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STORMWATER
ASSOCIATION



tnstormwater.org

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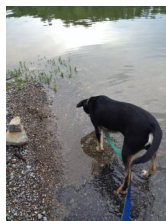
Tennessee Stormwater Association News & Information

March/April 2016

Crystal's Corner: A Message from the President

Ch-ch-changes...

"I watch the ripples change their size, but never leave the stream of warm impermanence and so the days float through my eyes, but still the days seem the same." – David Bowie



The past couple of months have foreshown imminent changes to MS4 programs in Tennessee. We have worked diligently to express concerns over House Bill 1892 (Senate Bill 1830); which was approved by an overwhelming majority by both the House and Senate. The Governor has 10 days to either veto or sign a bill; if he does neither, it becomes a law without his signature, which in this case was April 23, 2016. Governor Haslam refused to sign the bill but has let it become law anyway. In his letter to Lieutenant Governor Ramsey, he said, "the bill imposes

on local governments a cumbersome procedural mechanism that will cause confusion for those communities as they seek to implement required storm water pollutant removal programs. I am concerned that some of the ambiguous and confusing language of the bill could lead to costly litigation." It may take several years to fully understand the implications of HB1892 (SB1830).

The draft NPDES General Permit for Discharges from Small MS4s is out on Public Notice. TDEC will host a Public Hearing on April 27, 2016, beginning at noon central time. The public comment period will end 10 days following the public hearing. TNSA is a professional association with members that have varying opinions and perspectives, making it challenging to provide comments to regulatory agencies on behalf of all our members. With that in mind, the TNSA Board of Directors has decided to submit a letter asking for clarification on a few specific items, in lieu of official TNSA comments that take a position on items in the draft permit.

We strongly encourage each member to send their own comments to TDEC and to attend the Public Hearing. If you can't make it to Nashville, you may contact your local TDEC Environmental Field Office to attend via video conference.

TNSA will continue to educate our members about stormwater practices that meet state requirements, and will focus on providing a network of support for MS4s in Tennessee. As state law and requirements change, TNSA will provide the same opportunities for education, networking and collaboration. There's no better way to educate, network, and collaborate than the TNSA Annual Conference at Fall Creek Falls State Park, October 18 – 20, 2016. Presentations, sponsors and exhibitors are still needed.

Embrace the change and go with the flow.

Crystal Bishop, TNSA President

Quarterly Stormwater Professional Spotlight: Ashlie Farmer

Ashlie Farmer is the NPDES Coordinator for the City of Clarksville Street Department. Prior to accepting employment with the City of Clarksville, she held the positions of Environmental Specialist 3 with the State of Tennessee Department of Environment and Conservation Division of Water Resources and Project Manager with Resolution Inc., an environmental consulting firm.

Her areas of expertise include water quality permit compliance,

aquatic entomology and aquatic ecology.

"Ashlie is always willing to dedicate time to assist other MS4s with permit compliance, especially monitoring efforts. I have had the pleasure to work side-by-side with her on TNSA committees, and have witnessed first-hand how her dedication to natural resources protection inspires stewardship in others" commented Crystal Piper, TNSA President.

In her role as NPDES Coordinator for Clarksville, Ashlie has focused on staff training and educating the community about stormwater through various workshops and volunteer activities. Since accepting her position with the City in late 2014, she has offered rain barrel and low impact devel-



Continued on page 10



Executive Director

Charlene DeSha

Charlene@tnstormwater.org

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Conference Planning

Chair: [Crystal Bishop](#)

We welcome TNSA Members to participate on any of these committees! Please contact the committee chair for additional information.

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TNSA Executive Director Message

Can you believe we are already one-third through 2016? The year is flying by!

First of all, I would like to welcome new members: [Envirogreen, Inc.](#) and the [Harperth River Watershed Association](#). Welcome to TNSA!

So far this year TNSA has been able to introduce a new website with the help of Vaughn & Melton Civil Engineers. Thank you to Becky Rehorn and Kellye Cook in the Knoxville office for working so hard on this project. In order to reduce emails TNSA has added the following features to the website: Job Board, Grants & Award Opportunities and an event calendar. We will no longer be sending

emails pertaining to these items as all of the information will be listed on the website. Also, we will be sending a monthly email update on the off months when the TNSA newsletter is not sent out.

TNSA is working on organizing the **best** TNSA Annual Conference just for you, October 18-20, 2016.

**Call for Speakers is open!
Please submit your presentation proposals by April 30th!**

Day one will feature another fun kick-ball game along with the TNSA Annual Membership Meeting, Board of Director's meeting and a special MS4 101 Introduction for new MS4 employees. A tentative schedule will be added to the website in

May. Registration is open at www.tnstormwater.org.

Feel free to contact me at any time with concerns, additions or changes you would like to see at TNSA. My job is to help and support you so my line is always open, 865-386-6917, charlene@tnstormwater.org.

Thank you all for your support and keep your head high through these tough times! Each and every one of you are working for the greater good and know that we here at TNSA appreciate your hard work and dedication.

