Crystal’s Corner: A Message from the President

Crystal Piper, TNSA President

RRM – Reflections, Resolutions, & Mantras.

The New Year fosters a spirit of reflection of the previous year and the opportunity to make changes in your path for the year ahead. Many folks make a New Year’s Resolution – a firm decision to do or not to do something. This year, to stimulate focus and continual reflection, I established a mantra – a commonly repeated word or phrase, especially in advocacy or for motivation. If, at any time, I get lost in my path, I can always come back to my Mantra to regain focus. While I use these for my personal life, this strategy applies to TNSA as well.

Reflections & New Opportunities – TNSA experienced tremendous accomplishments in 2015, such as the addition of Charlene DeSha as Executive Director (for more see Don’s message in the previous TNSA Times), which sets the stage for new and exciting opportunities for 2016. Charlene’s focus for 2016 will be membership and marketing. Part of the marketing strategy is a new logo that depicts six raindrops falling on Tennessee, inside an all-encompassing raindrop. The six raindrops represent each regional chapter across the state and the large raindrop represents TNSA as a whole. You may be thinking, “But Wait! I thought TNSA only had 5 regional chapters!” In January, Northwest Tennessee MS4s and other members within that area requested to create a new chapter of TNSA – official establishment is pending TNSA Board of Directors approval in March.

Resolutions – As President, I resolve to keep you informed about all happenings regarding the draft Phase II MS4 Permit. Currently, we are waiting for TDEC to place the official draft on Public Notice. We know for sure that the permanent stormwater implementation requirement has been postponed until at least October 31, 2016 (see TDEC Div. of Water Resources memo dated January 19, 2016). Otherwise, we remain in a “wait and see” mode.

The Home Builders Association of Tennessee has addressed committees from the State Senate and the State House of Representatives regarding the permit. You may view both the Senate and House proposed bills Here. You may also be interested in watching the committee meetings at the following links:

House Hearing

Senate Hearing

We have sent emails and letters to both the Senate and House requesting approval to present before their sub-committees and provide our perspective on practical stormwater management from a local level. We are also exploring the possibility for TNSA and HBAT to collaborate as key stakeholders because both TNSA and HBAT have tremendous expertise and experiences in which it would be valuable to share with one another. I’ll keep you posted.

Mantra – “Go with the Flow” is not only the 2016 Mantra, it’s the theme for the Annual Conference at Fall Creek Falls State Park (October 18 – 20). The Call for Presentations, Sponsors and Exhibitors has been released (see details at tnstormwater.org). We can only anticipate what exciting things may be in store for TNSA and MS4s in 2016; if we simply “Go with the Flow”, we will be able to navigate the troubled and still waters we may encounter throughout the year. Stay tuned and go with the flow…. 

Crystal Piper, TNSA President

Introducing the National Municipal Stormwater Alliance

By Scott Taylor, Vice Chair, NMSA

The National Municipal Stormwater Alliance (NMSA) is a new national stormwater organization focused on compliance with the MS4 stormwater program and providing clean water for the nation.

The roots of NMSA come from state-level organizations of MS4 permittees, working exclusively on issues and concerns directly related to the MS4 permitting program.

The membership of NMSA is comprised of state level organizations such as...
TNSA Executive Director Message

It is a very exciting time for me as the first TNSA Executive Director. TNSA is at a turning point this year and many changes are ahead. My goal this year is to bring TNSA to new heights by creating a marketing strategy in order to recruit new members and to expand communication to members and MS4’s.

We currently host 92 total members; up 25 members so far this year. TAB participants at 33, up 4 participants from last year.

The board of directors and I reviewed the TNSA survey you participated in this past fall and are working on your requests.

Our new website is under construction along with new brochures and marketing supplies. The new website will host a job board, members only login, file sharing option, grant information, events and more. We hope to roll out the new website no later than April 1st, 2016.

I am also working on creating a new and exciting TNSA exhibition booth in order to expand our membership base. Our membership goal is to reach landscape architects, engineering firms, developers, real estate agents, homebuilders and MS4’s who are not currently members. Our new exhibit booth will revealed at the Tennessee Environmental Conference in Kingsport, TN March 15-16.

