AMERICAN WATER RESOURCES ASSOCIATION

2012 ANNUAL WATER RESOURCES CONFERENCE

FINAL PROGRAM

November 12-15, 2012
Jacksonville, Florida

AWRA
American Water Resources Association
4 West Federal Street - P.O. Box 1626 - Middleburg, VA 20118-1626
(540) 687-8390 • Fax: (540) 687-8395
info@awra.org • www.awra.org
“Ask Me About...”

What is the “Ask Me About...” program?

➤ “Ask Me About...” is a new AWRA program that encourages fun and informal networking between conference attendees.

How does the “Ask Me About...” program work?

➤ Conference attendees wear “Ask Me About...” ribbons on their nametags. During conference breaks, lunches, and networking sessions, attendees are encouraged to initiate conversation with anyone wearing “Ask Me About...” ribbons. The “Ask Me About...” ribbons function as conversation icebreakers, resulting in interesting and fun discussion among conference attendees.

How do I participate in the “Ask Me About...” program?

➤ Pick up an “Ask Me About...” ribbon at the conference registration desk. Fill in the blank on your ribbon with a word(s) that provides a clue to your work, background, or professional interests. Attention-grabbing, witty, interesting, yet professional ribbon content is highly encouraged.

➤ Wear your “Ask Me About...” ribbon on your nametag throughout the conference.

➤ Engage in conversation with conference attendees by explaining your “Ask Me About...” ribbon.

➤ For the benefit of the novice conference attendees, experienced attendees should share conference tips, provide professional advice, and facilitate networking with others.

Let the water conversation flow...
WELCOME TO JACKSONVILLE, FLORIDA, AND TO
AWRA’S 2012 ANNUAL WATER RESOURCES CONFERENCE
STEPHAN J. NIX, GENERAL CONFERENCE CHAIR
TEXAS A&M UNIVERSITY ~ KINGSVILLE, TEXAS

Welcome to Jacksonville and Florida’s First Coast! The Florida Section of the American Water Resources Association is proud to host the 2012 AWRA Annual Water Resources Conference. A great program has been assembled full of information on the latest water resources topics, along with four days of productive community building, conversation, and connections while enjoying all that Jacksonville and the First Coast of Florida has to offer.

Our goal was to create a technical program that provides you with lessons learned, insights, and tools relevant to issues, problems, and opportunities in your region. We also hope you will take advantage of the many opportunities to interact with other attendees, including the Opening Networking Reception, numerous coffee breaks, the Exhibit Hall, the AWRA Awards Luncheon, and a special evening event on the St. Johns River. AWRA conferences provide unique opportunities for all members of the water resources community to network and exchange information and we feel the relaxed setting along the beautiful St. Johns River will set the stage for a very productive, enjoyable, and informative week.

Whether you have visited Jacksonville before or this is your first time, we also encourage you to stay a few extra days and take in what is truly the most beautiful part of a beautiful state. The area surrounding Jacksonville is home to a wide array of unique natural areas including beaches, rivers, and wetlands. If you are a golfer there is no better place than the Jacksonville area. The city itself offers museums, unique dining and shopping experiences, exciting nightlife, and a vibrant performing arts community.

Welcome again to beautiful Jacksonville and the 2012 AWRA Annual Water Resources Conference!

PLease Note . . . Conference Abstract Proceedings

The Conference Proceedings will be available free of charge on the AWRA website at the following website address:
http://www.awra.org/proceedings/Jacksonville2012
After that, it will be available for purchase in a CD ROM format from AWRA

Please Note

In this Final Program, the Presenter of each paper/poster is in BOLD type immediately following the paper title. Co-authors are then listed in parentheses. The affiliation given is that of the Presenter.

Please Turn Off Your Cell Phone When Entering the Session Rooms!

Awra Acknowledges and is grateful to all of our sponsors
Please Support Them . . . They are Helping to Enhance Awra’s Community Conversation Connections!
Many Thanks to Our Annual Conference Sponsors

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Kingsville, TX

University of Florida
Gainesville, FL

UF TREEO Center
Gainesville, FL
SPECIAL NETWORKING OPPORTUNITIES

Please make use of these opportunities to expand your career possibilities and gain a greater appreciation for the world of water resources.

**AWRA CONVERSATION CORNER**
Open Throughout the Conference ~ 3rd Floor Skybridge

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. AWRA will set aside a space — “Conversation Corner” — 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. This service is free of charge to conference attendees.

**AWRA EMPLOYMENT OPPORTUNITY BOARD**
Open Throughout the Conference ~ Conference Center A

★ Have an opening at your place of employment? Place an announcement on the Board.
★ Currently seeking a position? Place a copy of your resume on the Board and have some for distribution.
★ You may also access the full AWRA Career Center in the AWRA Conversation Corner (3rd Floor Skybridge). This service is available free of charge to everyone.

**CONFERENCE OPENING NETWORKING RECEPTION**
**M**ONDAY ~ **N**OVEMBER 12 ~ 5:00 pm - 6:30 pm ~ **C**ONFERENCE **C**ENTER **A**

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. Also, the Poster Session participants will be at their posters to answer any questions during the reception. Additional tickets may be purchased on site at the AWRA Registration Desk. The cost of an additional ticket is $30.00.

**DINNER AT THE RIVER CITY BREWING COMPANY**
**T**UESDAY ~ **N**OVEMBER 13 ~ 6:00 p.m. - 9:00 p.m.

Join us for a fun night out at the River City Brewing Company (RCBC), Jacksonville’s premier riverfront restaurant located on the Southbank of downtown Jacksonville! The restaurant overlooks the St. Johns River and has an excellent view of the Jacksonville skyline. But the best part will be the great food, great company, and great music to dance to after you enjoy your meal. We will take the Water Taxi to and from the hotel to the RCBC. Cost includes a wonderful “southern style” buffet and entertainment from the River City Bluez Band. Check out the restaurant at www.rivercitybrew.com, and the band at www.facebook.com/therivercitybluezband. The cost for this evening of fun and good food is $38.00. Meet in hotel lobby at 5:45 p.m.

**AWRA AWARDS LUNCHEON**
**W**EDNESDAY ~ **N**OVEMBER 14 ~ 12:00 noon-1:25 p.m. ~ **G**RAND **B**ALLROOM **4**

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, Estus Daniel Whitfield. Among other job responsibilities throughout his career, Mr. Whitfield has served as principle environmental advisor to five Florida Governors. 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.

**BOOK AND JOURNAL EXHIBITORS**

3RD FLOOR SKYBRIDGE

During the conference there will be a display of publications on numerous aspects of water resources, education, conservation, and technology. This is a unique opportunity for you to review new literature in the field. Display copies may be purchased at a discounted price, and must be picked up at the AWRA Registration Desk by 11:00 a.m. Thursday, November 15, 2012. Book display hours are: Monday, Nov. 12, 7:30 a.m.-6:00 p.m.; Tuesday, Nov. 13, 8:00 a.m. - 5:00 p.m.; Wednesday, Nov. 14, 8:00 a.m.-5:00 p.m.; and Thursday, Nov. 15, 8:00 a.m.-11:00 a.m.

**CONFIRMED BOOK EXHIBITORS**
(at the time of the printing of the final program)

**AMERICAN WATER WORKS ASSOCIATION**
Denver, Colorado

**SUNY PRESS**
Albany, New York
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### Monday ~ November 12 • (SS denotes a “Special Session”)

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<th>Time</th>
<th>Session</th>
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<tr>
<td>8:30 AM-10:00 AM</td>
<td><strong>Opening Plenary Speaker</strong>&lt;br&gt;Terrencia “Rock” Salt&lt;br&gt;Principle Deputy Assistant Sec. of the Army – Wash, DC</td>
</tr>
<tr>
<td>10:30 AM-12:00 NOON</td>
<td><strong>Concurrent Sessions 1, 2, 3, 4</strong>&lt;br&gt;1. SS: Reservoir Science-1&lt;br&gt;2. SS: Homeowner Water Conservation, Nutrient Mgmt. &amp; Social Marketing-1&lt;br&gt;3. Ecosystems-1&lt;br&gt;4. Mgmt. &amp; Tools-1: Modeling</td>
</tr>
<tr>
<td>1:30 PM-3:00 PM</td>
<td><strong>Concurrent Sessions 5, 6, 7, 8</strong>&lt;br&gt;5. SS: Reservoir Science-2&lt;br&gt;6. SS: Homeowner Water Conservation, Nutrient Mgmt. &amp; Social Marketing-2&lt;br&gt;7. Water Quality-1&lt;br&gt;8. Wetlands</td>
</tr>
<tr>
<td>3:30 PM-5:00 PM</td>
<td><strong>Concurrent Sessions 9, 10, 11, 12</strong>&lt;br&gt;9. SS: Reservoir Science-3&lt;br&gt;10. SS: Payment for Environmental Services&lt;br&gt;11. Climate Change-1: Challenges, Planning, &amp; Impacts&lt;br&gt;12. Surface Water-1: Flood Forecasting &amp; Floodplain Mgmt.</td>
</tr>
</tbody>
</table>

**Lunch ~ On Your Own ~ 12:00 nn-1:25 PM**

### Tuesday ~ November 13 • (SS denotes a “Special Session”)

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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**Lunch ~ On Your Own ~ 12:00 nn-1:25 PM**

### Wednesday ~ November 14 • (SS denotes a “Special Session”)

<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:30 AM-10:00 AM</td>
<td><strong>Concurrent Sessions 29, 30, 31, 32</strong>&lt;br&gt;29. SS: Eco-Hydrology-1&lt;br&gt;30. SS: Frontiers in Aquifer Recharge &amp; Storage as an Alternative Water Supply Solution&lt;br&gt;31. Policy, Planning, &amp; Legal Issues-2: Case Studies&lt;br&gt;32. Mgmt. &amp; Tools-3: Modeling</td>
</tr>
<tr>
<td>10:30 AM-12:00 NOON</td>
<td><strong>Concurrent Sessions 33, 34, 35, 36</strong>&lt;br&gt;33. SS: Eco-Hydrology-2&lt;br&gt;34. Groundwater: Surface Water/Groundwater/Ecosystem Interactions&lt;br&gt;35. SS: St. Johns River Water Supply Impact Study (WSIS)&lt;br&gt;36. Climate Change-3: Impacts on Freshwater Availability &amp; Supplies</td>
</tr>
<tr>
<td>1:30 PM-3:00 PM</td>
<td><strong>Concurrent Sessions 37, 38, 39, 40</strong>&lt;br&gt;37. SS: Eco-Hydrology-3&lt;br&gt;38. SS: Renewable Energy &amp; Alternative Water Supplies: Amigos or Enemigos?&lt;br&gt;39. Agriculture&lt;br&gt;40. Education &amp; Training-1</td>
</tr>
<tr>
<td>3:30 PM-5:00 PM</td>
<td><strong>Concurrent Sessions 41, 42, 43, 44</strong>&lt;br&gt;41. SS Panel: Eco-Hydrology-4&lt;br&gt;42. SS: Decision Support Tools for Drought Monitoring, Mgmt., &amp; Forecasting&lt;br&gt;43. Surface Water-2: Water Quality &amp; Innovative Techniques&lt;br&gt;44. Urbanization</td>
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### Thursday ~ November 15 • (SS denotes a “Special Session”)

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>8:30 AM-10:00 AM</td>
<td><strong>Concurrent Sessions 45, 46, 47, 48</strong>&lt;br&gt;45. SS: Wetlands Science &amp; Restoration: The Everglades &amp; the World&lt;br&gt;46. International Issues-1&lt;br&gt;47. Surface Water-3: Innovative Techniques&lt;br&gt;48. Water Quality-4: Data &amp; Monitoring</td>
</tr>
<tr>
<td>10:30 AM-12:00 NOON</td>
<td><strong>Concurrent Sessions 49, 50, 51, 52</strong>&lt;br&gt;49. SS: Floodplain Mgmt. &amp; Flood Risk Assessment-1&lt;br&gt;50. SS: New Tools for River &amp; Stream Mgmt. Related to Fisheries Resources&lt;br&gt;51. Water Quality-5: Salinity&lt;br&gt;52. Climate Change-4</td>
</tr>
<tr>
<td>1:30 PM-3:00 PM</td>
<td><strong>Concurrent Sessions 53, 54, 55, 56</strong>&lt;br&gt;53. SS: Floodplain Mgmt. &amp; Flood Risk Assessment: Jacksonville Case Study&lt;br&gt;54. Policy, Planning, &amp; Legal Issues-3&lt;br&gt;55. Ecosystems-2&lt;br&gt;56. Mgmt. &amp; Tools-4</td>
</tr>
<tr>
<td>3:30 PM-5:00 PM</td>
<td><strong>Concurrent Sessions 57, 58, 59, 60</strong>&lt;br&gt;57. Education &amp; Training-2&lt;br&gt;58. Water Quality-6: Source Water Protection &amp; GIS&lt;br&gt;59. Infrastructure&lt;br&gt;60. International Issues-2</td>
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**Lunch ~ On Your Own ~ 12:00 nn-1:25 PM**

~ Special Event ~ 6:00 pm-9:00 pm<br>Dinner at the River City Brewing Company

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**AWRA Awards Luncheon ~ Speaker ~ Estus Daniel Whitfield<br>Former Principal Environmental Advisor to Five Florida Governors<br>“Florida’s Water Management: Its Hights & Lows” ~ 12:00 nn-1:25 PM**
2012 ANNUAL CONFERENCE PLANNING COMMITTEE

GENERAL CONFERENCE CHAIR
STEPHAN J. NIX
Texas A&M University-Kingsville
Kingsville, Texas

CONFERENCE TECHNICAL PROGRAM CO-CHAIRS
MICHAEL DeICHARCO
Taylor Engineering, Inc.
Jacksonville, Florida

CHRISTOPHER J. MARTINEZ
University of Florida
Gainesville, Florida

FIELD TRIPS AND SPECIAL EVENTS
PATRICK R. VICTOR
Camp Dresser & McKee, Inc. ~ Jacksonville, Florida

EXHIBITS
CAROL HINTON
University of Florida TREEO Center ~ Gainesville, Florida

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Alico Incorporated ~ Delray Beach, Florida

STUDENT ACTIVITIES
KRISTIN K. BENNETT
Tetra Tech EC, Inc. ~ Stuart, Florida

NATIONAL AWRA BOARD
DAVID R. WATT
St. Johns River Water Management District ~ Palatka, Florida

CONFERENCE CONNECTIONS
RAFAEL E. FRIAS III
Black & Veatch ~ Sunrise, Florida

AWRA CONVERSATION CORNER
Open Throughout the Conference ~ 3rd Floor Skybridge
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Open Throughout the Conference ~ Conference Center A
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<td>City Terrace 7</td>
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<td>2-SS</td>
<td>Homeowner Water Conservation, Nutrient Management, and Social Marketing-1</td>
<td>City Terrace 12</td>
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<tr>
<td>3</td>
<td>Ecosystems-1</td>
<td>River Terrace 2</td>
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<tr>
<td>4</td>
<td>Management and Tools-1: Modeling</td>
<td>City Terrace 4</td>
</tr>
<tr>
<td>5-SS</td>
<td>Reservoir Science-2</td>
<td>City Terrace 7</td>
</tr>
<tr>
<td>6-SS</td>
<td>Homeowner Water Conservation, Nutrient Management, and Social Marketing-2</td>
<td>City Terrace 12</td>
</tr>
<tr>
<td>7</td>
<td>Water Quality-1</td>
<td>River Terrace 2</td>
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<td>8</td>
<td>Wetlands</td>
<td>City Terrace 4</td>
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<td>Reservoir Science-3</td>
<td>City Terrace 7</td>
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<td>10-SS</td>
<td>Payment for Environmental Services</td>
<td>City Terrace 12</td>
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<td>11</td>
<td>Climate Change-1: Challenges, Planning, and Impacts</td>
<td>River Terrace 2</td>
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<td>12</td>
<td>Surface Water-1: Flood Forecasting and Floodplain Management</td>
<td>City Terrace 4</td>
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**LUNCH (ON YOUR OWN) / 12:00 NOON-1:25 P.M.**

**AFTERNOON NETWORKING BREAK / 3:00 PM-3:30 PM / CONFERENCE CENTER A**

**STUDENT ATTENDEE CONFERENCE ORIENTATION / 4:45 PM-5:00 P.M.**

**OPENING NETWORKING RECEPTION & POSTER SESSION OPEN / 5:00 PM-6:30 PM / CONFERENCE CENTER A**

*commercial & educational exhibits open – see pg. 36*
CONFERENCE OPENING PLENARY SESSION
MONDAY ~ NOVEMBER 12 ~ 8:30 A.M.-10:00 A.M. ~ CONFERENCE CENTER B

WELCOME AND OPENING REMARKS

WILLIAM A. BATTAGLIN
President, American Water Resources Association
U.S. Geological Survey ~ Denver, Colorado

STEPHAN J. NIX
General Conference Chair
Texas A&M University-Kingsville ~ Kingsville, Texas

MICHAEL DELCHARCO
Conference Technical Program Co-Chair
Taylor Engineering ~ Jacksonville, Florida

CHRISTOPHER MARTINEZ
Conference Technical Program Co-Chair
University of Florida ~ Gainesville, Florida

KEYNOTE SPEAKER

TERRENCE “ROCK” SALT
Principle Deputy Assistant Secretary of the Army (Civil Works)
Washington, D.C.

