



Nonpoint Source News-Notes

July 2015, #98

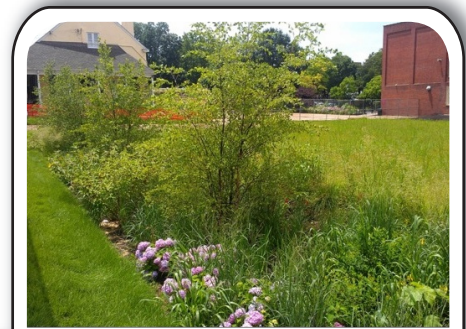
*The Condition of the Water-Related Environment
The Control of Nonpoint Sources of Water Pollution
The Ecological Management & Restoration of Watersheds*



Notes on the National Scene

Strengthening the National Nonpoint Source Program

In April 2013, the U.S. Environmental Protection Agency (EPA) updated its *Nonpoint Source Program and Grants Guidelines for States and Territories* (guidelines) for the first time in a decade, and in doing so, provided states and territories with a new framework for funding water restoration and protection projects and addressing many of nation's most pressing nonpoint source (NPS) problems. EPA released the guidelines in the wake of a [national program evaluation in 2011](#) and a [decade of budget cuts](#), including cuts totaling \$45 million from fiscal years 2010 to 2013 (and down more than \$80 million since 2003). These guidelines represent the culmination of ideas that percolated up from an introspective [2011 EPA report titled A National Evaluation of the Clean Water Act Section 319 Program](#) that provided a critical assessment of what was—and what wasn't—happening



Philadelphia program encourages green infrastructure on private property. See [page 12](#).

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with our nation's efforts to take on NPS pollution through section 319 of the Clean Water Act, as well as an EPA–States workgroup process that examined and debated the report's findings and developed a set of recommendations to strengthen the 319 program nationally. The workgroup, billed as the 319 Reform Workgroup, and its various spin-off issue sub-groups, active in 2011 and 2012, were charged with examining key aspects of state NPS management programs such as their collective strengths and weaknesses, how they allocated and leveraged their resources, and what they might be capable of delivering, to lay out a set of recommendations for strengthening the national 319 program. Many of the key recommendations were realized in the 319 grant guidelines published in 2013, which became fully effective for the FY2014 grant funding cycle. (See [News-Notes Issue 94](#) for an overview of these guidelines.)

One noticeable weakness, identified in the 2011 national evaluation and addressed head-on by the 319 Reform Workgroup process, stood out as being particularly ripe for reform: a significant majority of state NPS management programs were long out-of-date and no longer informed the annual grant workplans that states submit to EPA to describe how federal CWA section 319 grant dollars are spent. Congress had intended these written planning documents to establish program goals, objectives, and annual milestones over a span of years, and to provide the strategies and accountability framework for achieving results.

A centerpiece of the 319 program reforms is a requirement in the FY2014 guidelines for all state NPS management programs to be brought up-to-date by September 2014 and then updated every five years. In late 2012, EPA announced to states and [published guidance on expectations for these state program updates](#). The September 2014 deadline proved to be a challenge for many states to meet, considering that EPA had issued its 319 guidelines in April 2013 and state processes for updating programs of such significance can be lengthy. By September 2014, 28 states and the District of Columbia (DC) had updated their NPS management programs, the highest number of up-to-date programs since 2000. The remaining states have made good progress since then. As of April 30, 2015, 42 states and DC had up-to-date programs, with updates in progress for all remaining states. All state program updates must be approved by EPA, which reviews each draft update against eight key components (see list, below). These components were originally outlined in EPA's 2012 guidance as recommendations, and were reiterated in the FY2014 319 grant guidelines as a mandatory program feature. For state policy documents of such significance, essentially establishing funding priorities for the next five years, many states chose to release drafts for public review and comment, in addition to conducting their own stakeholder involvement processes (e.g., interagency reviews and engagement with key partners beyond state government prior to developing public drafts). The result has been robust, well-integrated policy and planning documents that chart clear courses for addressing NPS problems at the state level. As the last batch of states make it over the final hurdles of federal approval, EPA anticipates that all 50 states will have fully approved up-to-date NPS management programs in place by September 30, 2015—no small feat!

What's in the State NPS Management Programs and Why Do They Matter?

State NPS management programs chart the course and set priorities for statewide NPS management activities for the next five years. They also map out the strategies for achieving success and articulate the expected outcomes of annual investments in these programs. Below is a summary of the eight key components in EPA-approved state NPS management program updates:

1. The state program contains explicit short- and long-term goals (including a schedule of outcome-based annual milestones), objectives and strategies to restore and protect surface water and ground water, as appropriate.
2. The state strengthens its working partnerships and linkages to appropriate state, interstate, tribal, regional and local entities (including conservation districts); private sector and citizen groups; and federal agencies.
3. The state uses a combination of statewide programs and on-the-ground projects to achieve water quality benefits; efforts are well-integrated with other relevant state and federal programs.

4. The state program describes how resources will be allocated between (a) abating known water quality impairments from NPS pollution and (b) protecting threatened and high quality waters from significant threats caused by present and future NPS impacts.
5. The state program identifies waters and watersheds impaired by NPS pollution and identifies priority unimpaired waters that should be protected. The state establishes a process to assign priority and to progressively address identified watersheds by conducting more detailed watershed assessments and developing and implementing watershed-based plans.
6. The state implements all program components required by CWA section 319(b), and establishes strategic approaches and adaptive management to achieve and maintain water quality standards as expeditiously as practicable. The state reviews and upgrades program components as appropriate. The state program includes a mix of regulatory, nonregulatory, financial and technical assistance, as needed. In addition, the state incorporates existing baseline requirements established by other applicable federal or state laws to the extent they are relevant.
7. The state manages and implements its NPS management program efficiently and effectively, including necessary financial management.
8. The state reviews and evaluates its NPS management program using environmental and functional measures of success, and revises its NPS management program at least every five years.

Accountability Linkages: Annual Milestones and Satisfactory Progress Determinations

While the state NPS management programs are intended to serve as planning documents, they include features to ensure they will not sit on shelves gathering dust. A key provision of CWA section 319 is the NPS program's built-in accountability mechanism found in section 319(h)(8), which requires EPA to determine whether a state has "made satisfactory progress" in meeting the schedule of annual milestones in state NPS management programs required under section 319(b)(2) as a condition for awarding the upcoming fiscal year's section 319 grant. However, EPA's 2011 national program evaluation found inconsistencies in how this provision was applied across the country. To ensure greater national consistency and robust state accountability, the recent guidelines include a standardized checklist to determine Satisfactory Progress (*Appendix E: Guidance and Checklist for Determining Progress of State NPS Management Programs and Performance of CWA Section 319 Grants*). To be effective barometers of state progress, annual milestones should be measurable, outcome-based and relevant to the goals and objectives specified in the five-year state program updates.

Additional Reforms: Targeting Results, Improving Coordination and Providing Flexibility

The FY2014 CWA section 319 guidelines strengthen EPA's emphasis on implementing watershed-based plans in targeted priority watersheds, and encourage the leveraging of resources. For example, under the National Water Quality Initiative, begun in 2012, U.S. Department of Agriculture's Natural Resources Conservation Service targets some Farm Bill funding to install conservation projects in priority agriculture-dominated watersheds selected for improvement by state water quality agencies. To help monitor results, states can use section 319 funds provided by EPA. (See also page 17 of [News-Notes Issue 92](#) for more information on the NWQI.)

EPA's CWA section 319 guidelines also encourage increased leveraging through the use of incentives. States that choose to leverage state or local funds equivalent to their total state CWA section 319 allocation for implementing approved watershed-based plans are exempt from needing to use a portion of their 319 funds to implement watershed projects. As a result, these states are granted more flexibility because the CWA section 319 program funds can be used to implement any component of their NPS management programs.

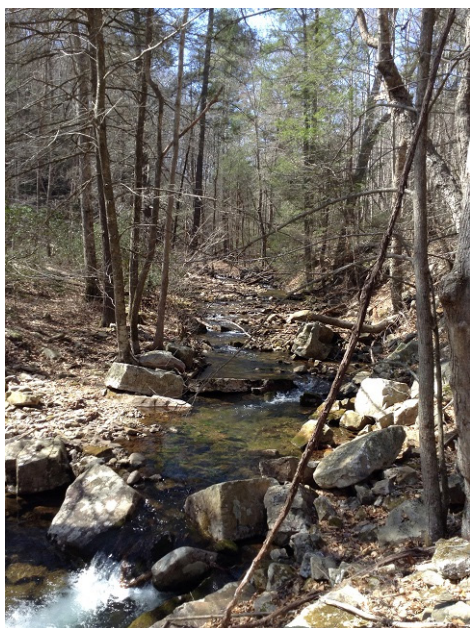
All these changes are collectively making a difference, seen in part by the growth in 319 success stories (see [page 6](#) in this issue), and the commitments states have made in their updated state NPS management plans and annual milestones to achieve results where they are needed most.

“States have stepped up to the plate to update their NPS management plans and embrace the letter and the spirit of the 319 program reforms,” noted Lynda Hall, EPA’s national nonpoint program manager. “As a result, the 319 program is stronger than ever and well-situated for the future.”

