

25th Tennessee Water Resources Symposium and TVA River Science Conference

Presented by the TNAWRA including pre-symposium events::

TVA Conference
sponsored by TVA
April 11-12, 2016

OASIS Workshop
April 13, 2016

25th Tennessee Water Resources Symposium (TWRS)

April 13-15, 2016
Montgomery Bell State Park

KEYNOTE SPEAKER:

[Michael Kern](#), Director
The William D. Ruckelshaus Center



Photo courtesy of Alan Cressler, USGS

Registration and Preliminary Agenda

(ATTN Engineers: Opportunity for PDHs/CEUs)

LUNCHEON SPEAKER:

[Brian Malow](#)
North Carolina Museum of Natural Sciences



Montgomery Bell State Park
Burns, Tennessee
April 13-15, 2016



Hosted by

Tennessee Section of the American Water Resources Association

Planning Committee

- Tom Allen, Neel-Schaffer, Inc.
- Paul Davis, P.E.
- David Duhi, TDEC, DWR
- Jack Gordon, TTU, *ret.*
- Michael Hunt, Nashville Metro Water Services
- Curt Jawdy, Tennessee Valley Authority
- Alfred Kalyanapu, Tennessee Tech University
- Deedee Kathman, Civil & Environmental Consultants, Inc.
- Rodney Knight, U.S. Geological Survey
- Tom Lawrence, Water Quality Matters!
- Ingrid Luffman, ETSU, Geosciences
- Patrick Massey, LDA Engineering
- Regan McGahen, TDEC, DWR
- Patrick McMahon, S&ME, Inc.
- Paul Sloan, Cumberland River Compact
- Daniel Saint, Tennessee Valley Authority
- Scott Schoefernacker, Ground Water Institute, University of Memphis
- Forbes Walker, University of Tennessee, Biosystems Engineering & Soil Sciences
- Sherry Wang, TDEC, DWR
- Adrian Ward, Barge, Waggoner, Sumner & Cannon, Inc.
- Lori Weir, U.S. Geological Survey
- Mike Williams, Barge, Waggoner, Sumner & Cannon, Inc.

Symposium Chair

Rodney Knight
U.S. Geological Survey
Email: rrrknight@usgs.gov
Tel: (615) 837-4731

25th Tennessee Water Resources Symposium



Symposium Dates:

April 13-15, 2016

Pre-registration for Symposium:

Before April 8, 2016

Symposium Location and Accommodations:

Montgomery Bell State Park
1000 Hotel Avenue
Burns, TN 37029

A block of rooms at the Montgomery Bell Inn has been reserved. Inn rooms are \$83 plus tax. When making your reservations, please specify group code #7546. For reservations call (615) 797-3101 or (800) 250-8613.

Please reserve lodging by FEBRUARY 20, 2016, to ensure availability and rate.

Directions to Montgomery Bell State Park:

For detailed directions to the park, please visit:
http://tnawra.er.usgs.gov/2016/map_dir.html

Sponsors & Exhibitors

Opportunities are still available for your organization to be a sponsor.

<http://tnawra.er.usgs.gov/2016/exhibitor.html>

Both Sponsoring and Exhibiting

- Amec Foster Wheeler Environment & Infrastructure, Inc.
- OTT Hydromet
- Stevens Water Monitoring Systems, Inc.
- TTU, Center for the Management, Utilization & Protection of Water Resources
- Trutta Consulting
- UT, Tennessee Water Resources Research Center and Institute for a Secure and Sustainable Environment

Exhibitors

- Aquatic Informatics
- Eureka
- HydroLogics
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- TTU, Professional Science Master's
- Xylem/YSI

Sponsors

- ARCADIS U.S.
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- Center for Applied Earth Science and Engineering Research (CAESER)
- Civil & Environmental Consultants, Inc.
- Neel-Schaffer, Inc.
- Tennessee American Society of Civil Engineers /Environmental & Water Resources Institute



Dinner
Speaker:
Bill Landry
4/11/16

\$100

25th TWR\$ Pre-Symposium Conference: TVA River Science Conference

April 11-12, 2016

Agenda: <http://tnawra.er.usgs.gov/2016/TVAConfAgenda.pdf>
Register on the 25th TWR\$ Registration form below or online.



