2018 UCOWR/NIWR
Annual Water Resources Conference



June 26-28, 2018
Pittsburgh Marriott City Center
Pittsburgh, PA

UCOWR
UNIVERSITIES COUNCIL
ON WATER RESOURCES

NIWR
THE NATIONAL INSTITUTES
FOR WATER RESOURCES

Special Events

TUESDAY

UCOWR Delegate Business Luncheon (see pg. 6)
11:30 AM - 1:00 PM

Welcome Reception & Poster Session (see pg. 11)
5:30 PM - 7:00 PM

WEDNESDAY

Breakfast Roundtable Discussions (see pg. 13)
7:30 AM - 8:30 AM

Awards Luncheon (see pg. 28)
11:30 AM - 1:30 PM

JCWRE Editors & Associate Editors Meeting
5:00 PM - 5:45 PM

Career Conversations for Students (see pg. 27)
5:00 PM - 6:00 PM

Happy Hour for Grad Students and Professionals
(see pg. 27)
6:00 PM - 8:00 PM

THURSDAY

Urban Stream Restoration Hiking Tour
(see pg. 21) Must be pre-registered.
12:45 PM - 4:30 PM

Exhibitors

xylem
Let's Solve Water

PennState
Institutes of Energy
and the Environment

EESL | ENERGY AND ENVIRONMENTAL SUSTAINABILITY LABORATORIES

Conference Sponsors

Virginia
WATER RESOURCES
Research Center

Pittsburgh Collaboratory for
WATER
Research, Education, Outreach



The Ivanhoe
Foundation

SRBC
SUSQUEHANNA RIVER
BASIN COMMISSION
NY ▪ PA ▪ MD ▪ USA

INSTITUTE OF WATER
SECURITY AND SCIENCE

Pennsylvania Water
Resources Research Center
PAWRRC

SOUTHWESTERN PENNSYLVANIA COMMISSION
SPC
WATER RESOURCE
CENTER

Virginia Tech
Department of
Forest Resources
and Environmental
Conservation

Carnegie Mellon University
Civil & Environmental Engineering

@ucowr #ucowr

facebook.com/ucowr

Welcome from Conference Chair, UCOWR President, and NIWR President

Dear Colleagues,

On behalf of the organizing committee, it is our great pleasure to welcome you to Pittsburgh, Pennsylvania to participate in the 2018 Universities Council on Water Resources (UCOWR) and the National Institutes for Water Resources (NIWR) Annual Water Resources Conference. Pittsburgh, at the confluence of three major rivers, has historical, industrial, recreational, and hydrological significance that provides the perfect backdrop to our conference. We have done our best to offer a thought-provoking program, composed of three exciting plenary sessions and 42 abstract-driven concurrent sessions presenting the latest on science, policy, management, and education in water resources. The conference will offer plenty of opportunities to network and socialize, including our welcome reception, the annual awards banquet, and a special student activities session and happy hour.

On Tuesday, our opening plenary will feature, Dr. Gene Likens, who will discuss water quality insights from long-term studies, and Dr. Jeanne VanBriesen, who will provide an overview on regional water challenges. The 2018 Warren A. Hall Medal recipient Dr. Leonard A. Shabman, and representatives to honor the late Ari Michelson, Zhuping Sheng and Brian Hurd, will speak in Wednesday's plenary session. Our plenary for Thursday focuses on energy-water issues and water quality controversies with Dr. Donald Siegel and Geoff Gisler. The concurrent sessions span many themes that will provide plenty of opportunities for engaging with colleagues on the latest research in water resources.

Thank you to all the participants, plenary speakers, and all who made this meeting possible including: the conference planning committee, the UCOWR board, Bryan Swistock, and particularly Karl Williard and the UCOWR staff, without whom this conference would not be possible.

Best wishes for a productive and enjoyable conference!

Kevin McGuire, Conference Chair
Sharon Megdal, UCOWR President
Sam Fernald, NIWR President

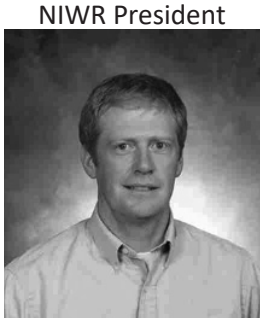
Kevin McGuire
Conference Chair



Sharon Megdal
UCOWR President



Sam Fernald
NIWR President



UCOWR
UNIVERSITIES COUNCIL ON WATER RESOURCES

Universities Council on Water Resources (UCOWR) is a consortium of academic institutions and affiliates invested in water resources research, education, and outreach. UCOWR expands the capacity of universities and their partners to address current water resources challenges through sharing expertise, fostering leadership, and developing interdisciplinary collaborations. In addition to our annual national conference, UCOWR publishes *The Journal of Contemporary Water Research and Education*. For more information, please visit www.ucowr.org.

NIWR
The National Institutes for Water Resources

The National Institutes for Water Resources (NIWR) is comprised of the 54 university-based centers that were established by the Federal Water Resources Research Act. It is charged with arranging for research that addresses water problems or expands understanding of water and water-related phenomena, aiding the entry of new professionals into the water resources fields, helping to train future water scientists and engineers, and transmitting research results to water managers and the public. For more information about NIWR, visit: www.niwr.info.

Special thanks to Southern Illinois University for their ongoing support of UCOWR.

SIU CARBONDALE Southern Illinois University

Monday, June 25

Early Registration
4:00 pm - 6:00 pm
(Grand Ballroom Foyer)

Tuesday, June 26

Registration 7:30 am - 3:30 pm *(Grand Ballroom Foyer)*

Breakfast
7:30 am - 8:30 am
(Grand Ballroom 5)

Opening Plenary Session
8:30 am - 9:50 am *(Grand Ballroom 1 & 2)*

Welcome by UCOWR President, Sharon Megdal; Conference Chair, Kevin McGuire; NIWR President, Sam Fernald

Gene E. Likens - Founding Director and President Emeritus of Cary Institute of Ecosystem Studies; Co-founder of Hubbard Brook Ecosystem Study

Jeanne M. VanBriesen - Duquesne Light Company Professor of Civil and Environmental Engineering and the Director of the Center for Water Quality in Urban Environmental Systems (Water QUEST) at Carnegie Mellon University



9:50 am - 10:10 am
(Grand Ballroom 5)

Concurrent Technical Sessions
10:10 am - 11:30 am

Water Infrastructure Challenges associated with Climate Change *(Marquis C)*
Methods and Approaches for Monitoring and Sharing Water Data *(Marquis B)*
Water Treatment and Remediation *(Marquis A)*
Investigating Feedbacks between Human and Natural Systems in Freshwater Lake Catchments *(City Center A)*
Water Resources Education *(City Center B)*

11:30 am - 12:45 pm
UCOWR Delegate Business Luncheon
(Grand Ballroom 3 & 4)
Must be pre-registered and bring ticket. See pg. 6.
All others - lunch on your own

Concurrent Technical Sessions
1:00 pm - 2:20 pm

Lightning Session: Green Stormwater Infrastructure Research Needs for the Urban Core *(Marquis C)*
Lightning Session: Rural Water Issues in Developing Countries *(Marquis B)*
Panel Discussion: Ohio River Headwaters: Local Issues and National Significance *(Marquis A)*
Panel Discussion: People and Freshwater Lake Catchments *(City Center A)*
Coupled Human-Natural Systems: Management and Economics *(City Center B)*
Climate Change *(Grand Ballroom 1)*



2:20 pm - 2:40 pm
(Grand Ballroom 5)

Concurrent Technical Sessions
2:40 pm - 3:40 pm

Transitions in Agriculture and Water Use I *(Marquis C)*
Lead in Drinking Water and Public Health Implications I *(Marquis B)*
Springs and Seeps: Hydrology, Ecosystem Functions, and Management I *(Marquis A)*
Functions of Vulnerable Waters across a Continuum of Connectivity I *(City Center A)*
Smarter Rivers: Sensors Advancing Science and Water Management *(City Center B)*



3:40 pm - 4:00 pm
(Grand Ballroom 5)

Concurrent Technical Sessions
4:00 pm - 5:00 pm

Transitions in Agriculture and Water Use II *(Marquis C)*
Lead in Drinking Water and Public Health Implications II *(Marquis B)*
Springs and Seeps: Hydrology, Ecosystem Functions, and Management II *(Marquis A)*
Functions of Vulnerable Waters across a Continuum of Connectivity II *(City Center A)*
Irrigation Efficiency and Management *(City Center B)*

5:30 pm - 7:00 pm
Welcome Reception & Poster Session
(Grand Ballroom 3 & 4)

Wednesday, June 27

Registration 7:30 AM - 3:30 PM *(Grand Ballroom Foyer)*

7:30 AM - 8:30 AM
Breakfast & Roundtable Discussions
(Grand Ballroom 5) See pg. 13.

Plenary Session: Warren A. Hall Medal Recipients
8:30 AM - 9:40 AM *(Grand Ballroom 1 & 2)*

Leonard Shabman - Senior Fellow at Resources for the Future

Zhuping Sheng and Brian Hurd - speaking & singing in memory of Ari M. Michelsen (awarded posthumously; past UCOWR President and former Resident Director of the Texas A&M AgriLife Research and Extension Center at El Paso)



9:40 AM - 10:00 AM
(Grand Ballroom 5)

Concurrent Technical Sessions
10:00 AM - 11:20 AM

Water Sustainability, Urban Water, and Ecosystems I *(Marquis C)*
Understanding and Managing Legacy Nutrients in Agricultural Watersheds I *(Marquis B)*
Private Drinking Water Supplies I *(Marquis A)*
Bridging the Communication of Science with the Science of Communication I *(City Center A)*
Engaging the Public through Markets, Policies, and Outreach I *(City Center B)*
Transitions in Agriculture and Water Use III *(Grand Ballroom 1)*

11:30 AM - 1:30 PM
Awards Luncheon
(Grand Ballroom 3 & 4)
Must be pre-registered and bring ticket.
See pg. 28.
All others - lunch on your own

Concurrent Technical Sessions
1:50 PM - 3:10 PM

Water Sustainability, Urban Water, and Ecosystems II *(Marquis C)*
Understanding and Managing Legacy Nutrients in Agricultural Watersheds II *(Marquis B)*
Private Drinking Water Supplies II *(Marquis A)*
Bridging the Communication of Science with the Science of Communication II *(City Center A)*
Engaging the Public through Markets, Policies, and Outreach II *(City Center B)*



3:10 PM - 3:30 PM
(Grand Ballroom 5)

Concurrent Technical Sessions
3:30 PM - 4:50 PM

The Food-Energy-Water Nexus I *(Marquis C)*
Extremes in Water Resources *(Marquis B)*
Groundwater Management *(Marquis A)*
Water Governance *(City Center A)*
Remote Sensing and Modeling to Understand Watershed Processes *(City Center B)*

5:00 PM - 5:45 PM
JCWRE Editors & Associate Editors Meeting *(City center B)*

5:00 PM - 6:00 PM
Career Conversations for Students
(Grand Ballroom 3) See pg. 27.

6:00 PM - 8:00 PM
Happy Hour for Graduate Students and Professionals
(Meet Outside Grand Ballroom 3)
See pg. 27.

Thursday, June 28

Registration 7:30 AM - 10:00 AM *(Grand Ballroom Foyer)*

Breakfast
7:30 AM - 8:30 AM
(Grand Ballroom 5)

Plenary Session
8:30 AM - 9:50 AM *(Grand Ballroom 1 & 2)*

Donald I. Siegel - Emeritus Laura J. and L. Douglas Meredith Professor, Department of Earth Sciences, Syracuse University

Geoff Gisler - Senior Attorney and Leader of Southern Environmental Law Center's Clean Water Program, Chapel Hill Office



9:50 AM - 10:10 AM
(Grand Ballroom 5)

Concurrent Technical Sessions
10:10 AM - 11:50 AM

The Food-Energy-Water Nexus II *(Marquis C)*
Water Issues Associated with Oil and Gas Production *(Marquis B)*
Modeling and Assessment of Cyanobacterial Blooms in Water Supplies and Natural Waters *(Marquis A)*
Ohio River Watershed *(City Center A)*
Watershed Restoration Strategies *(City Center B)*

Field Trip
12:45 PM - 4:30 PM
Urban Stream Restoration Hiking Tour
(Meet in Hotel Lobby) See pg. 21.
Must be pre-registered and bring ticket.

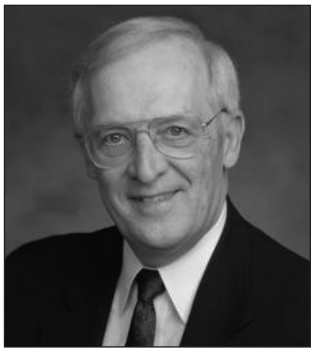
Tuesday, June 26

8:30 am - 9:50 am
Opening Plenary Session
(Grand Ballroom 1 & 2)

Moderator - Sharon Megdal, University of Arizona Water Resources Research Center

Welcome Remarks - Sharon Megdal, UCOWR President; Kevin McGuire, Conference Chair; Sam Fernald, NIWR President

"Insights into Water Quality from Long-Term Studies: Lessons Learned and Implications for the Future"



Gene E. Likens is an ecologist best known for his discovery of acid rain in North America with colleagues, for co-founding of the internationally renowned Hubbard Brook Ecosystem Study and for founding the Institute of Ecosystem Studies, a leading, international ecological research and education center. Dr. Likens is an educator and advisor at state, national, and international levels. He has been an advisor to two governors in New York State and one in New Hampshire, as well as one U.S. President. He currently holds faculty positions at Yale, Cornell, Rutgers, SUNY Albany, and the University of Connecticut; and was awarded a Chair as Albert Einstein Professor from the Chinese Academy of Science and also named Honorary Professor at Jinan University, Guangzhou, China. Dr. Likens has been awarded eleven honorary doctoral Degrees. In addition to being elected a member of the U.S. National Academy of Sciences and the American Philosophical Society, Dr. Likens has been elected to membership in the American Academy of Arts and Sciences, the Royal Swedish Academy of Sciences, Royal Danish Academy of Sciences and Letters, Austrian Academy of Sciences, and an Honorary Member of the British Ecological Society. Dr. Likens was awarded the 2001 National Medal of Science, presented at The White House; and In 2003 was awarded the Blue Planet Prize (with F. H. Bormann) from the Asahi Glass Foundation, considered to be the Nobel Prize of Ecology. Among other awards, in 1993 Dr. Likens, with F. H. Bormann, was awarded the Tyler Prize, The World Prize for Environmental Achievement, and in 1994, he was the sole recipient of the Australia Prize for Science and Technology. Dr. Likens has served as President of the International Society of Theoretical and Applied Limnology, American Institute of Biological Sciences, Ecological Society of America, and American Society of Limnology and Oceanography. Dr. Likens is the author, co-author, or editor of 26 books and more than 600 scientific papers.