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Clean Water Rule Protects Streams and Wetlands Critical to Public Health, Communities and Economy

On May 27, 2015, the U.S. Environmental Protection Agency (EPA) and the U.S. Army finalized the Clean Water Rule to clearly protect from pollution and degradation the streams and wetlands that form the foundation of the nation’s water resources. The rule ensures that waters protected



The new Clean Water Rule clarifies protection for streams like this small, headwaters tributary of the Shenandoah River in western Virginia. The Clean Water Act protects navigable waterways, such as the Shenandoah River, and their tributaries. To reduce confusion, the Clean Water Rule further clarifies what constitutes a tributary, noting that it must show physical features of flowing water—a bed, bank and ordinary high water mark—to warrant protection.

under the Clean Water Act are more precisely defined and predictably determined, making permitting less costly, easier and faster for businesses and industry. The rule is grounded in law and the latest science, and is shaped by public input. The rule does not create any new permitting requirements for agriculture and maintains all previous exemptions and exclusions.

“For the water in the rivers and lakes in our communities that flow to our drinking water to be clean, the streams and wetlands that feed them need to be clean too,” said EPA Administrator Gina McCarthy. “Protecting our water sources is a critical component of adapting to climate change impacts like drought, sea level rise, stronger storms and warmer temperatures—which is why EPA and the Army have finalized the Clean Water Rule to protect these important waters, so we can strengthen our economy and provide certainty to American businesses.”

People need clean water for their health. About 117 million Americans—one in three people—get drinking water from streams that lacked clear protection before the Clean Water Rule. Protection for many of the nation’s streams and wetlands has been confusing, complex, and time-consuming as a result of Supreme Court decisions in 2001 and 2006. The new rule allows EPA and the Army to provide clarity on protections under the Clean Water Act after receiving requests for over a decade from members of Congress, state and local officials, industry, agriculture, environmental groups, scientists and the public for a rulemaking.

In developing the rule, the agencies held more than 400 meetings with stakeholders across the country, reviewed more than one million public comments, and listened carefully to perspectives from all sides. EPA and the Army also used the latest science, including a report summarizing more than 1,200 peer-reviewed, published scientific studies which showed that small streams and wetlands play an integral role in the health of larger downstream water bodies.

Specifically, the Clean Water Rule:

- **Clearly defines and protects tributaries that impact the health of downstream waters.** The Clean Water Act protects navigable waterways and their tributaries. The rule says that a tributary must show physical features of flowing water—a bed, bank and ordinary high water mark—to warrant protection. The rule provides protection for headwaters that have these features.
- **Provides certainty in how far safeguards extend to nearby waters.** The rule protects waters that are next to rivers and lakes and their tributaries because science shows that they impact downstream waters. The rule sets boundaries on covering nearby waters for the first time that are physical and measurable.

- **Protects the nation’s regional water treasures.** Science shows that specific water features can function like a system and impact the health of downstream waters. The rule protects prairie potholes, Carolina and Delmarva bays, pocosins, western vernal pools in California, and Texas coastal prairie wetlands when they impact downstream navigable waters.
- **Focuses on streams, not ditches.** The rule limits protection to ditches that are constructed out of streams or function like streams and can carry pollution downstream. Ditches that are not constructed in streams and that flow only when it rains are not covered.
- **Maintains the status of waters within Municipal Separate Storm Sewer Systems.** The rule does not change how those waters are treated and encourages the use of green infrastructure.
- **Reduces the use of case-specific analysis of waters.** Previously, almost any water could be put through a lengthy case-specific analysis, even if it would not be subject to the Clean Water Act. The rule significantly limits the use of case-specific analysis by creating clarity and certainty on protected waters and limiting the number of similarly situated water features.

A Clean Water Act permit is only needed if a water is going to be polluted or destroyed. The Clean Water Rule only protects the types of waters that have historically been covered under the Clean Water Act. It does not regulate most ditches and does not regulate groundwater, shallow subsurface flows, or tile drains. It does not make changes to current policies on irrigation or water transfers or apply to erosion in a field. The Clean Water Rule addresses the pollution and destruction of waterways—not land use or private property rights. Specific differences between the old rule, the proposed rule and the final rule are presented in Table 1.

Table 1. Changes to the Clean Water Rule’s Requirements for Water Body Types

Subject	Old Rule	Proposed Rule	Final Rule
Navigable Waters	Jurisdictional	Same	Same
Interstate Waters	Jurisdictional	Same	Same
Territorial Seas	Jurisdictional	Same	Same
Impoundments	Jurisdictional	Same	Same
Tributaries to the Traditionally Navigable Waters	Did not define tributary.	Defined tributary for the first time as water features with bed, banks and ordinary high water mark, and flow downstream.	Same as proposal except wetlands and open waters without beds, banks and high water marks will be evaluated for adjacency.
Adjacent Wetlands/Waters	Included wetlands adjacent to traditional navigable waters, interstate waters, the territorial seas, impoundments or tributaries.	Included all waters adjacent to jurisdictional waters, including waters in riparian area or floodplain, or with surface or shallow subsurface connection to jurisdictional waters.	Includes waters adjacent to jurisdictional waters within a minimum of 100 feet and within the 100-year floodplain to a maximum of 1,500 feet of the ordinary high water mark.
Isolated or “Other” Waters	Included all other waters, the use, degradation or destruction of which could affect interstate or foreign commerce.	Included “other waters” where there was a significant nexus (i.e., connection) to traditionally navigable water, interstate water or territorial sea.	Includes specific waters that are similarly situated: Prairie potholes, Carolina & Delmarva bays, pocosins, western vernal pools in California, & Texas coastal prairie wetlands when they have a significant nexus with navigable waters. Includes waters with a significant nexus within the 100-year floodplain of a traditional navigable water, interstate water, or the territorial seas, as well as waters with a significant nexus within 4,000 feet of jurisdictional waters.
Exclusions to the definition of “Waters of the U.S.”	Excluded waste treatment systems and prior converted cropland.	Categorically excluded those in old rule and added two types of ditches, groundwater, gullies, rills and nonwetland swales.	Includes proposed rule exclusions, expands exclusion for ditches, and also excludes constructed components for MS4s and water delivery/reuse and erosional features.

The rule protects clean water necessary for farming, ranching, and forestry and provides greater clarity and certainty to farmers about coverage of the Clean Water Act. Farms across America depend on clean and reliable water for livestock, crops and irrigation. The final rule specifically recognizes the vital role that U.S. agriculture serves in providing food, fuel and fiber at home and around the world. The rule does not create any new permitting requirements for America's farmers. Activities such as planting, harvesting and moving livestock have long been exempt from Clean Water Act regulation, and the Clean Water Rule preserves those exemptions.

The EPA's [Clean Water Rule website](#) offers detailed information about the new rule (including what it does and does not do), and includes fact sheets for individual stakeholder groups: agriculture, business, community, developers, local government, recreation and utilities. Educational videos, infographics and slideshows are also available.

Nonpoint Source Success Story Program Crosses Milestone

In August 2014, states around the nation collectively achieved a major milestone, reporting that 500 nonpoint source (NPS) pollution-impaired water bodies have been fully or partially restored, thanks to on-the-ground NPS control efforts. These results were highlighted on the U.S. Environmental Protection Agency's (EPA's) [Success Stories website](#), which was launched in 2005 as a way to both highlight states' restoration efforts and track progress under the [National Water Program Guidance](#) measure WQ-10 (Figure 1). Given the momentum achieved to date, EPA expects the states to reach almost 600 restored water bodies by the end of 2015. These stories describe how watershed stakeholders use funding sources such as Clean Water Act (CWA) section 319 grants to remediate NPS impairments in streams, rivers and lakes.

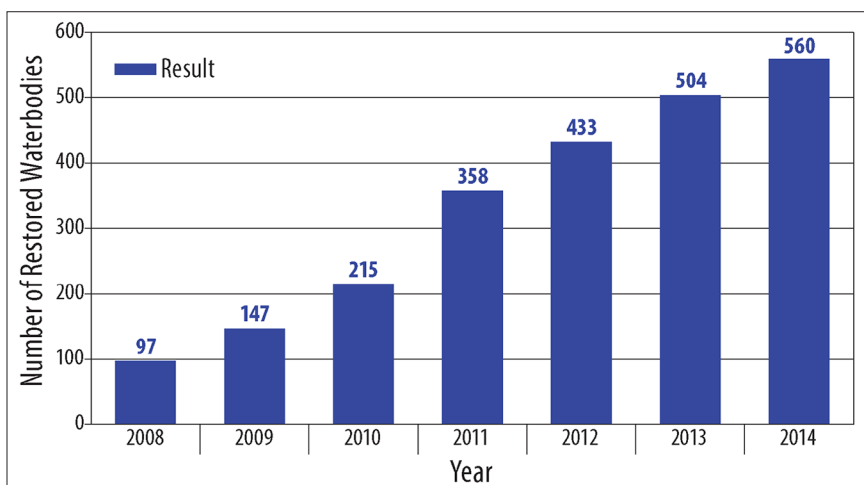


Figure 1. Number of partially or fully restored waters (fiscal years 2008–2014) under measure WQ-10.

The Success Story Universe

Water quality improvements are presented in one of three types of Success Stories: (1) Partially or Fully Restored Waters, (2) Waters Showing Progress, and (3) Waters Showing Ecological Restoration (see box for more information). Only partially or fully restored water bodies (Type 1) are counted under measure WQ-10; however, Type 2 and Type 3 Success Stories provide a means for states to highlight watershed stakeholders' hard work, ingenuity and successes. As of June 15, 2015, states have developed 339 Success Stories highlighting 558 water bodies as fully or partially restored (Type 1 stories). States have also developed 54 Success Stories reporting water quality improvements (Type 2 or 3 stories) in water bodies. EPA's Success Story website includes full-color, two-page fact sheets for each type of story, regardless of type.

