS-MARIE PATORNI • SANTA FE WATERSHED ASSOCIATION • SANTA FE, NEW MEXICO

PANELISTS

Francois-Marie Patorni ~ Santa Fe Watershed Association ~ Santa Fe, New Mexico
David Groenfeldt ~ Santa Fe Watershed Association ~ Santa Fe, New Mexico
Kyle Harwood ~ Harwood Consulting, PC ~ Santa Fe, New Mexico
Bill Fleming ~ University of New Mexico ~ Albuquerque, New Mexico
Denise Fort ~ University of New Mexico School of Law ~ Albuquerque, New Mexico

In 2007, the Santa Fe River was declared “the most endangered river in America” by American Rivers, the Washington, DC-based advocacy group. The river which was the original reason for the founding of the Spanish colonial capitol in Santa Fe, has become a dry, heavily eroded drainage channel, flowing only during storm events, or when the city releases water from its upstream reservoirs. Long-time residents remember fishing in the river in downtown Santa Fe and swimming in water holes, but extensive urban growth has increased demand for water. In most reaches, the Santa Fe River has ceased to function as a river entirely, and the riparian ecosystem has largely dried up. The issue of allocating water to the river itself, in addition to allocations for conventional “beneficial uses,” has been debated for decades, but action has been stalled by legal complexities, conflicting interests, and lack of awareness about the benefits of environmental flows. Yet change is brewing, and new water policies are being considered. Santa Fe Mayor David Coss has promised to work towards a “living river,” state water agencies are at least discussing the merits of environmental flow, and there is a growing public sense that reviving the Santa Fe River might be a real possibility. A panel of water professionals directly involved with the Santa Fe River will lead a discussion of possible scenarios for transforming the Santa Fe River from “most endangered” to “living.” Topics will include (a) legal and policy considerations, (b) surface/subsurface interactions, (c) river channel restoration, (d) vegetation and habitat restoration, (e) stormwater management, (f) water conservation and demand management, (g) recreational and aesthetics benefits, (h) spiritual and ethical values, and (i) other issues. The audience will be invited to take an active role in the discussions and share their insights. Background materials for the panel discussion will be posted in advance on the website of the Santa Fe Watershed Association (www.santafewatershed.org).

SESSION 53 • SANDIA BALLROOM II-III
WATER QUALITY-III

MODERATOR • THOMAS AMIDON • OMNI ENVIRONMENTAL • PRINCETON, NEW JERSEY

- 1:30 P.M. **A Better Approach to the Development of Recreational Water Turbidity Standards - David Smith**, New York City DEP, Wappingers Falls, NY (co-author: James D. Mayfield)
- 1:50 P.M. **Multivariate Statistical Methods for Source Water Analysis Using Water Quality Data for Silver Springs, Marion County, Florida - Alaa Aly**, INTERA, Niwot, CO
- 2:10 P.M. **Water Quality Trading: An Examination of the Pennsylvania Nutrient Trading Program - Ann Smith**, Pennsylvania DEP, Harrisburg, PA
- 2:30 P.M. **The Mythology of the Chesapeake Bay – Walter Lyon**, University of Pennsylvania (Retired), Mechanicsburg, PA

3:00 P.M.-3:30 P.M. • AFTERNOON NETWORKING BREAK • SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 54, 55, 56, 57, 58, 59

3:30 P.M. - 5:00 P.M.

WEDNESDAY ~ NOVEMBER 14

SESSION 54 • SIERRA BALLROOM I
CERTIFICATION

MODERATOR • ALLEN GOOKIN • GOOKIN ENGINEERS, LTD • SCOTTSDALE, ARIZONA

- 3:30 P.M. **Why Certification in Hydrology? – Allen Gookin**, American Institute of Hydrology (Gookin Engineers, LTD), Scottsdale, AZ (co-author: Antonius Laenen)
- 3:50 P.M. **The American Academy of Water Resources Engineers, a Certification Program of ASCE - Jeffrey Bradley**, West Consultants, Inc., Salem, OR
- 4:10 P.M. **The Ecological Society of America’s Professional Certification Program - William Michener**, LTER Network Office, Albuquerque, NM

SESSION 55 • SIERRA BALLROOM II
WATER QUALITY STANDARDS/RECREATIONAL USE

MODERATOR • STEVEN WOLOSOFF • CDM • RANCHO CUCAMONGA, CALIFORNIA

- 3:30 P.M. **Addressing Bacterial Impairments Through Fecal Source Tracking - Katharine Field**, Oregon State University, Corvallis, OR
(co-authors: Mansour Samadpour, Hyatt Green)
- 3:50 P.M. **Determining Bacteria Reductions for TMDL Compliance in Santa Monica Bay - Sara Jo Elice**, CDM, Los Angeles, CA
(co-authors: Kimberly Siemens, Sofia Mohaghegh, Huub H.J. Cox, Reza Iranpour)
- 4:10 P.M. **Recreation Use Attainment in Effluent Dominated Streams: An Illusion or a Realistic Goal - Vladimir Novotny**, Northeastern University, Boston, MA
- 4:30 P.M. **A New Approach to Conducting Recreational Use Surveys in Support of Waterbody Specific Use Attainability Analyses (UAAs) for the Santa Ana River Watershed - Donald J. Schroeder**, CDM, Rancho Cucamonga, CA, (co-authors: Tim Moore, Dan Bounds, Richard Meyerhoff, Jeff Beehler, Steven Wolosoff)

SESSION 56 • SIERRA BALLROOM III
MEETING FUTURE WATER DEMAND-II (FLORIDA)

MODERATOR • JAMES BOLLETER • ECOLOGY AND ENVIRONMENT, INC. • WEST PALM BEACH, FLORIDA

- 3:30 P.M. **Florida's Largest Water Utility Looks to RO for Developing Alternative Water Supplies - Patrick Gleason for Juan F. Aceituno**, CDM, West Palm Beach, FL, CDM, Miami, FL (co-authors: Kurt Kiefer, Ralph Terrero, Brian Trujillo)
- 3:50 P.M. **Sustainable Regional Water Supplies for Growth and Environmental Recovery - R. Warren Hogg**, Tampa Bay Water, Clearwater, FL
- 4:10 P.M. **Regional Water Supply Alternatives for East Central Florida - Jim Gross**, St. Johns River Water Management District, Palatka, FL (co-authors: Jerry Salsano, Ron Wycoff)

SESSION 57 • OCOTILLO ROOM I
AGRICULTURAL BMPs

MODERATOR • JAYSON ROMIG • ECOSTRUCTION, LLC • YORK, PENNSYLVANIA

- 3:30 P.M. **Improved Anaerobic Digester Stability With the Use of an Acidotolerant Bog-Derived Methanogenic Inoculum - Lisa Steinberg**, Penn State University, University Park, PA (co-author: John M Regan)
- 3:50 P.M. **Evaluation of BMP Targeting and Optimization Options to Meet Water Quality Goals in Agricultural Watersheds - Indrajeet Chaubey**, Purdue University, West Lafayette, IN (co-authors: B.K. Schaffer, J.H. Popp)
- 4:10 P.M. **Landscape Planning for Agricultural Non-Point Source Pollution Reduction – Jeffrey T. Maxted**, University of Wisconsin-Madison, Madison, WI (co-authors: Matthew W. Diebel, M. Jake Vander Zanden)
- 4:30 P.M. **Addressing Biological Impairments: TMDL Target Development Integrating Biological Indexes, Continuous DO and Temperature Monitoring, and a Qual2K Diurnal Water Quality Model - William Graham**, Iowa Dept. of Natural Resources, Des Moines, IA (co-author: Tom Wilton)

SESSION 58 • OCOTILLO ROOM II
**PANEL: THE 2007/8 WATER RESOURCE DEVELOPMENT ACTS (WRDA):
PROSPECTS FOR POLICY CHANGE OR FOR STALEMATE?**

MODERATORS • GERALD E. GALLOWAY • UNIVERSITY OF MARYLAND • COLLEGE PARK, MARYLAND
ARI M. MICHELSEN • TEXAS A&M UNIVERSITY • EL PASO, TEXAS

PANELISTS

David Conrad ~ National Wildlife Federation

Erik Webb ~ Staffer ~ Senator Pete Domenici

Letmon Lee ~ Staffer ~ Senator Christopher Bond (invited)

By November 2007 Congress and the Administration will have reached a conclusion about a 2007 Water Resources Development Act (WRDA). While its passage might move several initiatives along, its very existence has stirred interest in several changes in the way water resources activities are conducted and federal water resources legislation is evolving from Washington. A potentially historic 2007 WRDA, the first in seven years, and a Clean Water Restoration Act clarification bill could affect significant changes in water project evaluation, federal coordination and jurisdiction definition. The changes are consistent in some areas with policy issues raised and recommendations from the three AWRAPolicy Dialogues and 2007 AWRA letter to the President. The conference committee version of WRDA authorized \$21 billion and 900 Army Corps of Engineers flood control and environmental restoration projects but was threatened by a presidential veto. WRDA changes included review and modifications in the Principles and Guidelines for evaluation of projects, incorporation of new techniques in risk and uncertainty, consideration of environmental restoration benefits and costs, mandatory independent, interdisciplinary review for projects costing over \$45 million or that are controversial, creation of a water resources planning coordinating committee and establishing National Water Resources Planning and Modernization Policies. These changes may have a substantial impact on water project evaluation, selection and development policy. There is not full agreement on these changes. Going into the conference on the Act, the House and Senate versions (WRDA– H.R. 1495 EH and EAS) differed in the extent of review and evaluation changes and policies. This joint AWRA-Universities Council on Water Resources panel session will explore and discuss with the audience the rationale, intent, perspectives and potential impacts of WRDA and water policy changes.