"Resources, Rain, Rivers and Regret: Energy and Water System Choices in the Ohio River Basin"



Watershed-scale choices on energy development and urban water infrastructure have altered water systems in the Ohio River Basin. In this talk, Dr. VanBriesen will share some of the challenges in the Ohio River Basin that have implications for the country and the world.

Jeanne M. VanBriesen is the Duquesne Light Company Professor of Civil and Environmental Engineering and Engineering and Public Policy at Carnegie Mellon University and the Director of the Center for Water Quality in Urban Environmental Systems (Water QUEST) at Carnegie Mellon University. Dr. VanBriesen holds a B.S. in Education and a M.S. and Ph.D. in Civil Engineering from Northwestern University. She is a licensed professional engineer in the state of Delaware. Her research is in environmental systems, including biotransformation of recalcitrant organics, detection of biological agents in drinking water and natural water systems, speciation-driven biogeochemistry of chelating agents and disinfection by-products, and impacts of energy extraction. Dr. VanBriesen has published more than 50 scientific articles and given more than 150 professional presentations. Her research has been funded by the National Science Foundation, the Department of Defense, the Colcom Foundation, the Heinz Endowments, the Packard Foundation, and the Pennsylvania Infrastructure Technology Alliance. She has supervised eighteen Ph.D. dissertations and six M.S. theses. Dr. VanBriesen has served on the boards of the Association for Environmental Engineering and Science Professors, the Consortium of Universities for the Advancement of Hydrologic Sciences, and the Ohio River Basin Consortia for Research and Education. She is currently serving on the U.S.EPA Science Advisory Board. Dr. VanBriesen has received numerous awards, including the 2015 American Society of Civil Engineers Margaret S. Petersen Award, the 2015 Carnegie Science Center Environmental Award, the 2013 Philip L. Dowd Fellowship at Carnegie Mellon, the 2009 American Society of Civil Engineers Pittsburgh Chapter Professor of the Year, and the 2007 Pennsylvania Water Environment Association Professional Research Award. Dr. VanBriesen was a selected presenter at the National Academy of Engineering Indo-U.S. Frontiers of Engineering Symposium on Infrastructure in 2008, and an invited speaker at the National Academy of Engineering Education Symposium in 2010. She was selected as a National Academy of Engineering Gilbreth Lecturer in 2011.

9:50 AM - 10:10 AM
(Grand Ballroom 5)

10:10 AM - 11:30 AM
Concurrent Technical Sessions

*Student presenter in oral presentation competition

Session 1 — Water Infrastructure Challenges Associated with Climate Change — Marquis C

Moderator - Costa Samaras, Carnegie Mellon University

10:10 AM **Recent Trends in Climate and Urbanization in San Diego County: Implications for Water Availability** - Laurent Ahiablame, University of California ANR, San Diego County (co-author: F. Light (1st author))

10:30 AM ***Using Four Adjustment Techniques to Characterize Uncertainty in Updating Intensity-Duration-Frequency Curves Under Climate Change** - Lauren Cook, Carnegie Mellon University (co-authors: C. Samaras, S. McGinnis)

10:50 AM ***Use of Historical Data to Assess Regional Climate Change** - Yuchuan Lai, Carnegie Mellon University (co-author: D. Dzombak)

11:10 AM **Impacts of Climate Change and Seasonal Alterations on Future Hydrological Extremes in the Northeastern U.S.** - Ridwan Siddique, Northeast Climate Science Center/University of Massachusetts Amherst (co-authors: C. Wu, A. Karmalkar, R. Bradley, R. Palmer)

Session 2 — Methods and Approaches for Monitoring and Sharing Water Data — Marquis B

Moderator - Liza Brazil, CUAHSI

10:10 AM **The iUTAH Experience: Cyberinfrastructure and Data Management for a Large, Interdisciplinary Water Project** - Amber Jones, Utah State University (co-author: J. Horsburgh)

10:30 AM **A Hydrologic Disaster Forecasting and Response (HDFR) System for Improving Transportation Management by Assimilating and Fusing NASA and Other Data Sets** - Xu Liang, University of Pittsburgh (co-authors: D. Luna, F. Hernández, R. Wang, Y. Liang, W. Teng)

10:50 AM **Using Shale Network Database to Assess the Water Quality Data in Marcellus Shale Area** - Tao Wen, The Pennsylvania State University (co-authors: X. Niu, J. Pollak, L. Brazil, Z. Li, S. Brantley)

11:10 AM **Temporal Information Partitioning Networks Reveal Ecohydrologic Responses to Rainfall Pulses and Drought** - Allison Goodwell, University of Colorado Denver (co-author: P. Kumar)

Session 3 — Water Treatment and Remediation — Marquis A

Moderator - Tolessa Deksissa, University of the District of Columbia

10:10 AM **Emerging Contaminants: Estrogen Occurrence and Persistence in Vernal Pools Impacted by Wastewater Irrigation Practices** - Odette Mina, The Pennsylvania State University (co-authors: H. Gall, H. Elliott, J. Watson, M. Mashtare, T. Langkilde, J. Harper, E. Boyer)

10:30 AM **Nanoparticles Infused Mesoporous Material for Water Treatment Processes** - Jiajun Xu, University of the District of Columbia (co-authors: T. Vu, M. Kamen, H. Sarpomah, T. Deksissa)

10:50 AM **A Public Policy Modeling Analysis of the Sustainability of Transboundary Desalination within the Santa Teresa-Sunland Park-San Jerónimo-Anapra Hydrologic-Social System** - Sam Fernald, New Mexico Water Resources Research Institute/NMSU (co-authors: A. Page (1st author), S. Langarudi, S. Forster-Cox)

11:10 AM **Is Bigger Better? Driving Factors of POTW Performance in New York** - Brian Rahm, Cornell University (co-authors: N. Morse, M. Bowen, J. Choi, D. Mehta, S. Vedachalam)

Tuesday, June 26

Session 4	Investigating Feedbacks between Human and Natural Systems in Freshwater Lake Catchments Moderator - Kelly Cobourn, Virginia Tech	City Center A
10:10 AM	**From Concept to Practice: An Innovative Framework for Modeling Coupled Natural and Human Systems in Lake Catchments** - Reilly Henson, Virginia Tech (co-authors: K. Cobourn (1st author), C. Carey, K. Boyle, C. Duffy, H. Dugan, K. Farrell, L. Fitchett, P.C. Hanson, J.A. Hart, V.R. Henson, A. Hetherington, A.R. Kemanian, L.G. Rudstam, L. Shu, P.A. Soranno, M. Sorice, J. Stachelek, N.K. Ward, K.C. Weathers, W. Weng, Y. Zhang)	
10:30 AM	***Land Use Versus Climate Drivers of Phytoplankton Production in an Oligotrophic Lake** - Nicole Ward, Virginia Tech (co-authors: B. Steele, K.C. Weathers, K.L. Cottingham, H.A. Ewing, P.C. Hanson, R. Wood, J. Fichter, C.C. Carey)	
10:50 AM	***Coupling Water Quality Numerical Simulation and Hedonic Models to Evaluate Impact of Changes in Nutrient Loading** - Sreeya Brahma, Virginia Tech (co-authors: K. Boyle (1st author), C. Carey, W. Weng, K. Farrell, P. Hanson, K. Cobourn, S. Brahma)	
11:10 AM	***The Roles of Volunteer Organizations in Water Management: A Case Study of Lake Associations** - Leah Fitchett, Virginia Tech (co-authors: M.G. Sorice, K.J. Boyle)	

Session 5	Water Resources Education Moderator - Ken Fritz, USEPA, National Exposure Research Laboratory	City Center B
10:10 AM	**Coordinating Stakeholder Engagement in Watershed Management in the Finger Lakes: Challenges and Opportunities** - Beth Kinne, Hobart & William Smith Colleges	
10:30 AM	**Building High-School Youth Conservation Leadership Capacity through Project-Based Learning: A Model for the Water Resources Research Institutes to Engage the Next Generation** - Melissa Miller, Iowa Water Center	
10:50 AM	**Watershed Science Training: Perspectives and Needs of Locally-Elected Water Resources Directors** - Troy Gilmore, University of Nebraska (co-authors: L. Pennisi, J. Korus, D. Martin, E. Ingram)	
11:10 AM	**Channeling Rosgen in Coursework: Outcomes of Introducing Dave Rosgen's Stream Restoration Principles to Undergraduate Landscape Architect Students at West Virginia University** - Vaike Haas, West Virginia University	

11:30 AM - 12:45 PM Lunch

UCOWR Delegate Business Luncheon: Enhancing the Role of the UCOWR Delegate (Grand Ballroom 3 & 4)

Must be pre-registered and bring ticket.

Are you a delegate for your member institution? Hint: Check your name badge! Join the UCOWR board and fellow delegates for this interactive luncheon. No sitting through long presentations. You'll enjoy lunch while moving around, talking, and listening as we explore ways to foster delegate engagement, empowerment, and commitment within UCOWR.
This also serves as the Annual UCOWR Business Meeting.

*** Are you currently not a delegate, but interested in finding out more?
See the registration desk or contact Karl Williard at williard@siu.edu ***

All others - lunch on your own

See page 32 for restaurants within walking distance.

1:00 PM - 2:20 PM
Concurrent Technical Sessions

*Student presenter in oral presentation competition

Session 6 — *Lightning Talk Session* — **Marquis C**

Green Stormwater Infrastructure Research Needs for the Urban Core

Moderator - Robert Traver, Villanova University

1:00 PM	**Green Stormwater Infrastructure Research Needs for the Urban Core** - Robert Traver, Villanova University
1:05 PM	**Green Stormwater Infrastructure Research at Virginia Tech: Review of Current Projects and Critical Research Needs** - David Sample, Virginia Tech
1:10 PM	**The Impacts of Winter Pavement Maintenance on Green Infrastructure Performance** - Shirley Clark, The Pennsylvania State University (co-author: K. Jain)
1:15 PM	**Temporal Evolution of Green Stormwater Infrastructure Strategies in Three U.S. Cities** - Lauren McPhillips, Arizona State University (co-author: M. Matsler)
1:20 PM	**Identifying Hydrologic Sensitivity to Infiltration-Based Stormwater Green Infrastructure at the Watershed Scale** - Anne Jefferson, Kent State University (co-author: P. Avellaneda)
1:25 PM	**Interactive Discussion with the Audience**

Session 7 — *Lightning Talk Session* — **Marquis B**

Rural Water Issues in Developing Countries

Moderator - John Groninger, Southern Illinois University

1:00 PM	**Water Resources in International Rural Development: What Should Everyone Know?** - John Groninger, Southern Illinois University
1:05 PM	**Groundwater Governance and Transboundary Aquifer Assessment** - Sharon B. Megdal, Water Resources Research Center, The University of Arizona
1:10 PM	**Addressing the Impossible Triad—High Inequality, Decentralized Policy and Low Local Capacity—Challenges for Drinking Water Policy in Mexico** - Marcela Gonzalez Rivas, University of Pittsburgh
1:15 PM	**Is a University Consortium for Water and Sanitation in the Developing World Sustainable?** - David Kreamer, University of Nevada, Las Vegas
1:20 PM	**Interactive Discussion with the Audience**

Session 8 — *Panel Discussion* — **Marquis A**

Ohio River Headwaters: Local Issues and National Significance

Moderator - Deb Lange, Carnegie Mellon University

1:00 PM	***Higher Highs, Lower Lows: Increased Variability within the Ohio River Basin** - Lauren Cook, Carnegie Mellon University (co-authors: R. Weinberg, A. Goradia, C. Kolb)
1:15 PM	**ORSANCO's Ohio River Basin Water Resources Initiative** - Sam Dinkins, Ohio River Valley Water Sanitation Commission
1:30 PM	**Wireless Sensor Networks for Environmental Monitoring: An Analysis of Spatiotemporal Patterns of Hydrological Variables** - Xu Liang, University of Pittsburgh (co-authors: T. Slater, F. Plaza, X. Zhong, Y. Li, Y. Liang)
1:45 PM	**The Ohio River Basin Alliance** - Harry Stone, Ohio River Basin Alliance (co-author: C. Somerville (1st author))
2:00 PM	**Interactive Discussion with the Audience**

Tuesday, June 26

Session 9 — *Panel Discussion* — **City Center A**

People and Freshwater Lake Catchments

Moderator - Kelly Cobourn, Virginia Tech

1:00 PM Interactive panel-audience discussion of the current status and future of coupled natural-human systems (CNHS) modeling in freshwater lake systems. Panelists provide diverse perspectives across disciplines and career stages, with insight into multidisciplinary research, graduate education, and engaging citizen groups in lake management.

Panelists:
Armen Kemanian, The Pennsylvania State University
Michael Sorice, Virginia Tech
Nicole Ward, Virginia Tech
Kathleen Weathers, Cary Institute of Ecosystem Studies

Session 10 — **Coupled Human-Natural Systems: Management and Economics** — **City Center B**

Moderator - Melissa Miller, Iowa Water Center

1:00 PM **Direct Policy Search for Robust Multi-Objective Management of Deeply Uncertain Socio-Ecological Tipping Points** - Julianne Quinn, Cornell University

1:20 PM ***Paying for Rain: The Spread of Stormwater Fees across the United States over the Past 50 Years** - Brian Chalfant, University of Pittsburgh

1:40 PM **Connecting More Dots: Green Infrastructure, Watersheds, and Finance** - John Wiener, University of Colorado

2:00 PM **Understanding In-Field Soil Moisture Variability** - Mary Love Tagert, Mississippi State University (co-authors: J. Paz, D. Reginelli)

Session 11 — **Climate Change** — **Grand Ballroom 1 & 2**

Moderator - Roger Babcock, University of Hawaii WRRC

1:00 PM **Modeling the Effects of Sea Level Rise on Infiltration in Wastewater Collection Systems** - Roger Babcock, University of Hawaii WRRC (co-authors: D. Spirandelli, S. Shen, A. Fung)

1:20 PM **Climate Variability and Change in West Virginia: Implications for Appalachian Food Deserts** - Evan Kutta, West Virginia University Institute of Water Security and Science (co-authors: J. Hubbart, E. Kellner)

1:40 PM **Climate Change Impacts on Groundwater Resources in Southwest Michigan** - Glenn O'Neil, Institute of Water Research - Michigan State University

2:00 PM **Restoring Appalachian River Networks in a Changing Climate** - Todd Petty, West Virginia University (co-author: E. Merriam)



2:20 PM - 2:40 PM
(Grand Ballroom 5)
Light refreshments available.