I am working to meet and help each one of you by attending the regional meetings. Please try to attend these meetings as this is your best opportunity to network and share information with your peers locally and statewide. The scheduled meetings are listed on the TNSA Members Wiggio Account page. If you are not receiving regional meeting emails please email me at charlene@tnstormwater.org.

Thank you for allowing me to be a part of this incredible organization. With your help 2016 is already shining bright for TNSA!

Green’s Ramblings: The Price of Eggs

By TNSA Past President Don Green

Price of eggs

In 2009, the United Nations made a startling announcement: More people on planet Earth live in urban areas than live in the rural country! Wow! And the world’s urban population is expected to increase 84 percent by 2050.

“What does this have to do with the price of eggs, you might ask? Glad you asked… Where are we going to put all of these people? How are we going to supply them all with Netflix? (maybe for another publication?) Planning and managing of these urban areas are going to be one of the most important challenges of the 21st century. Us ‘urban scientist’ are not going to be able to set back in our chairs, with our boots on the desk, searching through our gmail and be satisfied that we have done all we can to enhance and protect our environment, especially out waters, staying the old course.

Was it Einstein or Joni Mitchell that said if we pave paradise that we are not going to solve the existing problems we have with our streams, rivers and lakes with the solutions of yester year?

low impact/green infrastructure

Chattanooga was been set on the forefront for MS4s in the state to develop and institute the new green infrastructure requirements in the state. These LID/GI techniques have been used successfully for many years in other parts of the US and the City of Nashville has installed over 200 of them, on a voluntary bases, for a few years now. The City of Houston conducted a Design Competition resulting in the development community realizing that these new techniques of mimicking natural hydrology, works and is cost effective. And even the National Homebuilders Association has lauded their use for the economic and other benefits from these techniques. Click Here

mother nature

If you have ever been in the woods with a creek flowing through it during a rain fall, you know what I’m talking about: you hardly get wet and the creek continues to run relatively clean; and if it rises, it only comes up slowly, if any at all. Mother Nature ‘captures’ most of the water absorbing it into the ground–replenishing the base-flow of the creeks–which allows the streams to continue to flow during dry months–and the trees intercept much of the rain.

problems

As you know, trying to design our ‘built environment’ by using Mother Nature’s techniques is not as easy as it sounds. Engineering natural hydrology is a definite challenge and TDEC has

Continued on page 8
Upcoming Conferences

2016 Tennessee Stormwater Association Annual Conference "Go with the Flow"
October 18-20, 2016 ~ Fall Creek Falls, Pikeville, TN
REQUEST FOR SPEAKERS, SPONSORS & EXHIBITORS
Click here for Presenter & Sponsorship Form

Join us at Fall Creek Falls State Park in Pikeville, Tennessee, as we explore challenges and discover solutions to the ever-changing world of stormwater management in Tennessee. This year’s theme is “Go with the Flow”.

We are looking for presentations that inspire and educate, provide realistic and cost-effective solutions to managing stormwater runoff and innovative approaches to meeting MS4 permit requirements.

Please complete the presentation application form Here. Applications must be received no later than April 30, 2016 to be considered. Sponsors, please click here for information Thank you to ADS and Belgard for already committing to Sponsorship!

For additional information or if you have questions please contact Charlene DeSha at charlene@tnstormwater.org, 865-386-6917.

Municipal Wet Weather Stormwater Conference
Nashville, TN May 16-18, 2016

Call For Presentations!
The EPA Region 4 and the Southeast Chapter of the International Erosion Control Association (IECA) are hosting their third annual Municipal Wet Weather Stormwater Conference in Nashville, Tennessee May 16-18, 2016.

Presentations will inform and educate MS4 operators, consultants, contractors and others practicing in the discipline of stormwater management, stormwater quality and erosion and sediment control. Click here to download a flyer with more information

Presentation Topics: Presentation(s) should include, but not limited to one or more of the following conference topics, and each presentation will be limited to 45 minutes unless approved in advance by IECA for a longer timeframe: Deadline for abstracts is March 31, 2016. Click Here for more info.

