2016 National Capital Region Water Resources Symposium:

Rethinking the Value of Water: Innovations in Research, Technology, Policy, and Management

Friday, April 8, 2016
8:00 a.m. – 5:00 p.m.

University of the District of Columbia (UDC)
David A. Clarke School of Law
4340 Connecticut Ave., NW, Washington DC

Introduction

This one-day symposium will bring together experts from governmental agencies, academia, the private sector, and non-profits to present and discuss innovations in water research, technology, policy and management to respect and reflect the value of water in the National Capital Region, as well as nationally and internationally. We hope that you will make the most of the opportunity to meet other water resources professionals across the region.

The National Capital Region, encompassing the District of Columbia, and parts of Maryland, Virginia and West Virginia, has unique and challenging opportunities for sustainable management of water resources and water infrastructures. The region makes up a large portion of the watershed for the Chesapeake Bay, the largest estuary in the U.S; contains rivers which provide for the water needs of nearly six million people; and hosts many organizations and entities that consider water resources as their primary focus. The role of the AWRA-National Capital Region Section is to focus water resources professionals on water resources issues in the national capital region.

Featured Speakers


G. Tracy Mehan


Emily Feenstra


Kimberly Jones


Saul Kinter


Eugene Stakhiv


Thomas Grizzard

G. Tracy Mehan, III is Executive Director, Government Affairs, for the American Water Works Association (AWWA), Adjunct Professor at George Mason University School of Law and Carnegie Mellon University's Heinz College and member of EPA's Environmental Financial Advisory Board and boards of the U.S. Water Alliance and the Great Lakes Observing System. He was an independent consultant and served as Interim President of the U.S. Water Alliance and national Source Water Protection Coordinator for the U.S. Endowment for Forestry and Communities. He was also a Principal with The Cadmus Group, Inc., an environmental consulting firm, from 2004 to 2014. Mr. Mehan served as Assistant Administrator for Water at the U.S. Environmental Protection Agency from 2001-2003, Environmental Stewardship Counselor to the 2004 G-8 Summit Planning Organization (2004), director of the Michigan Office of the Great Lakes (1993-2001) and as Associate Deputy Administrator of EPA in 1992. Mr. Mehan was director of the Missouri Department of Natural Resources from 1989 to 1992. Mehan is a graduate of Saint Louis University and its School of Law, served on the Water Science and Technology Board and now the Committee on the Mississippi River and the Clean Water Act for the National Research Council of the National Academies.

Emily Feenstra is the Deputy Director of the US Water Alliance. In this capacity see oversees a diverse portfolio of projects and manages partnerships with Alliance members and supporters to advance one water management in America. Prior to joining the US Water Alliance, Emily was the Director of Infrastructure Initiatives and Public Affairs at the American Society of Civil Engineers. In that role she led policy and advocacy initiatives for the American Society of Civil Engineers, including ASCE's Report Card for America's Infrastructure, the Failure to Act economic study series, and other reports designed to influence infrastructure policy. She also directed the media relations team for the 145,000-member Society. Prior to ASCE, Emily held senior positions at the Intelligent Transportation Society of America and as a consultant for the Washington State Department of Transportation. She holds a bachelor's degree from Duke University and a Master's of Public Administration from the University of Washington.

Dr. Kimberly L. Jones is Professor of Environmental Engineering and Chair of the Department of Civil and Environmental Engineering at Howard University in Washington, DC. She holds a B.S in Civil Engineering from Howard University, a M.S. in Civil and Environmental Engineering from the University of Illinois in Champaign, IL and a Ph.D. in Environmental Engineering from The Johns Hopkins University. Dr. Jones' research interests include developing membrane processes for environmental applications, physical-chemical processes for water and wastewater treatment, remediation of emerging contaminants, drinking water quality, and environmental nanotechnology. Dr. Jones currently serves on the Chartered Science Advisory Board of the US Environmental Protection Agency, and as chair of the Drinking Water Committee of the Science Advisory Board. She has served on the Water Science and Technology Board of the National Academy of Sciences, and the Board of Association of Environmental Engineering and Science Professors. She has served on several committees of the National Academy of Science and the Institute of Medicine. She served as the Deputy Director of the Keck Center for Nanoscale Materials for Molecular Recognition, one of the first centers to bring nanotechnology research to Howard University. She also serves on the Center Steering Committee of the Center for the Environmental Implications of Nanotechnology (CEINT), a National Environmental Nanotechnology Center.