2:40 PM - 3:40 PM
Concurrent Technical Sessions
*Student presenter in oral presentation competition

Session 12 — **Transitions in Agriculture and Water Use I** — **Marquis C**

Moderator - Ron Lacewell, Texas A&M University

2:40 PM **Introduction to Transitions in Agriculture and Water Use: What is the Face of Agriculture in the Next 10 to 30 years?** - Robert DeOtte, West Texas A&M University (co-author: T. Gerik)

3:00 PM **Evaluating Transition Options across the Ogallala Aquifer Region** - Meagan Schipanski, Colorado State University (co-authors: A. Nunez, P. Gowda, A. Andales, J. Suter, L. Moore, R. Waskom, C. West, R. Ghimire, V. Acosta-Martinez, R. Bailey, A. Kremen, J. Schneekloth, D. Manning, C. Goemans)

3:20 PM **Southern High Plains: A Case Study in the Transitions in Agriculture and Water** - Gary Marek, USDA-ARS-CPRL (co-authors: R.L. Baumhardt, D. Brauer)

Session 13 — Lead in Drinking Water and Public Health Implications I — Marquis B

Moderator - Sheldon Masters, Environmental Science, Policy, and Research Institute

2:40 PM **Examining Water Lead Levels during the Flint Water Crisis** - Kelsey Pieper, Virginia Tech (co-authors: R.M. Tang, R. Martin, L. Walters, J. Parks, M. Edwards, S. Roy)

3:00 PM **Road Salt, Lead Leaching, and Private Well Systems: A Case Study from New York State** - C. Nathan Jones, The National Socio-Environmental Synthesis Center (co-authors: H. Mohsim, M. Tang, S. Weiss, J. Parks, M. Edwards, K.J. Peiper)

3:20 PM **Health Impacts of Low Dose Lead: Implications for Monitoring and Exposure Reduction Guidelines** - Adrienne Katner, LSUHSC (co-authors: K. Pieper, K. Brown, J. Parks, C. Hu, H. Lin, X. Wang, M. Edwards)

Session 14 — Springs and Seeps: Hydrology, Ecosystem Functions, and Management I — Marquis A

Moderator - David DeWalle, Penn State

2:40 PM **Landscape Conservation Planning and Design for Springs Ecosystems** - Abraham Springer, Northern Arizona University

3:00 PM **Grand Canyon Springs and Exceedence of Maximum Contaminant Level Drinking Water Standards - Implications for Resource Management** - David Kreamer, University of Nevada, Las Vegas

3:20 PM **Groundwater Seeps: Portholes to Observe Groundwater Quality and Contaminant Transport to Streams** - Michael O'Driscoll, East Carolina University (co-authors: C. Humphrey, D. DeWalle)

Session 15 — Functions of Vulnerable Waters across a Continuum of Connectivity I — City Center A

Moderator - Daniel McLaughlin, Virginia Tech

2:40 PM **Three-Dimensional Source Area Connectivity Drives Stream Hydro-Biogeochemical Signals across an Ephemeral-To-Perennial Drainage Network** - Margaret Zimmer, University of California, Santa Cruz (co-author: B. McGlynn)

3:00 PM **Ephemeral Tributaries Functionally Connected to a Central Appalachian Stream through Asynchronicity of Flow and Particulate Organic Matter Input** - Ken Fritz, United States Environmental Protection Agency, National Exposure Research Laboratory (co-authors: G. Pond, B. Johnson, C. Barton)

3:20 PM **Increased Hydrologic Connectivity in the Delmarva Peninsula (U.S.): Consequences for Wetland Water Storage and Watershed Functions** - Daniel McLaughlin, Virginia Tech (co-authors: C.N. Jones, G. Evenson)

Session 16 — Smarter Rivers: Sensors Advancing Science and Water Management — City Center B

Moderator - Emily Elliott, University of Pittsburgh

2:40 PM **Applications of Optical Sensors for Real-Time Water Quality Monitoring and Research in Rivers** - Brian Pellerin, U.S. Geological Survey

3:00 PM **CUAHSI Data Services: Tools and Cyberinfrastructure for Water Data Publication, Discovery, Research, and Collaboration** - Liza Brazil, CUAHSI (co-authors: A. Castronova, M. Seul, J. Pollak)

3:20 PM **Exploring Urban Stream Temperature Heterogeneity via Drone-Based Thermal Infrared Imagery** - Christa Kelleher, Syracuse University (co-author: S. Caldwell)

3:40 PM - 4:00 PM
(Grand Ballroom 5)

Tuesday, June 26

4:00 PM - 5:00 PM

Concurrent Technical Sessions

*Student presenter in oral presentation competition

Session 17 — **Transitions in Agriculture and Water Use II** — **Marquis C**

Moderator - Jeff Johnson, Mississippi State University

4:00 PM **Transitions of Agriculture and Water Use in the Western Great Plains: What is possible in the next 10 to 30 years?** - Thomas Gerik, Texas A&M AgriLife

4:20 PM **Resulting Changes from Producer-Driven Groundwater Pumping Reductions in Kansas** - Bill Golden, Kansas State University (co-authors: D. Devlin, B. Guerrero, K. Liebsch)

4:40 PM **Building a National Integrated Drought Information System for Agriculture and Water Use -** Elizabeth Ossowski, National Oceanic and Atmospheric Administration (NOAA)'s National Integrated Drought Information System (NIDIS)

5:00 PM **Transitions in Agriculture in Oklahoma – Where have we been and where are we going?** - Kevin Wagner, Oklahoma Water Resources Center

Session 18 — **Lead in Drinking Water and Public Health Implications II** — **Marquis B**

Moderator - Kelsey Pieper, Virginia Tech

4:00 PM **Evaluation of Lead Sampling Strategies and Regulations** - Sheldon Masters, Environmental Science, Policy, and Research Institute (co-authors: G. Welter, M. Edwards)

4:20 PM **Progress in Reduction of Lead in Drinking Water** - Tolessa Deksissa, University of the District of Columbia

4:40 PM **Investigating the Relationship between Discolored Water from Corrosion of Old Iron Pipe and Source Water Conditions** - Min Tang, Virginia Tech (co-authors: V. Nystrom, K. Pieper, J. Parks, B. Little, R. Guilliams, T. Esqueda, M. Edwards)

Session 19 — **Springs and Seeps: Hydrology, Ecosystem Functions, and Management II** — **Marquis A**

Moderator - Jonathan Duncan, Penn State

4:00 PM **The Flux of Inorganic Carbon from Natural and Not-So-Natural Springs** - Dorothy Vesper, West Virginia University

4:20 PM **Appalachian Valley and Ridge Springs: There's More Than Just Karst** - Dorothy Vesper, West Virginia University (co-authors: E. Bausher (1st author), A. Downey, D. Vesper)

4:40 PM **Spring and Stream Water Quality in a Rapidly Urbanizing Karst Watershed in Central Pennsylvania** - David DeWalle, Penn State University (co-author: J. Duncan)

Session 20 — **Functions of Vulnerable Waters across a Continuum of Connectivity II** — **City Center A**

Moderator - Daniel McLaughlin, Virginia Tech

4:00 PM **Exploring Drivers of Wetland Hydrologic Fluxes across Parameters and Space** - C. Nathan Jones, The National Socio-Environmental Synthesis Center (co-authors: F.Y. Cheng, D.L. McLaughlin, N. Basu, M. Lang, L. Alexander)

4:20 PM **Characterizing and Modeling Wet Stream Length Dynamics in Appalachian Headwaters** - Carrie Jenson, Virginia Water Resources Research Center, Virginia Tech (co-author: K. McGuire)

4:40 PM **Wetland Hydrologic "Hot Spots" in a Large River Basin: Inferences from Spatially Explicit Watershed Modeling** - Adnan Rajib, U.S. EPA Office of Research and Development (co-authors: H. Golden, C. Lane, E. D'Amico)

Session 21 — **Irrigation Efficiency and Management** — **City Center B**

Moderator - Kofi Akamani, Southern Illinois University

4:00 PM **Irrigation Technology Adoption Choices and Implication for Conservation Policy** - Naveen Adusumilli, LSU AgCenter (co-author: H. Wang)

4:20 PM **WRF Agricultural Research Effort: Impediments and Incentives for Using Recycled Water for Agricultural Irrigation** - Kristan VandenHeuvel, The Water Research Foundation

4:40 PM **Evaluation of the STAMP Irrigation Decision Tool for Agronomic Crops in Louisiana** - Stacia Davis, LSU AgCenter (co-author: D. Fromme)

5:30 pm - 7:00 pm
Welcome Reception and Poster Session
(Grand Ballroom 3 & 4, Posters in Foyer)
Hors d'oeuvres and Cash Bar

Poster Presentations

*Student presenter in poster competition
(In alphabetical order by presenter last name, # corresponds to location in room)

1. ***Geostatistical Evaluation of Precipitation Data Sources for Streamflow Analysis** - Jeramy Bittinger, University of Pittsburgh at Johnstown (co-authors: M. Galbraith, K. Blevins, S. Parks)
2. ***Urban Influence on Large Wood Abundance in Streams** - Garrett Blauch, Kent State University (co-author: A. Jefferson)
3. **Gender Issues in the Intersections of Urban and Rural Agriculture, Water and Renewable Energy in the U.S. Southwest** - Stephanie Buechler, University of Arizona
4. ***Thermal Characterization of Vacant Lots in an Urban Environment** - Crystal Burgess, Syracuse University (co-author: C. Kelleher)
5. **The Quantification of Net Monthly Municipal Wastewater Volumes to Determine Blue Water Savings for Three Cities in a Semi-Arid West Texas Watershed** - Erick Butler, West Texas A&M University (co-authors: N. Howell, B. Guerrero)
6. ***Utilizing a Water Balance Model Approach in Assessment of Forest Response to Drought Conditions** - Brittany Casey, West Virginia University (co-authors: B. McNeil, E. Brzostek, N. Raczka, N. Zegre, L. Guillen)
7. ***Characterization of Reactive Nitrogen in Pittsburgh's Three Rivers** - Angela Chung, University of Pittsburgh (co-authors: E. Elliott, C. Nim, Z. Yu)
8. ***Spatial Patterns of Road-Induced Backwaters** - Marja Copeland, University of Pittsburgh (co-author: D. Bain)
9. **Comparison of Changes in Riparian Vegetation Due to the Fluctuating Available Water Regimes of Before and After Drought in the Mesilla Valley Basin Aquifer New Mexico, USA** - Sam Fernald, New Mexico Water Resources Research Institute (co-authors: A. Tellez (1st author), K. Boykin, F. Ochoa, S. Fernald)
10. **Projected Changes in Atmospheric Water Supply and Demand across the Appalachian Region During the 21st Century and their Impacts on Water Supply to Major Cities in Eastern U.S.** - Rodrigo Fernandez, West Virginia University (co-author: N. Zegre)
11. **The Appalachian Water Tower: The Role of Mountain Water in Regional Water Security** - Rodrigo Fernandez, West Virginia University (co-author: N. Zegre (1st author), R. Fernandez, R. Rushforth, B. Ruddell)
12. ***Using Continuous Sensing and Stable Isotopes of Nitrate to Improve Regional Water Quality Planning** - Rebecca Forgrave, University of Pittsburgh (co-author: E. Elliott)
13. ***Evaluating the Stability of Headwater Reference Catchments from Long-Term Paired Watershed Studies: An Eastern Perspective** - Luis Andres Guillen, West Virginia University (co-authors: N. Zegre, R. Fernandez)
14. ***Prediction of Terrestrial Water Storage Using Different Modelling Approaches** - Bimal Gyawali, Texas A&M University-Corpus Christi (co-author: D. Murgulet)
15. ***Water Treatment and Desalination Plants in Arid Cities: Optimum Location and Sustainable Operations** - Befekadu Habteyes, New Mexico State University (co-author: F. Ward)
16. ***Cation Exchange as a Control on Coal Mine Drainage Geochemistry in Appalachia, Eastern USA** - Ben Hedin, University of Pittsburgh (co-authors: R. Capo, B. Stewart, C. Cravotta)
17. **Texas Watershed Steward Program** - Michael Kuitu, TAMU (co-authors: J. Mowrer, D. Gholson, W. Ling)
18. ***Long-Term Effects of Elevated Manganese on *Procambarus clarkii* Behavior** - Cody Lambert, Marshall University (co-author: B.L. Antonsen)
19. ***Stream Discharge Monitoring and Load Estimation for Small Scale Watersheds** - Abbie Lasater, University of Arkansas (co-authors: B. Austin, E. Scott, B.E. Haggard)
20. **Where the Map Meets the Mud: Watershed Assessment** - Evan Lewis, Franklin & Marshall College (co-authors: M. Royer (1st author), K. Kyler, S. Xenophon, J. Sweeney, D. Merritts, E. Lewis)
21. **The Water-Energy-Waste Biomass Nexus: Ecological Engineering of Anaerobic Digestion Improves Bioenergy Recovery and Water Use Efficiency** - Vadesse Lhilhi Noundou, West Virginia State University (co-authors: E. Chavarria-Palma, A. Ramirez-Garcia, N.A. Montenegro-Garcia, I.R. Ugwuanyi, S.A. Malkaram, T. Espinosa-Solares, D.H. Huber)