2016 Green Infrastructure Summit
April 6, 2016, Raleigh, North Carolina

North Carolina will again be hosting a national event on Stormwater Green Infrastructure! Experts will be presenting on a variety of topics that holistically examine the benefits of stormwater control measures. Topics to be explored are wide-ranging and include climate resiliency, air quality benefits, carbon sequestration, green job creation, maintenance of base flow, public perceptions and acceptance of innovative measures, real-time control to improve SCM function while preserving stream health, and a discussion on employing Green Stormwater Infrastructure across the US. Understanding Green Infrastructure may change how you perceive and implement stormwater infrastructure in your community. Click Here for more information and to Register!
Reflections on the Value of Buffers

By Marjan Farzaad, EPA Region 4

Over a long environmental career, I've seen a host of environmental management topics temporarily receive attention in crisis or fade mode. Whether it is watershed management, climate change, ozone or air quality, topics resonate with folks in a place when something is broken. Fixing any of these is expensive and requires a long-term commitment. The commitment has to be firmly entrenched with communities, because our government officials change with each election cycle and respond to their constituents. A 20-year problem cannot be solved in a 4-year election term. Whether permits drive action or we are responding to catastrophic events, it seems all environmental action is driven by crisis and confrontation. It will continue to remain so as we all work to balance the public good with private gain.

I've seen a lot of investments in our health and the quality of our environment that have been successful, and have seen a few that have not met expectations. Some have been exorbitant, while others were minimal. In all my years though, I have not seen any one thing that addresses a multitude of sins like stream buffers. Let's consider the services they provide.

They filter nutrients.

- Your drinking water treatment plant has to disinfect less; your cost is lower. Disinfection by-products in your drinking water are reduced.
- No algal outbreaks causing die offs and creating an unhealthy condition.
- Diverse fauna.

They keep out sediment.

- Top soil remains in place. That's where your food grows.
- Stream fauna don't choke with fine sediment and die.
- Trout and other coldwater species can reproduce because the substrate is not covered with fines thereby augmenting fishing industry incomes.
- Run-off sediment brings the pollutants that cover the surfaces of our lives—i.e., roads, yards, industrial areas, farms, golf courses, etc. The truth is, we are developing chemicals faster than we can even name them. There is no way everything can be filtered and removed. Best solution? Don't let it get to the water supply in the first place.

They are vegetated and shade the stream.

- Cooler water is needed for the power industry.
- Cooler water is the basis of our coldwater fisheries industry.
- Temperature differentials in urban areas help mitigate heat island effects and achieve ozone attainment goals.

They allow the stream to flood.

- Flooding will not damage property when the floodplain is left to flood!
- Flooding will not cause unhealthy moldy conditions.
- Flooding will replenish soils.
- Flooding will replenish nutrients.
- Seasonal floods are key habitats for the reproduction of many water-dependent species.
- Whether we have a flat floodplain with wetlands that handle saturated soils or standing water, or a sloped floodplain that handles flash floods, buffering the floodplain allows a stream access to its “kidneys.”
- Accessible stream buffer parks contribute to fighting obesity.
- Aesthetically pleasing outdoor venues lower blood pressure and boost immune response in humans.
- Vegetated buffer areas can increase adjacent property values because we view them as an amenity.

That’s not all, but it’s enough for us to consider. Tennessee is not alone in considering this balance. As it is, most buffer rules do not allow for full flooding of streams as 25-75 foot buffers that are common in land use management are biologically inadequate in many cases.

But, especially in sloped landscapes with erodible soils (most of Eastern and Central Tennessee), the consequences of not having buffers are expressed in catastrophic failures of our stormwater management systems during extreme storm events like the 2010 Nashville flood.

The frequency of such events seems to be increasing with changes in climate. As population increases, the consequences in health and property damage will also increase. Is it really beneficial for us to have that extra lot, or the benefits buffers provide? Is it really beneficial for us to have an unobstructed view of the stream, or is it better to have a stream worth looking at? Do we share this world or grab what we can and run?

As I make my way through a rhododendron lined stream bank in my beloved Smokies, I wonder what the kids will see here a 100 years from now? A 1000 years from now? Will it be worth seeing? I hope so…

Marjan Farzaad is an almost-retired EPA Senior Technical Advisor who has served in the water arena for the past 25 years. She has managed the stormwater, nonpoint source and watershed management programs in the Southeast. She has an Economics degree from Yale University and a Masters in Biology from Tennessee Technological University.