Dinner
Speaker:
Dr. Jay Day
4/12/16



Apr 13	25 th TWRS AGENDA		
7:30am	Golf Tournament at Montgomery Bell Golf Course		9am Mountain Bike Ride <i>sponsored by Trutta Consulting</i>
7:30 a.m.	Coffee Break in the Exhibit Room		
8:30 a.m.	OASIS Workshop		
	Room A	Room B	Room C
12:00 p.m.	Lunch/ Keynote: "Fostering Collaborative Solutions to Water Resource Management Challenges" Michael Kern, Director, The William D. Ruckelshaus Center		
	USGS Water Resources Institute Moderator: Rodney Knight, USGS	Stormwater I Moderator: Michael Hunt, Metro Water Services	ASCE EWRI Track Integrated Water Resources Approaches Moderator: George Garden, TDEC-DWR
1:30 p.m.	The USGS Water Resources Research Act Program: A Federal-State Partnership. E. Greene	Is it Time for a National Stormwater Testing and Evaluation Program for Products and Practices? M. Miller	Water Quality Protection Program An Innovative Approach to NPDES Permitting at ORNL. M. Peterson
2:00 p.m.	A Systems Approach Toward Sustainability: Bringing Biogeochemistry, Ecology, Economics and Land Ethics Together. T. Papanicolaou	The Health of Trees in Existing Bioretention Areas in Tennessee and North Carolina. A. Tirpak	Progress Toward Fully Supporting Urban Streams: A Partnership Between Non-Profits, Government and the Consulting Communities. M. Houghton
2:30 p.m.	Reach Scale Sediment Source Potential in Small Urbanizing Stream Systems. R. Woodman	Runoff Uncertainty Related to Fine-Scale Spatial Variability in Urban Watersheds. T. Epps	Characterization of Baseflow along the Duck R between Columbia and Centerville, TN, Sept 2015. G. Johnson
3:00 p.m.	Coffee Break in the Exhibit Room- <i>sponsored by Center for the Mgmt, Utilization & Protection of Water Resources, TTU</i>		
	Meteorology Moderator: Adrian Ward, BWSC	Stormwater II Moderator: Paul Davis, P.E.	ASCE EWRI Track Groundwater Moderator: Michael Bradley, USGS
3:30 p.m.	Throughfall Chemistry Study in the Great Smoky Mountains National Park. A. Veeneman	Stormwater Control Measures...Metro Nashville Latest Lessons Learned. J. Hayes	Groundwater Flow within the Western Limb of the Stones R. Syncline, Rutherford Co, Central TN. M. Abolins
4:00 p.m.	Knoxville Microclimates: Spatial Variability in Air Temperature across Four Urban Neighborhoods. D. Howe	Evaluation of Biofiltration Media for Optimum Stormwater Treatment Under Controlled Outflow Conditions. J. Fears	Recharge Mechanisms to the Unconfined Memphis Aquifer, Fayette County, Western Tennessee. D. Larsen
4:30 p.m.	Utilizing NEXRAD Data for Determination of Precipitation. T. Cropp	Solving the Sediment Dilemma: Successful Construction Site Outreach to a Difficult Audience. T. Lawrence	Historical Trends of the Water-Table Aquifer in Shelby County, Tennessee. T. Ogletree
5-6 p.m.	Vendor Equipment Demonstration Session at the dock behind the hotel restaurant		
6-8 p.m.	Dinner and Brian Malow, Science Comedian, in Rooms A&B- <i>evening beverages sponsored by Stevens Water Monitoring and Hydromet Ott</i>		
Apr 14			
7:00 a.m.	Fun Run <i>sponsored by Barge Waggoner Sumner & Cannon, Inc.</i>		
7:30 a.m.	Coffee and Biscuits in Exhibit Room- <i>sponsored by AMEC Foster Wheeler Environment & Infrastructure, Inc.</i>		
	Wastewater Moderator: Jack Gordon, TTU	Acid Rock Drainage Investigation I Moderator: Deedee Kathman, Civil & Environmental Consultants	ASCE EWRI Track Case Studies Moderator: Anne Hoos, USGS
8:30 a.m.	Total Dissolved Solids Toxicity--The Science, Challenges, and Full Scale Solutions. S. Hall	Potentially Acid Producing Rock (APR) on TDOT Highway Construction Projects. J. Hoilman	Wolf Creek Dam Rehabilitation and Environmental Considerations. T. Higgs
9:00 am.	Integrating Site Specific Bioassessment Data into Future Permits as Controlling Criteria. J. Corn	Acid-Rock Drainage from Seeps and Springs at Road Cuts in Tennessee. M. Bradley	Mercury Monitoring and Research in Oak Ridge, Tennessee. M. Peterson
9:30 a.m.	Temperature Control Challenges For Aerobic Biological Treatment of High Strength Wastewater. C. Robinson	Characterization of Runoff Water Quality from Highway Cut Slopes through Pyrite Geology. J. Schwartz	Stream Restoration: Myth, Mystery or Fact? G. Moody
10:00 a.m.	Coffee Break in Exhibit Room- <i>sponsored by Civil & Environmental Consultants, Inc.</i>		
10a-12p	Poster Session in the Mezzanine-students and professionals will be available for questions		
	Water for Agriculture I Moderator: Jim Kingsbury, USGS	Acid Rock Drainage Investigation II Moderator: Mike Bradley, USGS	ASCE EWRI Track Water Resources Moderator: David Duhl, TDEC-DWR
10:30 a.m.	Water for Agriculture: How Will Climate Change Affect Tennessee? F. Walker	Attenuation of Acid Rock Drainage with a Sequential Injection of Compounds to Revers Biologically Mediated Pyrite Oxidation T. Byl, USGS	Examination of Algal Assemblages in Rivers of Middle Tennessee: A Project Supported by the Tennessee Healthy Watershed Initiative. J. Lebkuecher
11:00 a.m.	Assessing Water Availability in the Hiwassee River Basin Using a Hydrologic Budget. T. Papanicolaou	Salamanders as Indicators of Environmental Stress: Impacts of Acid-Rock Drainage on Headwater Stream Integrity. B. Hogan	Applications of the High Definition Stream Survey on Choccolocco and Turkey Creek. B. Connell
11:30 a.m.	Investigating the Performance of One-and Two-dimensional Flood Models in a Channelized River Network: A Case Study of Obion River System. T. Dullo	Open discussion	High Definition Stream and Fish Surveys: Integrating Fish Habitat, Channel Geomorphology, Water Quality, Water Quantity, and Infrastructure Surveys. J. Parham