SESSION 59 • SANDIE BALLROOM II-III
GROUND WATER

MODERATOR • DENIS GILBERT • HDR ENGINEERING, INC. • OMAHA, NEBRASKA

- 3:30 P.M. **Rethinking Stormwater Management: The Los Angeles Basin Water Augmentation Study - Suzanne Dallman**, California State University, Long Beach, CA (co-author: Martin Spongberg)
- 3:50 P.M. **Confined Aquifer Responses to Pumping – Potential Impacts on Plume Migration - Kris Masterson**, CDM, Cambridge, MA (co-authors: Matthew Gamache, Robert Fitzgerald)
- 4:10 P.M. **Application of Groundwater Flow Modeling to Lake Okeechobee Fast Track Project - H. Harry Cheng**, CDM, Inc., Maitland, FL (co-authors: L.P. Wiseman, R.P. Schreiber, M.A. Long)
- 4:30 P.M. **Santa Fe Regional Groundwater Model - Gordon McCurry**, CDM, Denver, CO (co-authors: Matt Bliss, Mark McCluskey)

SPECIAL EVENT

STUDENT CAREER NIGHT

WEDNESDAY • NOVEMBER 14 • 5:00 P.M. - 7:00 P.M. • SANDIA BALLROOM VI

SPONSORED BY

BROWNSTEIN HYATT FARBER SCHREK, P.C. • ALBUQUERQUE, NEW MEXICO

(SEE "STUDENT CAREER PROGRAM" ON PG. 39 FOR DETAILS)

CONTINUING EDUCATION UNITS (CEUs)

AWRA is pleased to offer the opportunity for attendees of concurrent sessions to earn Continuing Education Units (CEUs).

SESSIONS FOR WHICH CEUs ARE AVAILABLE – CEUs will be available for 81 concurrent sessions in 15 time slots from 10:30 a.m., Monday, November 12, through 5:00 p.m., Thursday, November 15, 2007. Two options for CEUs are available:

OPTION 1: 1.05 CEUs will be awarded for attendance at concurrent sessions in 7 (seven) time slots of your choice.

OPTION 2: 1.5 CEUs will be awarded for attendance at concurrent sessions in 10 (ten) time slots of your choice.

Please note that CEUs are not available for the Plenary Session, the Poster Sessions, or any other scheduled events. Note also that CEUs are not available for one-day attendees.

SIGN UP AND COSTS – You may sign up for CEU credit at the AWRA Registration Desk. The Cost for OPTION 1 is \$22.00 for AWRA members and \$26.00 for non-members. The cost for OPTION 2 is \$25.00 for AWRA members and \$30.00 for non-members.

PROCEDURE – AWRA is required to maintain very specific records for the awarding of CEUs. If you have pre-registered for CEU credits, your conference registration packet will include an attendance sheet on which you must enter the Session Number of each concurrent session that you attend either under OPTION 1 or OPTION 2. You also must have the sheet signed by the Moderator of each session you attend. If you register for CEUs on-site, the sheet will be given to you at that time.

The sheet MUST be turned in to the AWRA Registration Desk upon its completion, faxed to AWRA (540/687-8395) or mailed within one week after the close of the Conference. AWRA cannot award CEUs without this completed form on file.

CEUs AND CERTIFICATES AWARDED – AWRA will award a total of 1.05 CEUs (representing 10.5 hours of attendance) to those persons who select OPTION 1; or 1.5 CEUs (representing 15 hours of attendance) to those persons who select OPTION 2. Earned CEUs will be entered into your permanent AWRA record within two weeks following the Conference. Certificates and letters signifying the award will be provided within two months after the Conference. Please note that 0.1 CEU is the same as 1.0 Professional Development Hour (PDH).

DAY-AT-A-GLANCE / THURSDAY / NOVEMBER 15, 2007

AWRA CONVERSATION CORNER OPEN / 6:00 A.M.-3:30 P.M. / SANDIA BALLROOM FOYER

SPEAKERS' PREPARATION ROOM OPEN / 7:00 A.M.-3:30 P.M. / AGAVE ROOM

REGISTRATION DESK OPEN / 7:30 A.M.-12:00 NOON / MEETINGS REGISTRATION DESK / SANDIA BALLROOM FOYER

BOOK & JOURNAL EXHIBIT OPEN / EMPLOYMENT OPPORTUNITY BOARD ON DISPLAY
7:30 A.M.-12:00 NOON / SANDIA BALLROOM FOYER

MORNING NETWORKING BREAK / 8:00 A.M.-10:30 A.M. / SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 60, 61, 62, 63, 64, 65 / 8:30 A.M.-10:00 A.M.

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|---|---|---|--|---|--|
| SESSION 60 STORMWATER MODELING SIERRA BALLROOM I | SESSION 61 MEETING FUTURE WATER DEMAND-III SIERRA BALLROOM II | SESSION 62 ARTIFICIAL RECHARGE SIERRA BALLROOM III | SESSION 63 PANEL: WATER POLICY-I - RESOLVING THE TENSION BETWEEN LAND-USE AND DRINKING WATER POLICIES OCOTILLO ROOM I | SESSION 64 ENERGY/WATER POLICY OCOTILLO ROOM II | SESSION 65 HYDROLOGIC AND GEOMORPHIC IMPACTS OF URBANIZATION SANDIA BALLROOM I-II |
|---|---|---|--|---|--|

MORNING NETWORKING BREAK (CONT'D.) / 10:00 A.M.-10:30 A.M. / SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 66, 67, 68, 69, 70, 71 / 10:30 A.M.-12:00 NOON

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| SESSION 66 STORMWATER COLLECTION AND TREATMENT: INNOVATIVE APPROACHES SIERRA BALLROOM I | SESSION 67 PANEL: LEGAL, ADM., AND POLICY CONSTRAINTS TO WATER REALLOCATION IN THE SOUTHWEST SIERRA BALLROOM II | SESSION 68 TMDLS- NONPOINT SOURCE-I SIERRA BALLROOM III | SESSION 69 PANEL: WATER POLICY II - MOVING TOWARD INTEGRATED WATER AND LAND USE LAW AND POLICY: GROWTH, PLANNING, AND CODES OCOTILLO ROOM I | SESSION 70 ALTERNATIVE ENERGY AND WATER OCOTILLO ROOM II | SESSION 71 MODELING-II SANDIA BALLROOM I-II |
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LUNCH BREAK / 12:00 NOON-1:25 P.M. / ON YOUR OWN

CONCURRENT SESSIONS 72, 73, 74, 75, 76 / 1:30 P.M.-3:00 P.M.

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|--|--|---|--|---|
| SESSION 72 STORMWATER MANAGEMENT SIERRA BALLROOM I | SESSION 73 WATER REUSE SIERRA BALLROOM II | SESSION 74 TMDLS-NONPOINT SOURCE-II SIERRA BALLROOM III | SESSION 75 SCIENCE, POLICY, AND ECONOMICS OF ENERGY EXPLORATION-RELATED AND PRODUCTION-RELATED WATERS OCOTILLO ROOM I | SESSION 76 DISTRIBUTED HYDROLOGIC MODELING OCOTILLO ROOM II |
|--|--|---|--|---|

AFTERNOON NETWORKING BREAK / 3:00 P.M.-3:30 P.M. / SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 77, 78, 79, 80, 81 / 3:30 P.M.-5:00 P.M.

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|---|---|---|--|--|
| SESSION 77 STORMWATER BMP PERFORMANCE SIERRA BALLROOM I | SESSION 78 WATER CONSERVATION SIERRA BALLROOM II | SESSION 79 TMDLS-URBAN SIERRA BALLROOM III | SESSION 80 COMMUNICATING SCIENCE TO POLICY MAKERS OCOTILLO ROOM I | SESSION 81 ENERGY/WATER ASSESSMENTS OCOTILLO ROOM II |
|---|---|---|--|--|

CONCURRENT SESSIONS 60,61,62,63,64,65

8:30 A.M. - 10:00 A.M.