Mr. Salt will present a multi-faceted talk on several important issues including: (1) Future of Everglades Restoration: Impacts From the Settlement With EPA and the Central Everglades Study, (2) Integrated Conservation: America's Great Outdoors and Lessons for Florida, and (3) Army Civil Works in Florida: Beaches, Harbors, and Everglades.

10:00 A.M.-10:30 A.M. • MORNING NETWORKING BREAK (CONT’D.) • CONFERENCE CENTER A

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 5:00 P.M.
TUESDAY • NOVEMBER 13 • 8:00 A.M. TO 5:00 P.M.
WEDNESDAY • NOVEMBER 14 • 8:00 A.M. TO 5:00 P.M.
THURSDAY • NOVEMBER 15 • 8:00 A.M. TO 3:30 P.M.

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

PLEASE TURN OFF YOUR CELL PHONE WHEN ENTERING THE SESSION ROOMS!
| 1 | Combining SWMM and Spatial Multi-Criteria Decision Making for Siting Detention Basins to Control Urban Flooding - Ebrahim Ahmadisharaf, Sharif University of Technology, Tehran, Iran (co-author: M. Tajrishy) |
| 2 | Suggestions to Reduce Litigation over Riparian Access Easements in Florida - M.B. Adelson IV, Adelson Law Firm, Tallahassee, FL |
| 3 | The Economics of Drought in the Middle Rio Grande - Dadhi Adhikari, University of New Mexico, Albuquerque, NM (co-authors: J.M. Chermak, V. Tidwell) |
| 4 | Interception Loss Heterogeneity Driven by Ecological and Topographical Complexity - Scott Allen, Oregon State University, Reisterstown, MD (co-authors: J.J. McDonnell, B.J. Bond) |
| 5 | Hydraulic Modeling for Flood Management Planning in the Sacramento and San Joaquin River Basins, California - David Altare, MWH, Sacramento, CA |
| 6 | Community-Based Private Well Monitoring as Secondary Level Environmental Education Research - Isabella Bergonzoli, Oxbridge Academy of the Palm Beaches, West Palm Beach, FL (co-author: T. Thornton) |
| 7 | An Assessment of Regional Climate Model Downscaling Around San Francisco, CA - Erica Brown, Noblis, Falls Church, VA (co-author: M. McHugh) |
| 8 | Basis for Developing Alternate Numeric Dissolved Oxygen Criteria for Florida's Blackwater Wetlands - Robert Compton, HT Odum Center for Wetlands, Gainesville, FL (co-authors: K.C. Reiss, M.T. Brown) |
| 9 | Understanding the Reasons for the Failure of the ACF Water Negotiations and the Prospects for Overcoming Them - Michael Dexter, Columbia University, New York City, NY |
| 10 | Optimal Multi-Objective Spatial Interpolation Models for Missing Precipitation Data Estimation - Husayn El Sharif, Florida Atlantic University, Lake Worth, FL (co-author: R. Teegavarapu) |
| 11 | Effects of Different Soil Phosphorus Levels and Irrigation Sources on Growth of Turfgrass - Jinghua Fan, Soil and Water Science Department, University of Florida, Gainesville, FL (co-authors: G. Hochmuth, J. Sartain, J. Kruse) |
| 12 | Establishing Total Maximum Daily Loads for Total Phosphorus and E. coli for Hickory Grove Lake in Central Iowa - Rohith Gali, Iowa State University, Ames, IA (co-author: M.L. Soupir) |
| 13 | Florida as a Laboratory for Global Urbanization, Sea Level Rise, and Future Health Risks of Drinking Water Sources - Evan Ged, University of Florida, Department of Environmental Engineering Sci., Gainesville, FL (co-author: T. Boyer) |
| 14 | The Role of Variability in Evaluating Agricultural Adaptation Needs to Climate Change - Dunia Patricia Gonzalez Zeas, School of Engineering, Technical University of Madrid, Madrid, Spain (co-authors: S. Quiroga, A. Iglesias, L. Garrote) |
| 15 | Advanced Treatment of Dissolved Organic Matter in Alternative Water Sources - Katherine Graf, University of Florida, Gainesville, FL (co-authors: T. Boyer, D. Cornell) |
| 17 | Marsh Change Analysis in Delaware’s Inland Bays, 1937 to 2007 - Andrew Homsey, University of Delaware, Newark, DE (co-author: K. Somers) |
| 18 | The Investigation of Reasonable Discharge and Pumping Time of Wells in Taiwan - Shao-Yang Huang, National Yunlin University of Science and Technology, Yunlin, Taiwan (co-authors: J. Wen, C. Liu, C. Lin, K. Chang, C. Tseng, Y. Chang) |
| 21 | Examples of Cross-Program Approaches for Sharing Drinking Water Indicators – Peter Ilieve, RTI International, Research Triangle Park, NC (co-authors: D. Boezio, K. Everett, J. Rineer, A.R. Anzzolin) |
Managing Salt and Nitrates in California - Is a Spreadsheet Model a Viable Management Tool? - Michael Johnson, MLJ-LLC, Davis, CA


Water Quality Assessment of Pesticide Usage for Biofuel Production at Watershed Scale - David Lampert, Argonne National Laboratory, Lemont, IL (co-author: M. Wu)

GIS-Based Simulation and Spatial Analysis Tool for the Design of Decentralized Recycled Water Systems - Eun Jung Lee, Stanford University, Stanford, CA (co-authors: C.S. Criddle. D.L. Freyberg)

Evaluation of Sustainability at the University of Florida-Nitrogen Mass Balance for the Main Campus - Jiexuan Luo, University of Florida, Gainesville, FL (co-authors: G. Hochmuth, M. Clark)


Enhancements to the Precipitation-Runoff Modeling System for Simulating In-Stream Water Temperature - Steven L. Markstrom, U.S. Geological Survey, Denver, CO


Artesian Water in the Florida Peninsula, V.T. Stringfield - Revisited - Douglas Munch, St. Johns River Water Management District, Palatka, FL (co-author: J. Stokes)


Development of Inundation Hazard Level for River Levee Failure - Jaehong Park, Semyung University, Jecheon, Chungbuk, CB, South Korea (co-authors: J. Song, M. Kim)


Assessment of Runoff Coefficient in Semi Arid Region - Mehemed Razzaghi, Al-Jabal Al-Gharbi Univeristy, Gharian, Libya (co-author: A.A. Ganfoud)


Evaluating the Influence of Soil Characteristics on Stormwater Biofilter Performance in Urban Areas - Redahegn Silesihi, Dept. of Civil, Construction and Environmental Engineering, University of Alabama, Tuscaloosa, AL (co-authors: R.Pitt, S.Clark)

An Innovative Approach to Service Learning and Watershed Management - Ritchie Taylor, Western Kentucky University, Bowling Green, KY (co-authors: J. Brown, V. Golla, E. Barringer, A. Murray, K. Smith)

California Environmental Data Exchange Network - Standardizing Data for Statewide Integration and Assessment - Melissa Turner, MLJ-LLC, Davis, CA (co-author: M. Johnson)

A Non-Point Source Regulatory Program, Coalition Representation, Compliance Assessment, Oh My! - Melissa Turner, MLJ-LLC, Davis, CA (co-author: M.L. Johnson)

Streamtube-Based Simulation of Site Remediation Under Different Flow Patterns - Fang Wang, University of Florida, Gainesville, FL (co-authors: M.D. Annable, J.W. Jawitz)

Water Quality Status and Trends in the SJRWMD: Web Access to Water Quality Information - Stephen Winkler, St. Johns River Water Management District, Palatka, FL (co-authors: A. Ceric, M. Daly, T. Mirti)

A Multi-Stakeholder Bayou Dredging Case Study: From Characterization to Innovative Dredge Material Containment - Matt Wissler, Geosynect Consultants, Temple Terrace, FL (co-author: J. Johnson)

Troubled Waters: Georgia, Florida and Alabama’s Conflict over the Waters of the ACF River Basin - Johnny Wong, University of South Florida, Tampa, FL

A Review of Social, Environmental and Human Health Consequences of River Development in the Volta River Basin, Ghana - Albert Yeboah-Fors, Department of Earth and Environment, Florida International University, Miami, FL (co-authors: M. Boateng-Gyimah-Water, E. Anderson)

Comparison of One-Dimensional and Two-Dimensional Hydraulics Model in Flood Inundation Mapping - Ao Yi, AECOM, Jacksonville, FL (co-authors: T. Sisak, J. Berg, D.E. Deegan)

ORAL PRESENTATIONS

CONCURRENT SESSIONS 1, 2, 3, 4

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

SESSION 1 • SPECIAL SESSION • CITY TERRACE 7

RESEVOIR SCIENCE-1

MODERATOR • KYLE JURACEK • U.S. GEOLOGICAL SURVEY • LAWRENCE, KANSAS

10:30 A.M. Reservoir Sustainability: Sediment Issues and Management Options - Kent Collins, U.S. Bureau of Reclamation, Denver, CO (co-authors: T.J. Randle, R.L. Ferrari)
10:50 A.M. Critical Data Needs in Reservoir Sedimentation - William Renwick, Miami University, Oxford, OH

SESSION 2 • SPECIAL SESSION • CITY TERRACE 12

HOMEOWNER WATER CONSERVATION, NUTRIENT MANAGEMENT, AND SOCIAL MARKETING-1

MODERATOR • PAUL MONAGHAN • UNIVERSITY OF FLORIDA • GAINESVILLE, FLORIDA

10:50 A.M. Reducing Residential Landscape Water Use in Alachua County - Stacie Greco, Alachua County Environmental Protection Department, Gainesville, FL
11:10 A.M. How Does Concern About Water Resources Influence Conservation Behavior? - Emily Ott, University of Florida, Agricultural Education and Communication, Gainesville, FL (co-authors: P. Monaghan, S. Greco)
11:30 A.M. Time Step Analysis for Rainwater Harvesting - James Male, University of Portland, Portland, OR (co-author: M.S. Kennedy)

SESSION 3 • RIVER TERRACE 2

ECOSYSTEMS-1

MODERATOR • GARY HOWALT • ENVIRONMENTAL SERVICES, INC. • JACKSONVILLE, FLORIDA

11:30 A.M. How Much Bias Does Migration Cause in 2-Sample Mark-Recapture Estimators of Stream Fish Abundance? - James N. McNair, Annie Water Resources Institute, Muskegon, MI (co-authors: C.R. Ruetz III, B.S. Harris)

SESSION 4 • CITY TERRACE 4

MANAGEMENT AND TOOLS-1: MODELING

MODERATOR • ARI MICHELSEN • TEXAS A&M AGRI LIFE RESEARCH • EL PASO, TEXAS

10:30 A.M. Challenges and Successes in Modeling Watersheds - Peter Black, SUNY ESF, Syracuse, NY
10:50 A.M. Optimizing Selection and Landscape Placement of Bioenergy Crops - Indrajit Chaubey, Purdue University, West Lafayette, IN (co-authors: C. Raj, Y. Her, B. Gramig)
11:10 A.M. Integration and Evolution of Hydro-Economic Modeling - Ari Michelsen, Texas A&M AgriLife Research, El Paso, TX (co-authors: J.F. Booker, R.E. Howitt, R.A. Young)
11:30 A.M. Pathogen Transport and Fate Modeling in the Upper Salem River Watershed using SWAT Model - Mehran Niazi, EPA, Cincinnati, OH (co-authors: C. Obropta, R. Miskewitz)

12:00 NOON-1:25 P.M. • LUNCH (ON YOUR OWN)
CONCURRENT SESSIONS 5, 6, 7, 8
MONDAY – NOVEMBER 12
1:30 P.M. - 3:00 P.M.
SESSION 5 • SPECIAL SESSION • CITY TERRACE 7
RESERVOIR SCIENCE-2
MODERATOR • KENT COLLINS • U.S. BUREAU OF RECLAMATION • DENVER, COLORADO
1:30 P.M. Hydrologic Analysis for Design Freeboard Components – Jin-yea “Paul” Yang, Environmental Consulting & Technology, Inc. (ECT), Ft. Lauderdale, FL
2:10 P.M. Reservoir Water Quality as an Impetus for Potential Dam Removal in the Klamath River Basin - Chauncey Anderson, U.S. Geological Survey, Portland, OR

SESSION 6 • SPECIAL SESSION • CITY TERRACE 12
HOMEOWNER WATER CONSERVATION, NUTRIENT MANAGEMENT, AND SOCIAL MARKETING-2
MODERATOR • PAUL MONAGHAN • UNIVERSITY OF FLORIDA • GAINESVILLE, FLORIDA
1:30 P.M. Building Blue Communities Through Wise Water Management - Jenni Woodworth, A. D. Marble & Company, Camp Hill, PA
2:30 P.M. Targeting Households for Outdoor Watering Campaigns - Paul Monaghan, University of Florida, Gainesville, FL (co-authors: E. Ott, G. Israel, E. Felter, W. Wilber)

SESSION 7 • RIVER TERRACE 2
WATER QUALITY-1
MODERATOR • L. DONALD DUKE • FLORIDA GULF COAST UNIVERSITY • FT. MYERS, FLORIDA
1:30 P.M. Water Quality Monitoring, Standards, TMDLs and Compliance Assessment - Kenneth Reckhow, Cardno ENTRIX, Durham, NC
1:50 P.M. Statistical Analysis for Improved Water Quality Targets With Sparse Data: Dissolved Oxygen in Southwest Florida Impaired Waterbodies - Jeffrey Talbott, Florida Gulf Coast University, Fort Myers, FL (co-author: L.D. Duke)
2:10 P.M. Modeling Nutrient and Biological Sources Within Hendry and Mullock Creek Basins: Identifying Areas of Concern and Recommending BMPs to Mitigate Effects - Ziqi (Zeke) He, HSA Engineers & Scientists, Fort Myers, FL (co-authors: R. Gause, R.G. Lewis, K. Bickford)