Noon	Lunch with Luncheon Speaker in Rooms A&B: "A Science Comedian's Guide to Communicating Science" by Brian Malow, North Carolina Museum of Natural Sciences			
	Water for Agriculture II Moderator: Tom Byl, USGS	Environmental Microbiology I Moderators: Qiang He, UTK & Tania Datta, TTU	ASCE EWRI Track	Stream Restoration I Moderator: Jimmy Smith, TDEC-DWR
1:30 p.m.	Analysis of Groundwater Availability for Agricultural Sustainability in Select Watersheds in Western Tennessee. B. Waldron	Potential Utility of Microbiome Analysis in Microbial Source Tracking. K. Wyckoff		Reclamation of the Lower North Potato Creek Watershed. T. McComb
2:00 p.m.	Estimating an Economic Value of Water in Tennessee. C. Clark	Impact of Process Configuration on Nitrifying Populations in Wastewater Treatment. S. Chen		Conception, Design, and Construction of a Regenerative Stream Restoration in Knoxville, Tennessee. K. Barry
2:30 p.m.	More Floods and Droughts: University of Tennessee Extension Approaches to Adapting to Climate Change in Tennessee. F. Walker	An Investigation of Microbial Communities in Wastewater Treatment Facilities Undergoing Optimization for Nutrient Removal. T. Datta & G. McClellan		Phase I Restoration of Beaver Creek, Bristol TN/VA. I. Luffman
3:00 p.m.	Coffee Break in the Exhibit Room-sponsored by Center for Applied Earth Science and Engineering Research (CAESER)			
3-3:30p.m.	Poster Session in the Mezzanine-students and professionals will be available for questions			
	Water for Agriculture III Moderator: David Money, TDEC-DWR	Environmental Microbiology II Moderators: Qiang He, UTK & Tania Datta, TTU	ASCE EWRI Track	Stream Restoration II Moderator: Jennifer Dodd, TDEC-DWR
3:30 p.m.	Educational Enhancements at UT Martin Associated with the Joint Water for Agriculture Project. P. Gale; G. Nail	Microalgae for Biofuel Production. T. Mathews		Hatchery Creek Stream Restoration Project: A Unique Opportunity to Enhance Sport Fishing. O. Routt
4:00 p.m.	Education Curriculum for Youth - Water Quality and Quantity. L. Reynolds	A Review of Bioremediation in Karst Aquifers. T. Byl		Nashville Zoo Stormwater Retrofit: Applying Level Spreader and Creek Dam Design Principles to Restore Riparian Area and Protect Receiving Stream. S. Casey
4:30 p.m.	An Assessment of the Effectiveness of Winter Wheat Cover Crops for Nutrient Load Reduction in the Red and Obion River Watersheds. S. Hawkins	Microbial Interactions in Methanogenic Treatment Processes. Q. He		Dam Removal in Tennessee: An Alternate Form of Stream Mitigation Credit? A. Spiller
5:00 p.m.				Ecological Effectiveness of Channel Restoration in the Coastal Plains. J. Fore
6-8pm	Dinner and Live Music followed by TN AWRA Business Meeting in Rooms A&B-evening beverages sponsored by ARCADIS U.S., Inc.			
Apr 15				
7:30 a.m.	Coffee and Biscuits in Exhibit Room-sponsored by UT, Water Resources Research Center			
	EPA/TDEC Moderator: Amy Feingold, EPA	Floods Moderator: Alfred Kalyanapu, TTU	ASCE EWRI Track	Sediment Moderator: Ingrid Luffman, ETSU
8:30 a.m.	Low Cost Opportunities for Energy & Nutrient Reductions at WWTPs. B. Freeman	Developing Flood Consequence Correlation Using Global DEMs. M. Bhuyian		Relationship between Cohesive Soil Erosion Behavior and the Physical and Geochemical Properties of Soil in Tennessee, USA. B. Mahalder
9:00 am.	Overview of the National Aquatic Resource Surveys. D. Melgaard	A Probabilistic Hydrologic Model to Analyze the Uncertainty of the Design Hydrograph Attributes. E. Ahmadisharaf		GIS Tools to Locate Potential Sediment Sources in Stream-channel Networks. J. Cartwright
9:30 a.m.	Coming Full Circle: How TDEC is Meeting New Challenges in Data Management and Energy Savings. J. Dodd	Making Room for Big Creek. A. Ward		Utilizing Stream Restoration to Reduce Sediment Loads. A. McIntyre
10:00 a.m.	Coffee Break in Exhibit Room			
	Better Outcomes for Natural Resources Management: Aligning for Success!			ASCE EWRI Track
	Moderator: Scott Gain, USGS			
10:30 a.m.	Scott Gain, U.S. Geological Survey			
	Tisha Calabrese Benton, TDEC			
	Susannah Kniazewycz, TDOT			
	Ted Fox, Blue Stream Task Force			
Adjourn				