THURSDAY ~ NOVEMBER 15

SESSION 60 • SIERRA BALLROOM I **STORMWATER MODELING**

MODERATOR • Y. JUN XU • LOUISIANA STATE UNIVERSITY • BATON ROUGE, LOUISIANA

- 8:30 A.M. **Modeling the Impact of Hurricane Katrina – A Case Study of Jefferson Parish, Louisiana** - Lee Guethle, CTE | AECOM, Chicago, IL (co-author: Daniel Tornil)
- 8:50 A.M. **The Case for Flow Duration Modeling at the Project Site Level** - Kristen Pleyte Acock, Willamette Watershed, City of Portland Bureau of Environmental Services, Portland, OR (co-authors: Phillip Pommier, Seth Jelen)
- 9:10 A.M. **Using GIS-Based Hydrologic, Hydraulic, and Pollutant Loading Models to Understand Nonpoint Source Impacts and Guide Restoration Initiatives** - Thomas Amidon, Omni Environmental, Princeton, NJ (co-author: Gopi Jaligama)
- 9:30 A.M. **Simulation of Watershed-Scale Metals Transport: Application to California Gulch, CO.** - Mark Velleux, HydroQual, Inc., Mahwah, NJ (co-authors: John F. England, Jr., Pierre Julien)

SESSION 61 • SIERRA BALLROOM II **MEETING FUTURE WATER DEMAND III**

MODERATOR • CHARLES DRAKE • TETRA TECH • ORLANDO, FLORIDA

- 8:30 A.M. **Utilization of the Colorado River Open Source Simulator to Assess the Implications of Climate Change, Water Demand, and Conservation on the Reliability of the Colorado River Reservoir System** - Niklas Christensen, Herrera Environmental Consultants, Seattle, WA
- 8:50 A.M. **Exploratory Drilling on the Mogollon Rim in Arizona Based on Surface Geophysics** - Laurel Lacher, Lacher Hydrological Consulting, Tucson, AZ (co-authors: Michael Stover, Gerd von Glinski)
- 9:10 A.M. **Water Resources Supply Decision Support System For Santa Fe County, New Mexico** - David Jordan, INTERA, Incorporated, Albuquerque, NM (co-authors: Cynthia Ardito, Stephen Wust, Van Kelley)

SESSION 62 • SIERRA BALLROOM III **ARTIFICIAL RECHARGE**

MODERATOR • STEPHANIE MOORE • DANIEL B. STEPHENS & ASSOCIATES • ALBUQUERQUE, NEW MEXICO

- 8:30 A.M. **Aquifer Storage and Recovery (ASR) for Environment Restoration – Heather Landis**, Black & Veatch, Boston, MA (co-authors: Rafael Frias III, Robert Verrastro)
- 8:50 A.M. **New Mexico's First Artificial Recharge Project** - Stephanie Moore, Daniel B. Stephens & Associates, Albuquerque, NM (co-authors: John T. Kay, John M. Stomp III)
- 9:10 A.M. **City of Rio Rancho Aquifer Recharge Demonstrations** - Robert Marley, Daniel B. Stephens & Associates, Inc., Albuquerque, NM (co-author: Larry Webb)
- 9:30 A.M. **Optimizing Wastewater Reuse and Recharge: One Arizona City's Goal Toward 100% Beneficial Reuse** - Steven Sagstad, Brown and Caldwell, Phoenix, AZ (co-author: Christine Nunez)

SESSION 63 • OCOTILLO ROOM I **PANEL: WATER POLICY I – RESOLVING THE TENSION BETWEEN LAND-USE AND DRINKING WATER POLICIES**

MODERATOR • BRENDA ORTIGOZA BATEMAN • SENIOR POLICY COORDINATOR • DIRECTOR'S OFFICE
OREGON WATER RESOURCES DEPARTMENT • SALEM, OREGON

PANELISTS

- Janet L. Bowers** ~ Executive Director ~ Chester County Water Resources Authority ~ West Chester, Pennsylvania
Kyle Harwood ~ Harwood Consulting, PC ~ Santa Fe, New Mexico
Al Canepa ~ Resource Management ~ St. Johns River Water Management District ~ Jacksonville, Florida
Jamie Grindatto ~ New Mexico Corporate Affairs Manager ~ Intel Corporation ~ Rio Rancho, New Mexico

The goal of this session is to create a menu of public policy options that policymakers can consider as they try to reconcile land-use and drinking-water policies in their own communities. The tension between land-use and drinking-water policies has reached an untenable situation in many parts of the United States. The pressures are not one-sided; land-use planners place great strain on their local water agencies, and vice versa. The results can be significant, in terms of economic, environmental, social, legal, and political costs. Fortunately, there is a growing body of public policy models that demonstrate innovative and commonsense solutions. The public policies discussed in this panel involve new regulations, permitting language, service agreements, and partnerships that begin to reconcile the competing – and quite legitimate – interests of the land-use and drinking water communities. Clearly, states differ in their governance structures, interactions with local governments, level of resources, and approaches to economic development, which may impede the adoption of some of these models. However, each case presented here contains a real-life public policy solution, designed to integrate the needs of a growing and thirsty population with the realities of available local resources. The panelists, representing diverse geographic interests, will share brief (five-minute) case studies at the city, county, special district, and state levels. The moderator will then facilitate a panel discussion that begins to identify some commonalities as well as unique characteristics of each scenario. Panelists will discuss whether these models are transferable to other jurisdictions, and under what conditions. This panel discussion is hosted by AWRA's Policy Technical Committee and represents the first in a two-part discussion of land-use public policies during AWRA's 2007 annual conference.

SESSION 64 • OCOTILLO ROOM II
ENERGY/WATER POLICY

MODERATORS • GERALD SEHLKE AND PAUL WICHLACZ • IDAHO NATIONAL LABORATORY • IDAHO FALLS, IDAHO

- 8:30 A.M. **Expanding and Integrating Federal Water Technology Development Programs - Meeting the U.S. Future Water Needs - Josh Johnson**, Senator Pete Domenici's Office, Albuquerque, NM (co-author: Erik Webb)
- 8:50 A.M. **Energy & Water: U.S. Federal and Regional Policy Challenges - Holly Conte**, University of Delaware, Newark, DE
- 9:10 A.M. **An Evaluation of the Impacts of Institutional Influences on Energy-Water Simulations - Nancy L. Ranek**, Exelon Corporation, Kennett Square, PA (co-author: John R. Gasper)
- 9:30 A.M. **Data Sharing and Security Perspectives in the Energy-Water Nexus - Noah Goldstein**, Lawrence Livermore National Lab, Livermore, CA (co-authors: Robin Newmark, Liz Burton, Debbie May, James E. McMahon, Camilla Dunham-Whitehead, Girish Ghatikar)

SESSION 65 • SANDIA BALLROOM I-II
HYDROLOGIC AND GEOMORPHIC IMPACTS OF URBANIZATION

MODERATOR • PAMELA EDWARDS • USDA FOREST SERVICE • PARSONS, WEST VIRGINIA

- 8:30 A.M. **Investigation of Normalized Streamflow in West Central Florida and Extrapolation to Ungaged Coastal Fringe Tributaries - Kim Beth Clayback**, Jones Edmunds, Bayonet Point, FL (co-author: Mark Ross, Michael H. Scott)
- 8:50 A.M. **An Evaluation of the Physical, Chemical, and Biological Response of a Piedmont Headwater Stream to Ten Years of Rapid Development - Ted Mikalsen**, Georgia EPD, Atlanta, GA (co-author: Robert L. Bourne)

10:00 A.M.-10:30 A.M. • MORNING NETWORKING BREAK • SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 66, 67, 68, 69, 70, 71

10:30 A.M. - 12:00 NOON

THURSDAY ~ NOVEMBER 15

SESSION 66 • SIERRA BALLROOM I
STORMWATER COLLECTION AND TREATMENT - INNOVATIVE APPROACHES

MODERATOR • JULIE COONROD • UNIVERSITY OF NEW MEXICO • ALBUQUERQUE, NEW MEXICO

- 10:30 A.M. **Innovative Stormwater Treatment Technologies - Jeffrey Herr**, PBS&J, Marietta, GA
- 10:50 A.M. **The Mountain House Creek Restoration: An Example of Multiple-Use Infrastructure - Ron Rovanseck**, PACE, Fountain Valley, CA (co-author: Derek Karimoto)
- 11:10 A.M. **The Caltrans Approach to Targeting Pollutants of Concern - James Sullivan**, Metcalf & Eddy, Inc., Wallingford, CT (co-authors: Karl Dreher, Timothy Sobelman, Dan Peterson)