Tuesday, June 26

22. **Dye Tracer Experiments to Detect Preferential Flow and its Interaction with Soil Matrix in the Three Gorges Reservoir Area of China** - Muxing Liu, College of Urban and Environmental Sciences, Central China Normal University, Wuhan, China (co-authors: J. Yi, H. Zhang, J. Huang, L. Guo)
23. ***Estimates of Demand Response Capacity in the Drinking Water Treatment, Distribution, and Wastewater Treatment** - Yang Liu, Carnegie Mellon University, (co-author: M. Mauter)
24. ***In-Situ Soil Moisture Condition of Various Land Uses within Three Acequia Irrigated Valleys in Northern New Mexico** - Alejandro Lopez, New Mexico State University (co-authors: A. Fernald, S. Guldan, D. VanLeeuwen)
25. **Fifteen Years of Change: Monitoring Riparian Conditions of Agricultural Lands in Oregon, 2003-2017** - Paul Measeles, Oregon Department of Agriculture (co-author: D. Walker)
26. ***Seasonal Drivers of Dissolved Metal Transport During Infiltration of Road Runoff Through Infiltration-Based Green Infrastructure** - Angela Mullins, The University of Pittsburgh (co-author: D. Bain)
27. ***Suitability of Basic Water Quality Conditions for Aquaculture in Uganda** - Shamim Naigaga, Auburn University (co-authors: C.E. Boyd, J. Molnar)
28. ***Potential Influence of Climate on Ugandan Aquaculture** - Shamim Naigaga, Auburn University (co-authors: C.E. Boyd, J. Molnar)
29. ***Water Quality Assessment of an Urban Aquatic Ecosystem by Molecular Phylogenetic Characterization of Diatoms: An Emerging Innovative Approach** - Emmanuella Nnabuo-Eguzozie, University of South Africa (co-authors: H. Atagana, R. Adeleke)
30. ***Spatial and Temporal Variability of Chloride Concentrations in Urban Streams in Northeast Ohio as a Function of Land Cover** - Mary Plauche, Kent State University (co-author: A. Jefferson)
31. **Use of Fish Scales for Tracking Environmental Exposure in Western Pennsylvania Fishes** - Brady Porter, Duquesne University (co-authors: L. Howell (1st author), B. Porter)
32. ***A Study of the Chronic Chloride Levels in Pine Creek, Allegheny County, PA** - Selina Prettner, Duquesne University (co-authors: L. Manley, B. Dakin, B. Porter)
33. ***The Effect of Spatial Resolution on the Placement of Agricultural BMPs Using a Spatially Explicit Watershed Planning Framework** - Zachary Respess, Pennsylvania State University (co-author: J. Duncan)
34. **Bayesian Belief Network Modeling of Direct Numerically Simulated Riverine Flow Imagery Variables for Sub-Surface Structure Diagnostics** - Nicholas Scott, Riverside Research (co-author: T. Hsu)
35. **Phase-Based Statistics from Direct Numerically Simulated Imagery of Sediment Laden Oscillatory Flow for Bayesian Belief Network Analysis** - Nicholas Scott, Riverside Research (co-author: T. Hsu)
36. **Nonnegative Matrix Factorization Based Feature Analysis for Hyperspectral Imagery of Sediment-Laden Riverine Flow** - Nicholas Scott, Riverside Research (co-author: I. Moore)
37. **Examining the Role of Directionality on Hydrologic Model Transferability** - Tyler Smith, Clarkson University
38. **A Two-Scaled Approach for Flood Susceptibility Prediction in Appalachia** - Michael Strager, West Virginia University (co-author: N. Zegre)
39. ***Alkali Earth Ratios Differentiate Conventional and Unconventional Hydrocarbon Brine Contamination** - Rebecca Tisherman, University of Pittsburgh (co-author: D. Bain)
40. **Sensitivity Analysis to Improve Identification of Undersized Culverts** - Allison Truhlar, NYS Water Resources Institute (co-author: J. Knighton)
41. **Dynamics of Water Quality Indicators for the Kanawha River (WV) in the "Chemical Valley" Region** - Ifeoma R. Ugwuanyi, West Virginia State University (co-authors: A. Hass, N.A. Montenegro-Garcia, V. Lhilhi Noundou, S. Malkaram, J.E. Chavarria-Palma, D.H. Huber)

7:30 am - 8:30 am
Breakfast Roundtable Discussions
(Grand Ballroom 5)

Rise and shine….get your breakfast….and join in as we discuss "Developing New Multi-institution Collaborations" to address current water issues.

- Table 1 – Water Quality and Harmful Algal Blooms
- Table 2 – Green Infrastructure in Urban Areas
- Table 3 – Sustainable Agriculture Systems
- Table 4 – Water Issues Associated with Oil and Gas Production

EVERYONE is encouraged to join the discussion! Take advantage of having so many active water institutions in one location. Bring your ideas and suggestions and become part of a new multi-institution collaborative effort!

8:30 am - 9:40 am
Plenary Session: Warren A. Hall Medal Recipients
(Grand Ballroom 1 & 2)

Moderator - Jeff Johnson, Mississippi State University
Introduction on Warren Hall - Mac McKee, Utah State University



Leonard A. Shabman, Senior Fellow at Resources for the Future, joined RFF in 2002 after 30 years on faculty at Virginia Tech, where he also served (10 years) as the Director of the Virginia Water Resources Research Center. He received his Ph.D. from Cornell University. He also has served as staff economist at the United States Water Resources Council, Scientific Advisor to the Assistant Secretary of Army, Civil Works, Visiting Scholar at the National Academy of Sciences, and Arthur Maass-Gilbert White Scholar at the Corps of Engineers Institute for Water Resources. Dr. Shabman's work balances research with advisory activities in order to have a bearing on the design and execution of water and related land resources policy. His publications include over 300 book chapters, journal papers, technical reports, and outreach papers on decision making for water resources and water quality management. He has held leadership positions on governmental advisory committees in areas as diverse as the Great Lakes, the Missouri River Basin, Chesapeake Bay, South Florida, and Coastal Louisiana. Dr. Shabman has served on or chaired 18 National Academy of Sciences Committees focused on water and related resources management, and in 2004 was recognized as an Associate member of the National Academy of Sciences.

Zhuping Sheng (Texas A&M AgriLife Research Center) and Brian Hurd (New Mexico State), speaking and singing in memory of Ari M. Michelsen, commemorating his life of service, accomplishment, kindness, and leadership in the water resources community.



Ari M. Michelsen, our past UCOWR President, most recently served as Regents Fellow, Professor of Agricultural Economics, and the Resident Director of the Texas A&M AgriLife Research and Extension Center at El Paso. His research and teaching expertise was in integrated water resources management, valuation, conservation, and markets and policy analysis. Over the course of his life and career, Ari built a legacy of leadership and service in the water resources community. He served as President of the UCOWR Board of Directors twice, first from 2001–2002, and again from 2015–2016. He also served as a member of the UCOWR Board of Directors for the majority of the last two decades, taking an active role to ensure the continuing vitality of our organization by chairing and participating in countless conference and award committees, serving a five year term on the editorial board of our Journal of Contemporary Water Research and Education, and representing his employing institutions as a delegate for our organization throughout his entire career. Ari served on the boards of other professional organizations as well, such as the American Water Resources Association and National Institutes for Water Resources, and throughout his career utilized the unique strengths of such organizations to further research, education, and practice in water resources. Additionally, Ari shared his knowledge and experience in places like China, Russia, and Chile as a water resources consultant to national and international agencies. Dr. Ari Montgomery Michelsen, 63 years of age, passed away on September 28, 2017 after a long illness. His kind mentorship, active professional involvement, and remarkable contributions to the field of water resources will long be remembered in the UCOWR community and among his colleagues, friends, and family.

Wednesday, June 27

9:40 AM - 10:00 AM
(Grand Ballroom 5)

10:00 AM - 11:20 AM
Concurrent Technical Sessions

*Student presenter in oral presentation competition

Session 22 — **Marquis C**

Water Sustainability, Urban Water, and Ecosystems I

Moderator - Brian Thomas, University of Pittsburgh

10:00 AM ***Design and Manufacture of 3D-Printed Substratum for Wastewater Treatment Processes** - Gabriel Proaño, Auburn University (co-authors: A. Carrano, D. Blersch)

10:20 AM **An Analysis of the Lead Contamination Risks of Public Water Supplies in the Mississippi Delta** - Stephanie Otts, National Sea Grant Law Center, University of Mississippi School of Law (co-authors: C. Janasie, K. Willett, J. Green)

10:40 AM **Developing Technology and Exploring Commercialization to Assist Water Utilities in Achieving Conservation Goals** - Allen Berthold, Texas Water Resources Institute

11:00 AM **A Monitoring Network for Sensing Water Quality and Hydrology Across Mountain to Urban Transitions** - Amber Jones, Utah State University (co-authors: J. Horsburgh, Z. Aanderud, M. Baker, D. Eiriksson)

Session 23 — **Marquis B**

Understanding and Managing Legacy Nutrients in Agricultural Watersheds I

Moderator - Brian Haggard, Arkansas Water Resources Center

10:00 AM **Phosphorus Dynamics in Soil and Water Pools Under Cover Crops and Tillage** - Gurbir Singh, Southern Illinois University (co-authors: K.W.J. Williard, J.E. Schoonover, J.F. Crim)

10:20 AM ***Groundwater Springs with High Nitrate Drive Downstream N Export from Artificially-Drained Agricultural Headwater Catchments** - Brandon Goeller, University of Canterbury (co-authors: C. Febria, H. Warburton, K. Hogsden, H. Devlin, K. Collins, J. Harding, A. McIntosh)

10:40 AM **Peat as a Source of Legacy Nitrogen in Cranberry Agriculture** - Casey Kennedy, USDA-ARS (co-authors: S. Wilderotter, M. Payne, A. Buda, P. Kleinman, R. Bryant)

11:00 AM ***Using Stable Water Isotopes to Characterize Pathways of Subsurface P Loss in a Ditch-Drained Field** - Lauren Mosesso, University of Delaware (co-authors: A. Shober, T. Buda, C. Kennedy, A. Collick, K. Elkin)

Session 24 — **Marquis A**

Private Drinking Water Supplies I

Moderator - Bryan Swistock, Penn State University

10:00 AM **Meeting the Resource Needs of the Private Well Owner Community in Florida** - Andrea Albertin, University of Florida (co-authors: K. Pieper, W. Rhoads, K. Mapili, G. House, Y. Zhuang, A. Tyrna, W. Elmore, R. Beckford, S. Treen, B. Burbaugh)

10:20 AM **Drinking Water Education in Underserved Pennsylvania Counties Raises Homeowners' Awareness of Their Private Water Supplies** - Susan Boser, Penn State Extension

10:40 AM **Empowering Virginia's Well and Spring Users: The Virginia Household Water Quality Program** - Erin Ling, Virginia Tech/Virginia Cooperative Extension (co-author: B. Benham)

11:00 AM **The Capacity to Support Private Water Well Owners after a Natural Disaster** - Drew Gholson, Texas A&M AgriLife Extension Service (co-authors: D. Boellstorff, J. Smith, K. Pieper, W. Rhoads, A. Katner, T. Gentry, K. Mapili, M. Dozier)

Session 25 — **City Center A**

Bridging the Communication of Science with the Science of Communication I

Moderator - Erika Wettergreen, Marstel-Day LLC

10:00 AM **An Introduction to a National Conversation about the Science of Science Communication** - Alan Raflo, Virginia Water Resources Research Center

10:20 AM **Building Communication and Collaboration Skills, from the Inside Out** - Carolyn Kroehler, Center for Communicating Science at Virginia Tech (co-authors: P. Raun, H. Govenor)

10:40 AM **Communications in the Water Sector** - Lisa Beutler, Stantec

11:00 AM **The Perception of Daily Temperatures as Evidence of Global Warming** - Patrick Kane, Carnegie Mellon University (co-authors: S. Broomell (1st author), J. Winkles, P. Kane)

Session 26 — **City Center B**

Engaging the Public through Markets, Policies, and Outreach I

Moderator - Beth Kinne, Hobart & William Smith Colleges

10:00 AM **The Water Academy: Engaging Water and Sewer Customers Through Experiential Learning** - Audrey Arnold, Prince William County Service Authority (co-author: K. Bentz)

10:20 AM **Securing Water for and from Agriculture through Effective Community and Stakeholder Engagement** - Kathryn Brasier, Penn State University (co-authors: W. Eaton, M. Burbach, C. Williams)

10:40 AM **Empower Citizen Scientists to Reduce the Presence of EDCs in the Susquehanna River Basin** - Kathryn Hayden, Penn State University (co-authors: H. Gall (1st author), K. Hayden, F. Kibuye, B. Swistock, L. Fowler, K. Elkin, R. Barnes, J. Durso)

11:00 AM **Engaging Context: Farmer Led Initiatives to Protect Water Quality** - Stephen Gasteyer, Michigan State University

Session 27 — **Grand Ballroom 1 & 2**

Transitions in Agriculture and Water Use III

Moderator - Robert DeOtte, West Texas A&M University

10:00 AM **Issues with Converting Irrigated Cropland to Pasture in Western Kansas** - Bill Golden, Kansas State University (co-authors: B. Guerrero, K. Liebsch)

10:20 AM **Interactive Panel-Audience Discussion with Panelists:**

Bob DeOtte, Professor of Civil and Environmental Engineering, West Texas A&M University
Dan Devlin, Director, Kansas Center for Agricultural Resources and the Environment, Kansas Water Resources Institute
Thomas Gerik, Professor and Center Director, Texas A&M AgriLife Blacklands Research Center
Bill Golden, Agricultural Economist, Kansas State University
Kevin Wager, Thomas E. Berry Professor in Integrated Water Resources Management and Director Oklahoma Water Resources Center, Oklahoma State University

11:20 AM - 11:30 AM
Break

11:30 AM - 1:30 PM
Awards Luncheon
(Grand Ballroom 3 & 4)
Must be pre-registered. Bring your ticket with you.
ALL OTHERS - LUNCH ON YOUR OWN
See page 32 for restaurants within walking distance.

1:30 PM - 1:50 PM
Break

Wednesday, June 27

1:50 PM - 3:10 PM

Concurrent Technical Sessions

*Student presenter in oral presentation competition

Session 28 — **Marquis C**

Water Sustainability, Urban Water, and Ecosystems II

Moderator - Esther Mosase, South Dakota State University

1:50 PM **Patterns in Event-Scale Dissolved Oxygen Dynamics in a Network of Headwater Streams Along an Urbanization Gradient** - Ryan Utz, Chatham University (co-author: B. Bookout (1st author))

2:10 PM ***Stream Sediment Microbial Community Function is Sensitive to Alterations in Water Chemistry Associated with Watershed Land Use** - Chansotheary Dang, Davis College of Plant and Soil Sciences, West Virginia University (co-authors: G. Martin, J. Hubbart, E. Kellner, C. Kelly, K. Stephan, R. Miller, Z. Freedman, E. Morrissey)

2:30 PM **Effects of Residential Water Demand, Water Loss and Population Trends on New Jersey Public Water System Needs for the Year 2040** - Daniel Van Abs, Rutgers University

2:50 PM **Water Sustainability Planning for Resilient Communities** - Erika Wettergreen, Marstel-Day LLC

Session 29 — **Marquis B**

Understanding and Managing Legacy Nutrients in Agricultural Watersheds II

Moderator - Brandon Goeller, University of Canterbury

1:50 PM ***Can Cover Crops Make a Difference in Improving Water Quality?** - Gurbir Singh, Southern Illinois University (co-authors: K.W.J. Williard, J.E. Schoonover, J.F. Crim)

2:10 PM **Managing Nutrient Loss in an Engineered Landscape** - Mark Williams, USDA-ARS (co-author: K. King)

2:30 PM **Examining the Role of Extreme Rainfall in Legacy Phosphorus Loss from a Headwater Agricultural Basin** - Anthony Buda, USDA Agricultural Research Service (co-authors: G. Folmar, P. Kleinman, R. Bryant)

2:50 PM **Sediment Phosphorus Release Sustains Nuisance Algal Growth in a Small Impoundment** - Brian Haggard, Arkansas Water Resources Center (co-author: B. Austin)

Session 30 — **Marquis A**

Private Drinking Water Supplies II

Moderator - Bryan Swistock, Penn State University

1:50 PM **Influence of Weather, Well Construction and Sampling Strategy on Bacterial Contamination of Private Water Wells in Pennsylvania** - Bryan Swistock, Penn State University

2:10 PM ***Pathogenic Risks and Antibiotic Resistance in Private Wells in High-Income Countries** - Kris Mapili, Virginia Tech (co-authors: K. Pieper, A. Pruden, W. Rhoads, M. Edwards)