SESSION 8 • CITY TERRACE 4
WETLANDS
MODERATOR • JIM SIEGFRIED • BROWN AND CALDWELL • JACKSONVILLE, FLORIDA
1:30 P.M. Disentangling the Effects of Mean Water Level and Hydrologic Variation on Wetland Structure and Function - Joseph Delesantro, University of Florida, Gainesville, FL (co-authors: M.J. Cohen, L.V. Korhnan)
1:50 P.M. A Method for Establishing MFLs for Palustrine Cypress Wetlands - Ken Watson, HSW Engineering, Inc, Tampa, FL (co-author: C. Uranoowski)
2:10 P.M. Developing a Suitability Analysis to Determine Locations for Wetland Water Quality Sampling - John Brito, University of Missouri, Columbia, MO (co-authors: E.C. Inniss, T.C. Matisziw, K.M. Trauth, R. Semilitzch, S. McIntosh, D. Mengel)

3:00 P.M. - 3:30 P.M. • AFTERNOON NETWORKING BREAK • CONFERENCE CENTER A

Monday, November 12
13
AWRA in JACKSONVILLE
CONCURRENT SESSIONS 9, 10, 11, 12

3:30 P.M.-5:00 P.M.  \hspace{1cm} MONDAY - NOVEMBER 12

SESSION 9 • SPECIAL SESSION • CITY TERRACE 7

MODERATOR • KYLE JURACEK • U.S. GEOLOGICAL SURVEY • LAWRENCE, KANSAS


4:10 P.M. Developing Seasonal Models to Accurately Assess Algal Succession and Water Quality Using Remotely Sensed Data: A Case Study at Deer Creek Reservoir, Utah - Carly Hyatt, Brigham Young University, Provo, UT (co-authors: G.P. Williams, N.A. Gonzalez, N.R. Swain, W. Miller, J. Nelson)


SESSION 10 • SPECIAL SESSION • CITY TERRACE 12

PAYMENT FOR ENVIRONMENTAL SERVICES

MODERATOR • TERRY CLARK • CARDNO ENTRIX • WELLINGTON, FLORIDA

3:30 P.M. Dispersed Water Management Promotes Shared Stewardship of Resources - Benita Whalen, South Florida Water Management District, West Palm Beach, FL

3:50 P.M. Highlands County FRESP Projects Comparison - Joel Jordan, Brown and Caldwell, Maitland, FL (co-author: B. Roy)

4:10 P.M. Northern Everglades Payment for Environmental Services: Assessing Environmental and Water Resource Benefits and Landowner Interests Through the Permitting Process - Stephanie Fidler, Cardno ENTRIX, Riverview, FL

4:30 P.M. Water Quality Banking/Credit Trading - Drivers, Opportunities and Issues - Jim Bolleter, Ecology and Environment, Wellington, FL (co-author: J. Fumero)

SESSION 11 • RIVER TERRACE 2

CLIMATE CHANGE-1: CHALLENGES, PLANNING, AND IMPACTS

MODERATOR • M. GHULAM RABBANI • CLIMATE CHANGE MITIGATION FOUNDATION, INC. • NEWBERRY, FLORIDA

3:30 P.M. Ready or Not: An Evaluation of State Climate and Water Preparedness Planning - Ben Chou, Natural Resources Defense Council, Washington, DC (co-authors: S. Fleischl, J. Schroeder)

3:50 P.M. Climate Change, Water Supply Reliability and Sustainability - George Annandale, Golder Associates Inc., Lakewood, CO

4:10 P.M. Challenges to Mitigate Adverse Impacts of Climate Change in Florida - M. Ghulam Rabbani, Climate Change Mitigation Foundation, Inc., Newberry, FL (co-authors: K. Hafffield, H.G. Bojd)

4:30 P.M. Possible Impact of Climate Changes on Groundwater Resources in Intergranular Aquifers in Serbia - Nevena Savic, Belgrade, Serbia (co-authors: D. Milenic, N. Doroslovac)

SESSION 12 • CITY TERRACE 4

SURFACE WATER-1: FLOOD FORECASTING AND FLOODPLAIN MANAGEMENT

MODERATOR • JESSICA NEWLIN • BUCKNELL UNIVERSITY • LEWISBURG, PENNSYLVANIA

3:30 P.M. History of Sediment Aggradation at Bridges in Pennsylvania and Its Effects on Flood Damage in 2011 - Jessica Newlin, Bucknell University, Lewisburg, PA (co-authors: B. Charland, B. Schultz, B. Hayes)

3:50 P.M. Using Monte Carlo Simulation to Estimate the Impact of Hydrologic Uncertainty on Flood Risk - Jason Lillywhite, GoldSim Technology Group, Issaquah, WA (co-author: A. Kalyanapu)

4:10 P.M. Flood Modeling Accuracy and the Influence of Digital Terrain Models Derived from Airborne LiDAR and USGS Elevation Data for the Swannanoa River in North Carolina - Monica Davis, Appalachian State University, Boone, NC (co-authors: J.D. Colby, J. Greg Dobson)

4:30 P.M. Interaction Between Surface Water and Groundwater and Its Impact on Boundless Biogeochemical Cycle in Continental Scale - Tadanobu Nakayama, National Institute for Environmental Studies, Tsukuba, Iba, Japan (co-author: D. Shankman)
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 60 concurrent sessions in 15 time slots from 10:30 a.m., Monday, November 12, 2012, through 5:00 p.m., Thursday, November 15, 2012 Two options for CEUs will be 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 registrants.

SIGN UP AND COSTS - If you have not preregistered for CEU credit, you may sign up for CEUs on site at the AWRA registration desk. The cost for Option 1 is $22.00 for AWRA members and $25.00 for non-members. The cost for Option 2 is $26.00 for AWRA members and $30 for non-members.

PROCEDURE - AWRA is required by the International Association for Continuing Education and Training (IACET) to maintain very specific records for the awarding of CEUs. If you pre-registered 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 concurrent session that you attend.

The sheet must be turned in to the AWRA Registration Desk upon its completion or faxed or mailed to AWRA within one week after the close of the Conference. AWRA cannot award CEUs without this completed form on file.

CEUs AWARDED AND CONFIRMING LETTERS SENT - AWRA will award a total of 1.05 CEUs representing 10.5 hours of attendance to those persons who selected Option 1; or 1.5 CEUs representing 15 hours of attendance to those persons who selected Option 2. Earned CEUs will be entered into your permanent AWRA record within two weeks following the Conference. A letter specifying the award will be provided within one month after the Conference. Please note that 0.1 CEU is the same as 1.0 Professional Development Hour (PDH).

GENERAL CONFERENCE INFORMATION

REFUNDS - Cancellations must have been received in writing at the AWRA Headquarters by Monday, October 22, 2012. No refunds will be issued after October 22, 2012. All cancellations received prior to October 22, 2012, 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, 2012.

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.

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 City Terrace 6 Room will be available for presenters to review their presentations during the conference. The room will be open on Monday, November 12 and Tuesday, November 13, from 7:00 a.m. to 8:00 p.m.; on Wednesday, November 14, from 7:00 a.m. to 5:00 p.m.; and on Thursday, November 15, from 7:00 a.m. to 3:30 p.m.
<table>
<thead>
<tr>
<th>Day-at-a-Glance / Tuesday / November 13, 2012</th>
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<tbody>
<tr>
<td>AWRA CONVERSATION CORNER OPEN / 7:00 a.m.-7:00 p.m. / 3rd Floor Skybridge</td>
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<tr>
<td>5K Fun Run / 6:30 a.m.-8:00 a.m. / Meet in Hotel Lobby at 6:15 a.m. (See Pg. 36)</td>
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<tr>
<td>Speakers' Preparation Room Open / 7:00 a.m.-8:00 p.m. / City Terrace 6</td>
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<tr>
<td>Registration Desk Open / 8:00 a.m.-5:00 p.m. / 3rd Floor Skybridge</td>
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<tr>
<td>Past Presidents' Breakfast (Invitation Only) / 7:30 a.m.-8:30 a.m. / Suite 4108</td>
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<tr>
<td>Book &amp; Journal Exhibit Open &amp; Employment Opportunity Board on Display / 8:00 a.m.-5:00 p.m. / 3rd Floor Skybridge</td>
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<tr>
<td>Morning Networking Break / 8:00 a.m.-10:30 a.m. / Conference Center A</td>
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<tr>
<td>Commercial and Educational Exhibits Open / 8:00 a.m.-3:30 p.m. / Conference Center A</td>
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<tr>
<td>Technical Poster Session / 8:00 a.m.-3:30 p.m. / Conference Center A (Poster Presenters will be at their posters during the Networking Breaks)</td>
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### Concurrent Sessions 13, 14, 15, 16 / 8:30 a.m.-10:00 a.m. |

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<tr>
<th>Session 13 - SS</th>
<th>Session 14 - SS</th>
<th>Session 15 - SS Panel</th>
<th>Session 16</th>
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<tr>
<td>USGS National Hydrologic Model-1</td>
<td>The Floridan Aquifer System Under Siege-1</td>
<td>Water Pollutant Trading</td>
<td>Water Quality-2: Emerging Contaminants and Pesticides</td>
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<td>City Terrace 7</td>
<td>City Terrace 12</td>
<td>River Terrace 2</td>
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### Morning Networking Break (Cont'd.) / 10:00 a.m.-10:30 a.m. / Conference Center A |

### Concurrent Sessions 17, 18, 19, 20 / 10:30 a.m.-12:00 noon |

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<tr>
<th>Session 17 - SS</th>
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<th>Session 19 - SS Panel</th>
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<td>River Terrace 3</td>
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### Lunch (On Your Own) / 12:00 noon-1:25 p.m. |

### Concurrent Sessions 21, 22, 23, 24, 24 / 1:30 p.m.-3:00 p.m. |

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<th>Session 21 - SS</th>
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### Afternoon Networking Break / 3:00 p.m.-3:30 p.m. / Conference Center A |

### Concurrent Sessions 25, 26, 27, 28, 28 / 3:30 p.m.-5:00 p.m. |

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<tr>
<th>Session 25 - SS</th>
<th>Session 26 - SS Panel</th>
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<td>City Terrace 12</td>
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<td>River Terrace 3</td>
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### Special Event ~ Dinner at the River City Brewing Company / 6:00 p.m.-9:00 p.m. Meet in Hotel Lobby at 5:45 p.m. (See Pg. 36)
CONCURRENT SESSIONS 13, 14, 15, 16, 16 | TUESDAY - NOVEMBER 13
8:30 A.M.-10:00 A.M. • SESSION 13 • SPECIAL SESSION • CITY TERRACE 7
USGS NATIONAL HYDROLOGIC MODEL-1
MODERATOR • JACOB LAFONTAINE • U.S. GEOLOGICAL SURVEY • ATLANTA, GEORGIA
8:30 A.M. National Hydrologic Model -- Overview - Steven L. Markstrom, U.S. Geological Survey, Denver, CO

SESSION 14 • SPECIAL SESSION • CITY TERRACE 12
THE FLORIDAN AQUIFER SYSTEM UNDER SIEGE-1
MODERATOR • BRIAN KATZ • U.S. GEOLOGICAL SURVEY • TALLAHASSEE, FLORIDA
8:30 A.M. South Hillsborough Aquifer Recharge Program (SHARP), Hillsborough County - Michael Weatherby, MWH Americas, Inc., Tampa, FL (co-authors: T.B. Weiss, J. Duncan, P. Waller)
8:50 A.M. ET Capture Estimation Using an Integrated Hydrologic Model - Patrick Tara, INTERA, Land O’ Lakes, FL (co-author: R. Murch)
9:10 A.M. The Hydrogeologic Information System Web Application of the St. Johns River Water Management District, Palatka, Florida - Jeffrey Davis, St. Johns River Water Management District, Palatka, FL
9:30 A.M. Uncertainty Assessment of Precipitation Projections for Florida Using Different Climate Change Models - Aneesh Goli, Department of Civil, Environmental and Geomatics Engineering, Florida Atlantic University, Boca Raton, FL (co-author: R.S.V. Teegavarapu)

SESSION 15 • SPECIAL SESSION PANEL • RIVER TERRACE 2
WATER POLLUTANT TRADING
MODERATOR • JIM BOLLETER • ECOLOGY AND ENVIRONMENT • WELLINGTON, FLORIDA

Panel Participants
JOHN FUMERO • Sundstrom, Friedman, and Fumero, LLP • Boca Raton, Florida
JIM BOLLETER • Ecology and Environment • Wellington, Florida
SHAUN MCKINNEY • NRCS • Portland, Oregon
BRIAN NORMANLY • TimberVest • Atlanta, Georgia
TIFFANY BUSBY • Wildwood Consulting Inc. • St. Augustine, Florida

A panel group has been assembled that will present their insights into water pollutant trading followed by a round table discussion of various issues including but not limited to:

➤ How do you set up a bank and how do you determine the price of the credits?
➤ How do you verify banks’ long-term compliance with the value of the credit?
➤ How would trades take place?
➤ How are credits established?
➤ What is the service area?
➤ What are some of the main constraints for water pollutant trading and how can they be overcome?
➤ What is the current regulatory status for water credit trading?
➤ How can water credit trading benefit me?
SESSION 16 • CITY TERRACE 4
WATER QUALITY-2: EMERGING CONTAMINANTS AND PESTICIDES
MODERATOR • WILLIAM A. BATTAGLIN • U.S. GEOLOGICAL SURVEY • LAKewood, COLORADO


8:50 A.M.  Environmental Factors Affecting Enterococcus and Fecal Coliform Bacteria in Beach Waters of Sarasota County, FL - Jennifer Clemente, Florida Gulf Coast University, Fort Myers, FL


SESSION 16 I • RIVER TERRACE 3
USACE TRANSFORMATION AND IMPROVING ACCESS TO WATER RESOURCES INFORMATION
U.S. ARMY CORPS OF ENGINEERS CIVIL WORKS PROGRAM TRANSFORMATION
PRESENTER • STEVEN L. STOCKTON
DIRECTOR OF CIVIL WORKS • USACE • WASHINGTON, D.C.

Increasing value to the Nation and providing cost effective and timely water resources solutions are high on the Corps agenda. Join Mr. Steven L. Stockton, Director of Civil Works, on learning about the swift changes taking place to move this iconic U.S. water management giant toward a more sustainable future.

WATERTOOLBOX: IMPROVING ACCESS TO WATER RESOURCES INFORMATION
PRESENTER • ADA L. BENAVIDES
ASSISTANT DIRECTOR OF CIVIL WORKS AND SENIOR WATER RESOURCES POLICY ADVISOR • USACE • WASHINGTON, D.C.

Join Ms. Ada Benavides and her work crew as they present one of the most unique ways to provide information access to water management practitioners and managers. The Federal Support Toolbox for Integrated Water Resources Management will support information sharing, collaboration and partnerships, technology transfer and capacity building, and capabilities. At this very interactive session you will watch a "hands on" demonstration of this information highway. No need to bring picks, shovels, and bulldozers.