The three types of Success Stories highlight a range of NPS problems, such as:

- Bacteria, sediment and fertilizer from agricultural areas
- Stormwater runoff of fertilizer and bacteria from urban and suburban areas
- Low pH and high metal loadings from abandoned mining areas
- Bacteria from failing septic systems
- Changes in a stream's natural hydrology

Nonpoint Source Success Story Types

Depending on data and listing status, NPS Success Stories fall into one of three types:

- 1. Waters That are Partially or Fully Restored:** These stories feature water bodies that meet water quality standards (WQS) for one or more pollutants (e.g., sediment) and/or designated uses (e.g., recreation) after being on the CWA section 303(d) list of impaired waters and after being subject to restoration efforts. By “fully restored,” EPA means that the water body meets all WQS or designated uses. “Partially restored” means that the water body meets some, but not all, of the WQS or designated uses.
- 2. Waters Showing Progress Toward Achieving Water Quality Goals:** These stories feature water bodies that, after restoration efforts, show significant progress toward achieving water quality goals, but do not yet meet WQS. Water quality improvements include either achieving measurable in-stream reduction in a pollutant or achieving improvement in a parameter that indicates stream health (e.g., an increase in macroinvertebrate counts). Because these water bodies still do not meet WQS, they remain on a state’s impaired waters list.
- 3. Waters Showing Ecological Restoration:** This section includes water bodies that had water quality problems but were not listed on the CWA section 303(d) list or on the Integrated Report. However, restoration efforts were implemented that resulted in one or more uses being restored.

Each two-page Success Story then also documents how federal, state and local stakeholders worked together—using a variety of funding sources—to remediate these water quality impairments. Some examples of water quality restorations highlighted in Success Stories include:

- Addressing failing septic systems
- Removing cattle from streams to reduce bacteria
- Remediating acid mine drainage to stabilize pH
- Implementing nutrient management practices on agricultural lands
- Restoring streambanks and riparian corridors
- Installing stormwater control practices such as rain gardens and permeable pavement

Learn More about Success Stories in Your State

EPA’s Success Stories website offers several features to help readers find stories within their area of interest (Figure 2). First, readers can select particular stories by state using either a national map

with clickable states or a drop-down list. Second, a search box on the home page allows readers to query for stories by keywords relating to individual pollutants, designated uses, river basins, localities, watershed partners, funding sources, etc. The [Success Stories Basic Information](#) webpage provides additional information on how to know if a particular water body qualifies as a Success Story.

“EPA continues to have a strong interest in demonstrating results in cleaning up NPS pollution problems, and most of these results are outcomes of implementing watershed-based plans within the context of effective state NPS management programs,” notes Lynda Hall, EPA’s National NPS Program Manager and Chief of the NPS Control Branch. “EPA is proud of the collective success that enables us to document over 500 waterways that are partially or fully restored. Nonpoint source programs continue to deliver results through a winning combination of collaborating with partners and strategic targeting of effort.”

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The screenshot shows the EPA Success Stories website interface. At the top, there is a navigation bar with 'EPA United States Environmental Protection Agency' and 'Advanced Search A-Z Index'. Below this is a search box with the text 'Search Success Stories by keyword.' and a 'GO' button. To the left of the search box is a 'Partially or Fully Restored Waterbodies' counter showing '558'. The main content area features a map of the United States with state boundaries highlighted in green. Below the map is a section titled 'Featured Stories' with the heading 'Stories about Partially or Fully Restored Waterbodies'. This section includes a brief description and a table listing the number of stories for each state.

Alabama [4]	Maine [6]	Oregon [1]
Alaska [20]	Maryland [1]	Pennsylvania [37]
Arizona [1]	Massachusetts [11]	Puerto Rico [3]
Arkansas [8]	Michigan [5]	Rhode Island [1]
California [15]	Minnesota [6]	South Carolina [15]
Colorado [3]	Mississippi [5]	South Dakota [5]

Figure 2. The Success Stories website offers clickable maps, a search box, and links to additional resources.

Handbook Highlights Application of Watershed Approach When Planning Restoration Projects

The Environmental Law Institute (ELI) and The Nature Conservancy (TNC) have released a new handbook advocating the use of a watershed approach in the selection, design and siting of wetland and stream restoration and protection projects, including projects required by compensatory mitigation (see box). The joint report, *Watershed Approach Handbook: Improving Outcomes and Increasing Benefits Associated with Wetland and Stream Restoration Projects*, demonstrates how using a watershed approach can help ensure these projects also contribute to goals of improved water quality, increased flood mitigation, improved quality and quantity of habitat, and increases in other services and benefits. The project is a collaborative effort of ELI and TNC, reflecting years of working with myriad partners.

What is Compensatory Mitigation?

Each year thousands of property owners undertake projects that affect the nation's aquatic resources. Proposed projects that are determined to impact jurisdictional waters are first subject to review under the Clean Water Act. The Corps of Engineers reviews these projects to ensure that environmental impacts to aquatic resources are avoided or minimized as much as possible. Consistent with the administration's goal of "no net loss of wetlands," a Corps permit might require a property owner to restore, establish, enhance or preserve other aquatic resources for the purpose of replacing those impacted by the proposed project. This process, known as compensatory mitigation, seeks to replace the loss of existing aquatic resources.

The handbook provides an overall framework for the spectrum of watershed approaches, offers examples of specific types of watershed approaches, explains the types of analyses that might be useful, and includes a list of national data sources that might inform all of the above. A lessons-learned section highlights experiences from other wetland and stream protection and restoration projects.

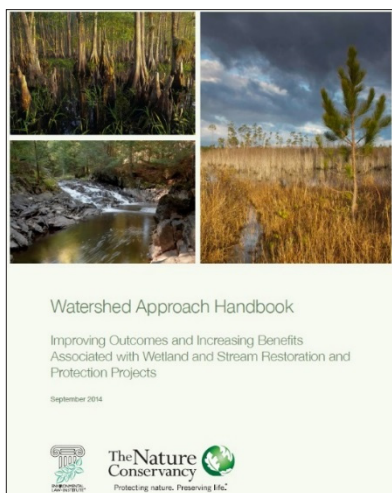
"It is estimated that more than \$2.9 billion a year is spent on wetland and stream protection and restoration through the U.S. wetland mitigation program, and many tens or hundreds of millions more through other restoration efforts," said Jessica Wilkinson, senior policy advisor for mitigation at TNC and a co-author of the handbook. "This is a tremendous investment in conservation, but the results haven't yet achieved their full potential. More can be done, and the watershed approach is an attempt to improve site selection for these projects, so we can improve their performance and maximize the return on investment."

Using a Watershed Approach to Improve Project Site Selection Can Pay Off

The handbook describes how using a watershed approach can offer a concrete, science-informed mechanism for improving site selection for wetland and stream restoration and protection projects, thereby improving their performance and maximizing conservation outcomes. By explicitly considering the issues and needs within a watershed and the various existing agency plans and goals (e.g., water quality goals, habitat protection goals) and making them relevant to wetland and stream restoration projects, multiple partners can work together to achieve them. Watershed health is more likely to improve with an increased understanding of needs, better site selection for restoration and protection projects, and an alignment of regulatory and nonregulatory wetland and stream restoration and protection efforts.

"This handbook can serve as a go-to manual for any group or agency working on wetland and stream restoration or protection projects," said Mark P. Smith, TNC's Deputy Director of the North America Freshwater Program. "The approach helps to coordinate protection and restoration projects across a wide variety of programs and groups, allowing each individual project to play a role in a larger effort to address the most pressing environmental needs and help achieve a larger overall environmental benefit. Equally important, using a watershed approach can ease the regulatory approval process—and thereby help ensure infrastructure projects like highways get their regulatory approvals more quickly."

Funding for the development of the handbook was provided by the U.S. Environmental Protection Agency (EPA). Private sources, including the Doris Duke Charitable



A new handbook by The Environmental Law Institute and The Nature Conservancy describes how using a watershed approach can improve site selection for wetland and stream restoration and protection projects, thereby improving their performance and maximizing conservation outcomes.

Foundation and Joyce Foundation, supported three pilot watershed approach projects—one each in Georgia, Tennessee and Wisconsin.

On March 18, 2015, EPA's Watershed Academy sponsored a [free Webcast seminar on the ELI/TNC Watershed Approach Handbook](#). The Webcast can be viewed in archived form on [YouTube](#). A [slide show](#) is also available for download in PDF.

Wetlands in Watershed Planning Resource Also Available

In 2013 EPA Region 5 developed [Wetlands Supplement: Incorporating Wetlands into Watershed Planning](#) as a supplement to EPA's 2008 [Handbook for Developing Watershed Plans to Restore and Protect Our Waters](#). EPA Region 5's *Wetlands Supplement* document promotes using a watershed approach that protects existing freshwater wetlands and maximizes opportunities to use restored, enhanced and created freshwater wetlands to address problems such as habitat loss, hydrological alteration and water quality impairments. The *Wetlands Supplement* is intended to encourage the inclusion of proactive wetland management in the watershed planning process, and therefore shares similar themes to the ELI/TNC document. Whereas the ELI/TNC Handbook defines the key stream and wetland-related elements and the issues to consider in a watershed approach, the *Wetland Supplement* provides specific methods and tools to support project planning and implementation. Using the *Wetlands Supplement* methodology, practitioners can identify wetland functions for the purpose of completing projects to address objectives in a watershed plan or as part of compensatory mitigation under CWA section 404. EPA's Watershed Academy sponsored a free [Webcast seminar on the Wetlands Supplement](#) on September 17, 2013.