SESSION 67 • SIERRA BALLROOM II
PANEL: LEGAL, ADMINISTRATIVE, AND POLICY CONSTRAINTS TO WATER REALLOCATION IN THE SOUTHWEST

MODERATOR • MICHAEL PEASE • SOUTHERN ILLINOIS UNIVERSITY CARBONDALE • CARBONDALE, ILLINOIS

PANELISTS

Michael Pease, Ph.D. Candidate ~ Environmental Resources and Policy Program
Southern Illinois University Carbondale ~ Carbondale, Illinois

Christopher D. Shaw, JD ~ Attorney working extensively with municipalities, counties, and other public entities on environmental, utility, and water issues ~ Albuquerque, New Mexico

Janie Chermak, Ph.D. ~ Associate Professor ~ Department of Economics
University of New Mexico ~ Albuquerque, New Mexico

Olen Paul Matthews, JD, Ph.D. ~ Professor ~ Department of Geography
University of New Mexico ~ Albuquerque, New Mexico

Tanya L. Scott, JD ~ Law & Resource Planning Associates ~ Albuquerque, New Mexico

This panel will evaluate contemporary constraints to using economic-based water transfers as a method of reallocating water in the semi-arid southwestern United States. In this fast-growing region, water transfers across uses may hold great potential for the region; however, such transfers have not occurred in large quantities. Panelists will discuss the physical, transboundary, economic, institutional, legal, and social uncertainties that constrain economically and socially efficient water transfers between willing parties.

SESSION 68 • SIERRA BALLROOM III
TMDLs-Nonpoint Source-I

MODERATOR • THOMAS AMIDON • OMNI ENVIRONMENTAL • PRINCETON, NEW JERSEY

- 10:30 A.M. **Methodology, Evaluation, and Feasibility Study of Total Phosphorus Removal Management Measures for Lake George and Nearby Lakes - Daniel L. Reisinger**, Camp Dresser & McKee Inc., Jacksonville, FL (co-authors: Tim Cera, Larry N. Schwartz, Michael F. Schmidt, Patrick R. Victor)
- 10:50 A.M. **The Christina River Basin: An Economic Analysis of Implementing a Pollution Control Strategy to Meet Total Maximum Daily Loads (TMDLs) - Martha Corrozi**, University of Delaware, IPA - Water Resources Agency, Newark, DE (co-authors: Gerald Kauffman, Angelina Micheva, Melissa Zechiel)
- 11:10 A.M. **Role of Dry Weather Loading in Attaining Bacteria TMDL Goals for Oso Creek and Oso Bay Watershed, Texas - Richard Hay**, Texas A&M University-Corpus Christi, Corpus Christi, TX (co-authors: Joanna Mott, Zeke Campbell, Russell Carden)
- 11:30 A.M. **Water Quality Problems at Edwards Run - Steven Devillasanta**, Rowan University, Glassboro, NJ (co-authors: Kausar Jahan, Diana Garcia)

SESSION 69 • OCOTILLO ROOM I

PANEL: WATER POLICY II - MOVING TOWARD INTEGRATED WATER AND LAND-USE LAW AND POLICY: GROWTH, PLANNING, AND CODES

MODERATOR • LORA A. LUCERO, AICP, ESQ. • EDITOR, PLANNING AND ENVIRONMENTAL LAW
AMERICAN PLANNING ASSOCIATION • ALBUQUERQUE, NEW MEXICO

PANELISTS

Michelle Henrie, Esq. ~ Brownstein Hyatt Farber Schreck, P.C. ~ Albuquerque, New Mexico

From the Local Government's Perspective: What is the Public Good, and How Does It Translate Into Water and Land-Use Codes?

Rick Carpenter ~ Senior Water Resources Coordinator ~ City of Santa Fe, Water Division ~ Santa Fe, New Mexico

From the Utility's Perspective: Correlating Land Use and Adequate Water Supply – Can a Water Supplier Just Say “No”?

Will Steadman ~ SunCal Companies, New Mexico Division ~ Albuquerque, New Mexico

From the Developer's Perspective: How Can Better Design and Better Buildings Produce Projects That Are More Water Sensitive?

Judith H. Jordan ~ Oil and Gas Liaison, Garfield County ~ Rifle, Colorado

From the Environmental Perspective: Property Rights vs. Critical Ground ... Should Some Places Be Off Limits to Development?

This panel is a follow-up to a session convened by the AWRA Policy Technical Committee at the 2006 AWRA Annual Conference – Inconsistent Water and Land Use Law and Policy at the State Level: Case Studies and Harmonization Efforts. In 2006, the panel presented brief case studies to illustrate difficulties posed by disjointed state and local water and land-use laws and policies, particularly as they relate to growth. They also discussed efforts by states and other organizations to craft solutions to conflicting underlying policies. The purpose of this panel is to further explore the perspectives with a critical role in integrated land use and water management through a moderated discussion among professionals representing these perspectives. Our goal is to provide a forum for gathering input as the AWRA Policy Technical Committee considers approaches to better correlate water use laws and land use laws. This is a post-panel work group formed to discuss strategy for developing a model code that integrates land use and water management and reconciles contradictory policies.

SESSION 70 • OCOTILLO ROOM II
ALTERNATIVE ENERGY AND WATER

MODERATORS • CATHY WILSON • LOS ALAMOS NATIONAL LABORATORY • LOS ALAMOS, NEW MEXICO
RICK SKAGGS • PACIFIC NORTHWEST NATIONAL LABORATORY • RICHLAND, WASHINGTON

- 10:30 A.M. **Renewable Energy for Water Pumping - Gary T. Sheehan**, SunTechnics Energy Systems, Malvern, PA (co-authors: Rick Holz, Steve Hazel, Robert Dally, Ken Schmeider)
- 10:50 A.M. **Assessing the “Carbon Footprint” of Water Supplies: A Southern California Case Study - Susan Mulligan**, Calleguas Municipal Water District, Thousand Oaks, CA (co-author: Donald R. Kendall)
- 11:10 A.M. **Wind Power-Water Equivalency for the Western U.S. Region - G. L. Toole**, Los Alamos National Laboratory, supported by US DOE, Los Alamos, NM (co-authors: D. Macuga, T. McTighe, Marvin Salazar)
- 11:30 A.M. **Wind-Hydro Coordination From a Riverine Perspective: New Challenges at the Energy-Water Nexus - Brennan Smith**, Oak Ridge National Laboratory, Oak Ridge, TN (co-author: Michael J. Sale)

SESSION 71 • SANDIA BALLROOM I-II
MODELING-II

MODERATORS • Y. JUN XU • LOUISIANA STATE UNIVERSITY • BATON ROUGE, LOUISIANA

- 10:30 A.M. **Uncertainty Analyses for the Hydrologic Integration Processes in the Integrated Hydrologic Model - Alaa Aly**, INTERA, Niwot, CO (co-author: Patrick Tara)
- 10:50 A.M. **Interdisciplinary Water Resource Modeling: When Economics and Hydrology Interact - Janie Chermak**, University of New Mexico, Albuquerque, NM (co-authors: V.C. Tidwell, D.S. Brookshire, J. Thacher, K. Grimsrud, L. Malczynski, J. Roach, J. Hansen)
- 11:10 A.M. **Modeling the Watershed Under Uncertainty for Water Quality Trading - Feng Shi**, University of Georgia, Athens, GA (co-author: M.B. Beck)
- 11:30 A.M. **Morris County Water Balance Model - Sumant Mallavaram**, HDR, Inc, Austin, TX (co-authors: Charles V. Beckers, Jr., Guy Apicella, Michael D. Lehtinen)

12:00 NOON-1:25 P.M. • LUNCH BREAK • ON YOUR OWN

CONCURRENT SESSIONS 72,73,74,75,76

1:30 P.M. - 3:00 P.M.