10:00 A.M.-10:30 A.M. • MORNING NETWORKING BREAK (CONT’D.) • CONFERENCE CENTER A

10:30 A.M.-12:00 NOON • CONCURRENT SESSIONS 17, 18, 19, 20

SESSION 17 • SPECIAL SESSION • CITY TERRACE 7
USGS NATIONAL HYDROLOGIC MODEL-2
MODERATOR • STEVE REGAN • U.S. GEOLOGICAL SURVEY • LAKewood, COLORADO


10:50 A.M.  An Application of the National Hydrologic Model in the Apalachicola-Chattahoochee-Flint River Basin, Southeastern USA - Jacob LaFontaine, U.S. Geological Survey, Atlanta, GA


SESSION 18 • SPECIAL SESSION • CITY TERRACE 12
THE FLORIDIAN AQUIFER SYSTEM UNDER SIEGE-2
MODERATOR • NATHAN JOHNSON • ST. JOHNS RIVER WATER MANAGEMENT DISTRICT • PALATKA, FLORIDA

10:30 A.M.  Groundwater as a Source of Hydrogen Sulfide in Indoor Air in Central and South Florida - Yaning Yang, HSA Engineers & Scientists, Fort Myers, FL (co-authors: Z. He, R.G. Lewis)

10:50 A.M.  Dover 2010 Freeze Protection Impacts and Regulatory Response - Robert Peterson and Darrin Herbst, Southwest Florida Water Management District, Brooksville, FL (co-author: J.O. Rumbaugh III)

AWRA in JACKSONVILLE  18  Tuesday, November 13
11:10 A.M.  Groundwater Protection through a Citizen-Based Private Well Testing Program - Teresa Thornton, Oxbridge Academy of the Palm Beaches, West Palm Beach, FL (co-authors: J. Leahy, J. Peckenheim)

11:30 A.M.  Statistical Relationships between Blue Spring Discharge and Upper Floridan Aquifer Well Water Levels - Nathan Johnson, St Johns River Water Management District, Palatka, FL

11:50 A.M.  Restoration Planning for Florida's Springs - Peter Colverson, Normandeau Assoc, Gainesville, FL (co-author: O. Wells)

SESSION 19 • SPECIAL SESSION PANEL • RIVER TERRACE 3
INTEGRATED WATER RESOURCES MANAGEMENT (IWRM)
MODERATOR • CHERYL ULRICH • WESTON SOLUTIONS, INC. • ATLANTIC BEACH, FLORIDA

Linkages Between Stewardship and Integrated Water Resources Management (IWRM) in Creation of a National Water Vision and Strategy - Brenda Bateman, Oregon Water Resources Dept., Salem, OR (co-authors: C, Ulrich, J. Wells, C. Collier)

PANEL PARTICIPANTS
BRENDA BATEMAN • Oregon Water Resources Department • Salem, Oregon
CAROL R. COLLIER • Delaware River Basin Commission • West Trenton, New Jersey
JOHN WELLS • Consultant • Eagan, Minnesota
THOMAS BARTOL • St. Johns River Water Management District • Palatka, Florida

The Board of Directors of the American Water Resources Association has asked AWRA’s Policy Technical Committee to examine how U.S. communities are incorporating Integrated Water Resources Management (IWRM) into their water management practices. The interpretations of "integrated" are many. In some locales they encompass water quantity, quality, and ecosystem issues. In other communities they encompass surface water and groundwater systems. Still other communities incorporate all of these components. From the planning stage to implementation, communities recognize the value of an integrated approach to water management. Benefits include shared resources, more effective policies and programs, and most importantly, positive economic and environmental outcomes. The Policy Technical Committee is developing a series of case studies, designed to answer the following questions: (1) What communities have used IWRM and at what scale? (2) Who were the lead institution and other key partners? (3) What did the IWRM efforts encompass; how holistic was it really? (4) What were the drivers for getting started and staying at the table? (5) What was the time period/evolution. Was it a one-time thing? (6) What are the total estimated costs and funding sources so far? (7) What are the estimated quantified benefits? The panel, comprised of Policy Technical Committee members, will hold a round-table discussion, sharing lessons learned thus far and sharing observations about each other's case studies. The moderator will help identify emerging themes and lead a discussion of their relevance in creation of a national water vision and strategy.

SESSION 20 • CITY TERRACE 4
MANAGEMENT AND TOOLS-2: GEOGRAPHIC INFORMATION SYSTEMS (GIS)
MODERATOR • PETER ILIEVE • RTI INTERNATIONAL RESEARCH • TRIANGLE PARK, NORTH CAROLINA


10:50 A.M.  NexRad Rainfall Data, a Decade of Progress - Michael Daly, St. Johns River Water Management District, Palatka, FL


11:30 A.M.  Automated Hydrologic Enforcement of LiDAR Topographic Surveys - Brian Gelder, Iowa State University, Ames, IA (co-author: D. James)

12:00 NOON-1:25 P.M.  LUNCH (ON YOUR OWN)

CONCURRENT SESSIONS 21, 22, 23, 24, 24 I

1:30 P.M. -3:00 P.M.  
SESSION 21 • SPECIAL SESSION • CITY TERRACE 7
USGS NATIONAL HYDROLOGIC MODEL-3
MODERATOR • LAUREN HAY • U.S. GEOLOGICAL SURVEY • DENVER, COLORADO

1:30 P.M.  Approach for Assessment of Water Availability in Major River Basins in Alabama - Ana Maria Garcia, U.S. Geological Survey, Raleigh, NC (co-authors: R. Knight, J. LaFontaine)

1:50 P.M.  An Application of the National Hydrologic Model in Puerto Rico - Ashley Van Beusekom, North Carolina State University, Raleigh, NC

Tuesday, November 13 19  AWRA in JACKSONVILLE

2:30 P.M.  Combining the Precipitation-Runoff Modeling System with the Reg3CM Regional Climate Model to Estimate Potential Effects of Climate Change on Northern Great Plains Streams - Katherine Chase, U.S. Geological Survey, Helena, MT (co-authors: L. E. Hay, S. W. Hostetler)

**SESSION 22 • SPECIAL SESSION • CITY TERRACE 12**

**FLORIDA SPRINGS-1**

**MODERATOR • TODD KINCAID • GEOHYDROS, LLC • RENO, NEVADA**

1:30 P.M.  Modeling Springshed and Spring Vulnerability in the Karstic Floridan Aquifer - Todd Kincaid, GeoHydros, LLC, Reno, NV (co-author: B. Meyer)

1:50 P.M.  The Detrimental Effects of Regional Groundwater Pumping on Spring Flows - Robert Knight, Florida Springs Institute, Gainesville, FL

2:10 P.M.  Water Resource Impacts From Groundwater Withdrawals in NE Florida – Gregg Jones, Cardno ENTRIX, Riverview, FL (co-author: B. Ashby)

2:30 P.M.  Dye Tracing in North Central Florida - A Critical Tool for Springshed Modeling and Protection – Todd Kincaid (GeoHydros, LLC) presenting for Peter Butt, Karst Environmental Services, High Springs, FL

**SESSION 23 • RIVER TERRACE 2**

**WATER QUALITY-3: IMPACTS OF STORM WATER ON WATER QUALITY**

**MODERATOR • THOMAS RIES • SCHEDA ECOLOGICAL ASSOCIATES • TAMPA, FLORIDA**

1:30 P.M.  Chesapeake Bay Watershed Implementation Plans - Large-scale Stormwater Infrastructure Retrofit to Achieve TMDL Compliance - Ali Abbasi, EA Engineering, Science & Technology, Sparks, MD

1:50 P.M.  Stormwater Retrofit and Habitat Restoration P3 - Thomas Ries, Scheda Ecological Associates, Tampa, FL (co-authors: L. Cross, Tampa Bay Estuary Program)


2:30 P.M.  Developing a Strategic Load Reduction Plan to Address TMDLs in Agriculturally Dominated Watersheds - John Shuman, Johnson, Mirmiran & Thompson, York, PA (co-author: M. Rahnis)

**SESSION 24 • CITY TERRACE 4**

**CLIMATE CHANGE-2: SEA LEVEL RISE**

**MODERATOR • RAHUL PARAB • TAYLOR ENGINEERING, INC. • JACKSONVILLE, FLORIDA**

1:30 P.M.  Modeling Climate Change Mitigation Strategies for Coastal Communities Using GIS - Valerie Seidel, The Balmoral Group, Maitland, FL (co-authors: C. de Bodisco, P. Yacobellis)

1:50 P.M.  How High Will the Tide Rise - Potential Sea Level Rise Impacts at Camp Edwards National Guard Base, MA - Lisa Dickson, Kleinfelder, Cambridge, MA (co-author: I. Ghosh)

2:10 P.M.  Sea Level Rises, Salinity Changes, and Sea Grasses in the Caloosahatchee Estuary - Stephen Hanks, AMEC Environment & Infrastructure, Pensacola, FL (co-author: C. Fitz)

2:30 P.M.  Coastal Storm Protection - The Seattle Seawall - Ridge Robinson, Tetra Tech, Inc., Seattle, WA

**SESSION 24 I • RIVER TERRACE 3**

**INTEGRATED WATER RESOURCES MANAGEMENT IN PRACTICE-1**

**MODERATOR • ARI MICHELSSEN • TEXAS A&M AGRIlIFE RESEARCH • EL PASO, TEXAS**

1:30 P.M.  IWRM on the World Stage – Ari Michelsen, Texas A&M AgriLife Research, El Paso, TX


3:00 P.M.-3:30 P.M.  • AFTERNOON NETWORKING BREAK • CONFERENCE CENTER A
CONCURRENT SESSIONS 25, 26, 27, 28, 28 I

3:30 P.M.-5:00 P.M.  TUESDAY - NOVEMBER 13

SESSION 25 • SPECIAL SESSION • CITY TERRACE 7
USGS NATIONAL HYDROLOGIC MODEL-4

MODERATOR • STEVE MARKSTROM • U.S. GEOLOGICAL SURVEY • DENVER, COLORADO


SESSION 26 • SPECIAL SESSION PANEL • RIVER TERRACE 2
RESTORATION STRATEGIES FOR FLORIDA’S SPRINGS

MODERATOR • PETER COLVERSON • NORMANDEAU ASSOCIATES • GAINESVILLE, FLORIDA

Panel Participants

PETER COLVERSON • Normandeau Associates • Gainesville, Florida
BRIAN KATZ • U.S. Geological Survey • Tallahassee, Florida
ROBERT KNIGHT • Florida Springs Institute • Gainesville, Florida
TODD KINCAID • GeoHydros, LLC • Reno, Nevada
TERESA THORNTON • Oxbridge Academy of the Palm Beaches • Palm Beach, Florida
MICHAEL WEATHERBY • MWH Americas, Inc. • Tampa, Florida
NATHAN JOHNSON • St. Johns River Water Management District • Palatka, Florida

A combination of nutrient pollution from agricultural and residential land uses together with decreasing flow has put many of Florida's springs in jeopardy. Many are clogged with algae and are currently registering the lowest flows ever recorded. The springs are an important resource to the people of Florida with many of them being open to the public for recreation and providing important contributions to local economies. They also form a unique clear water environment that supports a unique fish and wildlife assemblage. There are mandated protections for springs with both the Total Maximum Daily Load (TMDL) and the Minimum Flows and Levels (MFL) processes that can be used to decrease pollution and maintain flows at an adequate level. However, these processes are difficult to implement and there is a lack of resources to implement them on a sufficiently wide scale. One other option is to counter the degradation of springs using a more comprehensive restoration planning process. This was attempted in 2010 by the Florida Department of Environmental Protection for 4 of the state's larger and better known springs systems; Silver, Rainbow, Ichetucknee and Wakulla. Draft plans for all 4 springs were completed by consultants but funding was then cut. Each planning process involved a comprehensive effort to engage stakeholders in each spring basin, both professionals and lay people. The TMDL and the MFL processes were included as restoration strategies with coordination within the plan recommended to counter the more fragmented approach of separate processes being operated by different agencies. This session will explain the elements of the restoration plans, the rationale for them and provide some content from the drafts that were produced. Normandeau was in charge of three of the four plans (Wakulla was coordinated by a different company) which will be featured in this presentation. Emphasis will be given to the need for urgent action to focus attention and resources on Florida's springs systems and offer the restoration planning process as one model that can be pursued.

SESSION 27 • CITY TERRACE 12
POLICY, PLANNING, AND LEGAL ISSUES-1

MODERATOR • ROBERT MORESI • MORESI HYDROGEOLOGIC SERVICES, INC. • LUTZ, FLORIDA

3:30 P.M.  What the Frack? Hydraulic Fracturing, Groundwater Quality and Environmental Regulation - Eric Fitch, Marietta College, Biology and Environmental Science Department, Marietta, OH

3:50 P.M.  Institutional and Regulatory Factors Promoting and Inhibiting Enhanced Stormwater Infiltration: Case Study, Winter Haven and Polk County, Florida - Michele Weitzel, Florida Gulf Coast University, Fort Myers, FL (co-author: L.D. Duke)

4:10 P.M.  Displacing Securitization and Hydro-Hegemony for Resilience in an Adaptive Management Institutional Framework - Michael Davidson, Claremont Graduate University, Altadena, CA

4:30 P.M.  Cultivating Resilient Business Models for Water and Wastewater Utilities - Stacey Berahzer, Environmental Finance Center, Marietta, GA
**SESSION 28 • SPECIAL SESSION • CITY TERRACE 4**

**REUSE OF WATER**

**MODERATOR • JOHN C. PECK • UNIVERSITY OF KANSAS SCHOOL OF LAW • LAWRENCE, KANSAS**

3:30 P.M. Legal Aspects of Water Reuse in the Western States - John C. Peck, University of Kansas School of Law, Lawrence, KS

3:50 P.M. Legal Aspects of Water Reuse in Eastern States - Eugene C. McCall, Jr., McCall Environmental, PA, Greenville, SC

4:10 P.M. Water Prism: A Decision Support System for Examining Benefits of Multi-Sector Water-Saving Strategies - Laura Weintraub, LimnoTech, Ann Arbor, MI (co-authors: T. Redder, H. Tao, R. Goldstein)


**SESSION 28 I • RIVER TERRACE 3**

**INTEGRATED WATER RESOURCES MANAGEMENT IN PRACTICE-2**

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

3:30 P.M. Texas Alliance for Water Conservation Project – David Doerfert, Texas Tech University, Lubbock, TX


4:10 P.M. The Groundwater – IWRM Conundrum – Michael Campana, Oregon State University, Corvallis, OR

**SPECIAL EVENT - DINNER AT THE RIVER CITY BREWING COMPANY**

**TUESDAY – NOVEMBER 13 ~ 6:00 P.M.-9:00 P.M. (MEET IN HOTEL LOBBY AT 5:45 P.M.)**

**CO-SPONSORED BY**

CDM Smith • JACKSONVILLE, FLORIDA, AND THE AWRA BOARD OF DIRECTORS • MIDDLEBURG, VIRGINIA

SEE “SPECIAL EVENTS” ON PG. 36 FOR DETAILS.
**Day-at-a-Glance / Wednesday / November 14, 2012**

**AWRA Conversation Corner Open / 7:00 A.M.-7:00 P.M. / 3rd Floor Skybridge**

**Speakers’ Preparation Room Open / 7:00 A.M.-5:00 P.M. / City Terrace 6**

**Policy Technical Committee Meeting / 7:00 A.M.-8:00 A.M. / River Terrace 3**

**Registration Desk Open / 7:30 A.M.-5:00 P.M. / 3rd Floor Skybridge**

**Book & Journal Exhibit Open & Employment Opportunity Board on Display / 8:00 A.M.-5:00 P.M. / 3rd Floor Skybridge**

**Morning Networking Break / 8:00 A.M.-10:30 A.M. / Conference Center B Foyer**

** Concurrent Sessions 29, 30, 31, 32 / 8:30 A.M.-10:00 A.M.**

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**City Terrace 7**

**River Terrace 2**

**City Terrace 4**

**Morning Networking Break (cont’d.) / 10:00 A.M.-10:30 P.M. / Conference Center B Foyer**

** Concurrent Sessions 33, 34, 35, 36 / 10:30 A.M.-12:00 Noon**

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**City Terrace 4**

**Special Event / AWRA Awards Luncheon / 12:00 Noon-1:15 P.M. / Grand Ballroom 4 (see pg. 36)**

**AWRA Annual Business Meeting / Immediately Following the Awards Luncheon / Grand Ballroom 4**

** Concurrent Sessions 37, 38, 39, 40 / 1:30 P.M.-3:00 P.M.**

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**Afternoon Networking Break / 3:00 P.M.-3:30 P.M. / Conference Center B Foyer**