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Notes from the States, Tribes and Localities

Septic Smart Program Raises Awareness in Oregon

Oregon is encouraging its residents to be *Septic Smart*. More than 1 million Oregonians live in homes served by septic systems. To ensure these systems continue to function properly for both environmental and public health protection, the Oregon Department of Environmental Quality (DEQ) and the Oregon Association of Realtors (OAR) have teamed up to launch a new program, [Oregon Septic Smart](#).

Modeled after the U.S. Environmental Protection Agency's [national SepticSmart](#) program (see box), the Oregon Septic Smart program is designed to help educate residents about septic systems and the importance of regular inspection and maintenance. The program provides Oregonians with easy access to important information about their septic systems and connects them with certified industry professionals who perform system inspections.

EPA's SepticSmart Serves as Model

EPA's SepticSmart initiative is a nationwide public education effort that aims to inform homeowners living on properties serviced by septic systems about the importance of properly maintaining their system. It also provides valuable resources to help homeowners make important decisions regarding their wastewater management needs. The website offers a [SepticSmart Outreach Toolkit](#), which contains numerous resources for outreach organizations and government leaders who wish to promote proper maintenance of septic systems.

Motive and Opportunity Led to Launch of Septic Smart Program

In January 2013, the Oregon legislature passed a new law requiring that the seller of a property served by a septic system disclose information about the condition of that system before a real estate closing. The information that a seller must provide includes details about the septic system, as well as supporting materials specific to system inspection, maintenance and repair. Although

time-of-transfer septic system inspections remain voluntary, the requirement to disclose this information will raise awareness of septic issues and is intended to motivate the buyer to obtain an inspection as part of the real estate transaction. The new law went into effect in January 2014.

In anticipation of the new regulation, Oregon DEQ and OAR signed a Memorandum of Understanding (MOU) in November 2013 to formalize a partnership that aims to increase voluntary time-of-transfer septic system inspections. The MOU commits the partners to a variety of outreach and educational activities, including developing the Oregon Septic Smart program, providing homeowners with information on proper septic system operation and maintenance, and providing in-person and online classes to Oregon's realtors to encourage time-of-transfer inspections.



This septic tank failed and needed to be replaced. Oregon's push to increase awareness of the need for septic tanks inspections will help ensure proper septic tank operation.

Septic Smart Program Targets Diverse Audiences

ODEQ developed a program that targets both the people who own septic systems and those who service them. Besides working with OAR, ODEQ also collaborated with the Oregon Onsite Waste Water Association to ensure input by septic industry professionals. The Septic Smart program focuses its outreach on two main groups:

1. **Industry professionals.** [Oregon Septic Smart Pro](#) targets certified septic system installers, maintenance providers, and wastewater and environmental health specialists. The Septic Smart Pro website offers a downloadable and editable [Existing System Evaluation Report](#) form, addresses frequently asked questions and provides links to printable brochures. By completing an online survey, certified industry service providers can be added to an online list of available providers. Although participation in Oregon Septic Smart is voluntary for industry professionals, it provides a competitive business advantage by offering enhanced public visibility and recognition from the state. Industry professionals who sign up with Oregon Septic Smart also have the option of attending DEQ-sponsored classes for continuing education credit. Participating septic system service professionals are required to complete an annual end-of-year survey noting the number of inspections they conducted that were associated with property transfers (versus inspections conducted for other reasons, which also are tracked). Collectively, these reports will help county agencies identify inadequately performing systems and develop outreach strategies to promote improved system performance.
2. **Private citizens.** [Oregon Septic Smart Home](#) targets current homeowners, realtors, and home buyers and sellers. The Septic Smart Home website offers general information about septic system operation (e.g., [Septic Systems: How They Work](#)), describes the different types of service providers and the services they perform, and provides a complete list of the certified industry service providers registered for the program. Other resources include links to the new septic system regulation (i.e., requiring time-of-transfer notification about the condition of the septic system), downloadable forms, a survey targeted at those who have sold a home with a septic system in the past year, and a list of frequently asked questions.

Outreach Program is Paying Off

As part of the MOU, OAR helps ensure its realtors receive septic-related training so they are equipped to explain to buyers why a time-of-transfer inspection could be beneficial. Thanks to feedback received during the first year's outreach and training efforts, the OAR's legal team

developed an [Onsite Sewage System Addendum to Real Estate Agreement](#) that is used during real estate transactions. As of July 2014, about half of Oregon's 30 Realtor Associations had hosted in-house presentations about the programs, serving almost 1,300 individual realtors. In July 2014, a call-in radio program hosted a 45-minute discussion about the voluntary septic system program and helped spread the word. Realty companies are continuing to contact the Oregon DEQ to request training for their staff. Although specific numbers for the August 2014 to June 2015 time period are not yet available, "ODEQ receives three or four training requests per month," notes Randy Trox, DEQ's Onsite Wastewater Management Program Coordinator, "and anecdotal evidence suggests that it's making a difference in the number of inspections performed."

Robb Barnes, past president of the Oregon Onsite Waste Water Association and owner of a septic pumping company, agrees. "We've seen a tremendous increase in the number of inspections of onsite systems here in the Willamette Valley—and a corresponding increase in repairs and upgrades to systems. Last year, my company performed 80 inspections. We're on track to surpass that number this year. We've already performed around 50 inspections so far, and it's only mid-May. We find that at least 10 percent of systems need some type of repair."

When inspecting a system and completing an Existing System Evaluation Report, an inspector must conduct a public records search for permits, previous inspection reports and as-built drawings (i.e., drawings submitted by a contractor upon completion of a project). Barnes notes that this required public record search has been beneficial. "It has allowed all parties to be aware of such



Certified inspectors can spot signs of failing septic systems, such as ponding on the surface, and can work with homeowners to address the problems.

things as the property utilizing an easement for the drainfield on a neighboring property. It has also revealed that, in some cases, homeowners have undertaken repairs or upgrades on their own without obtaining proper permits or inspections. If a client does not want to pay for the time needed to expose distribution boxes and soil absorption lines during an inspection, as-built drawings let us at least perform a visual assessment of the area and probe to confirm the location of the soil absorption area. This has allowed us to see drainfields that have large animals on them, driveways placed over top and Christmas tree farms planted in them. When situations such as these are encountered it leads to great teaching opportunities for all parties involved."

Barnes, who also volunteers to lead many Septic Smart realtor training sessions, gives a lot of credit to ODEQ for developing a successful, voluntary program that's helping to address failing septic systems statewide. "ODEQ came up with a solution the real estate industry could get behind, and then they invested the time and energy into developing the program. Most impor-

tantly, they've reached out to the real estate industry with classes. As realtors become more familiar with the new protocols and see the benefits, the new system is becoming more acceptable and not seen as another form of 'big brother' intrusion. I continue to get requests for classes—each one I give just helps broaden the level of acceptance in the industry."

The program is still evolving and improving. Program participants have been working to ensure that inspectors are completing and submitting DEQ's updated Existing System Evaluation Report forms. "If realtors or other inspectors see the wrong forms being submitted, they'll call us," explains ODEQ's Randy Trox. "We can then reach out and help people find and use the correct forms moving forward. Overall the program has had very positive results and we anticipate that continuing."

[For more information contact: (1) Randy Trox, Oregon Department of Environmental Quality, Water Quality Onsite Program, 165 E. 7th Avenue, Eugene, OR 97201; Phone: 541-687-7338; Email: trox.randall@deq.state.or.us. (2) Robb Barnes, King's Pumping Service, Phone: 503-831-0104; Email: kingspumping@gmail.com.]

Philadelphia Grant Program Helps Private Property Owners Ensure a Greener Philadelphia

The city of Philadelphia is growing greener—and saving money—by offering stormwater retrofit grants. The Philadelphia Water Department (PWD) is partnering with the Philadelphia Industrial Development Corporation (PIDC) on two grant programs that aim to increase the acreage of private, nonresidential property retrofitted with green stormwater infrastructure (e.g., rain gardens, vegetated infiltration basins, porous asphalt, green roofs). The grant programs reward local businesses, institutions and other nonresidential water customers financially for managing at least the first inch of rainfall onsite, thereby preventing this water from polluting the city's local waterways. By encouraging cooperation and competition for city government-funded grant dollars, PWD is increasing stormwater management retrofits throughout the city, while also helping property owners save on stormwater fees.

Philadelphia Faces Stormwater Challenges

Philadelphia is one of the most densely built cities in the United States. The city's many impervious surfaces—rooftops, roads and parking lots—prevent rain from infiltrating into the soil. Instead, the water moves across these surfaces, picking up pollution along the way, and flows untreated via storm sewers into the city's waterways, where it impairs stream health and increases the city's cost of drinking water treatment. In other areas of the city, the stormwater flows into combined sewers, which collect both municipal wastewater and stormwater. Heavy rain can create high volumes of stormwater, which sometimes cause the combined sewers to overflow, releasing sewage directly into local rivers.

Philadelphia's two innovative [green infrastructure retrofit grant programs](#), the Stormwater Management Incentives Program (SMIP) and the Greened Acre Retrofit Program (GARP), are important components of the Philadelphia Water Program's 25-year-long [Green City Clean Waters Plan](#). The plan includes an ambitious goal to convert 9,500 impervious acres to "green acres," where each green acre includes green infrastructure elements capable of capturing and managing the first inch of stormwater runoff from that acre.