2:30 PM **Evaluating State-Level Well Disinfection Protocols in the United States** - Adrienne Katner, LSU Health Sciences Center-New Orleans (co-authors: L. Saucier (1st author), A. Katner, J. Barrett, K. Pieper)

2:50 PM **Issues Associated with the Use of Household and Roadside Springs as a Source of Drinking Water** - Andrew Yencha, Penn State University (co-authors: B. Swistock, S. Boser)

Session 31 — **City Center A**

Bridging the Communication of Science with the Science of Communication II

Moderator - Alan Raflo, Virginia Tech

1:50 PM **Tools of Engagement: Boundary Spanning, Networks and Effective Water Communication in the Texas Hill Country at the Texas Tech Llano River Field Station (LRFS)** - Tom Arsuffi, Texas Tech University Llano River Field Station (co-author: T. Broad)

2:10 PM **Iterative Learning in Stream Restoration Design: Experiences Teaching Landscape Architecture Students Rosgen Principles** - Vaike Haas, West Virginia University

2:30 PM **Creation of an On-Line Interactive Website for Mapping Changes of 43 Climate Indices for Alberta, Canada, for the Period 1950 to 2010** - Stefan Kienzle, University of Lethbridge (co-author: C. Clark)

2:50 PM ***Water Governance and Community Resilience: A Case Study of Two Resource-Dependent Communities in the Cache River Watershed of Southern Illinois** - Rachel Boucher, Southern Illinois University Carbondale (co-author: K. Akamani)

Session 32 — **Engaging the Public through Markets, Policies, and Outreach II** — **City Center B**
Moderator - Lisa Beutler, Stantec

1:50 PM **River Basin Finance and Economics in a Mid-Atlantic Watershed** - Gerald Kauffman, University of Delaware

2:10 PM **From Theory to Practice: Implementing the Sustainable Groundwater Management Policy in California, Case of Study: Ukiah Valley Groundwater Basin** - Maritza Flores Marquez, Stantec (co-author: S. Sandoval Solis)

2:30 PM **Using Design and Planning to Engage the Public in Reducing Coastal Hazards** - Karen O'Neill, Rutgers University (co-authors: S. Handel, J. Burger, B. Hensold, G. Ford)

2:50 PM **Empowering Communities to Reduce Land-Based Sources of Marine Debris to Nearshore Waters of the U.S. Virgin Islands through Educational Partnerships** - Kristin Wilson Grimes, University of the Virgin Islands (co-authors: S. Habtes, C.J. Bucklin, H. Forbes, Jr., M. Taylor, C. Goodwin, S. Nick, M. Guannel)



3:10 PM - 3:30 PM
(Grand Ballroom 5)
Light refreshments available.

3:30 PM - 4:50 PM
Concurrent Technical Sessions
*Student presenter in oral presentation competition

Session 33 — **The Food-Energy-Water Nexus I** — **Marquis C**
Moderator - Julie Padowski, Washington State University

3:30 PM **High-Resolution Water Footprints of Production of the United States** - Landon Marston, Kansas State University

3:50 PM ***Connectivity and Interdependence in the U.S. Virtual Water Network: A Multiplex Approach** - Susana Garcia, The Pennsylvania State University (co-author: A. Mejia)

4:10 PM ***The Hydro-Economic Resiliency of Cities in the U.S. Virtual Water Trade Network** - Michael Gomez, Pennsylvania State University (co-author: A. Mejia)

4:30 PM **An Organizing Principle for the Water Energy Food Nexus** - Chad Higgins, Oregon State University (co-author: M. Abou Najm)

Session 34 — **Extremes in Water Resources** — **Marquis B**
Moderator - John Wiener, University of Colorado

3:30 PM ***Modeling Streamflow and Climate Variables in a Changing Climate Using Machine Learning Techniques** - Seema Chouhan, University of Massachusetts Amherst (co-author: T. Randhir)

3:50 PM **Application of Consistent Contact Recreation Water Quality Standards Across Hydrological Extremes: Reasonable or Ridiculous?** - Lucas Gregory, Texas Water Resources Institute (co-authors: S. Muela, K. Wagner)

4:10 PM **Soil Moisture Dynamics and Drought in a Subtropical China Hillslope** - Lirong Lin, Huazhong Agricultural University, P.R. China; The Pennsylvania State University (co-authors: J. Song, M. Guo, J. Chen, H. Lin, M. Liu)

4:30 PM **Merging the Hydrosocial and Social-Hydro Frameworks: An Interdisciplinary Approach to the Study of Flooding in Appalachia** - Rodrigo Fernandez, West Virginia University (co-authors: J. Shinn (1st author), M. Caretta, N. Zegre, R. Fernandez)

Wednesday, June 27

Session 35 — **Groundwater Management** — **Marquis A**

Moderator - Troy Gilmore, University of Nebraska

3:30 PM **Spatial Assessment of Hydrogeological Characteristics of Watershed Using Well Records** - Salahu M. Hamza, Hussaini Adamu Federal Polytechnic/University Putra Malaysia (co-authors: A. Ahsan, A.A. Musa, S.A. Salisu, M. Ibrahim)

3:50 PM **Social Indicators of Groundwater Sustainability** - Glenn O'Neil, Institute of Water Research, Michigan State University

4:10 PM ***Assessing the Implications of Variabilities of Climate and Effluent Discharges on Groundwater Recharge in the Transboundary Santa Cruz Aquifer** - Elia Tapia, University of Arizona Water Resources Research Center (co-author: E. Shamir)

4:30 PM **Global Groundwater Sustainability as a Function of Reliability, Resilience and Vulnerability** - Brian Thomas, University of Pittsburgh

Session 36 — **Water Governance** — **City Center A**

Moderator - Jeff Johnson, Mississippi State University

3:30 PM **Groundwater Governance and Planning in Ogallala Aquifer: A Comparative Evaluation** - Seong C. Park, Texas A&M AgriLife Research (co-author: Y. Fan)

3:50 PM **Evolving Water Governance Mechanisms for Managing Wicked Environmental Problems in the Cache River Watershed of Southern Illinois** - Kofi Akamani, Southern Illinois University (co-author: J. Hancock)

4:10 PM **The Perils and Promise of Sustainable Water Management Reform: Lessons from Mexico City** - Marcela Gonzalez Rivas, University of Pittsburgh

4:30 PM ***Indigenous Water Governance: Innovation for Great Lakes Resilience** - Kelsey Leonard, McMaster University

Session 37 — **Remote Sensing and Modeling to Understand Watershed Processes** — **City Center B**

Moderator - Gurbir Singh, Southern Illinois University

3:30 PM ***Enhancing Seasonal Water Quantity and Quality Ensemble Forecasts in the Chesapeake Bay using the NOAA's Climate Forecast System** - Sanjib Sharma, The Pennsylvania State University (co-author: A. Mejia)

3:50 PM **Challenges in the Use of High-Resolution Remote Sensing Data for Estimation of Evapotranspiration in Wine Vineyards** - Mac McKee, Utah State University (co-authors: A. Torres-Rua, A. Nassar, M. Aboutalebi, W. Kustas, L. Sanchez, M.M. Alsina, N. Dokoozlian)

4:10 PM ***Rainfall and Temperature in the Limpopo River Basin, Southern Africa: Means, Variations, and Trends from 1979 to 2013** - Esther Mosase, South Dakota State University (co-author: L. Ahiablame)

4:30 PM ***Effects of Weather on Defoliation of Forest Ecology and its Impact on Hydrologic Cycle** - Supria Paul, University of Rhode Island (co-authors: T.B. Boving, S.M. Pradhanang)

5:00 PM - 5:45 PM
JCWRE Editors & Associate Editors Meeting
(City Center B)

5:00 PM - 6:00 PM
Career Conversations for Students
(Grand Ballroom 3)
See page 27 for more details.

6:00 PM - 8:00 PM
Happy Hour for Graduate Students and Professionals
(Meet Outside Grand Ballroom 3)
See page 27 for more details.

8:30 AM - 9:50 AM
Plenary Session
(Grand Ballroom 1 & 2)

Moderator - Kevin McGuire, Virginia Tech

"The Dismissal of Facts in Water-Related Decision Making: Root Causes and What to do About It"



Donald I. Siegel earned his B.S. in Geology from the University of Rhode Island, a MS in Geosciences at Penn State, and his doctorate in Hydrogeology at the University of Minnesota. He subsequently worked for the U.S. Geological Survey as a hydrologist/geochemist, and then joined Syracuse University in 1982 and taught and did research there on topics related to hydrogeology and water chemistry for 35 years. His research interests ranged from topics tied to the hydrogeology of deep basins and hydrocarbon-bearing rocks, methanogenesis in wetlands, organic and inorganic groundwater contamination, and drought-induced recharge in arid wetlands. Professor Siegel served as Chairman of the National Water Science and Technology Board of the National Research Council (NRC) and participated on many NRC panels related to water resources. He served as associate editor for most water topic journals and as book editor for the Geological Society of America. Geological Society of America's Hydrogeology Division awarded Professor Siegel its Distinguished Service Award, O.E. Meinzer Award and Birdsall-Dreiss Lectureship, and he is a Fellow of the American Association for the Advancement of Science, the Geological Society of America, and the American Geophysical Union for his contributions to water science. Not retired now but rewired, Siegel now serves as a partner at Independent Environmental Sciences, a consulting group specializing in forensic hydrogeology and geochemistry. He recently competed on the Food Network in 2016 and is developing a secondary career playing solo jazz guitar at coffeehouses, wineries, and various receptions in upstate New York.

"For Better or Worse: Critical Water Quality Controversies in North Carolina"



Industrial activity provides jobs and taxes to communities. Too often, it also brings water pollution. This presentation will focus on two water quality crises in North Carolina that have captured public attention and are likely lurking elsewhere: contamination from coal ash ponds and emerging pollutants. It will explore the issues surrounding coal ash ponds and emerging contaminants as well as legal and policy responses.

Geoff Gisler is a senior attorney with the Southern Environmental Law Center. Since joining SELC in 2006, Mr. Gisler has represented conservation organizations dedicated to protecting water quality, wetlands, fisheries, and wildlife habitat, with a focus on eastern North Carolina. His practice has included litigation and regulatory matters under various sections of the Clean Water Act. As the leader of SELC's Clean Water Program, Mr. Gisler oversees the organization's regional efforts to protect healthy aquatic ecosystems and clean drinking water. Mr. Gisler holds a J.D. from Notre Dame Law School and a B.S. in Ecology from the University of Georgia.

9:50 AM - 10:10 AM
(Grand Ballroom 5)

Thursday, June 28

10:10 AM - 11:50 AM

Concurrent Technical Sessions

*Student presenter in oral presentation competition

Session 38 — **The Food-Energy-Water Nexus II** — **Marquis C**

Moderator - Robert DeOtte, West Texas A&M University

10:10 AM **Energy Savings and Fouling Resistance of Batch Reverse Osmosis** - David Warsinger, Purdue University (co-authors: E. Tow, J. Lienhard V)

10:30 AM **Building Resilience in FEW Systems through Innovations in Technology and Institutions for Coordinated Resource Management** - Julie Padowski, Washington State University (co-authors: J. Adam, J. Boll, S. Katz, D. McLarty)

10:50 AM **Modeling the Intersections of Food, Energy, and Water in Climate-Vulnerable Ethiopia with an Application to Small-Scale Irrigation** - Ying Zhang, Johns Hopkins University (co-authors: S. Sankaranarayanan, W. Nie, J. Carney, B. Zaitchik, S. Siddiqui)

11:10 AM **Alternative Cropping Systems to Reduce the Environmental Impact of Row Crop Monoculture: A Geo-Spatial Eco-Optimization Model of Land Use** - Lucia Levers, University of Minnesota (co-authors: B. Dalzell, J. Peterson)

11:30 AM **Understanding and Addressing the Human Dimensions of the Food-Energy-Water Nexus: An Adaptive Governance Approach** - Kofi Akamani, Southern Illinois University

Session 39 — **Water Issues Associated with Oil and Gas Production** — **Marquis B**

Moderator - Brian Rahm, Cornell University

10:10 AM **A Comparison of Water Well Quality Before and After Nearby Fracking of Gas Wells in Pennsylvania** - Bryan Swistock, Penn State University (co-authors: E. Boyer, J. Clark, M. Madden, D. Rizzo)

10:30 AM ***Effects of Unconventional Oil and Gas Production on Water Chemistry and Fish Community Structure** - Kevin Eliason, West Virginia University (co-authors: J. Ankeny, T. Petty, E. Merriam)

10:50 AM **Brook Trout Distributional Response to Unconventional Oil and Gas Development: Landscape Context Matters** - Eric Merriam, West Virginia University (co-author: J.T. Petty)

11:10 AM **Freshwater Withdrawals Associated with Oil and Gas Production in Texas** - Dorina Murgulet, Texas A&M University-Corpus Christi (co-authors: K. Coeckelenbergh, K. Uhlman)

11:30 AM **Bromide, Chloride, and Sodium Occurrence in Tributaries of the Upper Allegheny River** - Bruce Dickson, RedHorse Environmental

Session 40 — **Modeling and Assessment of Cyanobacterial Blooms in Water Supplies and Natural Waters** — **Marquis A**

Moderator - Christa Kelleher, Syracuse University

10:10 AM **Assessing and Modeling Climate Change Impacts on Cyanobacteria in Utah Lake** - Michael Barber, University of Utah (co-authors: H. Li (1st author), C. Hansen, N. Von Stackelberg, R. Goel, S. Burian, M. Barber)

10:30 AM **Operationalizing Monitoring Networks and Developing Toxicity Models for Lake Erie Harmful Algal Blooms** - Renn Lambert, LimnoTech (co-authors: J. Bratton (1st author), R. Lambert, E. Verhamme, K. Paige, J. Chaffin)

10:50 AM **Exploring the Application of Unoccupied Aerial Vehicles to Study Water Quality** - Christa Kelleher, Syracuse University (co-author: R. Sessanna)

11:10 AM **Modeling Cyanobacteria Kinetics to Improve Cyanotoxin Release Predictions** - David Stevens, Utah State University (co-author: J. McLean, J. Horsburgh)

11:30 AM **The Water Quality Triad of Monitoring, Studies, and Modeling in the Upper Klamath River, Oregon** - Annett Sullivan, U.S. Geological Survey

Session 41 — **Ohio River Watershed** — **City Center A**

Moderator - Lucas Gregory, Texas Water Resources Institute

10:10 AM **Water Quality Monitoring in the Lower Allegheny River and its Tributaries** - Beth Dakin, Duquesne University (co-authors: B. Porter, J. Stolz)

10:30 AM ***Interbasin Transfers in the Ohio River Basin: Drivers and their Evolution** - Kerim Dickson, Carnegie Mellon University (co-author: D. Dzombak)

10:50 AM **Sediment Microbiomes in a Recovering Industrialized Appalachian River (WV)** - David H. Huber, West Virginia State University

11:10 AM **Three Rivers QUEST: Collaborative Monitoring in the Upper Ohio River Basin** - Melissa O'Neal, West Virginia Water Research Institute (co-authors: P. Ziemkiewicz, B. Stout, B. Porter, B. Dickson, L. Barreiro)

Session 42 — **Watershed Restoration Strategies** — **City Center B**

Moderator - Gerald Kauffman, University of Delaware

10:10 AM **Compositional and Functional Attributes of Mitigated and Natural Wetlands in West Virginia** - James Anderson, West Virginia University

10:30 AM **Takeaways from the Texas Riparian and Stream Ecosystem Program and Urban Riparian and Stream Restoration Program** - Clare Entwistle, Texas Water Resources Institute (co-authors: F. Jaber, N. Dictson)

10:50 AM **Monitoring and Data Management to Support Conservation in the Delaware River Watershed Initiative** - Stefanie Kroll, Academy of Natural Sciences of Drexel University (co-authors: S. Haag, J. Jackson, R. Horwitz)

11:10 AM ***Long-Term Fish Community Response to Watershed Scale Acid Remediation** - Rebecca Long, West Virginia University (co-authors: E. Merriam, T. Petty)

11:30 AM ***Soil Indicators of Restored Ecological Function Following Riparian Reforestation in Southern Illinois** - Benjamin Roosa, Southern Illinois University Carbondale (co-authors: K.W.J. Williard, J.E. Schoonover, S. Indorante)

Post-conference Field Trip

12:45 pm - 4:30 pm

Urban Stream Restoration Hiking Tour of Nine Mile Run Watershed

Tickets still available at Registration Desk. Must be pre-registered. Bring your ticket with you.