THURSDAY ~ NOVEMBER 15

SESSION 72 • SIERRA BALLROOM I
STORMWATER MANAGEMENT

MODERATOR • DENIS GILBERT • HDR ENGINEERING, INC. • OMAHA, NEBRASKA

- 1:30 P.M. **Prediction of Groundwater Recharge Rates in Semi-Arid Urbanized Watersheds - Michael Milczarek**, GeoSystems Analysis, Inc., Tucson, AZ (co-authors: Sheng Peng, Laurel Lacher, Tzung-mow Yao, Jamie Harding, David Goodrich, Lainie Levick)
- 1:50 P.M. **Integration of Surface Flows With Storm Water Sewer Collections Systems for Flooding Analysis - Denis Gilbert**, HDR Engineering, Inc, Omaha, NE
- 2:10 P.M. **Residential Lawns as a Dynamic Hydrologic Connection Between Rooftops and Lakeshores - Kaylea Foster**, University of Wisconsin-Stevens Point, Stevens Point, WI
- 2:50 P.M. **The Bellevue Natural Drainage Practices Manual: A New Tool for Implementing Low-Impact Development - Dustin Atchison**, CH2M HILL, Bellevue, WA

SESSION 73 • SIERRA BALLROOM II
WATER REUSE

MODERATOR • BRUCE THOMSON • UNIVERSITY OF NEW MEXICO • ALBUQUERQUE, NEW MEXICO

- 1:30 P.M. **New Water From Old and the Issues It Brings - Betty Jordan**, Alan Plummer Associates, Inc., Fort Worth, TX (co-authors: Ellen McDonald, Alan Plummer)
- 1:50 P.M. **Fouling of RO Membranes Treating Effluent From Biological Wastewater Treatment Processes - Kerry Howe**, University of New Mexico, Albuquerque, NM (co-authors: Bruce Thomson, Rochelle Jim, Elizabeth Field, Richard Kottenstette)
- 2:10 P.M. **Challenges and Opportunities for Wastewater Reuse in Miami-Dade County - Jim Bolleter**, Ecology and Environment, Inc., West Palm Beach, FL (co-authors: Monica Perez, Bill Pitt, Bertha Goldenberg, Debbie Swain)
- 2:30 P.M. **Use of Reclaimed Water for Coastal Wetland Rehydration in Miami-Dade County, Florida - Lucas Rincon**, CDM, Miami, FL (co-authors: Bertha Goldenberg, Douglas Yoder, Victor J. Pujals)

SESSION 74 • SIERRA BALLROOM III
TMDLS-NONPOINT SOURCE-II

MODERATOR • PAUL PICKETT • WASHINGTON STATE DEPARTMENT OF ECOLOGY • OLYMPIA, WASHINGTON

- 1:30 P.M. **Export of Phosphorus From Great Swamp to Passaic River - Thomas Amidon**, Omni Environmental, Princeton, NJ
- 1:50 P.M. **Total Maximum Daily Load Program Needs Better Data and Measures to Demonstrate Environmental Results - Renee McGhee-Lenart**, USEPA-OIG, Kansas City, KS (co-authors: Susan Barvenik, Laura Tam)
- 2:10 P.M. **Development of a Temperature TMDL for Impounded Waters - Pend Oreille River, WA and ID - Paul Pickett**, Washington State Dept. of Ecology, Olympia, WA
- 2:30 P.M. **Development of a Distributed TMDL Allocation With Considerations of QUAL2K Model Parameter Uncertainty - Chi-Feng Chen**, Graduate Institute of Environmental Engineering, Taipei, 106, Taiwan (co-author: Hwong-Wen Ma)

SESSION 75 • OCOTILLO ROOM I
SCIENCE, POLICY, AND ECONOMICS OF ENERGY EXPLORATION-RELATED AND PRODUCTION-RELATED WATERS

MODERATOR • GERALD SEHLKE • IDAHO NATIONAL LABORATORY • IDAHO FALLS, IDAHO
ENID "JERI" SULLIVAN • LOS ALAMOS NATIONAL LABORATORY • LOS ALAMOS, NEW MEXICO

- 1:30 P.M. **Overview of Airborne Geophysics for Addressing Environmental Issues Associated With Fossil Fuel Extraction - Terry E. Ackman**, National Energy Technology Laboratory, Pittsburgh, PA (co-authors: James Sams, Richard Hammack, Brian Lipinski)
- 1:50 P.M. **Water Issues Associated With Unconventional O&G Development – Carl J. Vavra**, Texas A&M University, College Station, TX (co-author: David Burnett)
- 2:10 P.M. **Evolving Regulation of Produced Water Disposal in New Mexico - Mark Fesmire**, New Mexico Energy, Minerals, and Natural Resources Department, Santa Fe, NM
- 2:30 P.M. **Produced Water – Resource or Liability in the Rocky Mountain Region - Deidre Boysen**, BC Technologies, Ltd., Laramie, WY (co-author: John Boysen)

SESSION 76 • OCOTILLO ROOM II
DISTRIBUTED HYDROLOGIC MODELING

MODERATOR • BILLY JOHNSON • USACE-ERDC • VICKSBURG, MISSISSIPPI

- 1:30 P.M. **Distributed Watershed Modeling: Overviews and Future Directions - Zhonglong Zhang**, SpecPro Inc., Vicksburg, MS (co-author: Billy E. Johnson)
- 1:50 P.M. **Modular Design Techniques for Developing Distributed Hydrologic Models - Terry Gerald**, SpecPro Inc., Vicksburg, MS (co-author: Billy Johnson)
- 2:10 P.M. **Development of Nutrient and Contaminant Sub-Modules for Integration With the Gridded Surface Subsurface Hydrologic Analysis (GSSHA) Model - Billy Johnson**, USACE-ERDC, Vicksburg, MS (co-authors: Zhonglong Zhang, Terry K. Gerald)
- 2:30 P.M. **Gridded Surface/Subsurface Hydrologic Analysis (GSSHA) Model: The Working Man's Distributed Hydrologic Model - Charles Downer**, U.S. Army Corps of Engineers, Vicksburg, MS (co-author: Aaron Byrd)

3:00 P.M.-3:30 P.M. • AFTERNOON NETWORKING BREAK • SANDIA BALLROOM FOYER

CONCURRENT SESSIONS 77, 78, 79, 80, 81

3:30 P.M. - 5:00 P.M.

THURSDAY ~ NOVEMBER 15

SESSION 77 • SIERRA BALLROOM I
STORMWATER BMP PERFORMANCE

MODERATOR • DENIS GILBERT • HDR ENGINEERING • OMAHA, NEBRASKA

- 3:30 P.M. **Sampling of Suspended Solids in Storm Water Conduits – John S. Gulliver**, University of Minnesota, Minneapolis, MN (co-authors: Joshua Brand, Omid Mohseni)
- 3:50 P.M. **Guidance for Improving Monitoring Methods for Stormwater-Borne Solids - Larry A. Roesner**, Colorado State University, Fort Collins, CO (co-authors: Amy Pruden, Elizabeth M. Kidner)
- 4:10 P.M. **A Streamlined Monitoring Framework for Low Impact Development Stormwater Management Practices - Matthew Morrison**, USEPA, National Risk Management Research Laboratory, Cincinnati, OH (co-authors: William D. Shuster, Rachel Webb)
- 4:30 P.M. **Reverse Auction Results for Implementation of Decentralized Retrofit Best Management Practices in a Small Urban Watershed (Cincinnati OH) - William Shuster**, USEPA, Cincinnati, OH (co-authors: M. Clagett; M. Morrison; A.H. Roy; J. Templeton; H.W. Thurston)

SESSION 78 • SIERRA BALLROOM II
WATER CONSERVATION

MODERATOR • PETER BLACK • SUNY ESF • SYRACUSE, NEW YORK

- 3:30 P.M. **A New Tool for Assessing Water Efficiency Opportunities in Commercial Buildings – Jordan Fischbach**, Pardee RAND Graduate School, Santa Monica, CA (co-author: David Groves)
- 3:50 P.M. **Bring WaterSense to Your Community – Katherine Yuhás**, Albuquerque Bernalillo County Water Utility Authority, Albuquerque, NM; **presenting for Matthew Richardson**, U.S. Environmental Protection Agency, Washington, DC
- 4:10 P.M. **Water Conservation Planning Analysis: Regulatory and Economic Aspects - MD Mamunur Rashid**, University of Southern Indiana, Evansville, IN

SESSION 79 • SIERRA BALLROOM III
TMDLS-URBAN

MODERATOR • PAUL D. ANKCORN • U.S. GEOLOGICAL SURVEY • ATLANTA, GEORGIA

- 3:30 P.M. **Estimating Annual Bacterial Loading for Four Urban Watersheds in Albuquerque, New Mexico - Jack Veenhuis**, U.S. Geological Survey, Albuquerque, NM
- 3:50 P.M. **Urban Runoff Impacts to Southern California Estuaries - Ken Schiff**, S. CA Coastal Water Research, Costa Mesa, CA
- 4:10 P.M. **Water Quality Modeling of a Regulated Flow and Urbanized Riverine Environment - Nicholas von Stackelberg**, Stantec Consulting Inc., Salt Lake City, UT (co-author: Donald Hayes)
- 4:30 P.M. **Analysis of Quality-Assurance and Quality-Control Procedures for an Urban Water-Quality Monitoring Program, Gwinnett County, Georgia - Andrew Knaak**, U.S. Geological Survey, Atlanta, GA (co-author: Paul D. Ankcorn)