Charlene DeSha

Green's Ramblings: For the Love of Sausage

By Don Green

Some erudite person once said (and I paraphrase): you really do not want to be a witness to the making of sausage, or laws. It has been many years since I have seen the grinding up of swine parts, but what I have had the 'pleasure' to view of the **other**, as of late, I was much more 'impressed' with the production of food.

It takes a lot of **skill, preparation** and the **love of the product** to prepare sausage, but upon creation of the latter, as of late, I'm not sure any of these three virtues were considered wholly or in part, by many. Don't get me wrong, I am sure many sausage makers have the best intent to make the very best product possible, but at times I wonder, as Mr. Falstaff would say, the better part of valor is discretion.

Just because you see what you think is a nail, doesn't mean you need to hammer it and just because you are sitting at a desk as a legislator, does not mean you have to continue to change our legal system, because you can. You

know that something is a foul in Denmark when the **regulators**, and many of the **regulated**, are gathered on the same side of the mountain, sharing the same consternations.

But, my mission here is not to degrade either the creation of sausage or legislation, I'm here to **praise**. I'm here to raise-up, honor and celebrate the dauntless efforts of many of the members, executive committee and board of TNSA.

They stepped up. Even, and especially, when the light in the far reaches of the tunnel, looked more like an approaching train than the feeling of success—but they stepped up, and gave their time and tremendous effort to address what they saw as a mis-service.

Many of TNSA had to use constrain, much more than I have, to do their due diligence to speak-up and wait out what had been put into motion by those that either are ignorant (which is not a bad thing—I am ignorant of a lot of things), or did not endeavor to find the truth, or mislead (or both), or truly out of self-service.

And to make one more comment, before I end my **praise**: again I paraphrase someone much smarter than myself: 'Eternal vigilance is the price'. TNSA has made several efforts as of late, to be vigilant concerning not just legislation, but water quality protection. For that is what we are about, when it comes to push and shove.

Sometimes I feel we need to push and shove, but we have much more in our tool box than hammers and we try **not** to see nails everywhere, but try to live out Mr. Falstaff's discretion advice.

And when it comes to making sausage, TNSA will jump right in there and turn the grinder, if we think the product will serve water quality.

Let's all give our members a tremendous **thank you** for efforts to educate and to rise above special and self-interest.

[Don Green](#), LEED AP
City of Chattanooga

Go Go Green Infrastructure! Memphis Gets Green Light on Rain Gardens in Schools

"The idea of installing the rain gardens at different age-level schools was to develop lesson plans that grow with the child." Tasha King-Davis, Storm Water Program Manager explains.



Hickory Ridge Middle

"What we learned from the grant is what we felt was true all along. People are interested in green infrastructure and how it can benefit their communities..."



Hickory Ridge Middle

By Tasha King-Davis, P.E.

This story begins with a TNSA Green Development Grant that had the objective of advancing green development projects across the state by assisting cities with the implementation of green infrastructure projects that would deliver multiple benefits to communities.

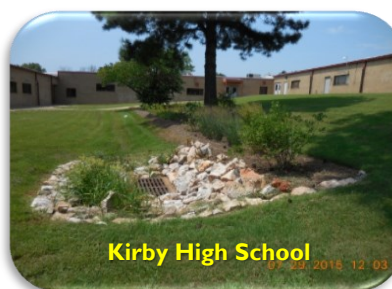
The City of Memphis was an enthusiastic recipient of that grant and had a vision to create an outdoor venue for educational purposes within communities that would beautify neighborhoods, enhance water quality, and educate the general public about storm-water and our impact upon it.

With all those goals in mind and schools as the focus, rain gardens were the blatantly obvious and perfect type of green infrastructure to achieve so many objectives.

Upon award of the grant, three feeder schools were selected for the installation of the rain gardens: an elementary school, a middle school, and a high school.

"The idea of installing the rain gardens at different age-level schools was to develop lesson plans that grow with the child." Tasha King-Davis, Storm Water Program Manager explains, "Our Storm Water Program has developed age-appropriate curriculums for the schools to use. You start with the basics about what water is and where it comes from and

then you move to the water cycle, impairments to the water cycle, impacts on water quality, and what we can do to make a positive impact on water quality. By providing continued hands-on exposure, our young students will graduate as environmentally-conscientious young adults that will leave a better impact on water quality."



Kirby High School

Better yet, it didn't stop with rain gardens. The high school was provided with sampling kits for lab use to test the water and make comparisons on water quality. The schools were provided with Project Wet Books. They were even motivated enough to purchase Enviroscapes, a



large model that demonstrates the variety of pollutants that can enter our waterways and how they enter waterbodies.

The rain gardens were installed within view of the public, each with a kiosk that explained the general description of the rain garden and its

benefits. Since the installation of these three original rain gardens, the Storm Water Program has initiated a program to install rain gardens in more City schools for the purpose of educating children and communities about the benefits of green infrastructure.

"What we learned from the grant is what we felt was true all along. People are interested in green infrastructure and how it can benefit their communities. We can get them involved by installing rain gardens in schools. It will start by parents learning with children and will end with our children becoming the future and taking this to the next level,"

Tasha states. "All we need to do is find City schools with teachers and principals that sincerely want to use and implement these amazing learning tools. The City is filled with enthusiastic educators that are just waiting for such an opportunity to advance the growth of children and the community."