Take a hike with Dr. Dan Bain, University of Pittsburgh, Department of Geology & Environmental Sciences, as he leads this 2.5 mile maturing "Restoration Walk," of Nine Mile Run.

Urban centers are haunted by a legacy of industrial activity, though few more than Pittsburgh. The city dubbed "Hell with the lid off" in the late 1800s and decimated by the outsourcing of the steel industry in the 1970s is reinventing itself and pioneering the rehabilitation and restoration of the city and its natural systems. While Pittsburgh was left a legacy of industrial impacts, it also inherited several large urban parks that provide a cornerstone for this renewal. One of the centerpieces of this process is the restoration of Nine Mile Run (NMR), a $7.7 million dollar project completed in 2006. The restoration of Nine Mile Run grew out of a grass roots effort and the success of the project has been monitored by a team including professionals, academics, and volunteers. This field trip will visit one of Pittsburgh's premier parks, Frick Park, and highlight the successes and challenges inherent in the rehabilitation of urban streams. We will walk the restored reach, beginning at the Monongahela River and continuing upstream to the culvert where the stream emerges from its burial in upper parts of the watershed. Visit the NMR website for more information about the restoration: ninemilerun.org.

Schedule

12:45 PM, Meet in hotel lobby and load bus (leaving at 1:00 PM)
1:00 PM, Bus to Nine Mile Run Urban Watershed, Pittsburgh's east end
1:20 - 4:00 PM, 2.5 mile Restoration Walk
4:20 PM, Arrive back at hotel

Hike: Moderate 2.5 MILES - The hike will be along restored wetland/stream and some minor stream crossing may be necessary. There will be riparian areas/wetlands, with uneven terrain, up and down hills, urban and forest conditions.

Dress: Hiking boots are recommended, but sneakers will do. Waterproof boots may be preferred. Light colored cool clothing.

Bring: Water, sunscreen, insect repellant, hat, money for incidentals.

Presenter Index

A

Adusumilli, Naveen (Session 21), Extension Economist, LSU AgCenter, nadusumilli@agcenter.lsu.edu
Ahiablame, Laurent (Session 1), Water Quality & Management Advisor, University of California ANR, San Diego County, lmahiablame@ucdavis.edu
Akamani, Kofi (Sessions 36 & 38), Assistant Professor, Southern Illinois University, k.akamani@siu.edu
Albertin, Andrea (Session 24), Northwest Extension District Regional Water Specialist, University of Florida, albertin@ufl.edu
Anderson, James (Session 42), Professor, West Virginia University, jim.anderson@mail.wvu.edu
Arnold, Audrey (Session 26), Education & Outreach Assistant, Prince William County Service Authority, aarnold@pwcsa.org
Arsuffi, Tom (Session 31), Director, Texas Tech University Llano River Field Station, tom.arsuffi@ttu.edu

B

Babcock, Roger (Session 11), Professor, University of Hawaii WRRC, rbabcock@hawaii.edu
Barber, Michael (Session 40), Professor, University of Utah, barber@civil.utah.edu
Berthold, Allen (Session 22), Research Scientist, Texas Water Resources Institute, taberthold@ag.tamu.edu
Beutler, Lisa (Session 25), Executive Facilitator, Stantec, lisa.beutler@stantec.com
Bittinger, Jeramy (Poster), Student, University of Pittsburgh at Johnstown, jjbitt@yahoo.com
Blauch, Garrett (Poster), Master's Candidate, Kent State University, gblauch@kent.edu
Boser, Susan (Session 24), Water Resources Educator, Penn State Extension, smw16@psu.edu
Boucher, Rachel (Session 31), Graduate Assistant, Southern Illinois University Carbondale, Dept. of Forestry, rsheely@siu.edu
Brahma, Sreeya (Session 4), Graduate Student, Virginia Tech, sbrahma@vt.edu
Brasier, Kathryn (Session 26), Associate Professor, Penn State University, kbrasier@psu.edu
Brazil, Liza (Session 16), Community Support Specialist, CUAHSI, lbrazil@cuahsi.org
Buda, Anthony (Session 29), Hydrologist, USDA Agricultural Research Service, Anthony.Buda@ars.usda.gov
Buechler, Stephanie (Poster), Assistant Research Professor, University of Arizona, buechler@email.arizona.edu
Burgess, Crystal (Poster), Graduate Researcher, Syracuse University, csburges@syr.edu
Butler, Erick (Poster), Assistant Professor of Environmental Engineering, West Texas A&M University, ebutler@wtamu.edu

C

Casey, Brittany (Poster), Masters Student, West Virginia University, bnc0015@mix.wvu.edu
Chalfant, Brian (Session 10), Ph.D. Candidate, University of Pittsburgh, water.wonk@pitt.edu
Chouhan, Seema (Session 34), Student, University of Massachusetts Amherst, seema.chouhan91@gmail.com
Chung, Angela (Poster), Graduate Student, University of Pittsburgh Department of Geology and Environmental Sciences, ahc32@pitt.edu
Clark, Shirley (Session 6), Professor of Environmental Engineering, The Pennsylvania State University, sec16@psu.edu
Cook, Lauren (Sessions 1 & 8), Ph.D. Candidate, Carnegie Mellon University, lmcook88@gmail.com
Copeland, Marja (Poster), Graduate Student, University of Pittsburgh, marja.copeland@pitt.edu

D

Dakin, Beth (Session 41), Research Associate, Duquesne University, bethdakin@gmail.com
Dang, Chansotheary (Session 28), Student, Davis College of Plant and Soil Sciences, West Virginia University, cd0039@mail.wvu.edu
Davis, Stacia (Session 21), Assistant Professor, LSU AgCenter, sdavis@agcenter.lsu.edu
Deksissa, Tolessa (Session 18), Director, University of the District of Columbia, tdeksissa@udc.edu
DeOtte, Robert (Sessions 12 & 27), Professor of Civil and Environmental Engineering, West Texas A&M University, rdeotte@wtamu.edu
Devlin, Dan (Session 27), Director, Kansas Center for Agricultural Resources and the Environment, Kansas Water Resources Institute, ddevlin@ksu.edu
DeWalle, David (Session 19), Professor Emeritus, Ecosystem Science and Management, Penn State University, d9d@psu.edu
Dickson, Bruce (Session 39), Director and Senior Ecologist, RedHorse Environmental, bdickson@redhorseenvironmental.com
Dickson, Kerim (Session 41), Ph.D. Candidate, Carnegie Mellon University, kedickso@andrew.cmu.edu
Dinkins, Sam (Session 8), Technical Program Manager, Ohio River Valley Water Sanitation Commission, sdinkins@orsanco.org

E

Eliason, Kevin (Session 39), Graduate Student, West Virginia University, kme0019@mix.wvu.edu
Entwistle, Clare (Session 42), Research Associate, Texas Water Resources Institute, clare.entwistle@ag.tamu.edu

F

Fernald, Sam (Session 3, Poster), Director/Professor, New Mexico Water Resources Research Institute/NMSU, afernald@nmsu.edu

Presenter Index

Fernandez, Rodrigo (Session 34, Poster), Postdoctoral Research Scientist, West Virginia University, rodrigo.fernandezreynosa@mail.wvu.edu
Fitchett, Leah (Session 4), Graduate Research Assistant, Department of Forest Resources & Environmental Conservation, Virginia Tech, leahlf2@vt.edu
Flores Marquez, Maritza (Session 32), Water Resources Engineer in training, Stantec, mfloresmarquez@ucdavis.edu
Forgrave, Rebecca (Poster), Ph.D. Student, University of Pittsburgh, ref61@pitt.edu
Fritz, Ken (Session 15), Research Ecologist, United States Environmental Protection Agency, National Exposure Research Laboratory, fritz.ken@epa.gov

G

Garcia, Susana (Session 33), Ph.D. Candidate, The Pennsylvania State University, seg253@psu.edu
Gasteyer, Stephen (Session 26), Associate Professor, Michigan State University, gasteyer@msu.edu
Gerik, Thomas (Sessions 17 & 27), AgriLife Center Director and Professor, Texas A&M AgriLife, tgerik@brc.tamus.edu
Gholson, Drew (Session 24), Program Specialist - Water Resources, Texas A&M AgriLife Extension Service, dgholson@tamu.edu
Gilmore, Troy (Session 5), Assistant Professor, University of Nebraska, gilmore@unl.edu
Gisler, Geoff (Plenary), Senior Attorney and Leader of Southern Environmental Law Center's Clean Water Program, Chapel Hill Office
Goeller, Brandon (Session 23), Ph.D. Student, University of Canterbury, bcgoeller@gmail.com
Golden, Bill (Sessions 17 & 27), Research Assistant Professor, Kansas State University, bgolden@k-state.edu
Gomez, Michael (Session 33), Ph.D. Student, Pennsylvania State University, mvg5545@psu.edu
Gonzalez Rivas, Marcela (Sessions 7 & 36), Assistant Professor, University of Pittsburgh, mag231@pitt.edu
Goodwell, Allison (Session 2), University of Colorado Denver, Allison.Goodwell@ucdenver.edu
Gregory, Lucas (Session 34), Research Scientist, Texas Water Resources Institute, LFGregory@ag.tamu.edu
Groninger, John (Session 7), Professor, Dept. Forestry, Southern Illinois University, groninge@siu.edu
Guillen, Luis Andres (Poster), Ph.D. Student, West Virginia University, lg0018@mix.wvu.edu
Gyawali, Bimal (Poster), Graduate Student, Texas A&M University-Corpus Christi, bgyawali@islander.tamucc.edu

H

Haas, Vaike (Sessions 5 & 31), Assistant Professor of Landscape Architecture, West Virginia University, vaike.haas@mail.wvu.edu
Habteyes, Befekadu (Poster), Research Assistant, New Mexico State University, befekadu@nmsu.edu
Haggard, Brian (Session 29), Director, Arkansas Water Resources Center, haggard@uark.edu
Hamza, Salahu M. (Session 35), Lecturer, Hussaini Adamu Federal Polytechnic/University Putra Malaysia, salahuhamza@gmail.com
Hayden, Kathryn (Session 26), Graduate Student, Penn State, kxh5242@psu.edu
Hedin, Ben (Poster), Ph.D. Student, University of Pittsburgh, bch37@pitt.edu
Henson, Reilly (Session 4), Project Technician, Virginia Tech, vrhenson@vt.edu
Higgins, Chad (Session 33), Associate Professor, Oregon State University, chad.higgins@oregonstate.edu
Huber, David H. (Session 41), Professor, West Virginia State University, huberdh@wvstateu.edu

J

Jefferson, Anne (Session 6), Associate Professor, Kent State University, ajeffer9@kent.edu
Jenson, Carrie (Session 20), Virginia Water Resources Research Center, Virginia Tech, ckjensen@vt.edu
Jones, Amber (Sessions 2 & 22), Research Engineer, Utah State University, amber.jones@usu.edu
Jones, C. Nathan (Sessions 13 & 20), Postdoctoral Fellow, The National Socio-Environmental Synthesis Center, njones@sesync.org

K

Kane, Patrick (Session 25), Carnegie Mellon University, pkane@andrew.cmu.edu
Katner, Adrienne (Sessions 13 & 30), Assistant Professor, LSU Health Sciences Center-New Orleans, akatn1@lsuhsc.edu
Kauffman, Gerald (Session 32), Director, University of Delaware, jerryk@udel.edu
Kelleher, Christa (Sessions 16 & 40), Assistant Professor, Syracuse University, christakelleher@gmail.com
Kemanian, Armen (Session 9), The Pennsylvania State University
Kennedy, Casey (Session 23), Hydrologist, USDA-ARS, casey.kennedy@ars.usda.gov
Kienzle, Stefan (Session 31), Professor, University of Lethbridge, stefan.kienzle@uleth.ca
Kinne, Beth (Session 5), Associate Professor, Hobart & William Smith Colleges, Kinne@hws.edu
Kreamer, David (Sessions 7 & 14), Professor, University of Nevada, Las Vegas, dave.kreamer@unlv.edu
Kroehler, Carolyn (Session 25), Associate Director, Center for Communicating Science at Virginia Tech, cjkroehl@vt.edu
Kroll, Stefanie (Session 42), Assistant Research Professor, Watershed Ecology Section Leader, Academy of Natural Sciences of Drexel University, sak345@drexel.edu
Kuitu, Michael (Poster), Professional Geologist, TAMU, mkuitu@tamu.edu

Presenter Index

Kutta, Evan (Session 11), Postdoctoral Fellow, West Virginia University Institute of Water Security and Science, evan.kutta@mail.wvu.edu