** Concurrent Sessions 41, 42, 43, 44 / 3:30 P.M.-5:00 P.M.**

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**City Terrace 4**

**AWRA Student Chapter Meeting / 4:00 P.M.-5:15 P.M. / River Terrace 3 (see pg. 35)**

**Student Career Night / 5:30 P.M.-7:30 P.M. / River Terrace 3 (see pg. 35)**
CONCURRENT SESSIONS 29, 30, 31, 32

8:30 A.M. -10:00 A.M.  WEDNESDAY - NOVEMBER 14

SESSION 29 • SPECIAL SESSION • CITY TERRACE 12

ECO-HYDROLOGY-1

MODERATOR • RODNEY KNIGHT • U.S. GEOLOGICAL SURVEY • NASHVILLE, TENNESSEE

8:30 A.M.  Development of a Transient HEC-RAS Model of the Santa Fe and Ichetucknee Rivers to Support EcologicAL Modeling and MFL Development - Julia Lukyanets, INTERA, Land O’ Lakes, FL (co-authors: P. Tara, J. Good)

8:50 A.M.  Assessment of Instream Flow Conditions for Two Endangered Fish Species Using Index of River Functionality Methodology in a Regulated Section of the Green River in Utah - Samrat Saha, Argonne National Laboratory, Argonne, IL (co-authors: T. Koteck, J.W. Hayse)

9:10 A.M.  How Do We Best Measure Reservoir Impacts for Different Hydrologic Regimes? - Michele Cutrofello Eddy, RTI International, Research Triangle Park, NC (co-authors: F. Moreda, R. Dykes)


SESSION 30 • SPECIAL SESSION • CITY TERRACE 7

FRONTIERS IN AQUIFER RECHARGE AND STORAGE AS AN ALTERNATIVE WATER SUPPLY SOLUTION

MODERATOR • GREGG JONES • CARDNO ENTRIX • RIVERVIEW, FLORIDA

8:30 A.M.  Mitigating Recovered Arsenic in Aquifer Storage and Recovery Wells Installed in Clastic Aquifers - Mark Lucas, CH2M HILL, Philadelphia, PA


9:10 A.M.  Seasonal Surface Water ASR, Marco Island, Florida - Mark Pearce, Cardno ENTRIX, Ft. Myers, FL

9:30 A.M.  Parameter Estimation for Groundwater Recharge Model - Saad Merayyan, California State University, Sacramento, Sacramento, CA (co-author: S. Safi)

SESSION 31 • RIVER TERRACE 2

POLICY, PLANNING, AND LEGAL ISSUES-2: CASE STUDIES

MODERATOR • JOANNE CHAMBERLAIN • BROWN AND CALDWELL • JACKSONVILLE, FLORIDA

8:30 A.M.  Benefit-Cost Analysis of Improved Water Quality in the Delaware River Basin - Gerald Kauffman, University of Delaware, School of Public Policy and Administration, Newark, DE

8:50 A.M.  Experience in Strengthening the Linkage Between Land Use and Flood Management in California - Rebecca Guo, MWI, Sacramento, CA (co-author: Y. Sun)

9:10 A.M.  Policy Debates Over the Southern Nevada Water Authority Pipeline Project - Lisa W. Welsh, Utah State University, Logan, UT (co-author: J. Endter-Wada)


9:50 A.M.  Reliability, Resilience and Vulnerability Criteria: Wellhead Protection Via Health-Based Measures - Carolyn Rodak, University of Notre Dame, Notre Dame, IN (co-authors: D. Bolster, S. Silliman)

SESSION 32 • CITY TERRACE 4

MANAGEMENT AND TOOLS-3: MODELING

MODERATOR • BRIAN WATSON • TETRA TECH, INC. • ATLANTA, GEORGIA

8:30 A.M.  A Probabilistic Balancing Rule (PBR) Approach for the Optimization of Reservoir Operation - Emmanuel Nzewi, Southern University, Baton Rouge, LA

8:50 A.M.  Large-Scale Watershed and Estuary Model Development and Their Flexibility and Applications - Erin Lincoln, Tetra Tech, Atlanta, GA (co-author: B.J. Watson)
Global Sensitivity and Uncertainty Analysis of a Generic Soil Water Drought Index Model - ARID (Agricultural Reference Index for Drought) - Yogesh Khare, University of Florida, Gainesville, FL (co-author: C.J. Martinez)

Evaluation of a Hydrologic Model in Simulating the Annual Water Balance in a Small-Scale Tile Drained Watershed in Iowa - Rohith Gali, Iowa State University, Ames, IA (co-authors: M.L. Soupir, M.J. Helmers)

10:00 A.M.-10:30 A.M. • MORNING NETWORKING BREAK (cont’d.) • CONFERENCE CENTER B FOYER

CONCURRENT SESSIONS 33, 34, 35, 36

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

SESSION 33 • SPECIAL SESSION • CITY TERRACE 12

ECO-HYDROLOGY-2

MORATOR • DARREN CARLISLE • U.S. GEOLOGICAL SURVEY • RESTON, VIRGINIA


SESSION 34 • CITY TERRACE 7

GROUNDWATER: SURFACE WATER/GROUNDWATER/ECOSYSTEM INTERACTIONS

MORATOR • CHRISTOPHER BROWN • UNIVERSITY OF NORTH FLORIDA • JACKSONVILLE, FLORIDA

10:30 A.M. Halfway Pond Re-Hydration Project Reduces Flooding, Improves Water Quality, and Recharges Aquifer - Roger Copp, A.D.A. Engineering, Inc., Tampa, FL (co-authors: L. Flynn, D. Lindsay)

10:50 A.M. Phase I Assessment of the C-111 Stormwater Harvesting and Recharge Project - Christopher Brown, University of North Florida, Jacksonville, FL


SESSION 35 • SPECIAL SESSION • RIVER TERRACE 2

ST. JOHNS RIVER WATER SUPPLY IMPACT STUDY (WSIS)

MORATOR • MICHAEL CULLUM • ST. JOHNS RIVER WATER MANAGEMENT DISTRICT • PALATKA, FLORIDA


SESSION 36 • CITY TERRACE 4

CLIMATE CHANGE-3: IMPACTS ON FRESHWATER AVAILABILITY AND SUPPLIES

MORATOR • TAMIM YOUNOS

THE CABELL BRAND CENTER FOR GLOBAL POVERTY AND RESOURCE SUSTAINABILITY STUDIES • SALEM, VIRGINIA

10:30 A.M. A Bayesian Framework to Evaluate Climate Informed Risk and Robustness on the Upper Great Lakes - Paul Moody, University of Massachusetts, Amherst, Amherst, MA (co-author: C. Brown)

10:50 A.M. Evaluation of Satellite Estimates and GCMs Outputs as Alternative Rainfall Data Sources in the Mara River Basin, Kenya/Tanzania – Shimelis Behailu Dessu, Department of Earth and Environment, Florida International University, Miami, FL (co-author: A.M. Melesse)

11:10 A.M. Downscaling Medium-Range Reference Evapotranspiration Forecasts in the Southeastern United States - Di Tian, University of Florida, Gainesville, FL (co-author: Chris Martinez)
CONCURRENT SESSIONS 37, 38, 39, 40

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

WEDNESDAY - NOVEMBER 14

SESSION 37 • SPECIAL SESSION • CITY TERRACE 12

ECO-HYDROLOGY-3

MODERATOR • WILLIAM WOLFE • U.S. GEOLOGICAL SURVEY • NASHVILLE, TENNESSEE

1:30 P.M.  
Completing the Circle, The Use of Simulation Models in Developing and Implementing Instream Flows - Brian McCrodden, HydroLogics, Inc., Raleigh, NC (co-author: S. Nebiker)

1:50 P.M.  

2:10 P.M.  
Macroinvertebrate Community Condition Associated with Streamflow Alteration - Daren Carlisle, U.S. Geological Survey, Reston, VA (co-authors: S. Mark Nelson, Ken Eng)

2:30 P.M.  

SESSION 38 • SPECIAL SESSION • CITY TERRACE 7

RENEWABLE ENERGY AND ALTERNATIVE WATER SUPPLIES: AMIGOS OR ENEMIGOS?

MODERATORS • VENKATESH UDDAMERI • TEXAS A&M UNIVERSITY • KINGSVILLE, TEXAS  
ANNETTE HERNANDEZ • TEXAS TECH UNIVERSITY • LUBBOCK, TEXAS

1:30 P.M.  
Design and Installation of a Micro-Hydro Power Generation Plant for Community Education - Tamim Younos, The Cabell Brand Center for Global Poverty and Resource Sustainability Studies, Salem, VA (co-authors: J. Garrette, E.F. Brown, S. Lyles)

1:50 P.M.  

2:10 P.M.  
Utilisation of Hydrogeothermal Energy for Open Space Surface Heating, Serbia Case Study - Ana Vranjes, University of Belgrade, Belgrade, Serbia (co-authors: D. Milenic, D. Milankovic)

2:30 P.M.  
An Integrated Optimization Model for Sizing Wind-Driven Desalination of Brackish Groundwater Resources - Annette Hernandez, Texas Tech University, Lubbock, TX (co-author: V. Uddameri)

SESSION 39 • RIVER TERRACE 2

AGRICULTURE

MODERATOR • MAY WU • ARGONNE NATIONAL LABORATORY • LEMONT, ILLINOIS

1:30 P.M.  
CLEANEASTTM Project: Final Results from Nutrient Management Planning and Other Environmental Services to More Than 400 Animal Feeding Operations - Marion Deerhake, RTI International, Research Triangle Park, NC (co-authors: K.S. Schaffner, N. Ubaka-Blackmore, A. Wesley-Snider, P.R. Peterson, J.M. Rice, C. Mosley)

1:50 P.M.  
Application of Energy Balance Methods to Estimate Consumptive Use to Support Basin Management, Water Accounting, and the Administration of Interstate Agreements - Phil Burkhalter, Riverside Technology, Inc., Fort Collins, CO (co-author: T. Martin)

2:10 P.M.  
Water Footprint of Perennial Grass Bioethanol - May Wu, Argonne National Laboratory, Lemont, IL (co-author: Y. Chiu)
Session 40 • City Terrace 4
Education and Training-1

Moderator • Martha Narvaez • University of Delaware • Newark, Delaware

1:30 P.M. Undergraduate Research in Water Resources at FGCU: Residential Stormwater Detention Ponds, Lee County, Florida – L. Donald Duke, Florida Gulf Coast University, Fort Myers, FL (co-author: G. Rosenaw)

1:50 P.M. Shad in Schools - A Public Education Tool for Restoring Our Rivers - Martha Narvaez, University of Delaware, Newark, DE (co-author: G. Kauffman)

2:10 P.M. Use of Multi-User Virtual Environments (MUVEs) for Training Purposes - David Doerfert, Texas Tech University, Lubbock, TX (co-author: T. Rutherford)

3:00 P.M.-3:30 P.M. • Afternoon Networking Break • Conference Center B Foyer

Concurrent Sessions 41, 42, 43, 44

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

Session 41 • Special Session Panel • City Terrace 12
Eco-Hydrology-4

Moderator • W. Scott Gain • USGS Tennessee Water Science Center • Nashville, Tennessee

Panel Participants

Kristin Blann • The Nature Conservancy • Cushing, Minnesota

William Hansen • National Park Service • Fort Collins, Colorado

Chris Goudreau • North Carolina Wildlife Resources Commission • Marion, North Carolina

This panel discussion is an attempt to fill a gap between scientific results and application in the area of ecological flows. Panelists representing federal, state, and nonprofit conservation organizations will provide perspectives on the need for improved understanding of the relation between streamflow and ecology, with reference to environmental policy and land management. Discussion will focus on successes and challenges in applying ecological flow science to policy and natural resource decisions. The panel will follow three technical sessions on Ecohydrology and provide an opportunity for a more general discussion and synthesis. Feedback from this discussion may help shape future science directions.

Session 42 • Special Session • City Terrace 7
Decision Support Tools for Drought Monitoring, Management, and Forecasting

Moderator • Jae Ryu • University of Idaho • Boise, Idaho

3:30 P.M. Decision Support Tools for Drought Monitoring, Management, and Forecasting in the State of Idaho - Jae Ryu, University of Idaho, Boise, ID

3:50 P.M. RDDSS: Forecasting and Communicating Drought in the Red River Basin - Stephanie Johnson, Houston Engineering Inc., Maple Grove, MN (co-authors: M. Deutschman, C. Fritz)

4:10 P.M. Crop Production Water Management Tools for West Texas Farmers - David Doerfert, Texas Tech University, Lubbock, TX (co-authors: R. Kellison, P. Johnson, S. Maas, J. Weinheimer)

Session 43 • River Terrace 2
Surface Water-2: Water Quality and Innovative Techniques

Moderator • Greg Johnson • U.S. Geological Survey • Knoxville, Tennessee

3:30 P.M. Assessment of Modern and Historic River Bank Erosion Using Geospatial Technologies - Andrew Kessler, University of Minnesota, St. Paul, MN (co-authors: S. Gupta, M. Brown)

3:50 P.M. Innovative Hydraulic Barrier to Manage Brownfields Contamination and Facilitate Stormwater Retrofits - Seth Nehrke, CDM Smith, Jacksonville, FL (co-author: M.F. Schmidt)


4:30 P.M. Utilization of an Alum Off-Line Nutrient Reduction Facility to Achieve TMDL Goals Downstream of Lake Apopka - Ron Hart, Lake County Water Authority, Tavares, FL (co-author: L. Lombard)
SESSION 44 • CITY TERRACE 4
URBANIZATION

MODERATOR • ELISABETH JENICEK • U.S. ARMY CORPS OF ENGINEERS • CHAMPAIGN, ILLINOIS

3:30 P.M. The Influence of Urbanization on Coastal Streams and Rivers: Hydrology, Stream Morphology, Water Quality, and Biota - George Guillen, Environmental Institute of Houston (EIH) – University of Houston Clear Lake (UHCL), Houston, TX (co-authors: J.W. Oakley, G. Knothe, M. Mokrech)

3:50 P.M. Metrics for Analyzing Appropriateness and Change in Urban Landscape Water Use - Joanna Endter-Wada, Utah State University, Logan, UT (co-authors: R. Kjelgren, C.M.U. Neale, D. Glenn, C. Lewis)

4:10 P.M. An Appropriate Methodology for Using ArcHydro Tool in Urbanised Catchment - Seyedhossein Pourali, RMIT University, Melbourne, Vic., Australia (co-authors: Arrowsmith, D. Mitchel, P. Lennox, N. Baby)

4:30 P.M. Water Efficiency Demonstrations at Army Installations - Elisabeth Jenicek, U.S. Army Corps of Engineers, Champaign, IL

AWRA STUDENT CHAPTER LEADERS MEETING
4:00 P.M.-5:15 P.M. • RIVER TERRACE 3
SEE “STUDENT PROGRAM” ON PG. 35 FOR DETAILS

STUDENT CAREER NIGHT
Sponsored By
Higgins Engineering • West Palm Beach, Florida and the • AWRA Florida State Section
5:30 P.M.-7:30 P.M. • RIVER TERRACE 3
SEE “STUDENT PROGRAM” ON PG. 35 FOR DETAILS

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Eagan, Minnesota
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<th>Session 45 - SS</th>
<th>Session 46</th>
<th>Session 47</th>
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<tr>
<td>Wetlands Science and Restoration: The Everglades and the World</td>
<td>International Issues-1</td>
<td>Surface Water-3: Innovative Techniques</td>
<td>Water Quality-4: Data and Monitoring</td>
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<td>City Terrace 7</td>
<td>City Terrace 12</td>
<td>City Terrace 4</td>
<td>River Terrace 2</td>
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**Concurrent Sessions 45, 46, 47, 48 / 8:30 a.m.-10:00 a.m.**