SESSION 80 • OCOTILLO ROOM I
COMMUNICATING SCIENCE TO POLICY MAKERS

MODERATOR • STEPHEN PENNINGTON • TETRA TECH • LANSING, MICHIGAN

- 3:30 P.M. **Water Science and Policy Makers: The Art of Communication – James E. Kundell**, Vinson Institute of Government, Athens, GA
- 3:50 P.M. **Using Modeling Results to Improve Future Management: The Case in the Clinton River Watershed - Stephen Pennington**, Tetra Tech, Lansing, MI (co-author: Kevin Kratt)
- 4:10 P.M. **Public Perceptions of Drinking Water in a Canadian Community - Andria Jones**, University of Guelph, Ontario Veterinary College, Guelph, ON, Canada (co-authors: Catherine E. Dewey, Kathryn Dore, Shannon E. Majowicz, Scott A. McEwen, David Waltner-Toews, Spencer J. Henson, Eric Mathews, Deborah Carr)
- 4:30 P.M. **“Judicial Taking” and Retroactive Overruling in State Water Rights – Williamson Chang**, University of Hawaii, Honolulu, HI

SESSION 81 • OCOTILLO ROOM II
ENERGY/WATER ASSESSMENTS

MODERATORS • JOHN GASPER • ARGONNE NATIONAL LABORATORY • ARGONNE, ILLINOIS
LARRY DALE • LAWRENCE BERKELEY NATIONAL LABORATORY • BERKELEY, CALIFORNIA

- 3:30 P.M. **Competition for Water: Projections for Energy and Other Sectors - Deborah Elcock**, Argonne National Laboratory, Washington, DC (co-authors: John Gasper, John Veil, Barbara Carney, Thomas Feeley)
- 3:50 P.M. **U.S. Department of Energy National Energy Technology Laboratory’s (DOE-NETL) Assessment of Water Requirements for Future Thermolectric Power Generation and Associated Water Research Program - Sara Pletcher**, US DOE-NETL, Morgantown, WV (co-authors: Thomas J. Feeley III, Barbara Carney, Andrea McNemar, Erik Shuster)
- 4:10 P.M. **A Study Comparing Water Usage From Three Electric Generating Capacity Expansion Alternatives for the Western United States - Thomas Veselka**, Argonne National Laboratory, Argonne, IL (co-authors: Guenter Conzelmann, John Gasper, Vladimir Koritarov, and Les Poch)

MARK YOUR CALENDARS TODAY SO YOU WILL NOT
MISS ANY OF AWRA'S EXCITING 2008 MEETINGS

AWRA's 2008 SPRING SPECIALTY CONFERENCE
MARCH 17-19, 2008

“GIS AND WATER RESOURCES V”
MARRIOTT SAN MATEO SAN FRANCISCO AIRPORT HOTEL ~ SAN MATEO, CALIFORNIA

AWRA's 2007 SUMMER SPECIALTY CONFERENCE
JUNE 30-JULY 2, 2008 ~ ABSTRACTS DUE DATE IS FEBRUARY 4, 2008
“RIPARIAN ECOSYSTEMS AND BUFFERS: WORKING AT THE WATER'S EDGE”
FOUNDERS INN AND SPA ~ VIRGINIA BEACH, VIRGINIA

AWRA's 2008 ANNUAL WATER RESOURCES CONFERENCE
NOVEMBER 17-20, 2008
SHERATON NEW ORLEANS HOTEL ~ NEW ORLEANS, LOUISIANA

CHECK OUT AWRA'S WEBSITE FOR ADDITIONAL INFORMATION ON ANY OF THESE MEETINGS! . . . www.awra.org

STUDENT CAREER PROGRAM

MONDAY • NOVEMBER 12 • 4:30 P.M. TO 5:00 P.M. • IN FRONT OF THE SANDIA BALLROOM
STUDENT ATTENDEE CONFERENCE ORIENTATION

FACILITATOR ~ **GARRETT W. WALLACE, JR.**
SOUTH FLORIDA WATER MANAGEMENT DISTRICT • WEST PALM BEACH, FLORIDA

Students who are interested in maximizing their conference experience are welcome to attend this orientation session. It will be structured in the format of a charette (the term “charette” is often used in architecture to describe an intense, creative, on-the-spot design project). As the architect of your career, this session will offer students the opportunity to network with other attendees while providing the information they need to design their own conference experience: learn about all the conference has to offer, network with students from around the country, envision a format that fits your personal needs, and design a plan of action that will help you make the most of your conference experience.

WEDNESDAY • NOVEMBER 13 • 5:00 P.M. TO 7:00 P.M. • SANDIA BALLROOM VI
STUDENT CAREER NIGHT

SPONSORED BY
BROWNSTEIN HYATT FARBER SCHREK, P.C. ~ ALBUQUERQUE, NEW MEXICO

An opportunity such as this comes once in a lifetime! Students will be interacting with professionals from all disciplines of water resources to learn how water, as a career, is evolving. The evening will provide a rare opportunity to hear stories of success from experts and gain experience not found in the classroom. Students are encouraged to create their business cards beforehand and bring them and learn a skill typically not taught ... networking. A panel of experts will be available spanning a breadth of water resources careers. Based on feedback from last year’s workshop, this year’s session will focus on a wide variety of career options (nonprofit to corporate) and will cater to both students just starting to explore their career options, and to undergraduate and graduate students who are ready for work.

MODERATOR

MICHELLE HENRIE
BROWNSTEIN HYATT FARBER SCHREK, P.C. • ALBUQUERQUE, NEW MEXICO

PANELISTS

PETER CASTIGLIA
HYDROGEOLOGIST • INTERA, INC. • ALBUQUERQUE, NEW MEXICO

THOMAS GREEN
DIRECTOR OF U.S. OPERATIONS • EL PORVENIR • NORTH FREEDOM, WISCONSIN

ORLANDO ROMERO
HYDROLOGIST • U.S. GEOLOGICAL SURVEY • NEW MEXICO WATER SCIENCE CENTER • ALBUQUERQUE, NEW MEXICO

BRUCE THOMSON
DIRECTOR OF WATER RESOURCES PROGRAM AND REGENTS PROFESSOR OF CIVIL ENGINEERING
UNIVERSITY OF NEW MEXICO • ALBUQUERQUE, NEW MEXICO

ANNE WATKINS
SPECIAL ASSISTANT TO THE STATE ENGINEER • NEW MEXICO OFFICE OF THE STATE ENGINEER • ALBUQUERQUE, NEW MEXICO

SPECIAL EVENTS

MONDAY • NOVEMBER 12 • 5:00 P.M. TO 6:30 P.M. • SANDIA BALLROOM V-VIII
OPENING NETWORKING RECEPTION

This event is included in the Registration Fee. All registered conference participants are invited to attend the Opening Networking Reception. Come greet old colleagues and make new acquaintances. Additional tickets for accompanying guests may be purchased on site at the AWRA Registration Desk. **The cost for each additional ticket is \$30.00.**

MONDAY • NOVEMBER 12 • 7:00 P.M. TO 9:00 P.M. • SIERRA BALLROOM III
SPECIAL SCREENING OF THE MOVIE "WATERBUSTER"

Waterbuster, a film by director/producer J. Carlos Peinado, was 900 years in the making. That is the span of time Mr. Peinado's family and ancestors lived on the floodplain of the upper Missouri River – until the U.S. Congress passed the Flood Control Act of 1944 and took their homelands by eminent domain. With the Flood Control Act came the Pick-Sloan Plan, a huge public works project that called for the construction of 110 dams, a project the *St. Louis Dispatch* and the *Farmer's Union* (among others) would eventually describe as "the largest public works boondoggle in history." The Garrison Dam submerged fertile land, destroying a self-sufficient community and displacing Peinado's family and the people of the Fort Berthold Indian Reservation. *Waterbuster* recounts Peinado's journey to his ancestral North Dakota homeland from his home on a sailboat in California to reconnect with his family and community. Through interviews he discovers the proud and resilient nature of his tribe, their contributions to American culture and history, and their deep attachment to the harsh North Dakota prairie. Ultimately this story is a confrontation with identity, a bi-cultural, hybrid identity of Indian and non-Indian, highlighting the universal struggle we all have in 21st century America to find a sense of place, a community, and a home.