L

Lai, Yuchuan (Session 1), Ph.D. Student, Carnegie Mellon University, ylai1@andrew.cmu.edu
Lambert, Cody (Poster), Graduate Student, Marshall University, lambert216@marshall.edu
Lambert, Renn (Session 40), Project Engineer, LimnoTech, rlambert@limno.com
Lasater, Abbie (Poster), University of Arkansas, allasate@email.uark.edu
Leonard, Kelsey (Session 36), Ph.D. Candidate, McMaster University, leonardk@mcmaster.ca
Levers, Lucia (Session 38), Research Associate, University of Minnesota, llevers@umn.edu
Lewis, Evan (Poster), Research Assistant, Franklin & Marshall College, elewis2@fandm.edu
Lhilhi Noundou, Vadesse (Poster), Microbiology Laboratory Technician, West Virginia State University, vlhilhinoundou@wvstateu.edu
Liang, Xu (Sessions 2 & 8), Professor, University of Pittsburgh, xuliang@pitt.edu
Likens, Gene E. (Plenary), Founding Director and President Emeritus of Cary Institute of Ecosystem Studies; Co-founder of Hubbard Brook Ecosystem Study
Lin, Lirong (Session 34), Associate Professor, Huazhong Agricultural University, Wuhan, China; Department of Ecosystem Science and Management, The Pennsylvania State University, lrlin@mail.hzau.edu.cn
Ling, Erin (Session 24), Sr. Extension Associate, Virginia Tech/Virginia Cooperative Extension, ejling@vt.edu
Liu, Muxing (Poster), Associate Professor, College of Urban and Environmental Sciences, Central China Normal University, Wuhan, China, liumuxing@mail.ccnu.edu.cn
Liu, Yang (Poster), Ph.D. Student, Carnegie Mellon University, yliu6@andrew.cmu.edu
Long, Rebecca (Session 42), Graduate Student, West Virginia University, ral0018@mix.wvu.edu
Lopez, Alejandro (Poster), Research Assistant, New Mexico State University, arlopez@nmsu.edu

M

Mapili, Kris (Session 30), Ph.D. Student, Virginia Tech, krismm1@vt.edu
Marek, Gary (Session 12), Research Agricultural Engineer, USDA-ARS-CPRL, gary.marek@ars.usda.gov
Marston, Landon (Session 33), Assistant Professor, Kansas State University, ltmarston@ksu.edu
Masters, Sheldon (Session 18), Research Engineer, Environmental Science, Policy, and Research Institute, sheldonmasters@gmail.com
McKee, Mac (Session 37), Director, Utah Water Research Laboratory, Utah State University, mac.mckee@usu.edu
McLaughlin, Daniel (Session 15), Assistant Professor of Ecohydrology, Virginia Tech, mclaugd@vt.edu
McPhillips, Lauren (Session 6), Postdoctoral Research Fellow, Arizona State University, lmcphill@asu.edu
Measeles, Paul (Poster), Hydrologist, Oregon Department of Agriculture, pmeaseles@oda.state.or.us
Megdal, Sharon B. (Session 7), Director and Professor, Water Resources Research Center, The University of Arizona, smegdal@email.arizona.edu
Merriam, Eric (Session 39), Postdoctoral Research Assistant, West Virginia University, emerriam@mix.wvu.edu
Miller, Melissa (Session 5), Associate Director, Iowa Water Center, millerms@iastate.edu
Mina, Odette (Session 3), Managing Director, Energy and Environmental Sustainability Laboratories, The Pennsylvania State University, oom5021@psu.edu
Mosase, Esther (Session 37), Ph.D. Candidate, South Dakota State University, esther.mosase@sdstate.edu
Mosesso, Lauren (Session 23), Research Assistant, University of Delaware, lmosesso@udel.edu
Mullins, Angela (Poster), Graduate Student, The University of Pittsburgh, arm175@pitt.edu
Murgulet, Dorina (Session 39), Associate Professor of Hydrogeology, Texas A&M University-Corpus Christi, dorina.murgulet@tamucc.edu

N

Naigaga, Shamim (Poster), Auburn University, szn0030@tigermail.auburn.edu
Nnabuo-Eguzozie, Emmanuella (Poster), Ph.D. Student, University of South Africa, emachioma@yahoo.com

O

O'Driscoll, Michael (Session 14), Associate Professor, East Carolina University, odriscollm@ecu.edu
O'Neal, Melissa (Session 41), Program Manager, West Virginia Water Research Institute, moneal@mail.wvu.edu
O'Neil, Glenn (Sessions 11 & 35), Environmental Scientist, Institute of Water Research - Michigan State University, oneilg@msu.edu
O'Neill, Karen (Session 32), Associate Professor, Rutgers University, karen.oneill@rutgers.edu
Ossowski, Elizabeth (Session 17), Program Coordinator, National Oceanic and Atmospheric Administration (NOAA)'s National Integrated Drought Information System (NIDIS), elizabeth.ossowski@noaa.gov
Otts, Stephanie (Session 22), Director, National Sea Grant Law Center, University of Mississippi School of Law, sshowalt@olemiss.edu

Presenter Index

P

Padowski, Julie (Session 38), Clinical Assistant Professor, Washington State University, julie.padowski@wsu.edu
Park, Seong C. (Session 36), Associate Professor, Agricultural and Natural Resource Economist, Texas A&M AgriLife Research, scpark@ag.tamu.edu
Paul, Supria (Session 37), Research Assistant, University of Rhode Island, supria_paul@uri.edu
Pellerin, Brian (Session 16), Physical Scientist, U.S. Geological Survey, bpeller@usgs.gov
Petty, Todd (Session 11), Professor and Associate Dean of Academic Affairs, West Virginia University, jtpetty@mail.wvu.edu
Pieper, Kelsey (Session 13), Research Scientist, Virginia Tech, Kpieper@vt.edu
Plauche, Mary (Poster), Graduate Student, Kent State University Department of Geology, mplauche@kent.edu
Porter, Brady (Poster), Associate Professor, Duquesne University, Biology Department, porterb@duq.edu
Prettner, Selina (Poster), Research Assistant, Duquesne University, prettners@duq.edu
Proaño, Gabriel (Session 22), Ph.D. Candidate, Auburn University, gzp0009@tigermail.auburn.edu

Q

Quinn, Julianne (Session 10), Postdoctoral Associate, Cornell University, jdq8@cornell.edu

R

Raflo, Alan (Session 25), Research Associate, Virginia Water Resources Research Center, araflo@vt.edu
Rahm, Brian (Session 3), Research Associate, Cornell University, bgr4@cornell.edu
Rajib, Adnan (Session 20), ORISE Research Fellow, U.S. EPA Office of Research and Development, rajib.adnan@epa.gov
Respess, Zachary (Poster), Graduate Student, Pennsylvania State University, zmr8@psu.edu
Roosa, Benjamin (Session 42), Graduate Research Assistant, Southern Illinois University Carbondale, benjamin.roosa@siu.edu

S

Sample, David (Session 6), Associate Professor, Virginia Polytechnic Institute and State University, dsample@vt.edu
Schipanski, Meagan (Session 12), Assistant Professor, Colorado State University, meagan.schipanski@colostate.edu
Scott, Nicholas (Poster), Physical Oceanographer, Riverside Research, nscott@riversideresearch.org
Shabman, Leonard(Plenary), Senior Fellow at Resources for the Future
Sharma, Sanjib (Session 37), Ph.D. Candidate, The Pennsylvania State University, sanjibsharma66@gmail.com
Siddique, Ridwan (Session 1), Postdoctoral Research Associate, Northeast Climate Science Center/University of Massachusetts Amherst, siddique@umass.edu
Siegel, Donald I. (Plenary), Emeritus Laura J. and L. Douglas Meredith Professor, Department of Earth Sciences, Syracuse University
Singh, Gurbir (Sessions 23 & 29), Graduate Research Assistant, Southern Illinois University, gsvw9@siu.edu
Smith, Tyler (Poster), Assistant Professor, Clarkson University, tsmith@clarkson.edu
Sorice, Michael (Session 9), Virginia Tech
Springer, Abraham (Session 14), Professor, Northern Arizona University, abe.springer@nau.edu
Stevens, David (Session 40), Professor, Utah State University, david.stevens@usu.edu
Stone, Harry (Session 8), Chair, ORBA Steering Committee, Ohio River Basin Alliance, hstone6148@aol.com
Strager, Michael (Poster), Professor, West Virginia University, mstrager@wvu.edu
Sullivan, Annett (Session 40), Hydrologist, U.S. Geological Survey, annett@usgs.gov
Swistock, Bryan (Sessions 30 & 39), Senior Water Resources Specialist, Penn State University, brs@psu.edu

T

Tagert, Mary Love (Session 10), Assistant Extension Professor, Mississippi State University, mltagert@abe.msstate.edu
Tang, Min (Session 18), Postdoctoral Research Associate, Virginia Tech, mint3@vt.edu
Tapia, Elia (Session 35), Graduate Research Assistant, University of Arizona Water Resources Research Center, emtapia@email.arizona.edu
Thomas, Brian (Session 35), Assistant Professor, University of Pittsburgh, bfthomas@pitt.edu
Tisherman, Rebecca (Poster), Graduate Student, University of Pittsburgh, rat64@pitt.edu
Traver, Robert (Session 6), Professor, Villanova University, robert.traver@villanova.edu
Truhlar, Allison (Poster), Postdoctoral Research Associate, NYS Water Resources Institute, amt94@cornell.edu

U

Ugwuanyi, Ifeoma R. (Poster), Microbiology Research Technician, West Virginia State University, iugwuanyi@wvstateu.edu
Utz, Ryan (Session 28), Assistant Professor of Water Resources, Chatham University, rutz@chatham.edu

Presenter Index

V

Van Abs, Daniel (Session 28), Associate Professor of Practice for Water, Society and Environment, Rutgers University, vanabs@sebs.rutgers.edu
VanBriesen, Jeanne M. (Plenary), Duquesne Light Company Professor of Civil and Environmental Engineering and the Director of the Center for Water Quality in Urban Environmental Systems (Water QUEST) at Carnegie Mellon University
VandenHeuvel, Kristan (Session 21), Research Manager, The Water Research Foundation, kvandenheuvel@waterrf.org
Vesper, Dorothy (Session 19), Associate Professor of Geology, West Virginia University, djvesper@mail.wvu.edu

W

Wagner, Kevin (Sessions 17 & 27), Director, Oklahoma Water Resources Center, kevin.wagner@okstate.edu
Ward, Nicole (Sessions 4 & 9), Graduate Student, Virginia Tech, nkward@vt.edu
Warsinger, David (Session 38), Assistant Professor, Purdue University, davidwarsinger@gmail.com
Weathers, Kathleen (Session 9), Cary Institute of Ecosystem Studies
Wen, Tao (Session 2), Postdoctoral Scholar, Earth and Environmental Systems Institute and Department of Geosciences, The Pennsylvania State University, tzw138@psu.edu
Wettergreen, Erika (Session 28), Water Resources Program Manager, Marstel-Day LLC, ewettergreen@marstel-day.com
Wiener, John (Session 10), Research Associate, University of Colorado, john.wiener@colorado.edu
Williams, Mark (Session 29), Agricultural Engineer, USDA-ARS, mark.williams2@ars.usda.gov
Wilson Grimes, Kristin (Session 32), Director, Virgin Islands Water Resources Research Institute, University of the Virgin Islands, kristin.wilson@uvi.edu

X

Xu, Jiajun (Session 3), Professor, University of the District of Columbia, jiajun.xu@udc.edu

Y

Yencha, Andrew (Session 30), Water Resources Extension Educator, Penn State University, azy30@psu.edu

Z

Zhang, Ying (Session 38), Postdoc, Johns Hopkins University, ying.zhang@jhu.edu
Zimmer, Margaret (Session 15), Assistant Professor, University of California, Santa Cruz, margaret.zimmer@ucsc.edu

****** Calling Students and Early Career Professionals ******
Special Events

Wednesday, 5:00 pm - 6:00 pm
Career Conversations for Students
(Grand Ballroom 3)

Moderator - Kelly Cobourn, Virginia Tech

Do you wonder what comes next and how to get there? Join students and professionals from diverse disciplines and career stages to discuss a range of professional development topics. Conversations will focus on making the career transition, communicating research, tips and tricks for effective teaching, productivity strategies, and diversity and inclusion. Participate in two small-group Q&A sessions of your choice. Then stay for continued conversations, snacks, and refreshments!

Wednesday, 6:00 pm - 8:00 pm
Happy Hour for Graduate Students and Professionals
(Meet Outside Grand Ballroom 3)

This year's student event, Career Conversations for Students, will be immediately followed by an informal happy hour for graduate students and professionals on June 27th from 6:00-8:00 pm. Any and all UCOWR attendees are invited to join us as we venture out into downtown Pittsburgh to continue conversing in a relaxed setting. Weather dependent, we will seek out a location with an outdoor patio. The group will depart from Grand Ballroom 3 at 5:30. Please contact Kelly Cobourn at kellyc13@vt.edu if you have any questions about the event.

Special thanks to The Ivanhoe Foundation for their generous contributions in support of student participation at the conference.

The Ivanhoe Foundation

The Ivanhoe Foundation grants Fellowships to needy and deserving students from developing countries. These students must be studying at a U.S. university for a practical Master of Science degree in engineering or science, with an emphasis on water resources. Mr. Ivanhoe, the Foundation's founder, spent most of his working years in developing countries and observed firsthand the plight of water-deprived localities. He felt the most pressing need globally will be practical water-related degrees at the Masters level. For more information go to www.theivanhoefoundation.com.



AWARDS LUNCHEON

Wednesday, 11:30 AM, Grand Ballroom 3 & 4

Must be pre-registered to attend. Bring your ticket with you.

Congratulations to the 2018 UCOWR awards recipients!
All recipients will be honored at the Awards Luncheon.

WARREN A. HALL MEDAL

Recognizes distinguished lifetime achievement in the field of water resources.

Leonard A. Shabman, Virginia Tech University
Ari M. Michelsen, Texas A&M University

FRIENDS OF UCOWR AWARD

Recognizes individuals or groups who have made outstanding contributions to UCOWR.

David R. DeWalle, Pennsylvania State University
Richard M. Vogel, Tufts University

PH.D. DISSERTATION AWARD

Recognizes outstanding Ph.D. dissertations in two categories.

Julianne Quinn, Cornell University (Natural Science and Engineering category)
Allison Goodwell (Honorable Mention), University of Illinois (Natural Science and Engineering category)
Landon Marston, University of Illinois (Water Policy and Socioeconomics category)

JOURNAL OF CONTEMPORARY WATER RESEARCH AND EDUCATION (JCWRE) PAPER OF THE YEAR

Recognizes the most outstanding paper selected from papers published in JCWRE during the previous year.

Finalists for 2017 (winner TBA at Awards Luncheon):

Water Budget Development for SGMA Compliance, Case Study: Ukiah Valley Groundwater Basin. M. Flores Marquez, S. Sandoval-Solis, A.J. DeVicentis, J.P. Ortiz Partida, E. Goharian, B.R. Britos, P.T. Silva Jordan, G.T. McGourty, D.J. Lewis, R.B. Elkins, and J.M. Harper. University of California, Davis

Design and Manufacturing of High Surface Area 3D-Printed Media for Moving Bed Bioreactors for Wastewater Treatment. O. Elliott, S. Gray, M. McClay, B. Nassief, A. Nunnelley, E. Vogt, J. Ekong, K. Kardel, A. Khoshkhoo, G. Proaño, D.M. Blersch, and A.L. Carrano. Auburn University

Many Thanks

Thank you to all the presenters, moderators, judges, and attendees.
Each of you are vital to a successful conference!