25th Tennessee Water Resources Symposium Pre-Registration Form

(Online registration is available at: <http://tnawra.er.usgs.gov/Submit/TWRS-Reg.html>)

Title _____ Mr., Ms., Dr. (circle one)
 Name _____
 What do you prefer to be called _____
 Title _____
 Organization _____
 Address _____
 City, State, Zip _____
 Daytime Phone _____
 Email Address _____

Check one:
 TVA Conf only
 25th TWRS only
 Both

Additional registrants if at the same address. If addresses differ or if more space is needed, please use a separate piece of paper.

2. Name: _____ Check one:
 Email: _____ TVA Conf only
 Phone: _____ 25th TWRS only
 Both

3. Name: _____ Check one:
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 Phone: _____ 25th TWRS only
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Type of Registration	Cost per person	Number of registrants	Subtotal
Regular Registration	\$100**		
Speaker & Moderator	\$100**		
Professional Poster Presenter	\$100**		
TVA Conference	\$100		
Sub Total			
Discount 10% (if more than 10 \$100 registrations)			
Student Registration*	\$30**		
Student Poster Registration*	\$30**		
Extra Meals for spouses	\$15		
Grand Total			

Send Registrations to:
 TN AWRA
 c/o U.S. Geological Survey
 640 Grassmere Park, #100
 Nashville, TN 37211
 ATTN: Lori R. Weir
 Phone: (615) 837-4720
 FAX: (615) 837-4783
 Email: lrweir@usgs.gov

*Student sponsorships for registration fees are available again this year. If you are a student and would like to be considered for sponsorship, please write "Student Sponsorship" on this form by your name.