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Grant Programs Encourage Private Investment

Launched in January 2012, SMIP serves as a catalyst for transforming impervious commercial properties into landscapes that support green stormwater management practices (Figure 1). Instead of simply requiring a property owner to pay a stormwater management fee based on the amount of impervious surface on a given parcel, SMIP creates a financial incentive to encourage the property owner to build and maintain systems that capture stormwater that would otherwise end up in the city's sewer system and waterways. SMIP grant recipients not only receive financial assistance for designing and implementing their systems, they also pay lower stormwater fees because the functioning green stormwater management systems ensure that the properties generate less runoff.

PWD launched its second publicly funded green infrastructure grant program, GARP, in July 2014. GARP is similar to SMIP, but differs because it provides stormwater grants to contractors or project aggregators who can build large-scale stormwater retrofit projects across multiple properties, rather than restricting the effort to a single property.

The SMIP and GARP grant programs are limited to nonresidential properties. Apartment buildings and condos are eligible for this program because they are classified as nonresidential. (Residential property is defined as property used exclusively for residential purposes that has between one and four dwelling units.)



Figure 1. Philadelphia's Greene Street Friends School received one of the first SMIP grants awarded (\$91,080 in 2012). The private school replaced a 16,330-square-foot parking area (top photo; depaved area denoted with red square) with a grassed play area. A rain garden (bottom photo) was added to manage runoff from an adjacent 9,280-square-foot parking area (top photo, denoted with yellow star). The completed project manages 18,912 gallons of runoff from a 1.5" storm and creates a greened open space for students and the community.

Public-Private Cooperation is Hallmark of the New Grant Programs

PWD anticipates providing up to \$10 million per fiscal year to fund these two grant programs. Applications are accepted on a rolling basis and awards are made quarterly. In the first quarter of fiscal year (FY) 2015 (July 1–September 30, 2014), PWD awarded a combined \$8.25 million to three SMIP projects and one GARP project (composed of eight separate sites). In total, nine FY15 SMIP and GARP projects have been funded to date, adding 115 greened acres across the city and bringing the SMIP and GARP contributions on nonresidential private properties to a total of 340 greened acres to date. Of this total, approximately 100 greened acre projects are completed, and the remainder are committed but are still in the design, planning or construction phase.

To distribute the grants, PWD provides funds to [PIDC](#), a public-private economic development corporation. PIDC then subgrants the money to recipients—either the property owner (if SMIP) or the third party aggregator (if GARP). Recipients of funded projects are required to file a deed restriction in the form of an operations and maintenance agreement on the property. This compels the property owner to maintain the improvement for 45 years. It also grants the city access to the improved area throughout that time, for inspections and to install monitoring equipment, if needed. Once the green stormwater infrastructure elements are completed, the property is eligible for a reduced stormwater fee. More information about the grant requirements and administration process is provided in the PWD’s [Stormwater Incentives Grant Manual](#) and is outlined in a [presentation](#) on PWD’s webpage.

Separate Philadelphia Grant Program Supports Maintenance of Green Infrastructure on Public Land

Through its [Soak it Up Adoption](#) grant program, PWD provides grants to Philadelphia-based nonprofit groups to help maintain the beauty and functionality of green stormwater infrastructure. Adoptees assume responsibility for the care of one or more green stormwater infrastructure sites on public lands within the city (see the city’s interactive [Big Green Map](#) for project locations). Responsibilities include weekly maintenance visits, reporting of activities on site and community engagement.

Program Saves Money

By implementing green infrastructure stormwater controls, nonresidential property owners reduce the amount of stormwater fees calculated for their parcels. The first round of 2015 SMIP and GARP grant recipients are on track to save, on average, more than \$4,000 per greened acre in annual stormwater fees. Some of the money saved will be used to pay for long-term maintenance costs. Most of the private property owners either have existing maintenance contractors in place or hire maintenance contractors to maintain the green infrastructure. “Market forces help ensure that maintenance costs remain low so the property owner still saves money after installing and maintaining the green infrastructure controls,” explains Erin Williams of the Philadelphia Water Department.

The city also saves money. For SMIP projects, PWD will provide up to \$100,000 per impervious acre treated. GARP projects will be funded up to \$90,000 per acre; these projects must cover at least 10 acres (although not required to be contiguous) within an area served by a combined sewer. In most cases, Philadelphia’s grant-funded investment in green infrastructure on private property proves to be less expensive than if the city tried to implement a similar degree of green infrastructure stormwater control on public land. Typically, Philadelphia spends \$200,000 to \$300,000 per greened acre (e.g., cost of land, labor, utilities) to complete a green infrastructure stormwater control project on publicly owned land such as parks, rights of way, etc. In contrast, by offering no more than \$90,000 to \$100,000 per greened acre as a grant, Philadelphia provides a means for contractors and private property owners to select the best, most cost-effective types and locations for green infrastructure on private parcels. The result is the same volume of stormwater control for less expense.

“We are pleased with the success of the grant programs so far,” says Williams. “They are a part of Philadelphia’s holistic approach to managing stormwater. By working with residents and business owners

Want to Read More?

For more details on the SMIP and GARP, refer to the Natural Resources Defense Council’s January 2015 issue brief, [WANTED: GREEN ACRES](#), which further explores how the Philadelphia grant programs are catalyzing low-cost green infrastructure retrofits on private property.

to install green infrastructure stormwater controls on public and private property throughout the city, we can protect the environment and ultimately save our rate payers money.”

[For more information contact Erin Williams, Philadelphia Water Department, 1101 Market Street, 4th Floor, Philadelphia, PA 19107-1496. Phone: 215-683-3236; Email: erin.williams@phila.gov]

Notes on Agriculture

Mississippi River Basin Healthy Watersheds Initiative Reaches New Watersheds

The U.S. Department of Agriculture’s (USDA’s) Natural Resources Conservation Service (NRCS) is investing \$10 million this year in the [Mississippi River Basin Healthy Watersheds Initiative](#) (MRBI), a program created in 2009 to improve water quality and enhance wildlife habitat within selected watersheds of a 13-state area in the Mississippi River Basin. The MRBI builds on the cooperative work of NRCS and its conservation partners in the Mississippi River basin, and offers agricultural producers in priority watersheds the opportunity for voluntary technical and financial assistance.

The Mississippi River is North America’s largest river, flowing more than 2,300 miles across America’s heartland to the Gulf of Mexico. It is one of the largest watersheds in the world, providing drinking water, food, industry and recreation for millions of people, as well as hosting a globally significant migratory flyway and home for more than 325 bird species. NRCS has identified the Mississippi River Basin as a top priority for protection because of ongoing water quality concerns, particularly those related to the effects of nutrient loading in local water bodies and, eventually, the Gulf of Mexico.

Since MRBI’s start in 2009, NRCS has worked with more than 600 partners and 5,000 private landowners to improve more than 1 million acres.

Since MRBI’s start in 2009, NRCS has worked with more than 600 partners and 5,000 private landowners to improve more than 1 million acres in the region by implementing conservation systems using financial and technical assistance provided by several Farm Bill conservation programs. Conservation systems include practices that promote soil health, reduce erosion and lessen nutrient runoff, such as cover crops, reduced tillage and nutrient management; waste management systems that treat agricultural waste and livestock manure; irrigation systems that capture and recycle nutrients back to the field; and wetland

restoration that increases wildlife habitat, mitigates flooding and improves water quality. Program funding will be available through the NRCS’ Environmental Quality Incentives Program and the Conservation Stewardship Program.

The USDA’s most recent MRBI investment is part of a commitment of \$100 million over four years (2014–2017) to address critical water quality concerns in priority watersheds while boosting rural economies. The 2015 MRBI funding is providing ongoing support for projects in 13 existing MRBI watersheds and is adding support for work in 27 new high-priority watersheds (Figure 1) that will help improve water quality and strengthen agricultural operations.

“These projects put to work some of our core conservation practices, which we know are having tremendous impacts downstream,” said NRCS Chief Jason Weller. “Putting to work NRCS-recommended conservation practices helps clean and conserve water, makes agricultural operations more resilient, and stimulates rural economies as this work often relies on help from biologists, foresters, pipe makers, dirt movers, welders, engineers and many more different professions to implement.”

MRBI Emphasizes Partnership Opportunities

Partners play a crucial role in encouraging and supporting producer participation. The MRBI effort relies on diverse partners such as conservation districts, state and local agencies, universities, commodity groups and nonprofit organizations. These partners help with watershed planning,

provide outreach to landowners and agricultural operators, offer technical assistance and additional financial assistance, and monitor progress toward watershed goals. USDA presented a [free webinar](#) on February 20, 2015, that describes the MRBI and its partnering opportunities. The [MRBI Fiscal 2015 Investments Web page](#) offers a detailed list of new and existing projects funded, along with the partners for each.

