

23rd Tennessee Water Resources Symposium

Presented by the TNAWRA including a Workshop:
**Demonstration of a SWAT Model Run in the
Oostanaula Creek Watershed**

November 4-6, 2013
Montgomery Bell State Park
Burns, TN

Registration and Preliminary Agenda

(ATTN Engineers: Opportunity for PDHs/CEUs)

KEYNOTE SPEAKER:

[Dr. Robert Hirsch](#)

U.S. Geological Survey

*"Changing Hydrologic Systems-Thinking
about Non-Stationarity of Streamflow and
Water Quality"*



Photo courtesy of Alan Cressler, USGS

LUNCHEON SPEAKER:

[Dr. David G. Haskell](#)

Sewanee, The University of the South
*"The Forest Unseen: A Year's Watch
of One Square Meter of Forest"*



**Montgomery Bell State Park
Burns, Tennessee
November 4-6, 2013**

Hosted by

Tennessee Section of the American Water
Resources Association

Planning Committee

- Barge Waggoner Sumner & Cannon, Inc.
- City of Chattanooga
- Harpeth River Watershed Association
- Nashville Metro Water Services
- Tennessee Association of Utility Districts
- Tennessee Department of Environment and Conservation
- Tennessee Technological University
- Tennessee Valley Authority
- University of Tennessee, Biosystems Engineering & Soil Science
- U.S. Geological Survey
- Water Quality Matters!

Symposium Chair

Tom Lawrence
Water Quality Matters!
Email: bus@thecave.com
Tel: (901) 237-4819

23rd Tennessee Water Resources Symposium



Symposium Dates:

November 4-6, 2013

Pre-registration for Symposium:

Before October 29, 2013

Symposium Location and Accommodations:

Montgomery Bell State Park
1000 Hotel Avenue
Burns, TN 37029

A block of rooms at the Montgomery Bell Inn have been reserved. Inn rooms are \$77 plus tax. When making your reservations, please specify group code #6994. For reservations call (615) 797-3101 or (800) 250-8613.

Please reserve lodging by SEPTEMBER 9, 2013, to ensure availability and rate.

Directions to Montgomery Bell State Park:

For detailed directions to the park, please visit:
http://tnawra.er.usgs.gov/2013/map_dir.html

Sponsors & Exhibitors

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

<http://tnawra.er.usgs.gov/2013/exhibitor.html>

Companies both Sponsoring and Exhibiting

- AMEC Environment & Infrastructure, Inc.
- Hach Hydromet
- Geosyntec Consultants

Exhibitors

- Advanced Drainage Systems, Inc.
- Applied Polymer Systems
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- S&ME, Inc.
- SMART Center
- Stevens Water Monitoring Systems, Inc.
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- Sutron Corporation
- Tennessee Instrumentation
- Tetra Tech
- Water Quality Matters!
- YSI

Sponsors

- American Society of Civil Engineers, Tennessee Chapter
- ARCADIS U.S., Inc.
- Barge Waggoner Sumner & Cannon, Inc.
- Buchart Horn, Inc.
- Center for the Management, Utilization & Protection of Water Resources, TTU
- Hazen and Sawyer Environmental Engineers and Scientists
- Neel-Schaffer, Inc.
- Tennessee Stream Mitigation Program
- TN Water Resources Research Center/ISSE