She may be contacted by phone at 404-562-9420 or via email: farzaad.marjan@epa.gov
Tennessee’s National Flood Insurance Program

By Amy Miller

The National Flood Insurance Program (NFIP) mission is to reduce the impact of flooding on private and public structures which is administered by the Federal Emergency Management Agency (FEMA). The program achieves this by providing affordable flood insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations. These efforts help mitigate the effects of flooding on new and improved structures. In order for residents and business owners to be eligible to purchase flood insurance, communities must commit to manage development in their special flood hazard areas according to federal regulations. These areas are delineated by FEMA on Flood Insurance Rate Maps.

The state of Tennessee has 400 communities that participate in the NFIP and 12 communities that enact higher regulatory standards participating in the Community Rating System. The NFIP is committed to reducing flood losses and preserving natural floodplain functions by embracing the broad and ever-changing field of floodplain management and flood hazard mitigation. Floodplain administrators are primarily local elected officials, local planners and emergency services personnel that are responsible for NFIP federal floodplain management regulations in their local jurisdictions.

While the NFIP is significant in scope at the federal level as a way to reduce the impact of flooding on private and public structures, its state-associated responsibilities are fairly narrow. State agency activity related to the NFIP is managed by one position, the State NFIP Coordinator.

The State NFIP Coordinator manages Tennessee’s efforts to provide technical assistance and coordination of activities for sound floodplain management throughout the state. This position assists citizens and professionals with questions regarding the National Flood Insurance Program and aids local elected officials and staff to implement effective floodplain management strategies in their communities ensuring compliance with the federal requirements. This includes program oversight and technical assistance as well as evaluation and documentation of floodplain management activities.

On January 1, 2016, the Tennessee Department of Environment and Conservation became the responsible state agency for the coordination and oversight of the state’s participation in National Flood Insurance Program as Gov. Haslam’s Executive Order #51 transferred that designation from the Department of Economic and Community Development to TDEC.

Amy Miller is the State National Flood Insurance Program Coordinator, and she officially joined TDEC department on Jan. 1, as part of the TDEC Emergency Services Group. Amy has a background in land use and community planning. Amy earned her Master of Science in City and Regional Planning from The Ohio State University before moving to Nashville in 2009. Amy is working on the 10th Floor of the TN Tower, and she can be reached at 615-770-1084 or Amy.J.Miller@tn.gov.

For more information on the National Flood Insurance Program, please visit http://tn.gov/environment/section/nfip-national-flood-insurance-program.

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Tennessee Stream Mitigation Program

Tennessee Stream Mitigation Program is Looking for Opportunities to Restore Degraded Streams

By Dan Eagar

The Tennessee Stream Mitigation Program (TSMP) is seeking opportunities to restore and enhance degraded streams statewide.

The TSMP was established in 2003, and since then they have restored or enhanced over 45 miles of stream. Projects have been implemented in all regions of the state, and in three major cities – Knoxville, Chattanooga, and Nashville. Those who have worked with the program to implement stream improvements on their property include dozens of private landowners, local governments, state agencies, and the federal government.

The TSMP is a subsidiary of the Tennessee Wildlife Resources Foundation, a private, not for profit corporation (501(c)(3)) established to support the Tennessee Wildlife Resources Agency, and to promote habitat conservation, responsible land stewardship, and the preservation of Tennessee’s hunting and fishing heritage. It was established through a Memorandum of Agreement signed by the U. S. Army Corps of Engineers, the Environmental Protection Agency, the U. S. Fish and Wildlife Service, the Tennessee Valley Authority, the Tennessee Department of Environment and Conservation, and the Tennessee Wildlife Resources Agency. All of those agencies as well as the U. S. Department of Agriculture’s Natural Resources Conservation Service serve on the oversight and advisory group known as the Interagency Review Team.

As an approved “third party” mitigation program, the TSMP provides stream mitigation for persons who obtain water quality permits from federal and state regulators for unavoidable stream impacts. The Program is able to accumulate mitigation funds from numerous permitted stream impacts and identify longer reaches of stream in need of restoration or enhancement within the same Service Area as the impacts. The TSMP has divided the state into ten Service Areas based on six-digit Hydrologic Unit Codes. All of the mitigation fees collected by the Program must be spent on providing water quality improvements sufficient to offset permitted stream impacts in each Service Area. The mitigation TSMP provides must meet the standards established by the regulators – both in quality and quantity.