Saul Kinter is the Innovation Program Manager for DC Water. He holds a BSE degree from Princeton University, where his thesis described a new model for distributing surface water according to the Texas water rights system. As Innovation Program Manager, he is responsible for improving organizational efficiency, leading implementation of new ideas, and developing new revenue streams. He also leads the heat recovery, intellectual property licensing, and water kiosk programs.

Dr. Eugene Z. Stakhiv is currently an Associate Research Scientist at Johns Hopkins University, Department of Geography and Environmental Engineering, and Visiting Scholar at the Corps' Institute for Water Resources. He retired after 35 years with the Corps, and served for 10 years as US Director, International Great Lakes Study, implementing new water management and regulation plans for various climate scenarios. Concurrently, he was Director of the UNESCO International Center for Integrated Water Resources Management. He served as co-chair and lead author for the first three UN Intergovernmental Panels on Climate Change (IPCC). He served as advisor to the water ministries of Iraq in 2003, and those of Bangladesh, Ukraine, Armenia, Afghanistan and the Aral Sea Basin countries as consultant for the World Bank. Stakhiv has a doctorate in water resources systems engineering from Johns Hopkins University, and authored 70 published papers and over 150 technical reports.

Dr. Thomas Grizzard (Luncheon Speaker) is Professor Emeritus in the Charles E. Via, Jr. Department of Civil and Environmental Engineering of Virginia Tech. He was Director of the Occoquan Laboratory in Manassas, Virginia for 40 years. In the For most of his career, Dr. Grizzard was involved with the signature U.S. project for potable reuse by augmentation of a drinking water reservoir. For over 35 years, the Upper Occoquan Service Authority has operated a water reclamation facility that serves to increase the drinking water yield of the Occoquan Reservoir. In addition, Dr. Grizzard has been involved with reuse projects in the Republic of Singapore. Dr. Grizzard is native Virginian, and a registered professional engineer in Virginia.

Wilbert O. Thomas, Jr. (**Invited Speaker, Session F)** is a Senior Technical Consultant with Michael Baker International in Manassas, Virginia. He reviews and performs hydrologic analyses for flood insurance studies and participates in special projects sponsored by FEMA and other clients. Mr. Thomas is the author of more than 75 papers on a variety of surface water hydrologic topics. As a U.S. Geological Survey employee, Mr. Thomas participated in the development of Bulletin 17B, *Guidelines for Determining Flood Flow Frequency*, published in March 1982 and still used by all Federal agencies for flood frequency analysis of gaged streams. Mr. Thomas is the current chair of the Hydrologic Frequency Analysis Work Group that recently developed a new Bulletin 17C for revised flood frequency guidelines. Mr. Thomas received a Bachelor of Science degree in Mathematics from the University of Maryland and a Master of Science degree in Statistics from the University of Illinois.

Program

8:00 a.m.	**~~ REGISTRATION ~~**	**Fifth Floor Lobby**
8:45 a.m.	**Opening & Welcome** • **Cherie Schultz**, Interstate Commission on the Potomac River Basin, AWRA-NCR Section President • **Tolessa Deksissa,** Director, Water Resources Research Institute & Professional Science Master's Water Resource Management Program, University of the District of Columbia • **Sabine O'Hara**, Dean, College of Agriculture, Urban Sustainability & Environmental Sciences, University of the District of Columbia • **Tamim Younos**, Green Water-Infrastructure Academy, Washington, D.C. Symposium Chair & Vice President AWRA-NCR Section, Fellow Member AWRA Introduction to the Symposium Theme	**Room 518**
9:15 a.m.	**Keynote** **G. Tracy Mehan, III**, Executive Director, Government Affairs, for the American Water Works Association (AWWA). Introduction by **Norm Starler**, Bowhead Professional Solutions, L.L.C, AWRA-NCR President-Elect	**Room 518**
10:00 a.m.	**~~ Break ~~** **Please visit posters on display in the break area**	**Fifth Floor Lobby**