Nov 4	AGENDA		
8:00 a.m.	Golf Tournament at Montgomery Bell Golf Course		9am Mountain Bike Ride sponsored by Geosyntec Consultants
7:30 a.m.	Coffee Break in the Exhibit Room co-sponsored by ARCADIS U.S., Inc. & Hazen and Sawyer		
	Room A	Room B	Room C
8:30 a.m.	Workshop: Demonstration of a SWAT Model Run in the Oostanaula Creek Watershed		Engineering Track
12:00 p.m.	Lunch with Keynote Speaker: Changing Hydrologic Systems-Thinking about Non-Stationarity of Streamflow and Water Quality, Bob Hirsch, USGS		
	Energy Moderator: Chris Cox, UT	Environmental Modeling for Habitat Moderator: John Schwartz, UT	Engineering Track Ecology/Biology Moderator: David Duhl, TDEC-DWR
1:30 p.m.	Water Management and Power Production in East Tennessee: An Assessment of Water-Energy Interactions and Policy. J. McKnight	Estimation of Wetland Elevations Based on Analysis of Daily Stages. R. Hunt	Watershed-Scale Estimation of Riparian Vegetation Impacts on Water Quality. H. Momm
2:00 p.m.	EPA Region 4-TDEC Energy Management Initiative for Water/Wastewater Utilities. J. Dodd	Estimation of Fish Spawning and Rearing Habitat Based on Analysis of Daily Stages Using the EnviroFish Computer Program. B. Bruchman	Hydrology and Soil Microbiology of Cedar Glade Ecosystems. J. Cartwright
2:30 p.m.	Reported Versus Estimated Water-use Data at Thermolectric Power Plants in the Southeastern United States. M. Harris	Combined Application of Wetland and Fish Habitat Estimation Methods for the Tunica Lake Weir, Tunica, Mississippi. L. Lin	Structure of Diatom Assemblages and Primary Production in the Nutrient-Impaired Waters of the Red R. Watershed in North-Central TN. J. Lebkuecher
3:00 p.m.	Coffee Break in the Exhibit Room co-sponsored by Buchart Horn, Inc.		
	Flood Moderator: Michael Hunt, Metro Water Service	Beaver Creek Restoration Moderator: Stefanie Farrell, Third Rock Consultants	Engineering Track Reservoir Moderator: Daniel Saint, TVA
3:30 p.m.	Flood Elevations on the Alabama River. P. Dobbs	The Beaver Creek Watershed Restoration Initiative. R. Arthur	Improving Hydrologic Decisionmaking for the Tennessee Valley. C. Jawdy
4:00 p.m.	A Record of Sediment Erosion, Flood Frequency, and Sediment Contamination Analyzed from Fine Sediment Deposited in Caves and Sinkholes Draining an Urban Area. E. Hart	Restoring Pool-Riffle Structure in Beaver Creek, Knox County, Using a Hydraulic Modeling Approach for Urban Streams. J. Schwartz	Hydrothermal Forecasting in the Tennessee Valley. T. Boyington
4:30 p.m.	Establishing Design Basis Flood Levels at TVA Dams. M. Eiffe	Green Infrastructure Conceptual Planning and Policy Development Using EPA's SUSTAIN Model. J. Parker	Reelfoot Lake Hydrologic Controls and Spillway Operation. B. Cobb
5-6 p.m.	Vendor Equipment Demonstration Session at the dock behind the hotel restaurant		
6-8 p.m.	Dinner and Live Music in Rooms A&B		
Nov 5			
7:00 a.m.	Fun Run sponsored by Barge Waggoner Sumner & Cannon, Inc.		
7:30 a.m.	Coffee and Biscuits in Exhibit Room sponsored by AMEC Environment & Infrastructure, Inc.		
	Water Supply Moderator: Scotty Sorrells, TDEC-DWR	Engineering Applications Moderator: Alfred Kalyanapu, TTU	Engineering Track Restoration Moderator: Andrea Ludwig, UT
8:30 a.m.	Water Use in the Tennessee Valley for 2010 and Projected Use in 2035. A. Bowen	The Use of Polymer Enhanced BMPs to Combat Soil Erosion, Eutrophication, and to Meet Water Quality Standards. K. Iwinski	Urban Stream Restoration Design Utilizing a Threshold Channel Approach and Habitat Evaluation. W. Barry
9:00 am.	Only a Drop to Drink: Potable Water Efficiency through High Performance Building. S. Sawyer	Sidestream Treatment Alternatives for Nutrient Removal and Recovery at Wastewater Treatment Facilities. T. Datta	Stream Restoration in an Urban Watershed: Short Story, Small Town. K. Bynum
9:30 a.m.	Determining Optimum Coagulant Dose Using Laboratory Charge Measurement. A. Mancilla	Low Impact Design and the Soil Conundrum. C. Lacey	Improving Water Quality through Stream Restoration at Town Branch: An Urban Watershed Case Study. R. Turpin
10:00 a.m.	Coffee Break in Exhibit Room co-sponsored by Hach Hydromet & ARCADIS U.S., Inc.		
10a-12p	Poster Session in the Mezzanine-students and professionals will be available for questions		
	Stream Determination Moderator: Paul Davis, P.E.	Stormwater BMP's Moderator: Saya Qualls, Hazen and Sawyer	Engineering Track Stream Channel Erosion Moderator: Bill Wolfe, USGS
10:30 a.m.	History and Origins of TDEC's Stream Determination Process. D. Eagar	Comprehensive Watershed Assessment Communication Tool. M. Wooten	A Review of Erosional Processes along a River Continuum from Headwater to River Channels. Z. Seiden
11:00 a.m.	An Overview of TDEC Hydrologic Determination Procedures. A. Morbitt	Genetta Ditch Stormwater Treatment Wetland Design and Construction. B. Wood	Developing a Method to Determine Site-Specific Daily Streambank Erosion Using GPS-based Watershed Scale Video Mapping. K. Hensley
11:30 a.m.	Current Rules and Technical Criteria for Applying TDEC's Hydrological Determination Certification Program. J. Schwartz	Retrofitting Stormwater Infrastructure and Perceptions in a Conventional Suburban Development in East TN. A. Ludwig	Streambank Erosivity and Substrate Mapping using SVMS on the East Fork Poplar Creek. D. Wade