**MORNING NETWORKING BREAK** / 8:00 a.m.-10:30 a.m. / Conference Center B Foyer

**Concurrent Sessions 49, 50, 51, 52 / 10:30 a.m.-12:00 noon**

**MORNING NETWORKING BREAK (cont’d.)** / 10:00 a.m.-10:30 a.m. / Conference Center B Foyer

**Concurrent Sessions 49, 50, 51, 52 / 10:30 a.m.-12:00 noon**

**LUNCH (ON YOUR OWN) / 12:00 noon-1:25 p.m.**

**Concurrent Sessions 53, 54, 55, 56 / 1:30 p.m.-3:00 p.m.**

**AFTERNOON NETWORKING BREAK / 3:00 p.m.-3:30 p.m. / Conference Center B Foyer**

**Concurrent Sessions 57, 58, 59, 60 / 3:30 p.m.-5:00 p.m.**

**AWRA HOPES THAT WE HAVE MET YOUR EXPECTATIONS DURING OUR 2012 ANNUAL WATER RESOURCES CONFERENCE. MAKE PLANS NOW TO ATTEND ANY ONE (OR ALL) OF OUR CONFERENCES BEING HELD IN 2013. PLEASE SEE THE INSIDE BACK COVER FOR A LISTING OF OUR 2013 MEETINGS. FOR ADDITIONAL INFORMATION VISIT OUR WEBSITE AT WWW.AWRA.ORG.**
CONCURRENT SESSIONS 45, 46, 47, 48

8:30 A.M.-10:00 A.M.  THURSDAY - NOVEMBER 15

SESSION 45 • SPECIAL SESSION • CITY TERRACE 7
WETLANDS SCIENCE AND RESTORATION: THE EVERGLADES AND THE WORLD

MEDIUMATOR • L. DONALD DUKE • FLORIDA GULF COAST UNIVERSITY • FT. MYERS, FLORIDA

8:30 A.M.  Stormwater Treatment Areas: Two Decades of Integrating Science and Engineering for Everglades Restoration - Jeremy Mc Bryan, South Florida Water Management District, West Palm Beach, FL (co-authors: E. Barnett, T. Morgan, J. Leeds, T. Piccone, L. Gerry)


SESSION 46 • CITY TERRACE 12
INTERNATIONAL ISSUES-1

MEDIUMATOR • ANNETTE HERNANDEZ • TEXAS TECH UNIVERSITY • LUBBOCK, TEXAS

8:30 A.M.  Comparative Study of a Watershed Management Tool Across International Boundaries - Felipe Estrada, Texas Tech University, Lubbock, TX (co-authors: A. Hernandez, V. Uddameri)

8:50 A.M.  Flood Mitigation Effects of the Four Major Rivers Restoration Project in Korea - Boosik Kang, Dankook University, Yongin, Republic of Korea (co-authors: M. Shim, H. Woo, K. Han)


SESSION 47 • CITY TERRACE 4
SURFACE WATER-3: INNOVATIVE TECHNIQUES

MEDIUMATOR • RENEE MURCH • INTERA • LAND O’ LAKES, FLORIDA

8:30 A.M.  Depth-Area-Duration Characteristics of Storm Rainfall in Texas Using Multi-Sensor Precipitation Estimates - John McEnery, University of Texas Arlington, Arlington, TX (co-authors: K. Jitkajornwanich, R. Elmasri)

8:50 A.M.  Santa Fe River Statistical Analysis -- Adjusted Historical Flow Estimation - Renee Murch, INTERA, Land O’ Lakes, FL (co-authors: P. Tara, J. Good)


9:30 A.M.  Evaluating and Mitigating the Impacts of Shale Gas Extraction on Landscape Fragmentation - Chi Ho Sham, The Cadmus Group, Inc., Waltham, MA (co-authors: S. DeCarli, B. Caccavale)

SESSION 48 • RIVER TERRACE 2
WATER QUALITY-4: DATA AND MONITORING

MEDIUMATOR • WILLIAM WOLFE • U.S. GEOLOGICAL SURVEY • NASHVILLE, TENNESSEE

8:30 A.M.  Downloading Water Quality Data From EPA’s STORET Data Warehouse Using Web Services Through a Microsoft Excel Spreadsheet Application - - Peter Ilieve, RTI International, Research Triangle Park, NC (co-authors: P. Andrews, D. Boezio, A. Wesley-Snider, C. Kovatch, M. Brennan)

8:50 A.M.  Continuous Water Quality Monitoring - What the Salespeople Don’t Tell You - Brian Behrens, Woolpert, Inc., Greenville, SC (co-authors: M. Long, J. Riddle, J. Wortkoetter)


10:00 A.M.-10:30 A.M.  • MORNING NETWORKING BREAK (cont’d.) • CONFERENCE CENTER B FOYER
CONCURRENT SESSIONS 49, 50, 51, 52
10:30 A.M.-12:00 NOON

THURSDAY - NOVEMBER 15

SESSION 49 • SPECIAL SESSION • CITY TERRACE 7
FLOODPLAIN MANAGEMENT AND FLOOD RISK ASSESSMENT-1
MODERATOR • ZHIDA SONG-JAMES • MICHAEL BAKER CORPORATION • ALEXANDRIA, VIRGINIA

11:10 A.M. A Holistic and Integrated Approach to Floodway Modeling/Delineation - Shweta Chervu, Dewberry, Raleigh, NC (co-author: M.A. Hanson)
11:30 A.M. Use of HAZUS to Estimate Economic Impact Due to New Coastal Engineering In the City of New London - Amol Daxikar, CDM Smith, Fairfax, VA (co-author: G. Cabanilla)

SESSION 50 • SPECIAL SESSION • CITY TERRACE 12
NEW TOOLS FOR RIVER AND STREAM MANAGEMENT RELATED TO FISHERIES RESOURCES
MODERATORS • WAYNE WRIGHT • GEODENIGERS, INC. • SEATTLE, WASHINGTON
ROSEMARY BURK • ARKANSAS TECH UNIVERSITY • RUSSELVILLE, ARKANSAS

10:30 A.M. Modeling the Effects of Switchgrass Management on Aquatic Macroinvertebrates - Latha Baskaran, Oak Ridge National Laboratory, Oak Ridge, TN (co-authors: V. Dale, L. Tran)
10:50 A.M. Restoration of Historic Flows Through Hydraulic Structures. - Henry Pate, Battelle Memorial Institute, Ponce Inlet, FL (co-author: F. Fernandez)
11:10 A.M. Modern Urbanized Stream Restoration and Protection Enhancements -- Natural System Supported With Engineered Protection - Larry Fluty, Cardno TBE, Brooksville, FL (co-author: D. Talhook)

SESSION 51 • CITY TERRACE 4
WATER QUALITY-5: SALINITY
MODERATOR • SHABBIR AHMED • U.S. ARMY CORPS OF ENGINEERS • JACKSONVILLE, FLORIDA

10:30 A.M. Sacramento-San Joaquin Delta Simulation Model for Simulation of Various Cations and Anions - David Altare, MWH Americas, Sacramento, CA (co-author: G. Parvathinathan)

SESSION 52 • RIVER TERRACE 2
CLIMATE CHANGE-4
MODERATOR • FEKADU MOREDA • RTI INTERNATIONAL RESEARCH • RESEARCH TRIANGLE PARK, NORTH CAROLINA

10:50 A.M. Stochastic Water Quality Modeling of an Impaired River Impacted by Climate Change - Timothy Cox, CDM Smith, Denver, CO (co-authors: A. Navato, D. Turner, G. Pellletier)

12:00 NOON-1:25 P.M. • LUNCH BREAK (ON YOUR OWN)
CONCURRENT SESSIONS 53, 54, 55, 56

1:30 P.M.-3:00 P.M. • THURSDAY - NOVEMBER 15

SESSION 53 • SPECIAL SESSION • CITY TERRACE 7
FLOODPLAIN MANAGEMENT AND FLOOD RISK ASSESSMENT: JACKSONVILLE CASE STUDY
MODERATOR • MICHAEL DELCHARCO • TAYLOR ENGINEERING, INC. • JACKSONVILLE, FLORIDA

1:30 P.M. Mapping the Risk and Engaging the Public: The Duval County Public Outreach Success Story - Lisa Sterling, CDM Smith, Jacksonville, FL (co-authors: P. Victor, J. Pappas, B. Joyce)
1:50 P.M. The Jacksonville Case Study: One Stormwater Model. Many Applications. - Jose Maria Guzman, CDM Smith, Jacksonville, FL (co-authors: G. Cabanilla, G. McGrath)
2:30 P.M. The Jacksonville Case Study: Coastal Storm Surge and Mapping Study - Michael DelCharco, Taylor Engineering, Inc., Jacksonville, FL

SESSION 54 • CITY TERRACE 12
POLICY, PLANNING, AND LEGAL ISSUES-3
MODERATOR • ERICA BROWN • NOBIS • FALLS CHURCH, VIRGINIA

1:30 P.M. The Value Chain of Water - Using Enterprise Blueprinting Techniques to Uncover New Knowledge - Erica Brown, Nobis, Falls Church, VA
1:50 P.M. Principles for Allocating Scarce Water Resources: Deliberating Water Policy Designs in Changing Societal Contexts - Joanna Endter-Wada, Utah State University, Logan, UT (co-authors: L.W. Welsh, H. Ingram)
2:10 P.M. Just the Facts Maam - Merging Political and Technical Decisions - Lisa Beutler, MWH Americas and California Water Plan, Sacramento, CA

SESSION 55 • CITY TERRACE 4
ECOSYSTEMS-2
MODERATOR • SARAH A. WHITE • CLEMSON UNIVERSITY • CLEMSON, SOUTH CAROLINA

1:50 P.M. Managing Forests for Increased Water Yield in Florida - David Kaplan, University of Florida, Gainesville, FL (co-authors: D.L. McLaughlin, M.J. Cohen)
2:10 P.M. Nutrient Loading Rates Impact Nutrient Fixation Rates Within Three Plant Species in Floating Treatment Wetlands - Sarah A. White, Clemson University, School of Agricultural, Forest, and Environmental Sciences, Clemson, SC

SESSION 56 • RIVER TERRACE 2
MANAGEMENT AND TOOLS-4
MODERATOR • ERIC McLAMORE • UNIVERSITY OF FLORIDA • GAINESVILLE, FLORIDA

1:30 P.M. Net Nitrification and Nitrous Oxide Emissions in Giant Cane in the Cache River Watershed, Southern Illinois - Amanda Nelson, SIUC, Carbondale, IL (co-authors: K. Williard, J. Schoonover)
2:10 P.M. An Investigation on Continental Scales and Altitude Effect on Isotopic Composition (δ¹⁸O) of Ground Level Vapour (GLV) in Indian Sub Continent - Gopal Krishan, Ministry of Water Resources, Roorkee-247 667, Uttarakhand, India (co-authors: M.S. Rao, P. Garg, C.P. Kumar)
2:30 P.M. Adjustment to the Curve Number (NRCS-CN) to Account for the Vegetation Effect on the Hydrological Processes - Alvaro Gonzalez, NOAA-CREST, New York, NY (co-authors: M. Temimi, R. Khanbilvardi)

3:00 P.M.-3:30 P.M. • AFTERNOON NETWORKING BREAK • CONFERENCE CENTER B FOYER
CONCURRENT SESSIONS 57, 58, 59, 60
3:30 P.M.-5:00 P.M.

SESSION 57 • CITY TERRACE 7
EDUCATION AND TRAINING-2
MODERATOR • CAROL HINTON • UNIVERSITY OF FLORIDA TREEO • GAINESVILLE, FLORIDA

3:30 P.M. Challenges and Opportunities of a Water Conservation Certificate Program – Carol Hinton presenting for Laurel Brown, UF TREEO, Gainesville, FL


4:10 P.M. Using Future Work Force to Create a Difference Now - Kimberley Knox, Washington Suburban Sanitary Commission, Laurel, MD

SESSION 58 • CITY TERRACE 12
WATER QUALITY-6: SOURCE WATER PROTECTION AND GIS
MODERATOR • AMR SAFWAT • UNIVERSITY OF CINCINNATI • CINCINNATI, OHIO

3:30 P.M. Source Water Protection and GIS - Kim Swan, Clackamas River Water Providers, Oregon City, OR

3:50 P.M. Using GIS for Drinking Water Quality Protection in an Urbanizing Watershed - Robert McConnell, Tampa Bay Water, Clearwater, FL (co-authors: B. Zumwalt, A. Willis, D. Robison)


4:30 P.M. Willingness to Pay for Continuous Supply of Drinking Water - Mohamed Gheblawi, UAE University, Al Ain, AD, United Arab Emirates

SESSION 59 • CITY TERRACE 4
INFRASTRUCTURE
MODERATOR • PETER JOHNSON • TETRA TECH, INC. • JACKSONVILLE, FLORIDA

3:30 P.M. Terminal Reservoir Replacement Project - Gregory C. Loscher, Bowen, Collins & Associates, Draper, UT

3:50 P.M. Understanding Your Risk - Michael Chilson, Golder Associates Inc, Atlanta, GA


4:30 P.M. Water Infrastructure Rehabilitation: Environmental Resources and Best Practices - Justin Haynes, Straughan Environmental, Inc., Columbia, MD

SESSION 60 • RIVER TERRACE 2
INTERNATIONAL ISSUES-2
MODERATOR • EMMANUEL U. NZEWI • SOUTHERN UNIVERSITY • BATON ROUGE, LOUISIANA


3:50 P.M. Perceptions of Water Management in the Fertile Crescent: The Role of Water Agreements and Politics in Concealing the Growing Water Scarcity - Tala Qtaishat, The University of Jordan, Amman, Jordan


4:30 P.M. Runoff Rainwater Harvesting for the Development of Semi Arid Areas - Mehemed Razzaghi, Al-Jabal Al-Gharbi University, Gharian, Libya

Thursday, November 15
**Commercial & Educational Exhibitors**

The following organizations will be exhibiting in the Millennium Hall during the conference.

Please be sure to visit them during exhibit hours:

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tr>
<td>Monday, November 12</td>
<td>8:00 a.m. to 3:30 p.m.</td>
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<td></td>
<td>&amp; 5:00 p.m. to 6:30 p.m.</td>
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<tr>
<td>Tuesday, November 13</td>
<td>8:00 a.m. to 3:30 p.m.</td>
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<tr>
<th>Organization</th>
<th>Location</th>
<th>Booth</th>
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<tr>
<td>AMEC</td>
<td>Lakeland, FL</td>
<td>22</td>
</tr>
<tr>
<td>Aquatic Informatics</td>
<td>Vancouver, BC, Canada</td>
<td></td>
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<tr>
<td>Brown and Caldwell</td>
<td>Tampa, FL</td>
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<tr>
<td>Cardno ENTRIX</td>
<td>Riverview, FL</td>
<td>12</td>
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<td>GoldSim Technology Group</td>
<td>Issaquah, WA</td>
<td>5</td>
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<tr>
<td>Hydrological Services America</td>
<td>Lake Worth, FL</td>
<td>23</td>
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<tr>
<td>In-Situ</td>
<td>Fort Collins, CO</td>
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<td>INTERA, Inc.</td>
<td>Austin, TX</td>
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<td>Normandeau Associates, Inc.</td>
<td>Gainesville, FL</td>
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<td>Schlumberger Water Services</td>
<td>Tucson, AZ</td>
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<tr>
<td>Stevens Water Monitoring, Inc.</td>
<td>Portland, OR</td>
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<tr>
<td>University of Florida TREEO Center</td>
<td>Gainesville, FL</td>
<td>21</td>
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<tr>
<td>Wiley – Blackwell</td>
<td>Malden, MA</td>
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<tr>
<td>YSI, Inc.</td>
<td>Yellow Springs, OH</td>
<td>17</td>
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**You can also find in the Exhibit Hall**

**AWRA State Section**

Florida

Booth 15

**Poster presentations can be found in the aisles between the exhibit booths in the Exhibit Hall**
STUDENT PROGRAM
MONDAY • NOVEMBER 12 • 4:45 P.M. TO 5:00 P.M. • MEET IN THE CONFERENCE CENTER A FOYER
STUDENT ATTENDEE CONFERENCE ORIENTATION
M Od erator • GARRETT WALLACE • ALICO, INC. • FT. MYERS, FLORIDA

This conference session is open to students and other first-time professional conference attendees. The goal of the session is to teach students how to “design” their own conference experience and learn proper networking techniques that will offer the opportunity to experience all that the AWRA National Conference has to offer. Additionally, each session attendee will be asked to spend a moment or two and describe what expectations each has from the conference and the moderator will assist in realizing these expectations. There is no charge for this orientation.