10:30 a.m.	**Invited Panel:** Rethinking the Value of Water: Innovations in Research, Technology, Policy, and Management **Moderator:** **Eugene Z. Stakhiv,** Institute for Water Resources, U.S. Army Corps of Engineers and Visiting Scholar at Johns Hopkins University **Panelists:** **Emily Feenstra,** Deputy Director**,** US Water Alliance **Saul Kinter,** Innovation Program Manager, DC Water **Kimberly Jones,** Professor and Department Head, Civil and Environmental Engineering, Howard University	**Room 518**
11:50 a.m.	**Lunch (provided). Luncheon Speaker: Thomas Grizzard,** Professor Emeritus, Virginia Tech	**Room 214**

Con-Current Sessions

1:00 p.m. - 2:45 p.m.	**A.** Water Environment and Management **B.** Water Treatment Technologies **C.** Green Infrastructure	A: Room 518 B: Room 505 C: Room 506
2:45 p.m.	**~~ Break ~~** **Please visit the posters on display in the break area**	Fifth Floor Lobby
3:00 p.m. 4:45 p.m.	**D.** Water and Climate **E.** Water Supply Management **F.** Flood and Storm Water Management	D: Room 518 E: Room 505 F: Room 506
8:30 a.m. – 3:30 p.m.	**Poster Presentations**	Fifth Floor Lobby

Con-Current Sessions (A, B, C)
1:00 p.m. – 2:45 p.m.

A. Water Environment and Management Room 518	B. Water Treatment Technologies Room 505	C. Green Infrastructure Room 506
Moderator: Thomas Johnson, Office of Research and Development, USEPA **Estimation of Land Surface Evaporation Using Variational Data Assimilation Method: Application Drought Monitoring.** Abedeh Abdolghafoorian, Graduate Research Assistant and Leila Farhadi, Assistant Professor, Department of Civil and Environmental Engineering, George Washington University, Washington, D.C. **Investigating the Potential Risk of Hydraulic Fracturing to Water Quality in the Potomac Watershed.** Colin Casey, Master's Degree Candidate, Jessica Balerna, Undergraduate Student, and Karen Knee, Assistant Professor, Department of Environmental Science, American University, Washington, D.C.; and Gabriel Santos, Undergraduate Student, Federal University of Rio de Janeiro, Brazil **Predicting Occurrences of Arsenic in Groundwater in Virginia as a Tool for Exposure Assessment.** Tiffany VanDerwerker, Master's Student; Madeline Schreiber, Professor, Department	**Moderator:** William Roper, Global Environment and Natural Resources Institute, George Mason University **Fouling Mechanisms and Control Strategies in Membrane Filtration of Hanford Tank Waste.** Ramamoorthy Malaisamy, Research Scientist; Ryan Rollock, Graduate Student; Yaolin Liu, Postdoctoral Research Associate; and Kimberly Jones, Professor, Department of Civil & Environmental Engineering, Howard University, Washington, D.C. **Nanostructured Smart Fluid with UV Switchable Surfactants for Water Pollution Prevention and Removal.** Naresh Poudel, Undergraduate Student; Xueqing Song, Associate Professor, Department of Department of Biology, Chemistry & Physics; Jiajun Xu, Assistant Professor, Department of Mechanical Engineering, University of the District of Columbia, Washington, D.C. **MCM Based Hybrid Mesoporous Materials for Water Treatment.** Vu, Trinh, Undergraduate Student and Xueqing	**Moderator:** Lisa Engelman, Booz Allen Hamilton **A Flexible Framework for Process-Based Hydraulic and Water Quality Modeling of Stormwater Green Infrastructure Performance.** Arash Massoudieh, Associate Professor and Saba Gharavi, Graduate Student, Civil Engineering Department, The Catholic University of America, Washington, D.C. **Urban Soil Quality Assessment as Green Urban Stormwater Management Strategy.** Tolessa Deksissa, Director; Sebhat Tefera, Project Specialist; and Yacov Assa, Program Coordinator for Environmental Quality Testing Laboratory, DC Water Resources Research Institute, CAUSES, University of the District of Columbia, Washington, D.C. **Institutionalizing Green Infrastructure.** Sara Hoverter, Senior Fellow, Emily Griffith, J.D. Candidate; Austin Castellano, J.D. Candidate, Harrison Institute for Public Law, Georgetown Climate Center, Georgetown University