Official Selection • Tribeca Film Festival 2006
www.waterbuster.org

TUESDAY • NOVEMBER 13 • 6:30 A.M. TO 8:00 A.M.
AWRA 5K FUN RUN

SPONSORED BY GROUNDS ANDERSON LLC • HOUSTON, TEXAS

All **pre-registered participants** are welcome to join us for a beautiful, casual 5K Fun Run! The run will follow a course (TBD) that will take in sights near the hotel. After the race, enjoy refreshments and AWRA door prizes! **There is no charge for this event but if you have not pre-registered, please do so at the AWRA Registration Desk by noon on Monday, November 12. (Please meet in hotel lobby at 6:15 a.m.)**

TUESDAY • NOVEMBER 13 • 6:00 P.M. TO 9:00 P.M.
2007 SOUTHWESTERN ROUNDUP AT LOS AMIGOS ROUNDUP RANCH

Come join other Conference attendees for a dynamic evening of fun at the Los Amigos Ranch. A Mexican Dance Troupe, the Aztec Fire Dancers, will perform a friendship dance. Enjoy the unique Private Party Barn as well as the outdoor patio, with bonfire pit, under the giant cottonwood trees. Food will be plentiful and includes: Angus sirloin steaks and chicken breast, Dutch oven biscuits and green chile stew, ranch style beans, potato salad, fudge brownies, assorted sodas, and an open bar with beer, wine, and Margaritas. **The cost for this event is \$47.50 per ticket.** Tickets may be purchased at the AWRA Registration Desk until noon Monday, November 12.

WEDNESDAY • NOVEMBER 14 • 12:00 NOON TO 1:30 P.M. • SANDIA BALLROOM V-VIII
AWRA AWARDS LUNCHEON

**SPONSORED BY • BLACK & VEATCH • OFFICES WORLD WIDE
SERVICES FOR ENERGY - WATER - INFORMATION - GOVERNMENT**

GUEST SPEAKER

THE HONORABLE JACKIE DINGFELDER
Oregon House of Representatives - Portland, Oregon
Bridging the Gap Between Science and Policy: A Legislative Perspective

This event is included in the Registration Fee. Annually the American Water Resources Association recognizes those persons who have achieved excellence in water resources research, management, and education. In addition, we are honored to have as luncheon speaker, the Honorable Jackie Dingfelder. Serving her fourth term, Ms. Dingfelder is the Oregon State Representative for District 45, northeast Portland, and she is a consultant on environmental policy and planning issues. She is the Chair of the House Energy and Environment Committee and also serves on the Ways and Means Natural Resources Subcommittee. Ms. Dingfelder is a strong champion of protecting Oregon's environment and has extensive experience on conservation issues. Prior to joining the Oregon Legislature, she served as watershed program manager at For the Sake of the Salmon. Previously she worked as coordinator for the Tualatin River Watershed Council and as an environmental planning consultant in the private sector. She has also served on many boards and commissions. All Conference participants are invited to attend. Additional tickets for accompanying guests may be purchased on site at the AWRA Registration Desk. **The cost of an additional ticket is \$40.00.**

WEDNESDAY • NOVEMBER 14 • 1:20 P.M. • SANDIA BALLROOM V-VIII
AWRA ANNUAL BUSINESS MEETING

PRESIDENT'S REPORT
GERALD E. GALLOWAY
PRESIDENT

SECRETARY/TREASURER'S REPORT
ROBERT MORESI
SECRETARY/TREASURER

REPORT OF THE TELLER'S COMMITTEE
HAROLD POST
COMMITTEE CHAIR

GENERAL CONFERENCE INFORMATION

REFUNDS – Cancellations must have been received in writing at the AWRA HQ by Monday, October 22, 2007. No refunds will be issued after October 22, 2007. All cancellations received prior to October 22, 2007, are subject to an administrative fee of 25% of the total registration fees. No refunds will be given for ticketed events purchased after October 22, 2007.

BADGES – It is important that the official badge supplied at the time of registration be worn at all times. This practice is a courtesy to your fellow registrants. It also indicates that you have completed registration and may participate in the scheduled events. Admission to all technical sessions and breaks will be by badge only. Please wear your badge on your RIGHT lapel.

INFORMATION DESK – Please consult the staff at the AWRA Registration Desk if you have any questions regarding the events at the meeting.

SESSION PARTICIPANTS – Authors, panelists, and moderators are requested to meet in their respective meeting rooms 10 minutes prior to the start of their session. All participants are required to register PRIOR to their sessions.

SPEAKERS' PREPARATION ROOM – The AGAVE Room will be available for presenters to review their presentations on Monday, Tuesday, and Thursday. The SAGE Room will be available on Wednesday for this purpose. Monday, November 12 the Agave Room will be open from 9:00 a.m. to 8:00 p.m.; on Tuesday, November 13, the Agave Room will be open from 7:00 a.m. to 8:00 p.m.; on Wednesday, November 14, the Sage Room will be open from 7:00 a.m. to 5:00 p.m.; and on Thursday, November 15, the Agave Room will be open from 7:00 a.m. to 3:30 p.m.

BOOK AND JOURNAL EXHIBITORS

SANDIA BALLROOM FOYER

During the Conference there will be a display of publications from a variety of publishers on numerous aspects of water resources, education, conservation, and technology. This is a unique opportunity for you to review new literature in the field. Hours for the Book Display will be from 7:30 a.m.-6:00 p.m. on **Mon., Nov. 6**; from 7:30 a.m.-5:00 p.m. on **Tues., Nov. 7** and **Wed., Nov. 8**; and from 7:30 a.m.-12:00 noon on **Thurs., Nov. 9**. **The display copies may be purchased at a discounted price and must be picked up at the AWRA Registration Desk by 11:00 a.m. on Thurs., Nov. 9.** The following are confirmed exhibitors at the time of the printing of the final program:

DESTTECH PUBLICATIONS, INC. ~ LANCASTER, PENNSYLVANIA

E. SCHWEIZERBART'SCHE ~ STUTTGART, GERMANY

JOHN WILEY & SONS ~ WEST SUSSEX, UNITED KINGDOM

JT & A, INC. ~ CHANTILLY, VIRGINIA

McGRAW-HILL PROFESSIONAL ~ NEW YORK, NEW YORK

NATIONAL GROUND WATER ASSOCIATION ~ WESTERVILLE, OHIO

STYLUS PUBLISHING/EARTHSCAN ~ STERLING, VIRGINIA

THE MIT PRESS ~ CAMBRIDGE, MASSACHUSETTS

UBC PRESS ~ VANCOUVER, BRITISH COLUMBIA, CANADA

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UNIVERSITY OF HAWAII PRESS ~ HONOLULU, HAWAII

VANDERBILT UNIVERSITY PRESS ~ CHARLOTTESVILLE, VIRGINIA

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DIRECTORY OF PRESENTERS

- Abbasi, S. Ali (Session 29)**, Greenhorne & O'Mara, 6110 Frost Place, Laurel, MD 20707, USA, Phone: 301-982-2800, Fax: 301-220-2595, Email: aabbasi@g-and-o.com (Abstract)
- Aceituno, Juan F. (Session 56)** (Presented by Patrick Gleason, CDM, Phone: 561-689-3336, Email: gleasonpj@cdm.com), CDM, 800 Brickell Avenue, Ste. 500, Miami, FL 33131, USA, Phone: 305-372-7171, Fax: 305-372-9167, Email: aceitunofj@cdm.com (Abstract)
- Ackerman, Drew (Session 23)**, SCCWRP, 3535 Harbor Blvd., Ste. 110, Costa Mesa, CA 92626, USA, Phone: 714-755-3217, Email: drewa@sccwrp.org (Abstract)
- Ackman, Terry E. (Session 75)**, National Energy Technology Laboratory, Office of Strategic Analysis and Planning, 626 Cochran Mill Rd., PO Box 10940, Pittsburgh, PA 15236, USA, Phone: 412-386-6566, Email: tackman@netl.doe.gov (Abstract)
- Adamski, Robert (Session 32)**, Gannett Fleming, 480 Forest Ave., Locust Valley, NY 11560, USA, Phone: 516-671-8440, Fax: 516-671-3349, Email: radamski@gfnet.com (Abstract)
- Aichinger, Clifton (Session 42)**, Ramsey-Washington Metro Watershed District, 2665 Noel Dr., Little Canada, MN 55117, USA, Phone: 651-792-7957, Fax: 651-792-7951, Email: cliff@rwmwd.org (Abstract)
- Aly, Alaa (Sessions 1, 53)**, INTERA, 137 2nd Ave., Ste. 200, Niwot, CO 80504, USA, Phone: 303-652-8899, Fax: 303-652-8811, Email: aaly@intera.com (Abstract)
- Amidon, Thomas (Sessions 60, 74)**, Omni Environmental, 321 Wall St., Princeton, NJ 08540, USA, Phone: 609-924-8821 x28, Fax: 609-924-8831, Email: TAmidon@omni-env.com (Abstract)
- Anderson, Christopher J. (Session 19)**, Auburn University, 3301 Forestry and Wildlife Bldg., Auburn, AL36849, USA, Phone: 334-844-1033, Fax: 334-844-1084, Email: andercj@auburn.edu (Abstract)
- Apodaca, Lori (Session 41)**, U.S. Environmental Protection Agency, USEPA Headquarters, Ariel Rios Building, 1200 Pennsylvania Ave., NW, Mail Code: 4608T, Washington, DC 20460, USA, Phone: 202-564-1068, Email: apodaca.lori@epa.gov (Abstract)
- Archambault, Steven (Session Poster 4: Aquifer Storage & Recovery I)**, University of New Mexico, Dept. of Economics, MSC 05 30601, Albuquerque, NM 87131, USA, Phone: 505-277-5304, Fax: 505-277-9445, Email: sarchamb@unm.edu (Abstract)
- Atchison, Dustin (Session 72)**, CH2M HILL, 1100 - 112th Ave. NE, Ste. 400, Bellevue, WA 98004, USA, Phone: 425-233-3361, Email: Dustin.Atchison@Ch2m.com (Abstract)
- Austin, Gordon C. (Session 5)**, Sewerage and Water Board of New Orleans, 2900 Peoples Ave., Rm 215, New Orleans, LA 70122, USA, Phone: 504-942-3851, Fax: 504-942-3971, Email: gaustin@swbno.org (Abstract)
- Axt, Josephine (Session 5)**, Northern Ecological Associates, Inc., 2 Avalon Place, Santa Fe, NM 87508, USA, Phone: 505-466-1890, Fax: 505-466-1890, Email: jaxt.nea@comcast.net (Abstract)
- Bateman, Brenda (Session 63)**, Senior Policy Coordinator, Director's Office, Oregon Water Resources Department, 725 Summer St., NE, Ste. A, Salem, OR 97301-1271, USA, Email: Brenda.O.Bateman@wrp.state.or.us (Abstract)
- Bathke, Deborah (Session 16)**, New Mexico State University, P.O. Box 30003, MSC 3Q, Las Cruces, NM 88005, USA, Phone: 505-646-6327, Fax: 505-646-6041, Email: djbathke@nmsu.edu (Abstract)
- Batie, Sandra (Session 6)**, Department of Agricultural Economics, Michigan State University, 204 Agriculture Hall, East Lansing, MI 48824, USA, Phone: 517-355-4705, Fax: 517-432-1800, Email: batie@msu.edu (Abstract)
- Battaglin, William (Session Poster 1: Water Quality)**, U.S. Geological Survey, Box 25046, MS 415, Lakewood, CO 80225, USA, Phone: 303-236-4882 256, Email: wbattagl@usgs.gov (Abstract)
- Benaman, Jennifer (Session 35)**, QEA, 800 Brazos St., Ste. 308, Austin, TX 78701, USA, Phone: 512-707-0090, Fax: 512-275-0915, Email: jbenaman@qeallc.com (Abstract)
- Bergstedt, Lee (Session 15)**, GEI Consultants, Inc., 5575 S. Sycamore St., Ste. 101, Littleton, CO 80120, USA, Phone: 303-794-5411, Fax: 303-794-5041, Email: lbergstedt@geiconsultants.com (Abstract)
- Birkhoff, Juliana E. (Session 48) (co-presenting with Bradford R. Spangler)**, RESOLVE, 1255 23rd St. NW, Ste. 275, Washington, DC 20037, USA, Phone: 202-965-6214, Fax: 202-338-1264, Email: jbirkhoff@resolv.org (Abstract)
- Biswas, Himadri (Sessions Poster 1: GIS; Poster 2: Climate Change)**, Florida International University, Miami, FL 33199, USA, Email: himadri.biswas@fiu.edu (Abstract)
- Bliss, Matt (Session Poster 4: Ground Water)**, CDM, 1331 17th St., Ste. 1200, Denver, CO 80202, USA, Phone: 303-383-2431, Fax: 303-293-8236, Email: blissmj@cdm.com (Abstract)
- Boddie, Peter (Session 27)**, HRS Water Consultants, 8885 W. 14th Ave., Lakewood, CO 80215, USA, Phone: 303-462-1111, Fax: 303-462-3030, Email: pboddie@hrswater.com (Abstract)
- Boken, Vijendra (Session 40)**, University of Nebraska at Kearney, Dept. of Geography and Earth Sciences, Kearney, NE 68849, USA, Phone: 308-865-8357, Email: bokenv1@unk.edu (Abstract)
- Bolleter, Jim (Session 73)**, Ecology and Environment, Inc., 1665 Palm Beach Lakes Blvd., Ste. 500, West Palm Beach, FL 33401, USA, Phone: 561-640-6552, Email: jbolleter@ene.com (Abstract)
- Bonfantine, Krista (Session 30)**, University of New Mexico, PO Box 1326, Cedar Crest, NM 87008, USA, Phone: 505-250-3629, Fax: 505-286-9724, Email: aridlandideas@comcast.net (Abstract)
- Boroughs, Craig (Sessions 26, 43)**, BH&H Engineering, Inc., P.O. Box 637, Dillon, CO 80435, USA, Phone: 970-513-4459, Fax: 970-513-4459, Email: Boroughs@BHandH.com (Abstract)
- Bowerman, Michelle (Session Poster 6: Agricultural BMPs)**, Environment Canada, Environmental Stewardship Branch, 351 St. Joseph Blvd., PVM, Gatineau, QC K1A0H3, Canada, Phone: 819-953-4737, Fax: 819-953-0402, Email: Michelle.Bowerman@ec.gc.ca (Abstract)
- Boysen, Deidre (Session 75)**, BC Technologies, Ltd., 715 Grand Ave., Laramie, WY 82070, USA, Phone: 307-742-5651, Fax: 307-745-3428, Email: bct01@aol.com (Abstract)

DIRECTORY OF PRESENTERS (CONT'D.)

- Bradley, Jeffrey (Session 54)**, West Consultants, Inc., 25th St. SE, Ste. 450, Salem, OR 97302, USA, Phone: 503-253-7213, Email: jeffbradley@westconsultants.com (Abstract)
- Brainard, James (Session Poster 4: Water Demand Management)**, Sandia National Labs, PO Box 5800, Albuquerque, NM 87185, USA, Phone: 505-844-5624, Email: jrbrain@sandia.gov (Abstract)
- Broadbent, Craig D. (Session 1)**, University of New Mexico, Dept. of Economics, 1 University of New Mexico MSC05-3060, Albuquerque, NM 87131, USA, Phone: 505-277-6426, Email: cdb@unm.edu (Abstract)
- Brunson, Laura R. (Session 4)**, University of Oklahoma, 202 W. Boyd., Norman, OK 73019, USA, Phone: 405-255-9622, Email: lbrunson@ou.edu (Abstract)
- Burnette, Linda (Session 44B)**, St Johns River Water Management District, P.O. Box 1429, Palatka, FL 32178, USA, Phone: 386-329-4289, Fax: 386-329-4103, Email: lburnette@sjrwmd.com (Abstract)
- Burns, Shea (Session Poster 3: Watershed Planning and Management)**, USDA-ARS SWRC, 2000 E. Allen Rd., Tucson, AZ 85719, USA, Phone: 520-670-6381, Email: shea.burns@ars.usda.gov (Abstract)
- Butcher, Jonathan (Session Poster 6: Modeling)**, Tetra Tech, Inc., PO Box 14409 Cape Fear Bldg., Ste. 105, 3200 Chapel Hill-Nelson Hwy, Research Triangle Park, NC 27709, USA, Phone: 919-485-8278 X103, Fax: 919-485-8280, Email: jon.butcher@tetrattech.com (Abstract)
- Cafaro, Dennis (Session 11)**, Resource Conservation Systems, LLC, 25300 Bernwood Dr. No. 7, Bonita Springs, FL 34135, USA, Phone: 239-495-5805, Fax: 239-495-9210, Email: dennisca@bonitabaygroup.com (Abstract)
- Casana, John (Session Poster 4: Water Demand Management)**, Booz Allen Hamilton, Inc., 8283 Greensboro Dr., McLean, VA 22102, USA, Phone: 703-377-8980, Email: casana_john@bah.com (Abstract)
- Casey, Christine (Session 17)**, Pure Water for the World, 11 Greenbriar Cir., Andover, MA01810, USA, Phone: 978-681-9102, Fax: 978-681-9102, Email: ccasey24@hotmail.com (Abstract)
- Castiglia, Peter (Session 16)**, INTERA, 6000 Uptown Blvd. NE, Ste. 100, Albuquerque, NM 87110, USA, Phone: 505-246-1600, Email: pcastiglia@intera.com (Abstract)
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