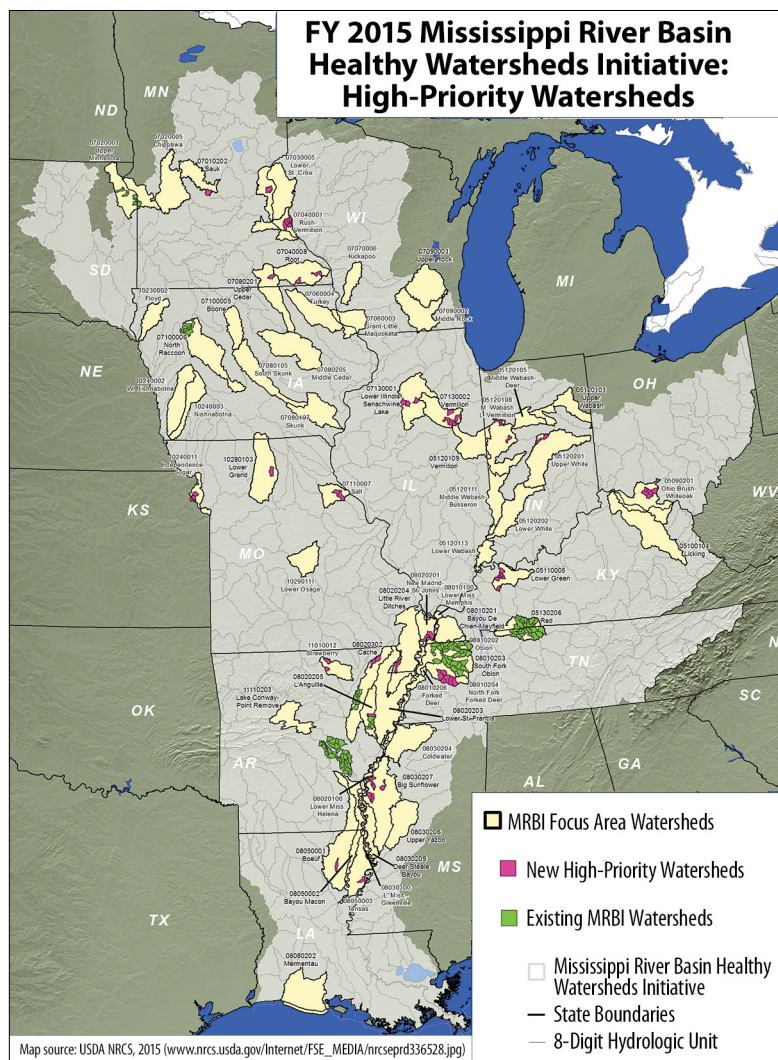


Figure 1. The 2015 MRBI funding is providing ongoing support for projects in 13 existing MRBI watersheds and is adding support for work in 27 new high-priority watersheds.

Dianne Schlenker, Initiatives Coordinator with the NRCS in Arkansas, described her experiences with the MRBI in the St. Francis River watershed in a [USDA blog post \(originally posted on April 1, 2105\)](#). According to Schlenker, MRBI funded five projects (covering 81,227 acres) in the St. Francis River watershed at a cost of \$14 million, helping farmers and ranchers to implement conservation systems that curbed soil erosion, improved the quality of water flowing off fields, and enhanced irrigation efficiency. This work builds on ongoing efforts by conservation districts in the area, who used approximately \$525,000 in U.S. Environmental Protection Agency (EPA) Clean Water Act (CWA) section 319 program funds to acquire a no-till drill for farmers' use and to help farmers implement water control structures to trap sediment.

The combined conservation efforts have controlled runoff from fields, causing turbidity levels to decline significantly. Two previously impaired St. Francis River segments once again meet water quality standards, allowing the Arkansas Department of Environmental Quality to remove them from the state's CWA section 303(d) list of impaired waters. More information about this restoration success is available on EPA's [Nonpoint Source Success Stories website](#).

Other opportunities to partner with NRCS include the [Regional Conservation Partnership Program](#), a new program established in the 2014 Farm Bill to further emphasize the focus on building effective partnerships and obtaining meaningful results for key natural resource concerns. (Page 3 of [News-Notes issue #97](#) included more details about this program.) One of the Regional Conservation Partnership Program's critical conservation areas includes the Mississippi River Basin, directing additional funding to this region.

Evidence Shows MRBI is an Effective Approach

Findings from a 2014 report by the USDA's Conservation Effects Assessment Project (CEAP) show that conservation work on cropland in the Mississippi River basin has reduced the amount of nitrogen and phosphorus flowing to the Gulf of Mexico by 18 and 20 percent, respectively. CEAP models have also shown that the targeted approach of MRBI has enhanced the per-acre conservation benefit by 70 percent for sediment losses, 30 percent by nitrogen losses and 40 percent for phosphorus losses, when compared to general program activities.

Meanwhile, watersheds prioritized by MRBI have shown clear successes in helping to improve water quality. The lower St. Francis River in Arkansas, for example, is the site of a [targeted MRBI project](#). The focus of the MRBI conservation efforts is the use of variable rate fertilizer application rate technology and improved irrigation water management to reduce turbidity and elevated nutrient levels in the St. Francis River.

Software Spotlight

New Climate Adjustment Tool Strengthens Stormwater Management Model Projections

As part of President Obama's Climate Action Plan Virtual Climate Resilience Toolkit, the U.S. Environmental Protection Agency (EPA) released the Climate Adjustment Tool for EPA's [Stormwater Management Model](#) (SWMM), a downloadable stormwater simulation model used throughout the world for stormwater runoff reduction planning and analysis, as well as design of combined and sanitary sewers and other drainage systems. The new Climate Adjustment Tool (CAT) allows engineers and planners to evaluate the performance of water infrastructure while considering future climate change projections, such as more frequent high-intensity storms and changes in evaporation rates of seasonal precipitation, to determine the benefits of resiliency decisions to reduce local economic burden and protect communities.

Intergovernmental Panel on Climate Change

The [Intergovernmental Panel on Climate Change](#) (IPCC) is the leading international body for the assessment of climate change. It was established by the United Nations Environment Programme and the World Meteorological Organization in 1988. The IPCC reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change.

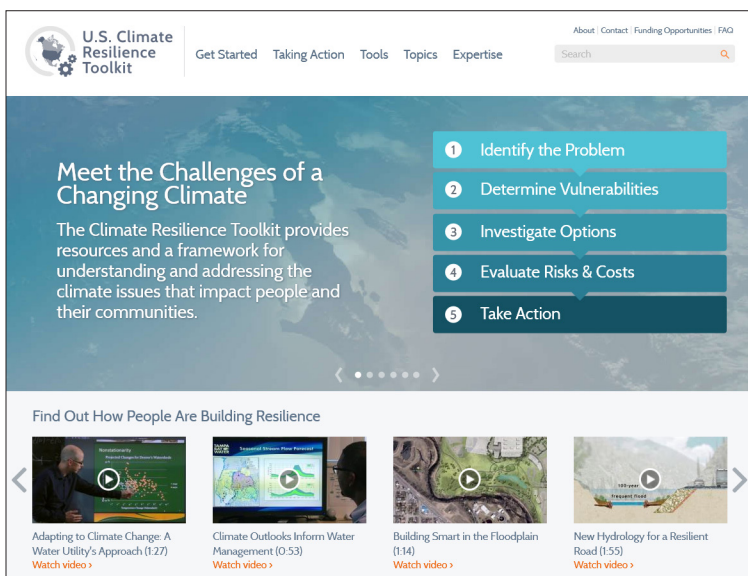
SWMM was recently updated to accept monthly adjustment factors for time series that could represent the potential impact of future changes in climatic conditions. CAT, a simple-to-use software utility, allows climate change projections to be incorporated into SWMM. This capability will enable users to add climate change scenarios (based on the Intergovernmental Panel on Climate Change's projections) to existing simulations to determine the quality of water traveling through the traditional stormwater control infrastructure features such as gutters, storm drains, pipes,

channels, collection tanks and storage devices. The tool can also model the performance of green infrastructure practices, including permeable pavement, rain gardens and green roofs. Engineers and planners can accurately represent any combination of traditional and green infrastructure practices within an area to determine how effectively they can manage stormwater and combined sewer overflows. More information about the tool is available in the [SWMM-CAT User's Guide](#).

CAT is One Tool in a Growing Toolbox

CAT, in addition to other tools in the President's [Climate Action Plan Virtual Climate Resilience Toolkit](#), can help users make planning, analysis and design decisions that will guard against the effects of climate change. Using these tools to choose the best adaptation options is an innovative and efficient way to promote healthy waters and support more sustainable communities.

Other EPA resources included in the Climate Resilience Toolkit can help protect communities against extreme weather and reduce the local economic burden after a natural disaster. For example, the [National Stormwater Calculator](#) is a desktop application that homeowners, landscapers and developers use to estimate the amount of rainwater and the frequency of runoff on a specific site based on local soil conditions, land cover, historic rainfall records and climate change scenarios. The EPA's [Climate Resilience Evaluation and Awareness Tool](#) is a software tool that helps drinking water and wastewater utility owners and operators understand potential climate change threats and assess the related risks.



President Obama's online Climate Action Plan Virtual Climate Resilience Toolkit website serves as a one-stop shop for users to find the resources they need to prepare their communities for changing climate.

Reviews and Announcements

Agricultural Nonpoint Source Pollution

2015: The International Year of Soils

The 68th United Nations General Assembly declared 2015 to be the [International Year of Soils](#). The U.S. Department of Agriculture (USDA) is celebrating throughout the calendar year by highlighting the importance of healthy soils for food security, ecosystem functions and resilient farms and ranches. Several resources are available through the [USDA's International Year of Soils website](#), including videos and a downloadable planner. The Soil Science Society of America is offering numerous free K-12 [Year of Soils lesson plans and activities](#) in keeping with a series of monthly themes.

Climate Change

Federal Finance Center to Improve Community Water Infrastructure and Resiliency

U.S. Environmental Protection Agency's (EPA's) new [Water Infrastructure and Resiliency Finance Center](#) is designed to help communities across the country improve their wastewater, drinking water and stormwater systems, particularly through innovative financing and by building resilience to climate change. The center is part of the White House's [Build America Investment Initiative](#)—a government-wide effort to increase infrastructure investment and promote economic growth by creating opportunities for state and local governments and the private sector to collaborate, expand public-private partnerships and increase the use of federal credit programs.

