



## **STORMWATER PHASE II ACTION ALERT**

A March 10<sup>th</sup> deadline is quickly approaching for targeted municipalities to file their stormwater management plans, under EPA's Stormwater Phase II of the Clean Water Act. While the Phase II requirement adds a new challenge in reducing polluted stormwater runoff from the nation's waterways, it also allows communities to use trees as part of the solution. A recent report published by the International City/County Management Association (ICMA), recognizes trees as "green infrastructure" and their benefits in improving water and air quality.

### **What is Stormwater Phase II?**

The federal Clean Water Act mandates that certain communities apply for a Stormwater discharge permit under a program called the "National Pollutant Discharge Elimination System (NPDES)". These permit requirements monitor the amount of stormwater discharged and pollutants contained in it. In Phase I, large municipalities, with populations over 100,000 needed permits to comply with the Clean Water Act, and in Phase II, smaller municipalities must comply with the law.

### **Who is Affected?**

In an effort to further reduce pollutants found in urban area's stormwater discharges, more than 8,000 cities and counties in the U.S. will need to file stormwater management plans. This applies to "urbanized areas" that have separate stormwater sewer systems (MS4s). Urbanized areas refer to a total population of at least 50,000 and a density of at least 1,000 people per square mile. Specifically Phase II will apply to:

- Populations of less than 100,000 served by separate stormwater sewer systems (MS4s);
- Industries operating in municipalities of less than 100,000;
- Construction activity disturbing between one and five acres.

To determine which cities and counties in your area must comply, contact your state environmental authority overseeing Phase II. A link to lists of state and EPA regional contacts is provided.

### **What's in the Stormwater Management Plan**

While each state has developed specific requirements, all affected municipalities must file a stormwater management plan by the March 10<sup>th</sup> deadline. The plans need to incorporate six required control measures as outlined in Phase II including: construction site runoff control, post-construction runoff control, pollution

prevention, public education and outreach, public participation, and illegal discharge detection and elimination. The plans must include a narrative for measurable goals for each of the control measures.

### **More Trees Means Less Stormwater Runoff**

Trees function as nonstructural stormwater management facilities. Here's how they work and why they should be part of a stormwater management plan:

- Trees slow stormwater flow, reducing the volume of water that must be managed in urban areas and decreasing the amount of runoff that containment facilities must store.
- Trees intercept rainwater on leaves, branches and trunks, slowing its movement into channelized drainage areas.
- Stormwater volume is diminished when some intercepted water evaporates into the atmosphere and some soaks into the soil. The net reduction in total volume and peak flow lessens the potential for flooding, a critical concern during heavy rains.
- Trees provide their greatest benefit during light rains by increasing soil permeability, which facilitates groundwater recharge. Reducing impervious surfaces and increasing tree cover promotes the movement of water into the water table.
- Long-term studies document trees' ability to reduce the movement of stormwater and cut peak flow rates that cause flooding and overtax stormwater sewers. The Natural Resource Conservation Service has measured the effects of stormwater movement across various land covers over the last 50 years. Based on these studies, engineers developed predictive models that calculate the volume of water produced from a given rainstorm and land cover (*TR-55: Urban Hydrology of Small Watersheds*). Stormwater management facilities' construction costs are calculated based on these models.
- Urban areas could reduce their stormwater runoff and save millions of dollars by increasing their tree cover. In Fayetteville, Arkansas, increasing tree canopy from 27% to 40% would reduce their stormwater runoff by 31% valued at an additional \$43 million in capital improvement savings (represents \$2/cubic ft. cost to contain stormwater runoff. American Forests, *UEA of Benton and Washington Counties, Arkansas, 2002*)

### **What You Can Do Immediately**

Include these provisions in the stormwater management plan:

- Incorporate trees into planning and management policies and programs
- Set a tree canopy target goal
- Measure the tree canopy's effect on stormwater runoff

#### *Tree Cover as a Measurable Goal*

Hundreds of communities have tree ordinances and tree programs in place to conserve and improve their urban forest and other natural resources. Many existing ordinances may intend to maintain and improve their forest cover with provisions that insure a specified density or number of trees on a per acre basis. However this density requirement is subjective and it would be difficult to quantify their benefits. The scientific and engineering knowledge of the benefits of trees has grown

dramatically in the last decade. With this new understanding, trees can be considered, “green infrastructure”. Now, with computerized technology and aerial and satellite imagery, communities can measure the benefits of their urban forests for stormwater and air quality benefits. The best way to ensure its protection is to establish tree cover goals. This measurable and defensible approach can be used in the development of stormwater management plans.

### *Setting tree canopy target goals*

The average urban tree cover for the 20 states in the northeastern quarter of the country is 30%. Setting a tree canopy goal will help protect a community’s green infrastructure and maximize the environmental benefits it can provide. American Forests offers generic tree canopy guidelines for specific zoning categories. While these percentages are a good starting point, they should be used only as a guide. Each community must consider local climate and other ecological conditions to set its own targets.

For metropolitan areas east of the Mississippi and in the Pacific Northwest:

Average tree cover for all land use zones	40%
Suburban residential zones	50%
Urban residential zones	25%
Central business districts	15%

For metropolitan areas in the Southwest and dry West:

Average tree cover for all land use zones	25%
Suburban residential zones	35%
Urban residential zones	18%
Central business districts	9%

Once a tree plan, ordinance, or strategy is mentioned in the stormwater plan, it becomes protected under the provisions of the Clean Water Act and carries civil and administrative penalties for non-compliance. Penalties can run as high as \$27,000 a day.

### **How to Help Develop the Stormwater Plan with Trees**

Once trees are included in the plan, communities have up to five years to detail plans for funding, identify measurable benefits, and develop guidelines and other regulations. Technical expertise will be especially helpful in developing measurable goals, conducting stormwater controls monitoring, and measuring success, as well as assisting with training, developing educational materials, and conducting public education programs for citizens and local officials.

### **For Further Information:**

Environmental Protection Agency (EPA)

For information on Stormwater Phase II

<http://cfpub.epa.gov/npdes/stormwater/swfinal.cfm>

For EPA’s regional contacts:

[http://cfpub.epa.gov/npdes/contacts.cfm?program\\_id=6&type=REGION](http://cfpub.epa.gov/npdes/contacts.cfm?program_id=6&type=REGION)

For state stormwater contacts:

[http://cfpub.epa.gov/npdes/contacts.cfm?program\\_id=6&type=STATE](http://cfpub.epa.gov/npdes/contacts.cfm?program_id=6&type=STATE)

American Forests

For Urban Ecosystem Analysis reports in U.S. metropolitan areas

<http://www.americanforests.org/resources/rea/>

For quantifying the environmental and economic benefits of trees

<http://www.americanforests.org/productsandpubs/citygreen/>

International City/County Management Association's

Local Government Assistance Network (LGEAN)

<http://www.lgean.org>

IQ Report: *Trees: The Green Infrastructure*

[http://bookstore.icma.org/obs/showdetl.cfm?&DID=7&Product\\_ID=953](http://bookstore.icma.org/obs/showdetl.cfm?&DID=7&Product_ID=953)

"Trees: The Oldest New Thing in Stormwater Treatment?"

*Stormwater: The Journal for Surface Water Quality Professionals*

[http://www.forester.net/sw\\_0203\\_trees.html](http://www.forester.net/sw_0203_trees.html)