Tasha King-Davis, P.E. is the Stormwater Program Manager for the City of Memphis. She can be reached via email:

Tasha.King@memphistn.gov



Belle Forest Community School

Partnering to Develop Watershed Management Tools in the Mill Creek Watershed

By Rob Bullard

The Nature Conservancy, in partnership with the Cumberland River Compact, is developing a set of conservation strategies for the Mill Creek Watershed in Metro Nashville-Davidson County. The goal of this work is to support economic growth while preserving this unique watershed system by analyzing national best practices and trends in urban watershed management and expanding decision making, policy, and funding tools for planners and developers.

The Mill Creek Watershed drains approximately 13 percent of Davidson County and is an integral element of Metro Nashville's environment. The watershed supports and connects a broad range of biodiversity and ecological services while accommodating some of the most intense existing and planned land uses in the county. Consequently, much of Mill Creek and its tributaries are considered both impaired and high habitat conservation priorities.

Underscoring the immediate need for effective environmental conservation

tools is Metro's recently approved comprehensive plan update, NashvilleNext, which calls for directing significant amounts of projected new growth and development to the southeast part of the county and the Mill Creek Watershed.

To meet this need, we have contracted with Gresham Smith and Partners through support from the Dan and Margaret Maddox Charitable Foundation to review existing practices, trends and conditions in the watershed and help us identify changes to local policies and practices that incentivize protection and conservation of environmental resources in the Mill Creek watershed.

For example, a number of federal, state, and local agencies have recently undertaken plans and studies to protect Davidson County's natural resources and, in particular the Mill Creek Watershed. Our work will complement and expand on these efforts by reviewing and synthesizing these efforts before conducting spatial analysis of land use, demographic, and environmental resources and conditions to identify critical opportunities for targeted policies and practices that improve the health of the watershed. This could include strategies like maximizing the

role of industry, transportation, and park infrastructure in reinforcing tree canopy, floodplain protection, and water quality.

The end result will be a thorough review of existing trends and conditions in the Mill Creek Watershed, a survey of existing and national best practices in urban watershed management, and a clear set of policies and practices that best address the unique needs of the watershed. This valuable information will then inform our own investment in on-the-ground restoration work in the watershed and be made available for partners, planners, and decision-makers who will shape the health of the watershed for generations to come.

Questions or comments about this work? Please contact Rob Bullard, Tennessee/Cumberland Rivers Program Director, at ebullard@tnc.org

The Nature Conservancy



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Your Stream (and land, and wallet, and community...) Is Tougher With A Buffer

By Amy Mann

In East Tennessee, most of us can say that they we live within about a half mile of a stream, and many people actually live on or adjacent to a stream or creek. But just how much do East Tennesseans know about how to take care of our streams, and why should we care?

We live in one of the most water rich and ecologically diverse regions in the world, but with this wealth comes a paramount responsibility to care for and maintain the reason for our [half million dollar a year tourist draw](#); not to mention that when we take care of our streams, we are also inherently caring for our land and our community. Planting a **vegetative streamside buffer** is arguably the most beneficial action you can take as a streamside landowner. Trees improve the quality of water for the aquatic species that live in the stream and have the added benefit of reducing your long-term workload while increasing the amount of money in your pocket!

First, a balanced stream ecosystem is crucial to the well-being of all aquatic species. A vegetated buffer with a mix of native grasses, shrubs and trees will shade the creek, which cools the water and provides not only more oxygen, but also more habitat for the species that live in and next to the water. Federal and state regulations mandate that communities discharge no more than a specific quantity of pollutants into streams in order to ensure that this delicate balance remain intact. Vegetated buffers help to remove pollutants from

Knox County Stormwater is creating a community-wide survey to not only find out about what people know about their water resources, but also to educate them about how to protect them for both short and long term economic and ecological gains. To participate in the landowner survey, contact us at 865-215-5283 or stormwater@knoxcounty.org

upland land uses. Violating these mandates opens communities up to financial burdens and increased taxes.

Landowners who live on or near a creek may be less motivated by obscure, speculative and likely shared tax levies than on more tangible, discreet and individual effects on their own properties, such as stream-bank erosion.

When streambank erosion continues unabated, the rate of land loss increases and can lead to threats to structures. In all of these examples, planting a mix of native trees, shrubs and grasses along the bank will work to provide stabilization to the stream bank as the roots grow into and hold onto the soil, keeping it from washing away during the next large storm event.



Moderate Erosion



Structural Threat

One of the drawbacks of living close to water is the risk of flooding. A major concern voiced amongst landowners who live adjacent to waterways is

Continued on Page 12



Massive Erosion

Call for Sponsors & Water Quality Booth Exhibitors!

Join us August 20, 2016, at Shelby Park for Nashville's 4th Annual Urban Runoff 5K! [Nashville's Metro Water Services](#), the [Tennessee Department of Environment & Conservation](#) and the [Tennessee Stormwater Association](#) have teamed up together once again to host the Urban Runoff 5k. The run weaves its way past several cool and innovative green stormwater management practices. Dogs on leashes and strollers welcome! We'll have a fun and

educational Water Quality Festival for the whole family to enjoy from 7:30-11:00.