of Geosciences, Virginia Tech; Lin Zhang, PhD Student, Department of Statistics, Virginia Tech, Blacksburg, VA

Where 'Life Meets Rock': A Critical Zone Perspective on Water Management. Katherine O'Neill, Associate Professor of Environmental Science, Environmental Studies Program, Roanoke College, Salem VA

Unmanned Aircraft Systems for Water Resources Management. Courtney Greenley, Strategic Communications Fellow, Institute for Water Resources, U.S. Army Corps of Engineers, Alexandria, VA

Song, Associate Professor, Department of Biology, Chemistry & Physics; Jiajun Xu, Assistant Professor, Department of Mechanical Engineering, University of the District of Columbia, Washington, D.C.

Optimization of Mainstream Deammonification Operation. Heather Stewart and Jamal Alikhani, Research Assistants, Arash Massoudieh, Assistant Professor, Department of Civil and Environmental Engineering, The Catholic University of America; Haydee De Clippeleir and Ahmed Al-Omari, DC Water and Sewer Authority, Washington, D.C.

Feed-forward Control Scheme to Minimize Operational Cost: A Case Study at the Blue Plains Wastewater Treatment Plant, Washington, D.C. Jamal Alikhani, Research Assistant and Arash Massoudieh, Assistant Professor, Department of Civil and Environmental Engineering, The Catholic University of America; Ahmed Al Omari, Haydee De Clippeleir and Sudhir Murthy, DC Water and Sewer Authority, Washington, D.C.

The Community-Based Public-Private Partnership (CBP3) Model: A New Way to Scale Up Green Stormwater Infrastructure Investments While Driving Costs Down and Benefiting Communities Along the Way. Seth Brown, PE, Principal/Founder, Storm and Stream Solutions, LLC, Alexandria, VA

Historic Chapel Site: Meadows, Meanders and Meditation. Harris Trobman, Green Infrastructure Specialist, Center for Sustainable Development, University of the District of Columbia, Victoria Chanse, Assistant Professor, Dept. of Plant Science & Landscape Architecture, University of Maryland; Jonathan Gemmell, Penny Jacobs, Nick Yoder (Landscape Architecture); Jaison Renkenberger, and Yan Wang (Civil Engineering). Mr. Dennis Nola, Dr. Lea Johnson, Dr. Peter May, Dr. David Myers (Faculty); and Karen Petroff (Facilities), University of District of Columbia, Washington, D.C.

Con-Current Sessions (D, E, F)
3:00 p.m. – 4:45 p.m.