WEDNESDAY • NOVEMBER 14 • 4:00 P.M. TO 5:15 P.M. • RIVER TERRACE 3
AWRA STUDENT CHAPTER LEADERS MEETING
M Od erator • MICHAEL E. CAMPANA • OREGON STATE UNIVERSITY • CORVALLIS, OREGON

Here’s your chance to catch up on the latest activities of our AWRA student chapters on campuses across the U.S. Student chapter officers will be presenting recent chapter activities with a focus on innovative events and outreach. The session will include a discussion aimed at fostering recently formed chapters as well re-invigorating established chapters. Student chapter advisors are encouraged to attend and join in the dialogue. If you are a student or potential faculty advisor with thoughts of starting a new chapter, we want to hear from you! The session will conclude with a brief discussion of AWRA’s role in supporting student chapters.

WEDNESDAY • NOVEMBER 14 • 5:30 P.M. TO 7:30 P.M. • RIVER TERRACE 3
STUDENT CAREER NIGHT
Sponsored by Higgins Engineering • WEST PALM BEACH, FLORIDA AND AWRA FLORIDA STATE SECTION
M Od erator • ROBERT HIGGINS • HIGGINS ENGINEERING • WEST PALM BEACH, FLORIDA
Panel Participants
L. DONALD DUKE • Florida Gulf Coast University • Gainesville, Florida
CHARLES PADERA • Atkins Global • St. Augustine, Florida
JOE ULLO • Lewis, Longman & Walker • Tallahassee, Florida

Join us for Student Career Night - an exciting opportunity for undergraduate and graduate students to explore water-related careers. The session will focus on a wide variety of career options (non-profit to private-sector). It will benefit both students just starting to explore their career options and those ready to join the workforce. Students will learn about experiences and opportunities that are available in various water resources vocations and will learn how water, as a career, is evolving. Topics of discussion geared toward water resources will include:

• Career options
• Growth industries and emerging fields
• Graduate degrees - pros and cons
• Working environments - hours, compensation, promotion capacity, etc.
• Entry level expectations

The session will be presented in two parts. First, a panel of professionals will discuss the substance of what they do and describe their work environment. Following the panel discussion, participants will have the opportunity to meet and network with professionals spanning a breadth of water resource careers in a rotating roundtable. This is a perfect opportunity to expand your own professional network, as well as to assist colleagues with career placement. Students will receive practical experience networking in a professional setting and will be able to exchange business cards and resumes with industry professionals. Contacts made at this event could result in lifetime business opportunities. Attendees are encouraged to eat dinner prior to this event. This event is included in your conference registration fee.

OTHER OPPORTUNITIES

While you’re at the conference you should also take advantage of some of the other terrific networking opportunities:

• The Conference Opening Networking Reception, Monday, November 12, 5:00 to 6:30 p.m. (Conference Center A).
• The AWRA Conversations Corner where you can meet colleagues and check your email (3rd Floor Skybridge).
• The “Ask Me About …” Program: Conversation-enabling program open to all registrants (see inside front cover of program).
• The AWRA Employment Opportunity Board where you can display your resume and/or look for a job (Conference Center A).

All of these items are included in your conference registration fee so please do make use of these opportunities to expand your career possibilities and gain a greater appreciation for the world of water resources.
SPECIAL EVENTS

MONDAY • NOVEMBER 12 • 5:00 P.M. TO 6:30 P.M. • CONFERENCE CENTER A
OPENING NETWORKING RECEPTION AND POSTER SESSION OPEN

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. Also, during the Reception, the Poster Session participants will be at their posters to answer questions about their presentations. Additional tickets for accompanying guests may be purchased on site at the AWRA Registration Desk. The cost for each additional ticket is $30.00.

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

All pre-registered participants are welcome to join us for a beautiful, casual 5K Fun Run! The run will follow a course 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 please sign up prior to the conference using the Conference Registration Form or you may sign up on site. Please meet in hotel lobby at 6:15 a.m.

TUESDAY • NOVEMBER 13 • 10:00 A.M. TO 10:30 A.M. • CONFERENCE CENTER A
MEET THE EDITORS OF “JAWRA” AND “NATURAL RESOURCE MODELING”

Wiley-Blackwell cordially invites you to meet the Editors from the Journal of the American Water Resources Association (JAWRA) and Natural Resource Modeling at Booth #4 in the Conference Center A Exhibit Room (see pg. 22).

TUESDAY • NOVEMBER 13 • 6:00 P.M. TO 9:00 P.M.
DINNER AT THE RIVER CITY BREWING COMPANY
CO-SPONSORED BY CDM SMITH • JACKSONVILLE, FLORIDA AND THE
AWRA BOARD OF DIRECTORS • MIDDLEBURG, VIRGINIA

Join us for a fun night out at the River City Brewing Company (RCBC), Jacksonville’s premier riverfront restaurant located on the Southbank of downtown Jacksonville! The restaurant overlooks the St Johns River and has an excellent view of the Jacksonville skyline. But the best part will be the great food, great company and great music to dance to after you enjoy your meal. We’ll take the Water Taxi to and from the hotel to the RCBC. Cost includes a wonderful "southern style" buffet and entertainment from the River City Bluez Band. Check out the restaurant at www.rivercitybrew.com, and the band at www.facebook.com/therivercitybluezband. The cost for this evening of fun and good food is $38.00. Please meet in hotel lobby at 5:45 p.m.

WEDNESDAY • NOVEMBER 14 • 12:00 NOON TO 1:25 P.M. • GRAND BALLROOM 4
AWRA AWARDS LUNCHEON
CO-SPONSORED BY CDM SMITH • JACKSONVILLE, FLORIDA

GUEST SPEAKER – ESTUS DANIEL WHITFIELD
FORMER PRINCIPAL ENVIRONMENTAL ADVISOR TO FIVE FLORIDA GOVERNORS

Florida’s Water Management – Its Highs and Lows

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. 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. (Note: If you are a vegetarian, ask your server for a vegetarian meal.) AWRA’s Annual Business Meeting will immediately follow the Awards Luncheon.

WEDNESDAY • NOVEMBER 14 • 3:00 P.M. TO 3:30 P.M. • CONVERSATION CORNER
PETER E. BLACK BOOK SIGNING

Peter E. Black will be holding a book signing of his latest book Water Drops (essays of his Public Radio Broadcasts on all aspects of water). Books will be available for purchase and Peter will be on hand to sign copies during the afternoon networking break.
Ahmadisharaf, Ebrahim (Poster Session), Sharif Univ. of Technology, Civil Engineering Dept., Azadi Ave., Tehran, TE 1458889694, Iran, Phone: 3632220, Email: eascosharif@gmail.com (Abstract)

Abbasi, Ali (Session 23), EA Engineering, Science & Technology, 15 Loveton Cr., Sparks, MD 21152, USA, Phone: 410-771-4950, Email: aabbasi@eaeast.com (Abstract)

Adelson IV, M.B. (Poster Session), Adelson Law Firm, 3454 Lakeshore Dr., Tallahassee, FL 32312, USA, Phone: 850-523-0606, Email: natreslaw@gmail.com (Abstract)

Adeniran, Ezekiel (Session 46), Univ. of Lagos, Works & Physical Planning Dept., Lagos, Nigeria, Phone: 2348033239097, Email: engadeniran@unilag.edu.ng (Abstract)

Adhikari, Dadi (Poster Session), Univ. of New Mexico, MSC05 3060, 1UNM, Albuquerque, NM 87131, USA, Phone: 505-277-5304, Fax: 505-277-9445, Email: dadhinp@unm.edu (Abstract)

Ahmed, Shabbir (Session 51), U.S. Army Corps of Engineers, 701 San Marco Blvd., Jacksonville, FL 32207, USA, Phone: 904-232-1116, Fax: 904-232-1876, Email: shabbir.ahmed.usace.army.mil (Abstract)

Aichele, Stephen (Session 20), U.S. Geological Survey, 6520 Mercantile Way, Ste. 5, Lansing, MI 48911, USA, Phone: 517-887-8918, Fax: 517-887-8937, Email: saichele.usgs.gov (Abstract)

Alam, Mahabub (Session 45), Civil and Environmental Engineering, Univ. of Missouri, E2509 Lafferre Hall, Columbia, MO 65211, USA, Phone: 573-882-1790, Email: mamg3@mail.missouri.edu (Abstract)

Albertin, Klaus (Session 52), CH2M HILL, 3201 Beechleaf Ct., #300, Raleigh, NC 27604, USA, Phone: 919-760-1748, Fax: 919-875-8491, Email: Klaus.Albertin@ch2m.com (Abstract)

Allen, Scott (Poster Session), Oregon State Univ., Corvallis, OR, USA, Phone: 410-336-3383, Email: scottallen1@gmail.com (Abstract)

Altare, David (Session 51, Poster Session), MWH, 3321 Power Inn Rd., Ste. 300, Sacramento, CA 95826, USA, Phone: 916-418-8254, Email: David.A.Altare@mwhglobal.com (Abstract)

Anderson, Chauncey (Session 5), U.S. Geological Survey, 2130 SW 5th Ave., Portland, OR 97201, USA, Phone: 503-251-3206, Email: chauncey@usgs.gov (Abstract)

Annandale, George (Session 11), Golder Associates Inc., 44 Union Blvd., Ste. 300, Lakewood, CO 80228, USA, Phone: 303-980-0540, Email: george_annandale@golder.com (Abstract)

Archfield, Stacey (Session 25), U.S. Geological Survey, 10 Bearfoot Rd., Northborough, MA 01532, USA, Phone: 508-490-5072, Email: sarch@sargov.usgs.gov (Abstract)

Basdekas, Leon (Session 28), Colorado Springs Utilities, 121 S. Tejon St., #200, Colorado Springs, CO 80947, USA, Phone: 719-688-4063, Email: LBasdekas@CSU.ORG (Abstract)

Baskaran, Latha (Session 50), Oak Ridge National Laboratory, 1 Bethel Valley Rd., PO Box 2008, MS 6036, Oak Ridge, TN 37831, USA, Phone: 865-576-1397, Email: baskaranl@ornl.gov (Abstract)

Bateman, Brenda (Session Panel 19), Oregon Water Resources Dept., 725 Summer St., NE, Ste. A, Salem, OR 97304, USA, Phone: 503-986-0879, Fax: 503-986-0903, Email: brenda.o.bateman@state.or.us (Abstract)

Battaglin, William (Session 16), U.S. Geological Survey, Box 25046, MS 415, DFC, Lakewood, CO 80225, USA, Phone: 303-236-6872, Email: wbatagli@usgs.gov (Abstract)

Bedir, Mourad (Session 60), Centre of Water Researches and Technologies, BP 273, Borj CÃ©dria Technopark, Solimon, 8020, Tunisia, Phone: 21622714218, Fax: 21679325802, Email: bedmour@yahoo.fr (Abstract)

Behrens, Brian (Session 48), Woolpert, Inc., 148 River St., Ste. 220, Greenville, SC 29615, USA, Phone: 864-527-4655, Fax: 864-421-9909, Email: brian.behrens@woolpert.com (Abstract)

Berahzer, Stacey (Session 27), Environmental Finance Center, PO Box 671346, Marietta, GA 30066, USA, Phone: 770-509-3887, Email: berahzer@unc.edu (Abstract)

Bergonzoli, Isabella (Poster Session), Oxbridge Academy of the Palm Beaches, 3151 N. Military Trail, West Palm Beach, FL 33409, USA, Phone: 561-972-9672, Email: ithomton@oaap.org (Abstract)

Beutler, Lisa (Session 54), MWH Americas & California Water Plan, 3321 Power Inn Rd., Ste. 300, Sacramento, CA 95826 USA, Phone: 916-924-8844, Email: Lisa.Beutler@mnwglobal.com (Abstract)

Black, Peter (Session 4), SUNY ESF, 1 Forestry Dr., Syracuse, NY 13210, USA, Phone: 315-470-6571, Email: peblack@esf.edu (Abstract)

Blann, Kristen (Session Panel 41), The Nature Conservancy, 7163 Bear Rd., Cushing, MN 56443, USA, Phone: 218-330-9612, Email: kblann@tnc.org (Abstract)

Blodgett, David (Session 17), U.S. Geological Survey, 8505 Research Way, Middleton, WI 57562, USA, Phone: 608-627-5855, Email: dbldgett@usgs.gov (Abstract)

Bock, Andy (Session 17), U.S. Geological Survey, MS 415, Box 25046, DFC, Lakewood, CO 80225, USA, Phone: 303 236 6875, Email: abock@usgs.gov (Abstract)

Bollen, Jim (Session 10, Session Panel 15), Ecology and Environment, 12300 S. Shore Blvd., Ste. 222, Wellington, FL 33414, USA, Phone: 561-793-3849, Email: jbollen@ene.com (Abstract)

Brito, John (Session 8), Univ. of Missouri, Columbia, MO 65201, USA, Phone: 401-663-2945, Email: johnbrito88@gmail.com (Abstract)

Brown, Christopher (Session 34), Univ. of North Florida, Bldg. 50, 1 UNF Dr., Jacksonville, FL 32224, USA, Phone: 904-620-2811, Fax: 904-620-1391, Email: christopherj brown@unf.edu (Abstract)

Brown, Erica (Session 54, Poster Session), Noblis, 3150 Fairview Park Dr., Falls Church, VA 22042, USA, Phone: 703-610-2149, Email: erica.brown@noblis.org (Abstract)
Hay, Lauren (Sessions 13, 21), U.S. Geological Survey, MS 412, Box 25406, DFC, CO 80225, USA, Phone: 303-236-7279, Email: lhay@usgs.gov (Abstract)

Haynes, Justin (Session 59), Straughan Environmental, Inc., 10245 Old Columbia Rd., Columbia, MD 21046, USA, Phone: 443-539-2515, Fax: 410-309-6160, Email: jhaynes@straughanenvironmental.com (Abstract)

Haywood, Carlton (Session 33), ICPRB, 51 Monroe St., Ste. PE-08, Rockville, MD 20850, USA, Phone: 301-274-8105, Email: chaywood@icprb.org (Abstract)

He, Ziqi (Zek) (Session 7), HSA Engineers & Scientists, 1520 Royal Palm Square Blvd., Fort Myers, FL 33909, USA, Phone: 239-936-4003, Email: zhe@hsa-env.com (Abstract)

Hernandez, Annette (Session 38), Texas Tech Univ., Box 41023, Lubbock, TX 79409, USA, Phone: 806-742-2801, Email: annette.hernandez@ttu.edu (Abstract)

Holtzower, Darby (Poster Session), Univ. of Florida, 328 Rinker Hall, Gainesville, FL 32611, USA, Phone: 352-514-1074, Fax: 352-392-9606, Email: holtzower@ufl.edu (Abstract)

Homsey, Andrew (Poster Session), Univ. of Delaware, DGS Annex, Academy St., Newark, DE 19716, USA, Phone: 302-831-4932, Email: ahomsey@udel.edu (Abstract)

Hu, Shangchun (Session 6), Univ. of Florida, PO Box 110675, Gainesville, FL 32611, USA, Phone: 352-273-4506, Fax: 352-392-1413, Email: noblespring@ufl.edu (Abstract)