Federal Partners' Resilient Lands and Waters Initiative: Preparing for Climate Change

EPA, in collaboration with the U.S. Department of the Interior and the National Oceanic and Atmospheric Administration (NOAA), have recognized four regions across the country where federal agencies and partners will focus efforts to conserve and restore important lands and waters and make them more resilient to a changing climate. Building on existing collaborations, the Resilient Lands and Waters partnerships (in southwest Florida, Hawaii, Washington and the Great Lakes region) will improve climate change resiliency, showcase the benefits of landscape-scale management approaches, and help enhance the carbon storage capacity of natural areas. More information is available in an [April 21, 2015, EPA press release](#).

Interactive Education Modules on Forest-Related Climate Change Effects are Available

The U.S. Forest Service's Climate Change Resource Center has released a new interactive online [Climate Change Education](#) module: *Climate Change Effects on Forests and Grasslands: What You Need to Know*. The second in a series of three modules, this video gives an overview of some of the projected climate change impacts to forest and grassland water resources, vegetation, and wildlife. The first of the three modules, *Climate Change Science and Modeling*, is still available. It provides an introduction to climatology, climate change models and climate change projections.

NOAA Study Shows Merits of Natural Approaches for Enhancing Coastal Resilience

According to a new [NOAA study](#), the resilience of U.S. coastal communities to storms, flooding, erosion and other threats can be strengthened when they are protected by natural infrastructure such as marshes, reefs and beaches, or by using hybrid approaches such as a "living shoreline," a combination of natural habitat and built infrastructure. The study, published in [Environmental Science and Policy](#), assesses reports and peer-reviewed studies on the strengths and weaknesses of using built infrastructure, such as seawalls or dikes, natural infrastructure, or approaches which combine both. The study summary highlights how these approaches help coastal communities reduce their risk of flooding and erosion while also providing additional benefits. It also discusses the tradeoffs when decision makers choose one type over another.

Webinar Series Offers Climate Information for Managing Risks to Water

The NOAA Climate Program office is partnering with numerous agencies to offer a webcast series targeted at water resource managers. Topic titles include the U.S. Climate Resilience Toolkit; Water Utility Planning Strategies to Mitigate Impacts of Climate Change; Precipitation Patterns, Supply Planning and Demand Curves; the Complexities of Assessing Water Supply Risks; and Water Hazards and Community Resilience. NOAA's Sectoral Applications Research Program's [webinar series website](#) offers more information.

Data Resources

Explore Thousands of Coastal and Seafloor Images along U.S. Coasts

Thousands of photographs and videos of the seafloor and coastline—most areas never seen before—are now easily accessible online. This imagery, available through the U.S. Geological Survey (USGS) [Coastal and Marine Geology Video and Photograph Portal](#), will help coastal managers make important decisions, ranging from protecting habitats to understanding hazards and managing land use. This USGS portal is unique because of the sheer quantity and quality of data presented. It is the largest database of its kind, providing detailed and fine-scale representations of the coast. The geospatial context is also unique, with maps displaying imagery in the exact location where it was recorded.

Map Reveals Population Drinking Water from Nonpermanent Streams

One in three Americans (117 million people) get some or all of their water from headwater, seasonal or rain-dependent streams. EPA has developed a new [Drinking Water Map](#) showing how many people in each county get some or all of their drinking water from these sources. The Clean Water Rule, finalized by EPA and the U.S. Army in May 2015, is designed to clearly protect this type of sensitive and important stream from pollution and degradation. For more information about the Clean Water Rule, see [page 4](#).

National Sea Grant Resilience Toolkit Released

The NOAA Sea Grant Program recently launched the [National Sea Grant Resilience Toolkit](#), a compilation of tools and data resources developed by the Sea Grant Network. As coastal populations continue to grow, it becomes increasingly important for communities to be able to adjust and adapt to a range of natural hazards, water quality challenges, severe weather and the effects of climate change. Sea Grant programs are spread across diverse communities and specialize in developing tools tailored to local needs. This toolkit allows users to learn about tools developed and applied by other coastal stakeholders, giving users the opportunity to adapt existing tools for their own needs. Each entry includes a description of the tool, a link for more information and a point of contact. The toolkit combines more than 100 tools, including 37 products directly related to watershed management. It will be updated as more tools are created.

Online Tool Estimates Atrazine Levels in Streams

The USGS recently released its online [Watershed Regressions for Pesticides \(WARP\) interactive mapping tool](#) for estimating atrazine concentrations in streams and rivers. The tool can help water managers, policy makers and scientists: (1) understand where and why pesticides occur in streams; (2) assess geographic patterns in pesticide stream concentrations at many scales, ranging from the watershed to regional and national; (3) design efficient and cost-effective monitoring programs and studies; and (4) identify streams with the greatest likelihood to have concentrations that exceed a water quality benchmark of potential concern. The estimates are based on the USGS' WARP model, which provides key statistics for each selected stream, including the probability that a pesticide might exceed a water quality benchmark of potential concern, and a level of confidence and uncertainty associated with each estimate.

Storm Surge Inundation Map Available

Watershed planners can consult EPA's new interactive [Storm Surge Inundation Map](#) to identify the current worst-case storm surge and inundation scenarios on the American Gulf and Atlantic coasts, including Puerto Rico and the U.S. Virgin Islands. The map combines data layers from the Federal Emergency Management Agency's 100- and 500-year flood maps and the NOAA National Hurricane Center's Sea, Lake and Overland Surge from Hurricanes (SLOSH) model and coastal county hurricane strike maps.

Education

Animation Highlights Protective Services of Green Infrastructure

NOAA's Digital Coast resource website offers a [Green Infrastructure Protective Services Animation](#), a short educational tool designed to visually communicate the protective benefits that green infrastructure can provide in coastal communities (e.g., buffering waves and wind, protecting water quality). The presentation is an online animated slide show supplemented with audio explanations. Each slide investigates a different aspect of green infrastructure in a coastal environment, including how storms impact coasts, the natural protective services provided by green infrastructure, the importance of the location of natural areas or green infrastructure relative to vulnerable built areas, and an explanation how people can protect their coasts.

Green Infrastructure Webcast Series Underway

This EPA webcast series is generally geared toward public officials and practitioners just beginning to implement green infrastructure, as well as those looking to enhance established programs. Leading academics and professionals from around the country cover a range of emerging topics and applications, from implementing green infrastructure in arid climates to winter operations and maintenance. For more information, and to access archived version of this and previous years' webcasts, see the [Green Infrastructure Webcast Series website](#).

Relying on Rain to Create Art

A Seattle group is creating [Rainworks](#), art that appears on concrete only during rainstorms. The group applies a super-hydrophobic, nontoxic coating to concrete using stencils. When it rains, the coating keeps the concrete dry, creating a design (words and pictures) on the concrete. Although the group uses the technique primarily for sharing positive and clever messages, it also has included some environmental messages such as "A healthy Puget Sound starts with each of us." This technique holds promise for communicating stormwater messages.

Urban Forest Webinar Series Available

The U.S. Forest Service's [Urban Forest Connections webinar series](#) brings experts together to discuss the latest science, practices and policies on urban forestry and the environment. Previous webcasts have discussed tools for supporting urban forest expansion and the benefits of urban trees for contributing to healthy communities, water and soil. The webinars are open to the public. Archived versions can be accessed online.

Watershed Academy Webcasts Available for Free

EPA's [Watershed Academy](#) sponsors free webcast seminars for watershed stakeholders, state and local government leaders, and the general public. Live webcasts are conducted by expert instructors on a range of watershed topics including low impact development, the Clean Water Act, watershed protection and planning, nutrient management and much more. Participants must pre-register to participate in a live webcast. Past Watershed Academy webcast seminars are available on EPA's [archived webcasts page](#). The Watershed Academy offers a certificate to those who attend live webcasts or listen to archived webcasts. Recent webcasts include: (1) Ten Years of Watershed Assessment in Conservation Effects Assessment (CEAP): Insights and Lessons Learned (February 5, 2015) and (2) ELI/TNC Watershed Approach Handbook: Improving Outcomes and Increasing Benefits Associated with Wetland and Stream Restoration and Protection Projects (March 18, 2015).

Green Stormwater Infrastructure

Berkeley Law School Releases Green Stormwater Infrastructure Report

The Wheeler Institute for Water Law & Policy at the University of California–Berkeley recently released a report, [Accelerating Cost-Effective Green Stormwater Infrastructure: Learning from Local Implementation](#). The report recommends key actions that EPA and state regulators can take to drive green stormwater infrastructure information collection and sharing. By identifying and addressing knowledge gaps and speeding cost-effective deployment, regulators can accelerate green stormwater infrastructure Implementation. A February 2015 Berkeley Law [blog post](#) discusses the new report in detail.

Campus RainWorks Challenge Winners Announced

On Earth Day, April 22, EPA announced the winners of its [Campus RainWorks Challenge](#), a design competition to engage college and university students in reinventing water infrastructure. Student teams proposed innovative green infrastructure designs to reduce stormwater pollution and develop sustainable communities. This year, more than 500 college students from 64 teams in 23 states submitted entries in two design categories, and four winners were chosen. The University of Illinois at Chicago won first place in the master plan category, and the University of Maryland–College Park placed first in the demonstration project category. Second place winners included the University of Illinois at Urbana–Champaign in the master plan category and Queens College–City University of New York in the demonstration project category. Pictures and design information for winning entries are provided on EPA's [2014 Challenge Winners](#) webpage.