For more information about the race, please visit our [Facebook Page](#).

We are celebrating with \$5.00 off the 2016 Urban Runoff 5K registration! Register using the discount code: **EARTH-DAY2016** (Expires April 29, 2016) [Register for the Race here.](#)

For more information on the race or how to become a sponsor or sign up for a WQ Booth, please contact Jennifer Watson: jennifer@stormwater.org or Beth Wilson: Eliza-beth.Wilson@nashville.gov



Save the Date!

4th Annual Nashville Urban Runoff 5K

August 20, 2016

Level I & II TNEPSC, Permanent Stormwater Design & TN-HDT Courses Schedules

TNEPSC Level I Certification Course	
May 10, 2016	Nashville
June 2, 2016	Knoxville
TBD	Johnson City

TN-HDT Course	
August 8-10, 2016	Montgomery Bell State Park

TN-HDT Refresher Course	
July 21, 2016	TDEC Knoxville EFO
August 3, 2016	Warner Park Nature Center Nashville

TNEPSC Level I Recertification Course	
May 4, 2016	Knoxville
May 19, 2016	Nashville
May 24, 2016	Chattanooga

TNEPSC Level II Certification Course	
April 27-28, 2016	Knoxville
May 11-12, 2016	Nashville
June 15-16, 2016	Memphis

Please contact [Tim Gangaware](#) with questions or visit the website: <http://tnstormwatertraining.org/> or <http://tnhdt.org/> or <http://tnepsc.org/>

TDEC Draft Phase II Permit Public Hearing

On Wednesday, April 27th, 2016, the Division of Water Resources will hold a public hearing for the proposed reissuance of the Tennessee Phase II Small MS4 General Permit.

Staff will hold an informational meeting prior to the opening of the formal public hearing. Location: 312 Rosa L. Parks

Avenue William R. Snodgrass – Tennessee Tower Nashville Room 3rd Floor Date: Wednesday, April 27, 2016 Informational Session: 12:00 Noon Central Time Public Hearing: 1:00 PM – 3:00 PM Central Time In addition, by video conference at the following Environmental Field Offices (EFOs): - [Click Here for More Information](#)

For additional information, please contact the permit writers: Vojin Janjic at 615-532-0670 / Vojin.Janjic@tn.gov or Paul Higgins at 615-532-

1178 / Paul.Higgins@tn.gov
[Click Here for Draft Permit](#)
[Click Here for Rationale](#)

NAFSMA's Green Infrastructure Awards Program Announced

The National Association of Flood and Stormwater Management Agencies (NAFSMA) has officially opened its 2016 [Green Infrastructure Awards Program](#).

To be eligible for consideration, **applications need to be submitted by May 17, 2016**. Per the application, the project description needs to include a site plan or diagram, and description s of the project's environmental impact, economic impact, outreach efforts, results, maintenance

(monitoring, upkeep, costs and reporting) and conclusion. This year's award winners will be announced at the NAFSMA Annual Meeting in Portland, OR on August 22-25, 2016. Applications will be submitted electronically.

NAFSMA also has a separate awards program to recognize Excellence in Communications in the categories of "Public Awareness of Flooding and/or Flood Prevention and/or Emergency Preparedness" and "Improving Water Quality." Application submissions for Excellence in Communications are also due

by May 17, 2016 and can be submitted electronically or via mail.

Applications for both awards programs can be accessed www.nafsma.org or can be sent to you directly by contacting ingsgilson@nafsm.org. Both awards programs are open to all public agencies as well as private firms working with a public agency on a green infrastructure project or on communications efforts.



Great Urban Parks Campaign: Green Infrastructure in Underserved Communities

Applications due April 29, 2016

The online grant application and full details are available [HERE](#). The National Recreation and Park Association opened the call for applications for our Great Urban Parks Campaign model project grants. We seek to fund replicable green stormwater infrastructure projects in parks located in underserved communities. The overall goal is to demonstrate the social and environmental impacts of green infrastructure approaches to storm-

water management, such as access to recreation and opportunities to connect with nature. Grants will be awarded up to \$575,000 and projects must be completed by fall 2017.

Grant Details

The purpose of this grant opportunity is to demonstrate the effectiveness of green infrastructure to positively affect environmental change in underserved low-income communities and communities of color, and thereby increase community engagement, connection to nature, and physical activity by community

residents. The intention is to create replicable model projects that provide strategies and lessons learned for application by a wide range of communities.

It is anticipated that this RFA will fund grants between \$350,000 and \$575,000. The Applicants will be notified whether or not they were selected for a grant by June 30, 2016.

For additional information: contact Jimmy O'Connor at jconnor@nrpa.org.

Upcoming Conferences

2016 TNSA 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 run-off 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](#) 865-386-6917.



[Register now](#) for the Tennessee Sustainable Transportation Forum! The forum will take place on May 12-13 at the University of Tennessee at Chattanooga.