There are thousands of miles of stream in Tennessee that are candidates for restoration because they are

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Nominations are Open for EPA Region 4 Rain Catcher Award

ATLANTA – For the third year in a row, the U.S. Environmental Protection Agency (EPA) is accepting nominations for the Rain Catcher Awards for excellence in implementation of stormwater green infrastructure projects during the past year. Award categories are available for Municipal, Commercial, Tribal, and Neighborhood/Community levels.

Nominations are due to the agency by March 18, 2016. The awardees will be honored at a ceremony in Nashville, TN on May 17, 2016.

For award criteria and nomination instructions, visit the About EPA Region 4 web page at: [http://www.epa.gov/ga/epa-region-4s-rain-catcher-awards](http://www.epa.gov/ga/epa-region-4s-rain-catcher-awards).

The EPA Region 4 Rain Catcher Award recognizes excellence in the implementation of stormwater green infrastructure practices. Green infrastructure uses natural systems and/or engineered systems designed to mimic natural processes to more effectively manage urban stormwater and reduce receiving water impacts. EPA and its partner organizations have promoted the use of green infrastructure for many years as part of a comprehensive approach to achieving healthier waters. Green infrastructure reduces the volume of stormwater discharges by managing rainwater close to where it falls and removes many of the pollutants present in runoff, making it an effective strategy for addressing wet weather pollution and improving water quality.

Connect with EPA Region 4 on Facebook: [www.facebook.com/eparegion4](http://www.facebook.com/eparegion4).


Nominations are Open for EPA Region 4 Rain Catcher Award-Deadline is March 18, 2016

Nominated entities must be located in Tennessee and projects must have been completed within the 2015 calendar year. All nominees must have a minimum of three consecutive years in overall environmental compliance with the Department of Environment and Conservation. Self-nominations are encouraged.

A panel of judges representing agricultural, forestry, conservation, environmental and academic professionals will select award recipients based on criteria including on-the-ground achievement, innovation and public education.

For more information and to apply, click here.

For further information on eligibility requirements and evaluation criteria, please contact Kathy Glapa at 615-253-8780.
Introducing the National Municipal Stormwater Alliance

Continued from page 1

the TNSA. Currently there are seven organizations that comprise the charter member group, of which TNSA is one of these organizations.

The motivation for the formation of NMSA is to represent MS4s at a national level, to help lead changes in regulation both proactively and reactively. MS4 programs to this point have been largely reactive to program implementation and a primary goal of NMSA will be to work with EPA on ways to improve the implementation of the MS4 program.

NMSA is also focused on connecting and uniting MS4 programs across the U.S. There is an exceptional amount of good work being done, but transfer of technology and programs is modest. NMSA will serve as a central point to disseminate information from high-performing programs, while promoting fundamental goals including developing a nationwide public education campaign on publicizing stormwater as a resource, improving the public image of stormwater, and creating opportunities for realizing multi-benefit projects.

NMSA will serve as the voice of the MS4 communities on a national scale, by providing a forum to discuss and act on items of national significance to MS4 permit holders, assembling data about stormwater programs and publicizing it, and helping to shape policies and rules to ensure they are protective of the environment, but also provide for stewardship of public funds.

Some of the projects NMSA will be focusing on include:

- Exploring topics at a national scope that are of interest to MS4s, such as public information campaigns
- Facilitating communications between MS4 associations
- Assisting states in forming new statewide MS4 associations

NMSA is in the process of incorporating as a 501c(3) non-profit entity. We are working to form in partnership with the Water Environment Federation (WEF), to gain access to WEF infrastructure and experience in working with the EPA and other national organizations.

Scott Taylor, P.E., is NMSA’s Vice Chair and has been the driving force, along with Randy Neprash, P.E. (Minnesota Cities Stormwater Coalition & NMSA Chair), Seth Brown, P.E. (Storm and Stream Solutions, LLC and NMSA WEF Liaison), Jennifer Watson (EnSafe, TNSA) and others in working diligently with WEF on forming this alliance for the benefit of statewide stormwater associations and MS4s across the country.