Please circle one: Visa Mastercard American Express Discover
 Credit Card # _____ Exp. _____
 CVV Number (last 3 digits on back V/MC; 4 digits on front of AmEx) _____
 Signature _____ Billing address zip code of credit card statement _____
 Please print name on card (if different from above): _____

**Pre-registration fee is \$100 until April 8, 2016; onsite registration fee is \$120. Student registration is \$30. A 10% discount applies if 10 or more people register from one organization (student registrations are already discounted). Make check payable to "Tennessee AWRA" or "TNAWRA." Visa, Mastercard, American Express, and Discover are also accepted. The registration fee covers the costs for attendance to all sessions, and the costs for both lunches, both dinners, coffee breaks, and 2016-17 membership fees. Additional meals may be purchased for spouses for \$15 each.



Social Events



Golf Tournament. The tournament is scheduled for 9:30 am, April 13. To sign up or for more information, please call Randy Kerr at (615) 736-5633 or email him at randall.z.kerr@usace.army.mil

Mountain Bike Ride sponsored by Trutta Consulting. A bike ride is scheduled for April 13 at 9am. If you are interested, please sign up at the Registration Desk. Contact Brett Connell, baconnell@gmail.com, (419) 215-7897, if you have any questions.

Fun Run sponsored by BWSC. A morning jog is scheduled for April 14 at 7am. If you are interested, please sign up at the Registration Desk.

 **Live Entertainment at both dinners**



Attn: ASCE Members

The ASCE EWRI Tennessee Chapter is again a sponsor of the TN AWRA Water Resources Symposium. This year's agenda identifies an "ASCE EWRI Track" that might be of particular interest to many civil engineers. Earn up to 15 Professional Development Hours by participating in these activities:

- OASIS Workshop
- Keynote luncheon address by Michael Kern, Director of the William D. Ruckelshaus Center and Luncheon Speaker Brian Malow, North Carolina Museum of Natural Sciences.
- Break-out sessions with presentations on flood issues, stormwater quality, environmental sustainability and acid rock drainage.
- Closing Panel Discussion: "Better Outcomes for Natural Resources Management: Aligning for Success!"

Of course, with your \$100 registration you can attend any of the sessions offered and come and go as you need. Take a look. We hope you can join us and keep yourself at the forefront of water resource issues in Tennessee. You are also welcome to attend the TVA "River Science Conference" for an additional day and a half of learning opportunities for an additional \$100.



OASIS Workshop by HydroLogics April 13, 2016 8:30 a.m.

HydroLogics has over 30 years of experience in modeling and managing water resources in river basins in Tennessee and around the country. The firm's OASIS software is used to support water allocation decisions, develop drought management plans, and evaluate the ecological benefits of various flow management strategies. During this workshop, staff from Hydrologics will be demonstrating applications of the OASIS modelling framework with examples of how it can be used as a decision-support tool.

Vendor Equipment Demo Session

Where: At the boat dock behind the hotel restaurant

When: April 13, 5-6 p.m.

Vendors are signing up to demonstrate their equipment in the field. Check the following website for vendor information:
<http://tnawra.er.usgs.gov/2016/equipdemo.html>

Please contact Don Green for more information: (615) 308-1014 or biogreen1@comcast.net.

Poster Session

The Poster Session will be in the Mezzanine on Thursday afternoon. The Poster Judges will be judging the Student Posters from 10a-12p and from 3:00-3:30p. Please be sure to attend.

To encourage student participation, TN Section AWRA will present awards for the best student posters.

If you are not affiliated with a university or a student poster presenter and would like to be a judge, please send email to either:

Regan McGahen regan.mcgahen@tn.gov Daniel Saint dpsaint@tn.gov

For a listing of this year's poster presenters, please visit:
<http://tnawra.er.usgs.gov/2016/posters.html>