**Lunch with Luncheon Speaker in Rooms A&B: “The Forest Unseen: A Year’s Watch of One Square Meter of Forest”,
David G. Haskell, Sewanee: The University of the South**

Noon			
	LID Moderator: Tom Lawrence, Water Quality Matters!	Modeling Tools I Moderator: Shawn Hawkins, UT	Engineering Track Moderator: Shannon Williams, USGS
1:30 p.m.	The LID Technology Selection Pyramid: Selecting a Green Infrastructure Design Approach. M. Miller	Evaluating the Performance of AnnAGNPS Model in Simulating Surface Runoff, Sediment Yield and Nutrient Loads: Case Study of Obed River Watershed. N. Alamdari	Use of Continuous Turbidity Monitoring Data to Identify Biological Impairment due to Suspended Sediment in East Tennessee Streams. R. Woockman
2:00 p.m.	Innovation in Simplified Green Infrastructure Design Criteria. S. Johnson	Applying DEM Correction Algorithm to derive Synthetic Cross Sections for Flood Inundation Modeling for Cumberland River near Nashville. M. Bhuyian	Stories of Change: The Tennessee Healthy Watershed Initiative. S. Palmer
2:30 p.m.	Metro Water Service's New Volume (Volume 5) Stormwater Management Manual – First Year Experiences. M. Hunt	GIS Spatial Modeling of Flow Alteration in SE United States. P. Li	Analytical Determination of Sources of Organic Pollution in Natural Waters. J. Harwood
3:00 p.m.	Coffee Break in the Exhibit Room		
3-3:30p.m.	Poster Session in the Mezzanine-students and professionals will be available for questions		
	LID Applications Moderator: Jennifer Dodd, TDEC-DWR	Modeling Tools II Moderator: David Ladd, USGS	Education Moderator: John McClurkan, TDA
3:30 p.m.	Development and Application of a Low Impact Development Optimization Model to Determine Cost-Effective LID Strategies to Reduce Surface Runoff Volume. R. Clark	Nashville SAFE - The Annual Update (Flood Forecasting). R. Lindsey	The USGS Velocity Mapping Toolbox, An Overview of How VMT Can Improve the Data Processing and Presentation of ADCP Transects. D. Saint
4:00 p.m.	State of LID in Tennessee. A. Ludwig	Conversion from a Legacy Stream Course Model to an Industry Standard Model. A. Ward	A Study of Cattle Producer Preferences for BMPs in an East Tennessee Watershed. S. Hawkins
4:30 p.m.	City of Chattanooga LID/Green Infrastructure Projects. D.Green	Concentration-Discharge Relationships in the Coal Mined Region of the New River Basin and Indian Fork Sub-Basin, Tennessee. J. Murphy	The Hardest, Best/Worst Farm Project in Oostanaula Watershed. L. Reynolds
6-8pm	Dinner and Live Music followed by TN AWRA Business Meeting in Rooms A&B		
Nov 6			
7:30 a.m.	Coffee and Biscuits in Exhibit Room sponsored by TNWRRC/ISSE		
	TDEC Moderator: Tom Allen, Neel-Schaffer, Inc.	GIS Techniques and Tools Moderator: Mike Bradley, USGS	Erosion Moderator: Tim Diehl, USGS
8:30 a.m.	Interpretation of Tennessee’s Narrative Color Criterion in an East Tennessee River. G. Denton	Applying Geographic Information System Techniques to Hydrologic Analysis. D. Ladd	Estimating Suspended Sediment from Turbidity. W. Wolfe
9:00 am.	Recovery Potential Screening Tool. R. McGahen	Using a Digital Smartpen for Map Markups. D. Greene	The Effects of Highway Construction and a Major Flood on Benthic Invertebrate Communities in Middle Tennessee. D. Kathman
9:30 a.m.	GIS Integration and Data Management at TDEC. R. Cochran	Slap Your Utility Crew in the Face with these Mobile Apps. C. Hoeffner	Erosion and Sediment Control: A Linear Project Success Story - SR-840 from SR-100 to Columbia Pike. J. Hoilman
10:00 a.m.	Coffee Break in Exhibit Room co-sponsored by the Tennessee Stream Mitigation Program		
10:30 a.m.	Panel: Connecting Water Science to Decisions		Engineering Track
	Scott Gain, Director, U.S. Geological Survey, Tennessee Water Science Center		
	Greg Wathen, Coordinator, Gulf Coastal Plains & Ozarks LCC, Tennessee Wildlife Resources Agency		
	Sandra K. Dudley, P.E., Ph.D., Director, TDEC, Division of Water Resources		
	Paul Sloan, Cumberland River Compact		
	Sally Palmer, Director of Science, The Nature Conservancy		
	Adjourn		