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Michael Baker International, Inc.
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Webinars & Online Training Opportunities

1. Free Webcast: EPA’s Greening Vacant Lots, February 9, 2016, 1:00 - 2:30 PM EST

EPA’s Green Infrastructure program will host a webcast titled “Greening Vacant Lots.” In this webcast, speakers from the Cleveland Botanical Garden, the Buffalo Sewer Authority, and the City of Baltimore will highlight vacant lot greening programs and specific landscape treatments that they have used in their communities. These programs and practices utilize vacant lots as sponges to hold and soak in rainwater, which helps to keep local waterways clean. Implementing green infrastructure on vacant lots can also reduce the incidence of combined sewer overflows and the quantity of stormwater that municipal sewer districts treat and manage. By creatively using vacant lots as an asset, these cities are addressing legacy environmental challenges in new ways that create multiple community co-benefits. Register Here

2. EPA Releases New Online Training Module on “Understanding Climate Change Impacts on Water Resources”

EPA has released a new online training module, “Understanding Climate Change Impacts on Water Resources.” This training module is intended to increase water resource professionals’ understanding of the causes of climate change, its potential impacts on water resources, and the challenges that water resource professionals face. The module also describes how federal, state, tribal, and local governments and communities are working to make the United States more resilient to the impacts of climate. The 45-minute training is part of the EPA Watershed Academy Web certificate program at www.epa.gov/watershedacademy

3. USDA’s Webinar Portal for Conservation of Natural Resources provides links to webinars that focus on natural resources topics. The portal serves as a launching point for current and on-demand webinars, and provides a platform where natural resource professionals, landowners and others can find up-to-date information for the fields of forestry, conservation, bioenergy, climate change and other topics related to natural resources. Webinar portal partners include the Southern Regional Extension Forestry Office, North Carolina State University’s Extension Forest Resources, Texas AgriLife Extension Service, land-grant universities, and the U.S. Department of Agriculture (i.e., Natural Resources Conservation Service, Forest Service and the Northeast Climate Hub)
Continued from page 2

developed a manual and tool to aid in implementing these new techniques. The requirements have been in most of our permits for quite a few years now to enable the regulatory and development community to tool/gear up/educate up for it. Whistling by the graveyard in hopes that the zombies are not going to rise up and eat your brains, don’t work.

The 84 percent urban population growth by 2050 will mostly be concentrated in the urban areas putting much more pressure on our natural environment and waters. I’m not really sure how this is going to affect the price of eggs, but it will definitely affect how we continue to grow. ‘New’ techniques of development have always been a challenge. Even sediment control requirements were fought over tooth and nail, as if they were going to hamper development and make new buildings too costly and out of the reach of a lot of people.

Let’s all work together towards the best way to develop our urban/living environment where we can still have natural areas, livable housing, commercial areas that are ‘desirable destinations’, and multimodal transportation: the price of eggs will follow.

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<th>Tier Level</th>
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<th>Tier Level</th>
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2016 WKU Summer Karst Field Studies

Western Kentucky University’s Center for Human Geoenvironmental Studies (CHNGES) and Department of Geography and Geology are pleased to offer the following KFS courses this coming summer:

♦ **Karst Geology**, June 12-18, Dr. Art Palmer
♦ **Cave Survey and Cartography**, June 18-24, Dr. Pat Kambesis
♦ **Intermediate Cave Techniques**, June 24-29, Drs. Jason Polk and Pat Kambesis
♦ **Experiential Ecology: Hands-on Subterranean Ecology in the Mammoth Cave Region**, July 10-16, Dr. Julian “Jerry” Lewis

Courses may be taken for graduate, undergraduate, or continuing education credit. Courses may also be taken just for fun as non-credit workshops.

Registration officially ends May 6, but be sure to sign-up by April 15 for discounted registration rates.

Green’s Ramblings

Meeting your Public Education Minimum Measure: Join the Tennessee Association of Broadcasters: TAB Program!

TNSA is continuing to work with the Tennessee Association of Broadcasters (TAB) and Stormwater Consultant, Tom Lawrence, P.E., to provide the TAB Stormwater Education Program for the 2015-2016 year.

The program works with TAB to distribute professionally developed radio and television announcements (NCSAs) to television and radio stations throughout the State. TAB has over 330 television and radio station members in Tennessee.

Due to TNSA’s relationship with TAB, all participating MS4s will be provided with NCSA airtime reporting, which can be included in your annual report as credit toward your stormwater education outreach program. TAB states that the return on investment in the average NCSA program can deliver 4 to 10 times the annual expenditures!