Huang, Yongtai (Poster Session), Hunter College, CUNY, 695 Park Ave., New York, NY 10021, USA, Phone: 845-340-7259, Fax: 845-338-1032, Email: hyontai@dep.nyc.gov (Abstract)

Huang, Shao-Yang (Poster Session), National Yunlin Univ. of Science and Technology, 123, Sec. 3, University Rd., Douliu, Yunlin, TWT 64002, Taiwan, Phone: +886-3-576034, Fax: +886-3-578035, Email: syh1019@ntu.edu.tw (Abstract)

Hughes, W. Brian (Session 29), U.S. Geological Survey, 9039 Amwiler Rd., Ste. 130, Atlanta, GA 30360, USA, Phone: 770-903-9162, Fax: 770-903-9199, Email: wbhughes@usgs.gov (Abstract)

Hutchinson, Kasey (Poster Session), U.S. Geological Survey, 400 S. Clinton St., Rm. 269, Iowa City, IA 52240, USA, Phone: 319-358-3617, Fax: 319-358-3606, Email: khutchin@usgs.gov (Abstract)

Hyatt, Carly (Session 9), Brigham Young Univ., 859 N. 700 E., #8, Provo, UT 84606, USA, Phone: 920-915-9353, Email: cadehyatt@gmail.com (Abstract)

Ilieve, Peter (Sessions 20, 48, Poster Session), RTI International, 3040 Cornwallis Rd, Research Triangle Park, NC 27709, USA, Phone: 919-932-4876, Fax: 919-541-7155, Email: pii@rti.org (Abstract)

Izursa, Jose-Luis (Poster Session), Inteligencias International, 4412 Usangte St., Beltsville, MD 20705, USA, Phone: 301-219-1824, Email: jilizursa@gmail.com (Abstract)

Jenicke, Elisabeth (Session 44), U.S. Army Corps of Engineers, PO Box 9005, Champaign, IL 61822, USA, Phone: 217-373-7238, Fax: 217-373-6740, Email: elisabeth.m.jenicke@usace.army.mil (Abstract)

Jia, Yanbing (Session 35), St. Johns River Water Management District, 4049 Reid St., Palatka, Fl 32177, USA, Phone: 386-329-4850, Email: yjia@jsrwmnd.com (Abstract)

Johnson, Greg (Session 43), U.S. Geological Survey, 3231 Middlebrook Pike, Knoxville, TN 37921, USA, Phone: 865-545-4140, Fax: 865-545-4496, Email: gcjohnso@usgs.gov (Abstract)

Johnson, Michael (Poster Session), MLJ-LLC, 632 Cantrill Dr, Davis, CA 95618, USA, Phone: 530-756-5200, Email: mjjohnson@mlj-llc.com (Abstract)

Johnson, Nathan (Session 18), St Johns River Water Management District, 4049 Reid St., Palatka, FL 32177, USA, Phone: 386-329-4835, Fax: 386-329-4820, Email: njohnson@srjwm.com (Abstract)

Johnson, Stephanie (Session 42), Houston Engineering Inc., 6901 E. Fish Lake Rd., Ste. 140, Maple Grove, MN 55369, USA, Phone: 763-493-4522, Email: sjohnson@houstoneng.com (Abstract)

Jones, Gregg (Session 22), Cardno ENTRIX, 3905 Crescent Park Dr., Riverview, FL 33678, USA, Phone: 813-625-3510, Fax: 813-646-0440, Email: gregg.jones@cardno.com (Abstract)

Jordan, Joel (Session 10), Brown and Caldwell, 850 Trafalgar Ct., Ste. 300, Maitland, Fl 32751, USA, Phone: 407-661-9530, Email: jordan@brnwald.com (Abstract)

Juracek, Kyle (Session 1), U.S. Geological Survey, 4821 Quail Crest Place, Lawrence, KS 66049, USA, Phone: 785-832-3527, Fax: 785-832-3500, Email: kjuracek@usgs.gov (Abstract)

Kang, Boosik (Session 46), Dankook Univ., #126 Jukjeon-dong Suji-gu, Yongin, Republic of Korea, Phone: -11425, Email: bskang@dankook.ac.kr (Abstract)

Kaplan, David (Session 55), Univ. of Florida, 319 Newins-Ziegler Hall, PO Box 110410, Gainesville, FL 32611, USA, Phone: 352-682-4693, Email: dkaplan@ufl.edu (Abstract)

Kaufman, Gerald (Session 31), Univ. of Delaware, School of Public Policy and Administration, DGS Annex Academy St., Newark, DE 19716, USA, Phone: 302-831-4929, Email: jerryk@udel.edu (Abstract)

Kennon, Jonathan (Session 33), U.S. Geological Survey, 810 Bear Tavern Rd., Ste. 206, West Trenton, NJ 08628, USA, Phone: 609-771-3948, Fax: 609-771-3915, Email: jgkennon@usgs.gov (Abstract)

Kessler, Andrew (Session 43), Univ. of Minnesota, 1991 Upper Buford Cr., St. Paul, MN 55434, USA, Phone: 612-626-4800, Fax: 612-626-4800, Email: kessl127@umn.edu (Abstract)

Khare, Yogesh (Session 32), Univ. of Florida, PO Box 110570, Gainesville, FL 32601, USA, Phone: 352-392-1864, Email: kherveyogesh1@ufl.edu (Abstract)

Kiich, Julie (Session 25), U.S. Geological Survey, National Center 415, Reston, VA 20192, USA, Phone: 703-648-5364, Fax: 703-648-6693, Email: jkiang@usgs.gov (Abstract)
Directory of Presenters (cont’d.)

Michelsen, Ari (Session 4), Texas A&M AgriLife Research, 1380 A&M Circle, El Paso, TX 79927, USA, Phone: 915-859-9111, Email: amichelsen@ag.tamu.edu (Abstract)

Monaghan, Paul (Session 6), Univ. of Florida, 305 Rolfs Hall, Gainesville, FL 32611, USA, Phone: 352-213-1481, Email: pauli@ufl.edu (Abstract)

Monahan, John (Session 50), GeoEngineers, Inc., 600 Dupont St., Bellingham, WA 98225, USA, Phone: 360-647-1510, Fax: 360-647-5044, Email: jmonahan@geoengineers.com (Abstract)

Moody, Paul (Session 36), Univ. of Massachusetts, Amherst, 379 Strong St., Amherst, MA 01992, USA, Phone: 253-722-8045, Email: paul.moody@us.army.mil (Abstract)

Moreda, Fedaku (Session 52), RTI International, 3040 Cornwallis Rd., Research Triangle Park, NC 27709, USA, Phone: 919-541-6819, Email: fmoreda@rti.org (Abstract)

Munsch, Dougias (Poster Session), St. Johns River Water Management District, 4049 Reid St., Palatka, FL 32177, USA, Phone: 386-329-4173, Email: dmunch@mjsrwm.com (Abstract)

Murch, Renee (Sessions 14, 47), INTERA, 4111 Land O’ Lakes Blvd., Ste. 104, Land O’ Lakes, FL 34639, USA, Phone: 813-527-6999, Email: rmurch@intera.com (Abstracts)

Murphy, Jenny (Session 33), U.S. Geological Survey, 640 Grassmere Park, Ste. 100, Nashville, TN 37211, USA, Phone: 615-837-4712, Email: jmurphy@usgs.gov (Abstract)

Nakayama, Tadanobu (Session 12), National Institute for Environmental Studies, 16-2 Onogawa, Tsukuba, Iba, Japan, Email: nakat@nies.go.jp (Abstract)

Narvaez, Martha (Session 40), Water Resources Agency, Univ. of Delaware, 180 Graham Hall, Newark, DE 19716, USA, Phone: 302-831-4931, Email: mcorrozi@udel.edu (Abstract)

Nehrkne, Seth (Session 43), CDM Smith, 8381 Dix Ellis Trail, Ste. 400, Jacksonville, FL 32256, USA, Phone: 954-527-6730, Email: NehrkneSM@CDMSmith.com (Abstract)

Nelson, Amanda (Session 56), SIUC, 1205 Lincoln Dr., Carbondale, IL 62901, USA, Phone: 314-779-8231, Email: amnels ons@siu.edu (Abstract)

Newlin, Jessica (Session 12), Bucknell Univ. Civil and Environmental Engineering, Lewisburg, PA 17837, USA, Phone: 570 577-2903, Email: jessica.newlin@bucknell.edu (Abstract)

Niazi, Mehran (Session 4), U.S. Environmental Protection Agency, 26 W. Martin Luther King Dr., Cincinnati, OH 45268, USA, Phone: 513-569-7332, Fax: 513-569-7620, Email: niazi.mehran@epa.gov (Abstract)

Norton, Stuart (Session 30), IndeWater, LLC, 5745 SW 75th St., # 367, Gainesville, FL 32608, USA, Phone: 352-727-4200, Email: stuartnorton@indewater.com (Abstract)

Nzewi, Emmanuel (Sessions 28, 60), Southern Univ., Dept. of Civil Engineering, Baton Rouge, LA 70813, USA, Phone: 225-771-3502, Fax: 225-771-3502, Email: emmanuel.mac@me.com (Abstracts)

O’Neal, Jeremy (Poster Session), Univ. of Florida, 209 Black Hall, Gainesville, FL 32611, USA, Phone: 321-394-5826, Fax: 352-392-3076, Email: jer3887@ufl.edu (Abstract)

Ortiz, Rod (Session 9), U.S. Geological Survey, 201 E. 9th St., Pueblo, CO 81003, USA, Phone: 719-544-7155, Fax: 719-544-463, Email: rfortiz@usgs.gov (Abstract)

Ott, Emily (Session 2), Univ. of Florida Agricultural Education and Communication, Dept. of Agricultural Education and Communication, 305 Rolfs Hall, PO Box 110540, Gainesville, FL 32611, USA, Phone: 352-222-9423, Fax: 352-392-9585, Email: emilyott@ufl.edu (Abstract)

Over, Thomas (Session 25, Poster Session), U.S. Geological Survey, Illinois Water Science Ctr., 1201 W. University Ave., Ste. 100, Urbana, IL 61801, USA, Phone: 217-328-9757, Email: tmower@usgs.gov (Abstract)

Palacio, Darina (Poster Session), Univ. of Florida, Gainesville, FL 32603, USA, Phone: 916-390-5136, Email: palaci o@ufl.edu (Abstract)

Parab, Rahul (Session 3), Taylor Engineering Inc., 10151 Deerwood Park Blvd., Bldg 300, Ste. 300, Jacksonville, FL 32081, USA, Phone: 904-731-7040, Fax: 904-731-9847, Email: rparab@taylor engineering.com (Abstract)

Park, Jaehong (Poster Session), Semayung Univ., Civil Engineering, Jecheon, Chungbuk, Korea, South, Phone: -3171, Email: jpark@semyung.ac.kr (Abstract)

Pate, Henry (Session 50), Battelle Memorial Institute, 4928 Sallie Dr., Ponce Inlet, FL 32127, USA, Phone: 386-767-3330, Fax: 386-760-7927, Email: pateh@battelle.org (Abstract)

Pearce, Mark (Session 30), Cardno ENTRIX, 1388 Colonial Blvd., Ft. Myers, FL 33907, USA, Phone: 239-574-1919, Fax: 239-574-8106, Email: mark.pearce@cardno.com (Abstract)

Peck, John C. (Session 28), Univ. of Kansas School of Law, Green Hall, 1535 West 15th St., Lawrence, KS 66217, USA, Phone: 785-864-9228, Fax: 785-864-5054, Email: jpeck@ku.edu (Abstract)

Peterson, Robert (Session 18), Southwest Florida Water Management District, 2379 Broad St., Brooksville, FL 34604, USA, Phone: 352-796-7211, Fax: 352-797-5799, Email: Robert.Peterson@watermatters.org (Abstract)

Phelan, Jennifer (Session 37), RTI International, 3040 Cornwallis Rd., Research Triangle Park, NC 27709, USA, Phone: 919-541-7079, Fax: 919-541-7155, Email: jenphelan@rti.org (Abstract)

Poole, Shannon (Poster Session), U.S. Geological Survey, MS 412, Box 25046, DFC, Lakewood, CO 80225, USA, Phone: 303-236-7279, Email: spool e@usgs.gov (Abstract)

Pourali, Seyyedhossein (Session 44), RMIT Univ., School of Mathematical and Geospatial Sciences, Royal Melbourne Institute of Technology (RMIT University), GPO Box 2476, Melbourne, 3001, Melbourne, Vic, Australia, Phone: 6140459544, Email: hossainpourali@yahoo.com (Abstract)
FIRE EMERGENCY INFORMATION ~ PREPAREDNESS IN HOTELS

PLAN AHEAD – When you check into your room, check the location of exits. Walk to the nearest exit, learn the route, obstacles, etc. Keep your room key on the night stand when you are in your room. Examine your room. Check the windows to see if they open and how. Examine the area outside your window.

IN CASE OF A FIRE ... EVACUATION PROCEDURES – Immediately investigate all odors, smoke, and/or disturbances. If you smell smoke, grab your key, roll out of bed, and crawl to the door. Feel the door. If the door facing or knob is hot, don’t open it. If the hall is clear of fire, crawl toward the exit after closing your door. Stay against the exit side of the wall. Keep as close to the floor as possible. When you reach the exit, walk down the stairs holding the handrail.

SURVIVAL TECHNIQUES IN THE ROOM – If the door is warm or hot, or if the hallway is filled with smoke, you can still defend yourself effectively in your room. Call the front desk to report the fire and let someone know your location. Vent the room. Use the bathroom vent fan or open the window if there is smoke in your room. Don’t open the window if there is smoke outside. Fill the bathtub with water for firefighting. Don’t get in the tub! Use wet sheets or towels to stuff the cracks around the door. Use the ice bucket to drench the walls, mattresses, rugs, drapes, etc. While waiting to be rescued, do not hide from the fire. Stay out of closets and out from under the bed. Keep fighting until help arrives. Place a towel, sheet, or other items in the window to let firemen know that someone is in the room.

OTHER TIPS – JUMPING ... If you jump from higher than the third floor, chances are you won’t survive the fall. Elevators ... Never enter an elevator during a fire alert. Don’t Panic ... It is contagious and almost irreversible once it sets in. If you understand what is happening, what to do, where to go and how to get there, you are unlikely to panic.

AWRA NATIONAL HEADQUARTERS STAFF
4 WEST FEDERAL STREET • P.O. BOX 1626 • MIDDLEBURG, VA 20118-1626
(540) 687-8390 • FAX: (540) 687-8395 • info@awra.org

TECHNICAL DIRECTOR …………………………………………………………………..RICHARD A. ENGBERG
DIRECTOR OF OPERATIONS ………………………………………………………………MICHAEL J. KOWALSKI, CAE
MEMBERSHIP SERVICES MANAGER……………………………………………………CHRISTINE MCCREHIN
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AWRA’s 2013 SPRING SPECIALTY CONFERENCE
“AGRICULTURAL HYDROLOGY AND WATER QUALITY II”

AWRA’S 2013 SUMMER SPECIALTY CONFERENCES
JUNE 24-26, 2013
“ENVIRONMENTAL FLOWS”

AND

JUNE 26-28, 2013
“HEALTHY FORESTS = HEALTHY WATERS”
HILTON HARTFORD HOTEL – HARTFORD, CONNECTICUT

SEPTEMBER 16-18, 2013
AWRA AND BEIJING HYDRAULIC ENGINEERING SOCIETY 2013 CONFERENCE ON
WATER FOR MEGA CITIES: CHALLENGES AND SOLUTIONS
YULONG HOTEL – BEIJING, CHINA

AWRA’S 2013 ANNUAL WATER RESOURCES CONFERENCE
NOVEMBER 4-7, 2013 – RED LION HOTEL ON THE RIVER-JANTZEN BEACH – PORTLAND, OREGON

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