Conference Planning Committee

Kevin McGuire (Chair), Virginia Tech
Bryan Swistock (Technical Program Chair), Penn State
Brian Benham, Virginia Tech
Tony Buda, USDA-ARS
Kelly Cobourn, Virginia Tech
Dave DeWalle, Penn State
Pam Edwards, USFS
Emily Elliot, University of Pittsburgh
Jason Hubbart, West Virginia University
Shreeram Inamdar, University of Delaware
Jerry Kauffman, University of Delaware
Christa Kelleher, Syracuse University
Franco Montalto, Drexel University
Melissa O'Neal, West Virginia University
Karen O'Neill, Rutgers University
Patrick Reed, Cornell University
Jim Shortle, Penn State
Jeanne VanBriesen, Carnegie Melon University
Karl Williard, Southern Illinois University
Nicolas Zegre, West Virginia University

Awards Committees

Thank you for your time and dedication to selecting deserving recipients from an excellent pool of candidates.

Warren Hall Medal Committee
Jeff Johnson, Chair, Mississippi State University
Elizabeth Boyer, Penn State University
Dan Devlin, Kansas State University

Friends of UCOWR Awards Committee
Doug Parker, Chair, University of California
Elizabeth Boyer, Penn State University
Sharon Megdal, The University of Arizona

Ph.D. Dissertation Awards Committee
Jonathan Yoder, Chair, Washington State University
Ellen Douglas, University of Massachusetts Boston
Nicole Wilkinson, NC State University

JCWRE Paper of the Year Committee
Karl Williard, Chair, Southern Illinois University
Natalie Carroll, Pudue University
Ellen Douglas, University of Massachusetts Boston
Melinda Laituri, Colorado State University
M.S. Srinivasan, National Institute of Water and Atmospheric Research, New Zealand
Jonathan Yoder, Washington State University

Are you interested in connecting with UCOWR and want more information?

Many people work on water, yet it can be difficult to find each other, especially when crossing disciplines. UCOWR prides itself on its professional, personalized customer service approach as we help water researchers, educators, extension specialists, and students across academia connect with each other in meaningful ways.

What we can do for you:

- Develop leadership skills, be a voice and help shape our diverse organization.
- Receive discounts for our dynamic UCOWR/NIWR annual conference featuring career development, skill building, and research exposure.
- Connect with a growing network of over 65 institutions nationwide who are leading the way in water research, education, and policy.
- Publish in and receive The Journal of Contemporary Water Research and Education, the only peer-reviewed water resource journal focused on applied research, policy, education, and extension.
- Be recognized for outstanding research and early, mid, and lifetime career achievements through our prestigious annual awards and scholarships.
- Access exclusive Water Smart Innovations conference scholarships through our partnership with Southern Nevada Water Authority.
- Advertise graduate assistantships and water resources positions via our website.

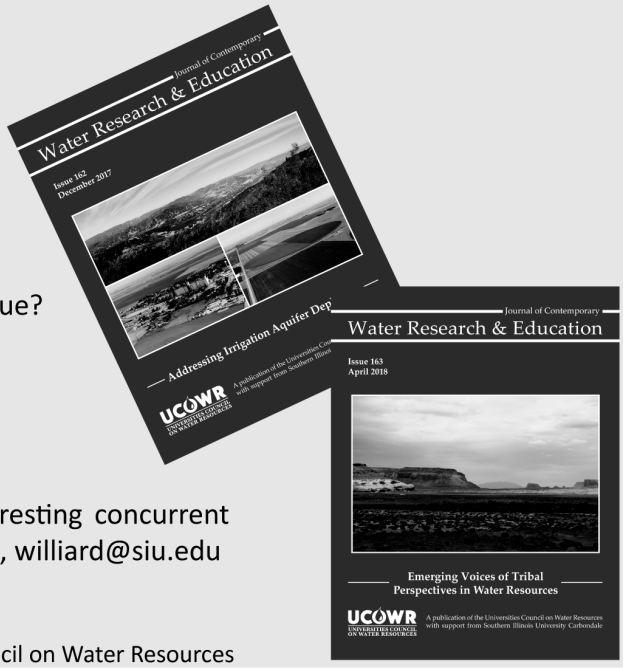
Reach out to a Board Member in your region

Jeff Johnson, President, Mississippi State University ..... jjohnson@drec.msstate.edu
Sharon Megdal, Past President, University of Arizona ..... smegdal@email.arizona.edu
Elizabeth Boyer, Penn State University ..... ewb100@psu.edu
Natalie Carroll, Purdue University ..... ncarroll@purdue.edu
Kelly Cobourn, Virginia Tech University ..... kcobourn@vt.edu
Dan Devlin, Kansas State University ..... ddevlin@ksu.edu
Doug Parker, University of California ..... doug.parker@ucop.edu
Kevin Wagner, Oklahoma State University ..... kevin.wagner@okstate.edu
Nicole Wilkinson, North Carolina State University ..... nicole_wilkinson@ncsu.edu
Jonathan Yoder, Washington State University ..... yoder@wsu.edu
Karl Williard, Executive Director, Southern Illinois University ..... williard@siu.edu

Calling All Water Professionals

Need an outlet for your work?
Consider the *Journal of Contemporary Water Research and Education*

JCWRE is a peer-reviewed journal devoted to disseminating original work in water research, policy, education, and extension. The journal is published three times a year. In 2019, two issues (April & August) will be open issues devoted to general submissions; the December issue will be a themed issue comprised of invited authors.



Interested in submitting a manuscript to a 2019 open issue?
Visit ucowr.org for author instructions.

Deadlines:

Publication in April Issue - October 15, 2018
Publication in August Issue - December 15, 2018

Have an idea for a themed issue? Did you see an interesting concurrent session suitable for a themed issue? Contact Karl Williard, williard@siu.edu

UCOWR
UNIVERSITIES COUNCIL ON WATER RESOURCES

JCWRE is a publication of the Universities Council on Water Resources

NOTES

***** Tell Us About Your Conference Experience *****

All attendees will receive an email survey in the days following the conference. Please provide your feedback and let's make next year's conference even better!

Transportation

Pittsburgh International Airport
(~ 30 minute drive to hotel)

Super Shuttle ($22 with discount code 7HEBD)
Reservation required. (800) 258-3826

Taxi ($37 est.)	Ride Share options
Checker Cab (412) 664-5600	Uber X ($37-48)
Cranberry Taxi (412) 481-8387	Uber XL ($54-70)
Yellow Cab (412) 321-8100	Lyft ($33-45)
zTrip (412) 777-7777	Lyft Plus ($50-62)

Airport Car Rental – http://www.flypittsburgh.com/parking-transport/parking-transport-car-rental

Getting Around Downtown Pittsburgh

Downtown is in the **T (transit) system** Free Fare Zone! The Red line connects many areas of interest. See http://www.portauthority.org/paac/apps/maps/TLines.pdf for map of the T system.

Bike rental is readily available in Pittsburgh; Explore at https://healthyridepgh.com/.

Walking - Downtown is pedestrian friendly, full of green spaces, interesting architecture, and historic sites. Visit: https://perceptivetravel.com/blog/2017/05/18/walk-around-downtown-pittsburgh/.

Dining within Walking Distance

There are ***many*** places to eat, including many well known chains and fast food joints. Below are just a sampling of some of the local restaurants particularly recommended in downtown Pittsburgh.

Primanti Bros. – Pittsburgh chain famed for loaded sandwiches invented to feed hungry truck drivers during the Great Depression; 0.8 mi, 2 South Market St. (Also in PPG Arena, 0.1 mi)

*Union Standard – Chef owned American eatery in the historic Union Trust Building; 0.3 mi, 524 William Penn Pl.

Bruegger's Bagels – New York style bagels, breakfast and lunch sandwiches; 0.5 mi, 429 Fourth Ave.

*The Commoner – Farm-to-table eats with a British spin, draft beer, wine, cocktails; 0.3 mi, 458 Strawberry Way

*Sienna Marcato – Rooftop beer garden, woodfire pizza, special meatball emporium; 0.5 mi, 942 Penn Ave.

Proper Brick Oven & Tap Room – Locally sourced pasta dishes, pizza, local/regional tap beers; 0.6 mi, 139 Seventh St.

*Pork & Beans – Award winning Texas style BBQ, homestyle sides, craft beer; 0.7 mi, 136 Sixth St.

*täkō – Inventive Mexican street food, sidewalk seating; 0.6 mi, 214 Sixth St.

*City Works - Pittsburgh – American pub fare, 90 local and global beers on tap; 0.7 mi, PPG Place

Millie's Homemade Ice Cream – Small batch, locally sourced, traditional and intriguing flavors; 0.6 mi, 246 Forbes Ave.

**These restaurants recommend reservations, especially for large groups, dinner - contact information online.*

Explore Pittsburgh

Point Park – A location of great historical significance, the Point offers beautiful views of the city and the confluence of three rivers, featuring a 100 ft. fountain. The Fort Pitt Museum tells the story of western PA's pivotal roles during settlement, American Revolution, and western expansion days. Don't forget to check out the Three Rivers Heritage Trail, a rails to trails success.

The Inclines and Mount Washington – The Monongahela and the Duquesne Inclines offer beautiful views as they transport people up to the Mount Washington area. On top, Grandview Avenue runs all along the hill with spectacular views of the city, rivers, and bridges available at frequent intervals. Read more at https://www.tripsavvy.com/exploring-mt-washington-2708253.

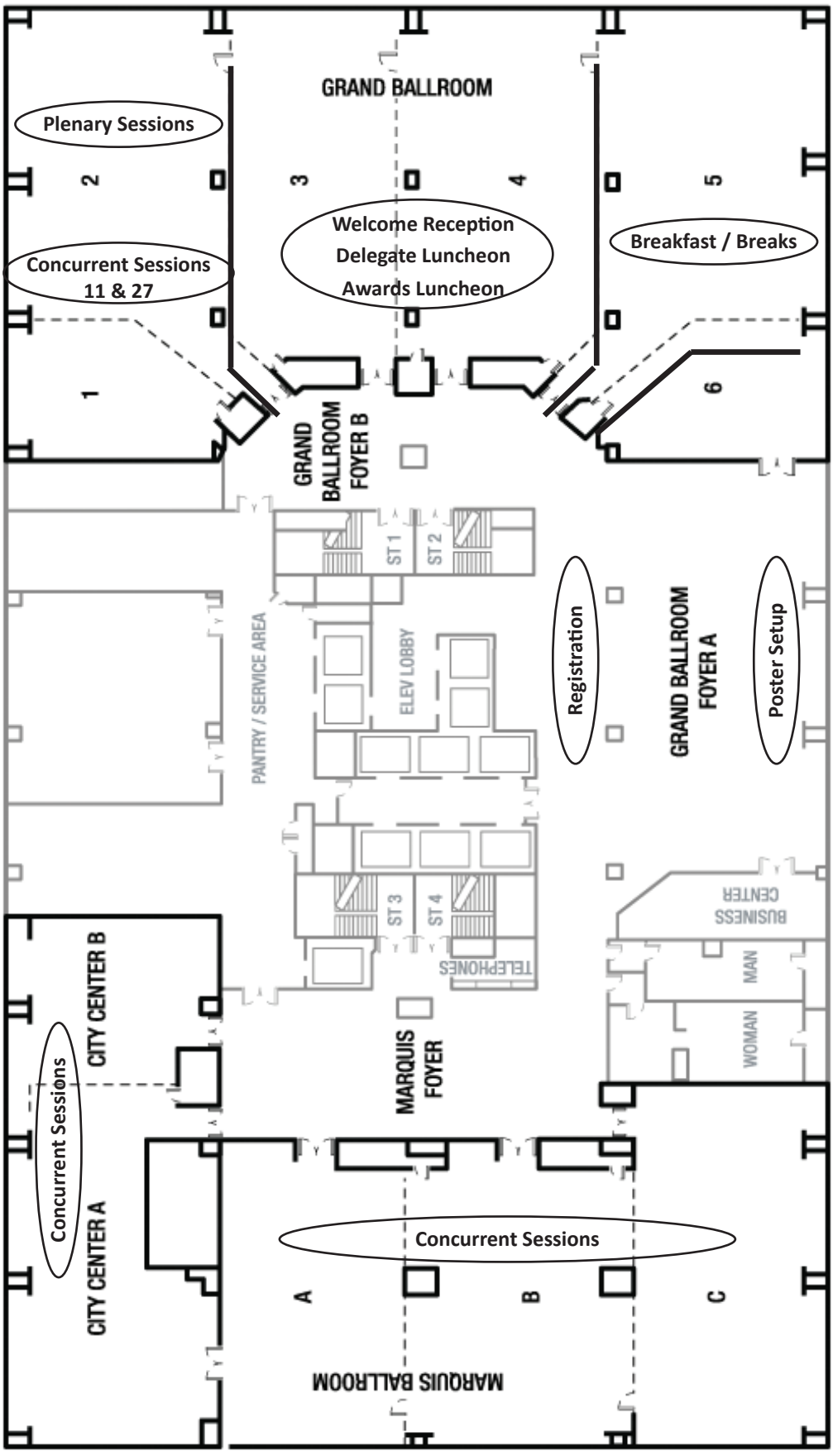
Museums – The Carnegie Museums include the Museum of Art, the Science Center, the Museum of Natural History, and the Andy Warhol Museum. The Children's Museum of Pittsburgh is highly rated, as is the Heinz History Center. Many more!

Downtown Shopping – Fifth Avenue Place (5th and Liberty), Station Square, Market Square (Forbes and Market St.).

Nearby Breweries – Southern Tier Brewing (316 N. Shore Dr.), Penn Brewery (800 Vinial St.), The Church Brew Works (3525 Liberty Ave.).

Pittsburgh Marriott City Center, 2nd Floor

112 Washington Place
Pittsburgh, PA 15219



2019 UCOWR/NIWR
Annual Water Resources Conference
Snowbird, Utah

June 11-13, 2019



Online abstract submission opens in October.
Abstract deadline is January 25, 2019.

Have an idea for a special session?
Submit a one paragraph proposal to David Stevens, Conference Chair, at david.stevens@usu.edu. Deadline for submissions is September 21, 2018.

UCOWR | UNIVERSITIES COUNCIL ON WATER RESOURCES

1231 Lincoln Drive, Mail Code 4526 • Southern Illinois University • Carbondale, IL 62901
Ph: 618-536-7571 • Fax: 618-453-2671 • ucowr@siu.edu • www.ucowr.org
facebook.com/ucowr @ucowr