This year's forum will feature speakers from UPS, Lyft, Proterra, Oak Ridge National Laboratory, and more! [Click here](#) to see the full list of speakers and their associated bios.

To view the agenda and to register for the forum, click [here](#).



Municipal Wet Weather Stormwater Conference



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](#). [Click here for an Agenda!](#)

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](#) [Register Here!](#)

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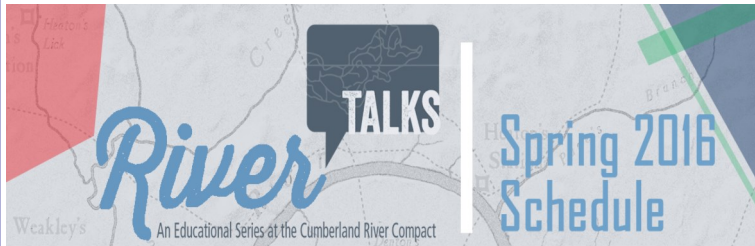
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May 12
@ 6 PM

"Racing Extinction" Movie Screening
co-hosted with Harpeth River Watershed Association and Urban Green Lab



May 19
@ Noon

"Strange Lifestyles of Aquatic Critters"
with Don Hubbs, Tennessee Wildlife Resources Agency, Environmental Services Division



May 26
@ Noon

"Coal Ash Conversations: How our Region's Energy Impacts the Cumberland River"
with Anne Davis, Managing Attorney at Nashville's Southern Environmental Law Center



June 2
@ Noon

"Painting the Nature of the Cumberland River - An American Legacy"
with Larry Richardson, Artist, Naturalist, Author



June 16
@ Noon

"Building Green and Complete Streets: Smart Design, Innovative Design Teams, and Working With The Community"
with Mark Macy, Public Works Director and Kim Hawkins, Principal, Hawkins Partners, Inc.



June 23
@ Noon

"The Special Bridge Program: Tennessee's Toll Bridges, 1927-1947"
with Dr. Tammy Allison Sellers, Historic Preservation Program Manager, Tennessee Department of Transportation

For full details and to RSVP, visit our website:
cumberlandrivercompact.org/river-talks

Flood Loss Avoidance Benefits of Green Infrastructure for Stormwater Management

This US Environmental Protection Agency modeling study estimates the flood loss avoidance benefits from application of small storm retention practices for new development and redevelopment nationwide.

Twenty HUC8 watersheds were modeled in areas where significant growth is expected between 2020 and 2040, using the FEMA Hazus model and national-scale datasets.

The area of the watersheds ranges between 500 and 3,000 square miles. The study was conducted in consultation with other federal agencies including the US Army Corps of Engineers (USACE), the National Oceanic and Atmospheric Administration (NOAA), and the Federal Emergency Management Agency (FEMA).

The approach was vetted by a panel of experts from government, academia, and industry. The results show that, over time, the use of green stormwater infrastructure can save hundreds of millions of dollars in flood losses, while just applying the practices to new development and redevelopment only. If retrofitting were to occur, the avoided losses would be even more significant.

[See Document Here.](#)

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Hathaway Wins Prestigious NSF CAREER Award for Sustainable Urban Water Management

Jon Hathaway, assistant professor of Civil and Environmental Engineering, has been selected to receive a [CAREER Award](#) by the National Science Foundation (NSF).

The purpose of this prestigious NSF program is to support the career development of select, outstanding faculty by facilitating the integration of the faculty member's educational and research plans in the early stages of their careers. Hathaway's CAREER proposal is entitled: "Toward Sustainable Urban Water Management through a Two-fold Approach: Enhanced Landscape Modeling and Strategic Spatial Placement of Stormwater Control Measures".

Through this 5-year project, Hathaway and his students will seek to develop strategies for more effective modeling and strategic placement of green infrastructure in urban watersheds. The educational component of this project includes outreach to K-12 students through the Knox County Adopt-a-Watershed program, introduction of green infrastructure concepts to freshmen, and a new graduate-level course on watershed-scale hydrologic modeling.

"The CAREER award identifies Professor Hathaway as one of the nation's most promising young faculty members working

in the water resources area," says CEE department chair and Robert M. Condra Professor, Chris Cox. "We are all proud of his outstanding achievement and expect that this award will enable him to make important contributions to green infrastructure."



Draft EPA-USGS Technical Report: Protecting Aquatic Life from Effects of Hydrologic Alteration

Public Comment ends May 2, 2016

EPA and U.S. Geological Survey (USGS) have released a draft technical report, [Protecting Aquatic Life from Effects of Hydrologic Alteration](#), for a 60-day public comment period. The report provides information to help states, tribes, territories, water resource managers, and other stakeholders responsible for the maintenance of hydrologic flow regimes to quantify flow targets for the preservation of aquatic life and habitat. This report describes the relationship between hydrologic condition and

water quality, and gives examples of what states have done to address flow concerns using Clean Water Act authorities and programs that can be used to support the natural flow regime and maintain aquatic life. The report provides a flexible, nonprescriptive framework to quantify flow targets to protect aquatic life from the effects associated with flow alteration.