The cost of participation is based on the population within the MS4 (see table below). TAB uses the money received from TNSA for distribution, promotion, and tracking of the NCSAs. TNSA pools the money from the individual MS4s to contract with TAB for the program to negotiate additional airtime at lower costs.

Chris Masin, Shelby County MS4, enthusiastically promotes TAB: “Of course Shelby County MS4 would like to participate in the TAB program for 2015. The exposure that the radio ads give the stormwater program is invaluable. The effort level to receive TDEC accepted public education credits is as simple as approving the invoice and downloading the efficiently-sent, timely reports. And the amount of value that the airtime is worth compared to the minuscule cost is absolutely mind-blowing. Count me in!”

If you would like to get an invoice for the TAB Program and receive monthly airtime reports, please contact Tom Lawrence (901-237-4819) or Charlene DeSha (615-926-7094).
Register Now! TEC's 50K Tree Day!

Click Here to Get Started and Join the Statewide Effort to plant 50,000 Trees!

Important Dates:
- Saturday February 27: planting day
- Friday February 26 (1pm to 7pm):
  - planting day
  - The state and helping users take action.

Tree Species available this year — While supplies last, seedling packages include equal number of each of the following: Virginia Pine, Shumard Oak, Red Bud, Flowering Dogwood and Yellow Poplar

Please watch this 2 minute video about planting a seedling and read: How to Plant And

2015 Citizen Action Guide to Watershed Assessment and Restoration

The Tennessee Environmental Council, along with the Obed Watershed Community Association, the Environmental Law Institute, and the Center for Watershed Protection, developed The Citizen's AC-GUIDE to Watershed Assessment and RESTORATION (Action Guide).

This guide is designed to be used by citizens, stormwater directors, and educators, youth groups such as scouts, church groups and any other group or individuals interested in clean water. The Council will continue to be available for training programs across the state and helping users take action. Click here for more information and to download the Action Guide.


The EPA's Green Infrastructure program released a new report that summarizes tools, strategies and lessons learned from green infrastructure projects across the country.

The report, Tools, Strategies and Lessons Learned from EPA Green Infrastructure Technical Assistance Projects, summarizes results from EPA's green infrastructure technical assistance program for communities looking for solutions to their unique challenges. This quick reference guide matches problems with real world, tested solutions and offers readers resources for further information. The report also includes a handy guide to technology and a table of benefits that you can share with potential collaborators and stakeholders.

Conservation Leadership Council Releases Green Infrastructure Report

On Dec. 8, 2015, the Conservation Leadership Council (CLC) released a new study examining the role of green infrastructure.

The CLC report, titled The Role of Green Infrastructure — Nature, Economics, and Resilience, asserts that green approaches promote ecosystem services and greater resiliency while providing water quality and quantity treatment at a lower cost than traditional stormwater management solutions. Such traditional solutions include underground storage tanks or concrete bulkheads while green infrastructure employs natural processes like bioretention, living shorelines, or preservation of open space.

The study, authored by The Horinko Group, identifies today’s water management challenges including aging infrastructure, increasing stormwater runoff pollution, accelerated degradation of coastal areas, and a significant lack of funding. The report also recommends a number of approaches to encourage broader use of green infrastructure technologies, including:

- Incorporating ecosystem service benefits into the federal project selection processes for both drinking water and clean water regulatory programs,
- Expanding public-private partnerships and the property-assessed clean energy program that can be adopted for green infrastructure,
- Regulatory recognition of the value of green infrastructure in regional- and watershed-based permitting and integrated planning,
- Developing market-based approaches for green infrastructure investments including water quality trading and cost-based threshold grants, and
- Increasing the impact of public capital investments in green infrastructure through leveraging of state revolving fund investments and expansion of the water infrastructure finance and innovation act program.
Do you need environmental education materials for your classroom? EPA’s National Service Center for Environmental Publications offers materials grouped by grade range— all are free of charge. Publications include activity books, lesson plans, posters, and more.

Teachers can quickly and easily order environmental education materials for students and how to apply

Explore lesson plans, videos, project ideas, student awards, and more

Learn about Environmental Education grants

Free Environmental Education Materials!

Green Infrastructure: Lessons from Science and Practice

A new report, Green Infrastructure: Lessons from Science and Practice, demonstrates the importance, as well as the limits, to green infrastructure.