Coastal Massachusetts Green Infrastructure Handbook Serves as Resource

In December 2014, EPA released [Coastal Stormwater Management through Green Infrastructure: A Handbook for Municipalities](#), which is designed to help Massachusetts Bay and Cape Cod Bay municipalities incorporate green infrastructure into their stormwater management planning. Although targeted for coastal Massachusetts, the handbook can be applied broadly by municipal infrastructure and resource managers in other states. The document presents the following process for green infrastructure planning: (1) watershed assessment, (2) site identification and prioritization, (3) site planning, (4) selecting appropriate green infrastructure practices, (5) developing conceptual plans and (6) effective plan review.

Green Infrastructure Funding Sources Highlighted

EPA recently released [Getting to Green: Paying for Green Infrastructure, Finance Options and Resources for Local Decision-Makers](#) as a resource for communities. The guidance document summarizes various funding sources that can be used to support stormwater management programs or finance individual projects—and includes a comparative matrix that describes the advantages and disadvantages of each. The guidance document highlights the funding source types used by several municipal programs and contains a list of additional resources for communities.

Housing and Urban Development Highlights Green Infrastructure

The U.S. Department of Housing and Urban Development's (HUD's) Office of Economic Resilience published a report, [Green Infrastructure and the Sustainable Communities Initiative](#), which highlights the green infrastructure best practices and outputs of 30 grantees under HUD's Sustainable Communities Initiative. Each grantee profile begins with a brief background of the planning projects funded by HUD. Then, project goals related to green infrastructure are identified. Finally, the green infrastructure outputs or outcomes that resulted from the grantees' planning and implementation efforts are highlighted. Each profile includes links to other resources with more detailed information.

Incorporating Green Infrastructure into Municipal Projects

In January 2015, the EPA National Estuary Program released a new report, [Green Infrastructure Opportunities that Arise During Municipal Operations](#). The report provides approaches that local government officials and municipal program managers in small to midsize communities can use to incorporate green infrastructure components into work they are doing in public spaces. Implementing projects in public spaces can show residents, businesses and local governments the aesthetic appeal of green infrastructure practices and provide a visual demonstration of how they can function. The document presents examples and case studies of how integrating green infrastructure methods can enhance retrofits and maintenance projects and provide other multiple community benefits.

NEMO Rain Garden App Expanded

The Connecticut Nonpoint Education for Municipal Officials (NEMO) program's free "[Rain Garden App](#)" has been expanded to include plant lists, sizing recommendations and soils information for 13 states. The smart phone app is designed to help homeowners and contractors design, install and maintain rain gardens. The app walks a user through the proper siting, sizing, construction, planting and maintenance of a rain garden. It includes tools to help the user determine the proper size of the garden, find out about local soil conditions, estimate the price of construction and customize a plant list that will delight the eye while soaking up stormwater. In addition, the app includes short video segments to explain various aspects of rain garden care and feeding. With funding from the USDA National Institute of Food and Agriculture program and help from partners in other states, NEMO has reconfigured the app to allow for state-specific information. Users can now search for rain garden plants native to (or at least well adapted to) their state, size their rain gardens based on local standards, and view USDA soils data for their location. The following states are currently included in the iOS (iPhone/iPad) version: CT, DE, GA, HI, MD, MA, MN, NJ, OH, PA, RI, SC and VT. The full multi-state Android version will be available in July 2015 (as of June 2015, only CT, DE, MD, NJ are included in the Android version). Just search for "Rain Garden" in your favorite app store.

Wetlands

Report Highlights Everglades Restoration Progress

The Committee on Independent Scientific Review of Everglades Restoration Progress' (CISRERP) has released its most recent biennial review document, [Progress Toward Restoring the Everglades: The Fifth Biennial Review, 2014](#). The Everglades ecosystem stretches more than 200 miles from Orlando to Florida Bay. During the 19th and 20th centuries, the area historically covered by the Everglades has been reduced to half of its original size, and what remains of the Everglades is highly engineered and intensely managed by humans. The report summarizes the progress made in meeting the goals of the Comprehensive Everglades Restoration Plan (developed in 2004), a complex, multibillion-dollar project to protect and restore the remaining Everglades in 30 to 40 years. According to the report, a dedicated source of funding could provide the ongoing long-term monitoring and assessment that is critical to meeting restoration objectives. The report offers recommendations for specific restoration activities, project management strategies, management of invasive nonnative species and high-priority research needs. For more information, see the CISRERP's [website](#).

Other

Great Lakes Water Quality Trading Feasibility Report Released

A Great Lakes Commission report, the [Lower Fox River Basin Water Quality Trading Economic Feasibility Assessment](#), describes the results of a nine-month effort to determine whether water quality trading is economically feasible in Wisconsin's Lower Fox River watershed. The report contains an analysis of the potential demand for water quality trading credits by wastewater treatment

facilities and others holding water quality permits, as well as the potential supply for those credits (primarily from upstream agricultural landowners, but also from municipalities). The commission concluded that: (1) demand for water quality trading is likely to be greater for wastewater treatment facilities and for municipal separate stormwater systems facing higher permit compliance costs, and (2) credits can be generated from agricultural sources in the watershed, but that agricultural sources of credits vary geographically and conservation efforts alone won't likely meet all pollution reductions needs.

Mississippi River Resource Assessment Released

In April 2015, the Army Corps of Engineers released the public review draft of the [Final Lower Mississippi River Resource Assessment report](#). The assessment examined three areas of concern (originally developed as three separate documents): (1) river management information, (2) habitat and (3) recreation. The Army Corps identified the needs for each of these topics and made recommendations for meeting those needs. The *Assessment of Information Needed for River-Related Management* (August 2013) found that information about sediment and water quality was lacking, data storage and availability need to be better managed, and that more information about the river's tributaries would facilitate better management of the Mississippi River. The *Assessment of Natural Resource Habitat Needs* (January 2015) identified a need to better understand water quality, restore the native vegetative mosaic, reconnect secondary channels, manage invasive species, improve the quality of floodplain habitats, inventory river islands, restore main channel habitats, support coastal wetland restoration and develop plans to comprehensively restore entire river reaches. The *Assessment of the Need for River-Related Recreation and Access* (August 2014) identified the need for more and better boat ramps, bicycle trails, outfitter and guide services, lodging and dining options, riverside parks, heritage and environmental interpretation, riverboat landings and marketing.

Multiple Satellite Eyes to Track Algal Threat to U.S. Freshwaters

Four federal agencies—EPA, USGS, NOAA and NASA (National Aeronautics and Space Administration)—have joined forces to transform satellite data into vital information to protect the public from freshwater contaminated by harmful algal blooms. The \$3.6 million research project is using technology originally developed to analyze ocean color satellite data and is adapting it to be used as an early warning indicator for toxic and nuisance algal blooms in freshwater systems. The agencies also intend to use this technology to build an information distribution system to expedite public health advisories through mobile devices and Web portals. More information is available from the USGS [Newsroom](#).

Recent and Relevant Periodical Articles

Acute Toxicity of Runoff from Sealcoated Pavement

This [article](#), presented in the April 10, 2015, issue of the journal *Environmental Science and Technology*, described a study showing that rainwater runoff collected as long as three months after coal-tar sealcoat applications caused 100 percent mortality to minnows and water fleas (part of the base of the food chain) when the test organisms were exposed to ultraviolet radiation to simulate sunlight.

Green Roofs and Living Walls

This [article](#), presented in the March/April 2015 issue of the journal *Stormwater*, described the expanding use of green walls (i.e., walls covered by living plants) and green roofs—and explored their role in improving aesthetics and managing stormwater runoff.

Websites Worth a Bookmark

IDDE Knowledge Bank (www.lorialilly.com/bank.html)

The Illicit Discharge Detection and Elimination (IDDE) Knowledge Bank is a webpage with links to IDDE research and literature, networking opportunities, resources and tools.

MyEnvironment (www.epa.gov/myenvironment)

EPA's MyEnvironment search application is designed to provide a cross-section of environmental information based on location. A user enters a ZIP code, street address, county name, water body name, national park name or other place name and the application generates a map and detailed location-related environmental information about air, water, energy, health, land, community, and available environmental reports and social networking resources.

Calendar

For an updated events calendar, see www.epa.gov/nps/calendar.

July 2015

7/26–28

[Water Environment Federation's Nutrient Symposium 2015](#), San Jose, CA

7/26–29

[Soil and Water Conservation Society International Annual Conference](#), Greensboro, NC

August 2015

8/2–6

[StormCon 2015](#), Austin, TX

8/4–7

[International Water Association's Symposium on Lake and Reservoir Management](#), Pembroke, VA

8/5–7

[American Society of Civil Engineers Watershed Management Symposium](#), Reston, VA

September 2015

9/20–24

[International Conference on Ecology & Transportation](#), Raleigh, NC

9/26–30

[WEFTEC](#), Chicago, IL

October 2015

10/5–8

[CitiesAlive: 13th Annual Green Roof and Wall Conference](#), New York, NY

10/14–15

[Villanova Urban Stormwater Partnership's 9th Stormwater Management Symposium](#), Villanova, PA

10/14–16

[Southeast Stormwater Association's 10th Annual Regional Stormwater Conference](#), Chattanooga, TN

10/19–21

[CASQA 11th Annual Stormwater Conference: Stormwater—Are We Making a Difference?](#), Monterey, CA

10/19–22

[Association for Environmental Health and Sciences Foundation's Annual International Conference on Soils, Sediments, Water, and Energy: U.S. East Coast Conference](#), Amherst, MA

10/28–29

[2015 Restoring the West Conference—Down by the River: Managing for Resilient Riparian Corridors](#), Logan, UT

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