Randy Neprash, Chair, National Municipal Stormwater Alliance (NMSA) noted that "Folks who work with MS4 permits should pay

attention to this new report. The MS4 program and discharges from MS4s are addressed in multiple locations in this report, especially volume control of stormwater runoff".

Summary:

- The 2-page Fact Sheet can be found by clicking [here](#):
- The 163-page report can be found [here](#);
- The EPA's Web page for this project can be found by clicking [here](#):

City Parks, Clean Water: Making Great Places Using Green Infrastructure

From the [Trust for Public Land](#) website:

"We are excited to share with you City parks, clean water: Making great places using green infrastructure, the first report exploring the intersection of green infrastructure and parks.

Using case studies, data tables, and interviews with national experts, the report explores both new and existing parks, including in-depth studies of water-smart parks in Atlanta, Georgia; Birmingham, Alabama; Cambridge, Massachusetts; New York; and Shoreline, Washington.

Parks have been capturing and cleaning stormwater from the beginning, often unintentionally through vegetation and porous soils. But these spaces now offer win-win situations for cities to manage stormwater runoff while also meeting residents' recreation needs.

Green infrastructure is not a simple, one-size-fits-all solution. It needs to be carefully designed, implemented, and maintained in order to protect the parks' resources and at the same time manage stormwater over the long term. Using parks as infrastructure may be a time-honored tradition, but it also requires new technologies and new practices.

That is the reality that City parks, clean water explores."

This report is part of The Trust for Public Land's work to support and improve the park systems of America's cities, providing valuable practical knowledge for those working to strengthen their communities through parks.

[Click Here for the Report.](#)

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Turning Stormwater Runoff Into Everyone's Business

By Julian Spector, [Atlantic City Lab](#)

D.C.'s marketplace for stormwater retention credits wasn't taking off, but a new investment could change that.

When it rains heavily in D.C., the surrounding ecosystem takes a beating.

A full 43% of land in the city is impervious to rainwater. As it flows down the streets, it picks up motor oil, pet waste, fertilizers, garbage, and whatever else is lying there, flushing it into the sewer. For two-thirds of the city, that all empties into the nearest river or stream, with enough force to gauge the banks of the smaller tributaries.

For the rest of the city, the runoff flows

into a combined sewer, which overloads and projects a sludgy mess of feces into the river system. Before the city took action in 2005, those overflows added up to 3.2 billion gallons per year. In either situation, the rivers then carry the junk into the Chesapeake Bay, where runoff is the fastest-growing source of pollution.

While a massive [\\$2.6 billion tunnel system](#) is underway to deal with some of the runoff, it's not enough. That's why the city turned to green infrastructure: rain gardens, green roofs, permeable surfaces, and leafy drainage ditches known as bioswales that filter and store extra rainwater, easing the load on the sewer system. These options cost much less than "gray infrastructure" and they make the city prettier and more enjoyable.

"For decades and decades people designed in the city to get stormwater off of a site as fast as possible," says Brian Van Wye, chief of program implementation for D.C.'s Stormwater Management Division. "What we're trying to do is turn that on its head and slow it down and, as much as possible, turn stormwater into a resource on that site."

But the city can't pay for it all by itself. That's why, in 2013, the District Department of Energy and Environment came up with a new idea to get more green spaces scattered around the area. The agency created [retention credits](#), available to homeowners, churches, businesses, and anyone else with land that could be upgraded to retain more rainwater. Those credits can then be sold to

Continued on page 13



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Quarterly Stormwater Professional Spotlight: Ashlie Farmer

opment workshops, gave numerous water quality presentations, organized an erosion prevention sediment control field demonstration day, participated in a science, engineering, technology and mathematics (STEM) externship program offered through the local school system, locally hosted a Level I Fundamentals of Erosion Prevention and Sediment Control for Construction Sites course, organized volunteers for the 2015 and 2016 50K Tree Day event and attended local Riverfest and Rivers and Spires festivals.

In 2015 she helped the Street Department become a Green Certified department through completion of the Clarksville Montgomery County Green Certification Program.

Ashlie attended Austin Peay State University (APSU) where she obtained a B.S. ('04) and M.S. ('10) in Biology. She has completed the State of Tennessee Hydrologic Determination Training course and is Level I and II certified through the Fundamentals of Erosion Prevention and Sediment Control for Construction Sites course.

In 2015, Ashlie was elected to serve as an at large member of the Board of Directors for the Tennessee Stormwater Association. She is also a member of the Clarksville Montgomery County Sustainability Committee and is actively involved with the Clarksville Tree Board.

Ashlie makes Tennessee a better place to work, live, and play! For all of us! Thank you Ashlie for sharing your knowledge, expertise, organizational skills and enthusiasm in protecting our water resources!

Upcoming Webinars

April 27, 2016, 2-3PM ET Webinar - [Assessment of Major Ion Effects on Aquatic Organisms](#) EPA's Office of Research and Development is hosting monthly webinars to share information on its Safe and Sustainable Water Resources Research Program. This webinar provides an overview of EPA's research in this area, and some of the implications for predicting ecological risks and informing management decisions.