23rd 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 _____

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: _____
 Email: _____
 Phone: _____

3. Name: _____
 Email: _____
 Phone: _____

4. Name: _____
 Email: _____
 Phone: _____

5. Name: _____
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Type of Registration	Cost per person	Number of registrants	Subtotal
Regular Registration	\$100**		
Speaker	\$100**		
Professional Poster Presenter	\$100**		
Moderator	\$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 October 29, 2013; 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 2013-15 membership fees. Additional meals may be purchased for spouses for \$15 each.



Social Events



Fun Run sponsored by BWSC. A morning jog is scheduled for November 5 at 7am. If you are interested, please sign up at the Registration Desk.

Golf Tournament. The tournament is scheduled for 8:00 am, November 4. 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

 **Live Entertainment at both dinners**



Attn: ASCE Members

The ASCE Tennessee Section is again a sponsor of the TN AWRA Water Resources Symposium. This year's agenda identifies an "Engineering Track" that might be of particular interest to many civil engineers. Earn up to 16 Professional Development Hours by participating in these activities:

- Advanced SWAT Workshop
- Keynote luncheon address by Robert Hirsch, USGS, and Luncheon Speaker David Haskell, Sewanee
- Break-out sessions with presentations on flood issues, storm water quality, water supply, low impact development (LID), treatment technologies, stream restoration, water modeling, GIS techniques, and engineering applications.

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.

Vendor Equipment Demo Session

Where: At the boat dock behind the hotel restaurant

When: November 4, 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/2013/equipmentdemo.html>

Please contact Don Green for more information: (615) 308-1014 or green_d@chattanooga.gov



Demonstration of a SWAT Model Run in the Oostanaula Creek Watershed

November 4, 2013, 8:30 a.m. Room A

The Soil and Water Assessment Tool (SWAT) is a physically based, watershed-scale, continuous time simulation water quality model operating on a daily time step. SWAT comprehensively links hydrology, erosion, and nutrient cycling with plant growth to predict in-stream flow and nutrient and sediment concentrations. It is designed and mainly used for rural, largely agricultural watersheds. The workshop will demonstrate the SWAT model using the ArcSWAT ArcGIS-ArcView graphical user interface. ArcSWAT is public-domain and attendees should consider bringing a laptop with the software already installed (please note that ArcMap version 9.2 or later must also be installed). Data for the demonstration will be provided. The workshop will focus on learning how to use the software.

Poster Session

In the Mezzanine on Tuesday afternoon at 3:30 p.m., the Poster Judges will be judging the Student Posters. The general Poster Session will follow at 5:30 p.m. 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@tva.gov

For a listing of this year's poster presenters, please visit:
<http://tnawra.er.usgs.gov/2013/posters.html>