D. Water and Climate Room 518	E. Water Supply Management Room 505	F. Flood and Storm Water Management Room 506
Moderator: Sandra Pavlovic, National Water Center, NOAA National Weather Service **ENSO 2015 - 2016: How to Act Based on Lessons Learnt from Past ENSOs in Peru.** Jorge Escurra, Adjunct Faculty, University of District of Columbia, Washington, D.C. **Statistical Downscaling of Precipitation in the Occoquan Watershed Using Different Climate Models.** Ayden Baran, Doctoral Student; Glenn Moglen, Professor, Adil Godrej, Research Associate Professor, Occoquan Laboratory, Virginia Tech, Manassas, VA **Using Climate Variability to Predict the Inter-annual Variability of Precipitation for Major Urban Areas and Regions within the USA and Abroad.** Jason Giovannettone, CEO, HydroMetriks, PLLC, Alexandria, VA **Impacts of Extreme Precipitation on Flood Frequency in Southeastern Virginia.** Mirza Billah, Postdoctoral Associate, Prasanth Valayamkunnath, Graduate student; and Venkataramana Sridhar, Assistant Professor, Biological Systems Engineering Department, Virginia Tech, Blacksburg, VA	**Moderator:** Venkataramana Sridhar, Biological Systems Engineering, Virginia Tech **Improving the Reliability and Risk Management of Water Supply Systems Using an Integrated Modeling Platform.** Adnan Lodhi, Graduate Student; Adil Godrej, Research Associate Professor; Dipankar Sen, Faculty Advisor, Thomas Grizzard, Professor Emeritus, Occoquan Watershed Monitoring Laboratory, Virginia Tech, Manassas, VA **Water Supply Planning and Potential for Innovative Solutions.** Sarah Ahmed, Water Resources Engineering Analyst; Karin Bencala, Senior Water Resources Planner; Cherie Schultz, Director, Cooperative Water Supply Operations, Interstate Commission on the Potomac River Basin (ICPRB) **Application of Two-Dimensional Analyses in Modeling Flat Terrains- A Case Study in Harney County, Oregon Using FLO-2D.** Brett Laplante P.E., Prabharanjani Madduri P.E., C.F.M, Water Resources Engineer, Stantec Consulting Inc. , Laurel MD	**Moderator:** Jennifer Solakian, AECOM **Revised Guidelines For Determining Flood Flow Frequency – Bulletin 17C (*invited talk*).** Wilbert O. Thomas, Jr., Professional Hydrologist, American Institute of Hydrology, Senior Technical Consultant, Michael Baker International, Manassas, VA **Field Study of Hydrodynamics Modification by a Coastal Wetland of the U.S. Mid-Atlantic.** Anne-Eleonore Paquier, Post-Doctoral Research Fellow; Jana Haddad and Seth Lawler, Graduate Students; Celso M. Ferreira, Assistant Professor, Department of Civil, Infrastructure and Environmental Engineering, George Mason University, Fairfax, VA

Updated Precipitation Frequency Estimates for the Northeastern States. Sanja Perica, Director, Hydrometeorological Design Studies Center, National Water Center (NWS), NOAA, Silver Spring, MD; Sandra Pavlovic, Hydrologist, Michael St. Laurent, Carl Trypaluk and Dale Unruh, Atmospheric Scientists, NWS, NOAA, Silver Spring, MD and University Corporation for Atmospheric Research, Boulder, CO; Deborah Martin, Atmospheric Scientist and Orlan Wilhite, Intern, NWS, NOAA, Silver Spring, MD	**Incorporating PET Sensitivity in the Assessment of Streamflow in the Chesapeake Bay Watershed.** Chounghyun Seong, Postdoctoral Associate and Venkataramana Sridhar, Assistant Professor, Biological Systems Engineering Department, Virginia Tech, Blacksburg, VA **A Nearest-Neighbor Method (NNM) for Annual Streamflow Prediction.** Tilaye Alemayehu, Graduate Student, Omar Abbas, Undergraduate Student, Nian Zhang, Assistant Professor, Electrical and Computer Engineering Department; Pradeep Behera, Professor, Civil Engineering Department, University of District of Columbia, Washington, D.C.	**Building and Applying a Modeling Tool to Develop and Inform the District of Columbia's Consolidated MS4 TMDL Implementation Plan.** Benjamin Crary, Limno Tech; Jonathan Champion Stormwater Management Division, District of Columbia Department of Energy and Environment, Washington, D.C. **Stormwater Quantity Control of Impervious Surfaces through the Use of Vegetated Buffers.** Raymond Green, Certified Floodplain Manager, Prime AE, Baltimore, MD, and Subra Das, P.E., Gannett Fleming, Baltimore, MD