May 4, 2016, 1-2PM ET: Informational Webinar [The Utility of the Future is Now](#)

A coalition of organizations including WEF, NACWA, WERF, EPA, and WaterReuse are collaborating on a new program to recognize the accomplishments of wastewater utilities that are implementing sustainable practices around resource recovery, watershed protection, energy efficiency and recovery, and community engagement. The program called *The Utility of the Future is Now* is based on the *Utility of the Future Blueprint*, issued in 2013. To find out more about the program and obtain an application please go to www.wef.org.

May 19, 2016, 2-3:30 PM ET Second Webinar [Enabling the Water Resources Utility of the Future](#) This webinar is focused on innovative ways in which utilities are becoming their own Utility of the Future to explore how utilities are building and nurturing a sustainable workforce.

May 24, 2016, 12:30 PM ET TDEC - [Getting Started on NetDMR Webinar](#) This webinar will walk you through the steps necessary to get started on NetDMR and will also cover the basics of the e-reporting rule.



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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 Non-Commercial Sustaining 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 and 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 CountyMS4, 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).



Tier Level	Population	Yearly Rate	Tier Level	Population	Yearly Rate
1	25,000 or less	\$400	4	100,000 or less	\$1,600
2	50,000 or less	\$800	5	Greater than 100,000	\$2,000
3	75,000 or less	\$1,200			

Your Stream (and land, and wallet, and community...) Is Tougher With A Buffer

Continued from Page 5

that during rain events,

the water rises, often to alarming rates, just feet or even inches away from structures built on or near the floodplain (the area of land that a stream or river uses to store flood waters during rain events).

Forested riparian buffers have long been known to curb the effects of flooding, largely due to the ability of large trees to soak up and either use or evapotranspire rainwater. [Large trees can uptake between 50 – 880 gallons of water per day!](#) Check out this [article](#)) Multiply this by 10 or more, add some shrubs and grasses, and you can often handily address incidences of standing water on property adjacent to waterways.

If you are restricted from planting trees along your waterway, the practice of not mowing all the way up to the stream and allowing desirable species that exist naturally in the soil to come up will also have a positive effect on both the stream and slow the loss of land on your property.

In addition to saving money on costly streambank repairs and flooding incidences and improving water quality, installing and maintaining a healthy vegetative streamside buffer requires surprisingly little work when compared to other well-intentioned efforts to keep the stream bank "tidy" and "clean". A healthy buffer includes a mixture of native grasses, shrubs and trees, as well as the resulting woody debris and leaf litter that will accumulate on the buffer floor.

As landowners, we inherently understand

that the actions we take on our own property have an impact on the value of our land. Regardless of our proximity to stream corridors, these actions can also impact water quality and the health of aquatic species living in streams and rivers nearby.

Landowners who live along stream corridors can best protect and care for these resources by simply allowing a vegetative buffer along the stream to grow and thrive, a modest measure that reduces the time and money we actually need to be investing in our properties as stewards of our land and water resources.

Amy Mann is the East Tennessee TNSA Regional Chapter Chair and works for Knox County Stormwater Management. She may be reached via email here: Amy.Mann@knoxcounty.org



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EPA's Soak Up the Rain Campaign Encourages Action on Stormwater Runoff



StormwaterReport

[Soak Up the Rain](#) is a stormwater public outreach campaign created by the New England office of the U.S. Environmental Protection Agency (EPA) to help raise awareness about the problem of polluted stormwater runoff and encourage action by citizens, municipalities, and others to help reduce runoff.

Launched in 2012, the campaign seeks to highlight the benefits of incorporating green infrastructure, rain barrels, permeable pavement, and other practices for controlling precipitation closer to where it falls and preventing runoff.

The campaign features a website connecting citizens to a host of information and resources, as well as tools to support municipalities in their public outreach efforts. According to the EPA, Soak Up the Rain measures can prevent water pollution, reduce

flooding, protect water resources, beautify neighborhoods, and bring other benefits to communities such as air cooling and helping lower community costs associated with stormwater management. <https://www.epa.gov/soakuptherain>



Turning Stormwater Runoff Into Everyone's Business

Continued from page 10

developers who may need them in order to meet the retention requirements for large new building projects.

Pricing the value of stormwater retention makes sense, but new markets are tough to get started. Until enough people buy and sell, there isn't an established price for the credits, making it an unpredictable investment. Since trading started in 2014, there have only been two exchanges. On the demand side, it takes time for new projects to wrap up and need the credits; on the supply side, owners need enough money up front to pay for upgrades in order to profit from the credits down the road.

Now the private sector is stepping in to nudge the market in the right direction. Last week, Prudential invested \$1.7 million in the recently founded [District Stormwater LLC](#). This company, affiliated with The Nature Conservancy, will work with property owners to install green improvements for free in exchange for the retention credits. If the business succeeds, every other city with runoff problems will want to take a look at D.C.

Inventing a market

The EPA's Clean Water Act agreement with D.C. says new developments of at least 5,000 square feet must retain the expected runoff from a storm that drops 1.2 inches of rain—this covers 90 percent of all downpours in the area. This regulation is the real driver of retention efforts in the city, Van Wye says. All of the city's programs to help homeowners, schools, and churches voluntarily green their property add up to just one-tenth of the retention that the large new developments must now provide.