Scientists from Syracuse University, the Cary Institute, and Harvard University, in partnership with the Science Policy Exchange, gathered data on the performance of eight green infrastructure technologies, including green roofs, grassed swales, constructed wetlands and porous pavement. They analyzed the technologies’ effectiveness at reducing storm water volume during summer and winter seasons, and also assessed how well these practices reduced loads of six common pollutants (e.g., suspended sediment, nitrogen, phosphorus, chloride, lead and cadmium). They found that green infrastructure holds great promise, but that performance varies by technology, season and site.

Tennessee Stream Mitigation Program

Tennessee Stream Mitigation Program is Looking for Opportunities to Restore Degraded Streams

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impaired from historical land uses, but one of the program’s biggest challenges is to identify landowners who are willing to enter into the long term land use restrictions necessary to assure the success of projects, and to meet the requirements of the regulatory agencies. Although other circumstances may represent feasible projects, the most viable restoration opportunities for the TSMP are long reaches (several thousand feet) of smaller streams (drainage area under five square miles), with unstable or hard-armored channels and degraded riparian zones. A typical stream restoration project consists of stabilization of a degraded channel using a natural cannal design approach, introduction of in-stream habitat, and reestablishment of native woody vegetation in a fifty-foot riparian area along each side of the stream channel.

If you are interested in learning more about the Tennessee Stream Mitigation Program, or if you know of potential stream restoration or enhancement projects, contact Dan Eagar at dan.eagar@tsmp.us or by phone at 615/831-9311 ext. 113.

TSSM
Benefits of Green Development Clear in Side-By-Side Comparison with Conventional Development

In Norman, Okla., the Trailwoods community is demonstrating the benefits of green infrastructure when compared side-by-side with traditional stormwater management techniques. The neighborhood, developed by Ideal Homes, includes 17 lots constructed with curb and gutter and downspout-to-driveway conveyance as well as two stormwater basins. Another 17 lots are designed with rain gardens, rain barrels, and downspout diversions. Construction of homes began in 2011. Green infrastructure was installed and monitoring equipment fully operational in October 2013.

The University of Oklahoma conducted the monitoring. Researchers found that, compared to the conventional side, Trailwoods green infrastructure has reduced nitrogen by an additional 30%, suspended sediment by 32%, and phosphorus by 152%, according to a recent article in the Bay Journal.

In sum, Trailwoods includes 366 m² (3940 ft²) of rain garden installed at a cost of $312 per square meter ($29 per square foot), and the rain barrels cost $35 each. The neighborhood also includes an 11-m² (120 ft²) area of porous paving installed at $65 per square meter ($6 per square foot).

Though the green homes cost more to construct and buy, the green side of the development has fewer landscape needs, lower energy bills, and is helping to improve the water quality of Oklahoma’s Lake Thunderbird.

The Oklahoma Conservation Commission, City of Norman, and two consulting firms, CH Guernsey and SMC Engineering are also involved in the project.

Job Opportunity! Stormwater Coordinator, Town of Collierville

Details: This purpose of this position is to monitor and enforce storm water regulations pertaining to all construction projects, including storm water runoff, and to ensure that safety standards and construction specifications are met. Town of Collierville | Development Services | Engineering Click here for more information.

Deadline to apply: Open Until Filled, Salary range: $39,977–$49,688
Purpose

The mission of the Tennessee Stormwater Association (TNSA) is to assist local government entities in their efforts to comply with State and Federal clean water laws and Stormwater Regulations promulgated by the Environmental Protection Agency and the Tennessee Department of Environment and Conservation; and through such assistance, to protect and improve the quality of the waters of Tennessee. This mission will be accomplished through TNSA members’ exchange of information and knowledge regarding the design, construction, maintenance, administration, and operation of stormwater facilities. The TNSA will promote the dissemination of information in stormwater control measures and the adoption of improved practices in stormwater administration.

Members

TNSA membership is composed of designated Municipal Separate Storm Sewer Systems (MS4s) including local governments (city and county), universities, military installations, and other entities such as TN Department of Transportation (TDOT). Associate members include environmental advocacy groups, non-profits, Tennessee State, sub-state or federal government entities consultants. Private sector membership is available to for-profit engineering, scientific and management firms or other organizations with an interest in stormwater.