Poster Presentations

Fifth Floor Lobby

Challenges in Field Data Acquisition and Processing for Wetland Characterization and Hydrodynamic Measurements. Alayna Bigalbal, Beverly Lanza, Lindsey Keller, Tenzin Jigme and Evan Reznicek, Undergraduate Students; Anne-Eleonore Paquier, Post-Doctoral Research Fellow; Celso M. Ferreira, Assistant Professor, Department of Civil, Infrastructure and Environmental Engineering, George Mason University, Fairfax, VA

Stream Flow Analysis of Potomac River to Understand the Flow Rate Trends. Bhrahim Sidi Mhamed, Civil Engineering Major; Pradeep K. Behera, Professor, Department of Civil Engineering, University of the District of Columbia, Washington DC

Development of Rainfall Storm Event Analysis Tool Based on Cloud Computing. Geetanjali VSSL, Graduate Student Computer Science; Pradeep K. Behera, Professor, Civil Engineering Department; Dong H. Jeong, Assistant Professor, Computer Science and Information Technology, University of the District of Columbia, Washington D.C.

The Mason Tidal Potomac Flood Monitoring Program: Towards a Real-Time Flood Warning System in Tidal Environments. Shahriar Abdsharifabadi, Undergraduate Student; Seth Lawler, Graduate Student, Celso Ferreira, Assistant Professor, Department of Civil, Infrastructure and Environmental Engineering, George Mason University, Fairfax, VA

Integrated Planning Model for Low-Impact Development. Domenico Amodeo, Graduate Research Assistant, Department of Engineering Management and Systems Engineering; Royce Francis, Department of Engineering Management and Systems Engineering, George Washington University, Washington, D.C.

Impacts of Urban Water Bodies on the Transportation Networks for the District of Columbia. Laura Rojas, Undergraduate Student, Pradeep K Behera, Professor, Yao Yu, Assistant Professor, Department of Civil Engineering, University of the District of Columbia, Washington D.C.

Evaluation of a Rapid Detection and Quantification Method of Organo-Chlorine Pesticides in Water Samples Using Gas Chromatography Mass Spectrometer. Harold Yapuwa and Rahil Fofana, Graduate Students; Tolessa Deksissa, Director Water Institute, Professional Science Masters in Water Resources Management, CAUSES, University of the District of Columbia, Washington D.C.

Chlordane Accumulation in Anacostia River Fish via the Tributary Food Chain. Sania Rose, Undergraduate Student and Harriette Phelps, Biology Professor Emeritus, University of the District of Columbia, Washington, D.C.

Studies on Water Quality Monitoring and Physical Characteristics of Urban Trees' Along the Appomattox and James Rivers. Latia Jackson, Undergraduate Student, Shobha Sriharan, Professor and others. Environmental Sciences Program, Department of Agriculture, Virginia State University, Petersburg, VA

	Parcel Scale Storm Surge Modeling for Anne Arundel County: A Comprehensive Dataset of Historical Flood Maps. Juan L. Garzon, Graduate Student and Celso Ferreira, 2 Assistant Professor, Department of Civil, Infrastructure and Environmental Engineering, George Mason University, Fairfax, VA	
5:00 p.m.	**Optional Post- Symposium TOUR: UDC Campus Green Infrastructure** Led by **Dr. Tolessa Deksissa,** Director, DC Water Resources Research Institute & Professional Science Master's Water Resource Management Program	Meet in 1st floor lobby

Registration

All attendees, including presenters/moderators, are expected to register. Please register online by Monday, April 4 for the early bird discount. Payment is accepted online by credit card or by cash/ check payment at the event.

Step 1: Go online to the link: https://co.clickandpledge.com/sp/d1/default.aspx?wid=58557
Step 2: Fill out the registration fee section
Step 3: Fill out the contact information section
Step 4: Scroll down and click "SUBMIT" to complete the registration and payment

	Professionals		**Students**	
Registration Fees (includes lunch & coffee breaks)	**Member or Presenter/Moderator**	**Non-Member**	**Member or Presenter**	**Non-Member**
On-line thru April 4	$35	$50	$15	$25
On-site April 8	$50	$75	$25	$35

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