When the rules were coming together, developers got on board, but asked for more flexibility in meeting the goal. Some new developments, especially in dense, downtown neighborhoods, don't have much open space to work with. A green roof might preclude a rooftop pool or bar; large underground cisterns might cut into parking spaces. The city came up with a compromise: if developers meet

50 percent of their water retention requirement, they can purchase credits from others in the city who've expanded their retention capacity. Rainwater is rainwater; as long as the right amount is diverted from the sewers, the developer has done his or her duty.

At first glance, that might sound like it lets developers off the hook. But, Van Wye says, "We realized that, actually, a trading program could give us better benefits and better outcomes."

"Once it gets going, it can become somewhat self-perpetuating, but it needs to get jumpstarted."

The large construction projects that have to comply with retention only account for about 1 percent of the city's land, Van Wye says. By giving other properties throughout the district a financial incentive to trap runoff on their own land, the city can capture more "first flush" water—the initial rainfall that catches the most pollution—before it hits the rivers.

And with more retention sites dispersed throughout the area, the city can capture more water from smaller storms. In one year, this could save 57 percent more runoff than if retention was concentrated only in large developments.

The green infrastructure comes with a host of other benefits, too: beautification, cooling effects for urban heat islands, wildlife habitat, even [health boosts](#) for people in the city. Van Wye also believes the marketplace is good for D.C.'s environmental justice: It's expected to drive investments to the lower-density eastern neighborhoods, which are lower income and historically populated by people of color.

The young market faces a challenge in that the value of the credits is still uncertain. If you're considering a retrofit to earn credits, you want to know how much you can sell them for, just as a developer wants to know how much they would cost.

"Once it gets going, it can become somewhat self-perpetuating, but it needs to get jumpstarted," Van Wye says.

Here's the jumpstart

With Prudential's \$1.7 million investment, District Stormwater will install green infrastructure in places deemed most ecologically beneficial, and then sell the credits. If it succeeds in turning a profit, Prudential will recoup its investment, plus interest, and the approach could be considered for other cities, says Lata Reddy, vice president of corporate social responsibility at Prudential.

The company is staffed by members of The Nature Conservancy and Encourage Capital. They are selecting sites for improvement in order to optimize the social and environmental benefit. Then they contact property owners with significant amounts of impervious land and offer to upgrade the retention capacity, free of charge. The owner will get to enjoy the new green space and save money on the stormwater runoff charge that comes with each water bill. In exchange, District Stormwater will get some portion of the retention credits, which it can sell on the marketplace. It's a business model designed to overcome the capital barrier to entry, says Craig Holland, director of product development at NatureVest, The Nature Conservancy's investment arm.

"The issue with individual property owners doing voluntary projects is they often lack the financing to be able to do them," Holland says. "They don't know a whole lot about the market, they're not necessarily set up to be a sophisticated business to go have a transaction with a real estate developer."

This initial amount is not enough to deal with D.C.'s runoff problem entirely. A single 1.2-inch storm in D.C. sends 525 million gallons of runoff hurtling into the sewers. That's about the volume of 800 Olympic-sized pools.

But if the initial effort creates a dependable supply of credits, and developers know they can count on the marketplace, it could have an effect far beyond the amount of the actual investment. Newly invented marketplaces are tricky, unpredictable beasts, but if they reach maturity they might be able to accomplish a policy goal more quickly and efficiently than government-sponsored construction, with city residents feeling the benefits all along. [Click here for Article](#)

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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.

EPA Alumni Association Essays Celebrate "A Half Century of Progress"

The EPA Alumni Association has prepared an overview essay, [Protecting the Environment: A Half Century of Progress](#), to tell the story of the major environmental challenges that the nation faced in the latter half of the 20th Century and describe EPA's role in mitigating them.

The overview is accompanied by seven supporting essays providing a more in-depth look at EPA's air, water, drinking water, waste management, Superfund, pesticides, and toxic substances programs. The essays capture

the environmental problems that existed, the major actions taken, the progress made, and the challenges that remain.

Marianne Horinko, President, The Horinko Group, and Cathryn Courtin, Program Manager, [The Horinko Group](#) contributed to this effort as authors of the [waste management program essay](#), which details the role of the RCRA program in transforming the country's approach to managing waste from generation to disposal.



To read the overview essay, visit <http://bit.ly/1prZDQj>.

To read the waste management essay, visit <http://bit.ly/1LoZo1S>.

Green Streets: The Road to Clean Water

Newly released U.S. Environmental Protection Agency video – Green Streets: The Road to Clean Water - "Green streets" are natural and engineered methods for controlling stormwater that would otherwise gather pollutants and rush from hard streets into storm drains

and out into local waterways.

This video highlights green streets as a technique for managing stormwater and providing other economic and community benefits.

Shown are examples of green streets in localities that have

worked with EPA and other partners to incorporate green streets as part of their stormwater management plans. Green features shown include porous pavement, rain gardens, vegetative curb areas and sidewalk trees. [See Video Here.](#)

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